



Smithsonian

100 years of science in Panama



Smithsonian Tropical Research Institute, Panamá

STRI news

www.stri.org

February 18, 2011

Gamboa seminar

Monday, February 21 at noon, Gamboa seminar speaker will be Justin Touchon, STRI **Measuring selection on aquatic and terrestrial reproduction in a Neotropical treefrog**

Tupper seminar

Tuesday, February 22, Tupper 4pm seminar speaker will be Jonathan Thompson, Smithsonian Conservation Biology Institute **TBA**

Special at Naos

Gonzalo Nieto Feliner, Madrid Botanical Garden will present a conference on Wednesday, February 23, 10am, Naos Conference Room: **Reticulate evolution in Armeria (Plumbaginaceae) and some considerations on the contribution of hybridization to plant diversity**

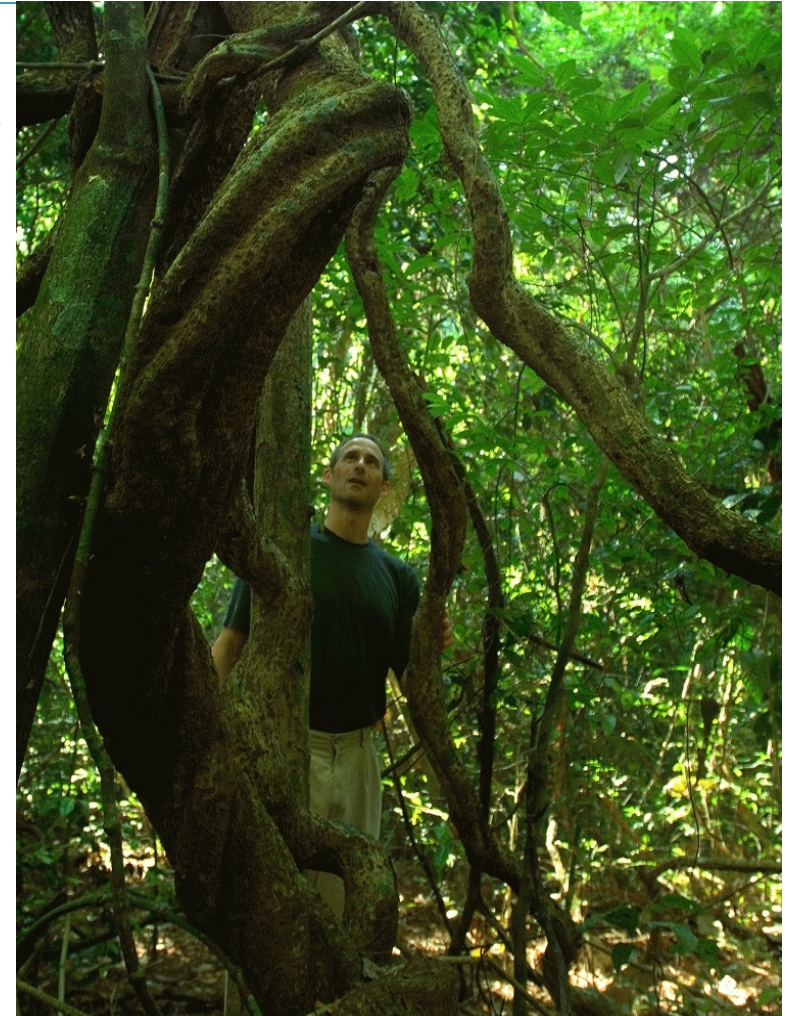
Paleo-talk at Tupper

Thursday, February 24, 4pm, at the Tupper Auditorium, Paleo-talk speaker will be Erica Hendy, University of Bristol **Set in stone: coral skeletal records of climate, reef environment & physiology**

Why are vines overtaking the American tropics?

Researchers at STRI and the University of Wisconsin at Milwaukee received funds from the US National Science Foundation to discover why real vines are overtaking the American tropics. Data from eight sites show that vines are overgrowing trees in all cases. "We are witnessing a fundamental structural change in the physical make-up of forests that will have a profound impact on the animals, human communities and businesses that depend on them for their livelihoods," said Stefan Schnitzer, research associate at STRI and associate professor at the University of Wisconsin at Milwaukee, who just published "Increasing liana abundance and biomass in tropical forests: Emerging patterns and putative mechanisms" with Frans Bongers, from Wageningen University, in *Ecology Letters*.

On BCI, the proportion of vines in tree crowns has more than doubled over the past 40 years. In French Guiana, liana vines increased 60% faster than trees from 1992 to 2002. Similar reports from Brazil, the Bolivian Amazon and



subtropical forests in South Carolina in the US confirm that vines are becoming more common and represent more of the total forest biomass.

Trees have huge woody trunks that take a lot of time and energy to produce. Vines take advantage of trees, growing quickly on slender stems up into the forest canopy, where their leaves may compete for light with the leaves of the trees that

support them.

There is still no consensus as to why lianas are gaining the upper hand. They may survive seasonal droughts that are becoming more common as climate becomes more variable. They may recover more quickly from natural disturbances such as hurricanes and El Niño events and from human disturbances like logging, clearing land for agriculture and

Bambi seminar

Thursday, Bambi seminar speaker on BCI will be Ernesto Medina, Instituto Venezolano de Investigaciones Científicas

Structural development of mangroves as determined by salinity and nutrient availability: Osmotic and isotopic analyses

Arrivals

Gerhard Zotz, University of Oldenburg, to study growth and demography of epiphytic and epilithic plants and lichens at the tree line, in Fortuna.

Maria Eckenweber, Germany, to study echolocation and foraging behavior of Neotropical bats, on BCI

Ann Frechette, Zachary Palomba-Frechette, Katrina Macht, and Lori Claerkin, Montclair State University, to join the Barro Colorado Island Mammal Census, on BCI.

Richard Aronson, Florida Institute of Technology, to participate as instructor in the 2011 Three Oceans/North Eastern University, at Bocas del Toro.

Gerardo Arturo Sánchez Azofeifa and Michael Hesketh, University of Alberta, to study leaf and canopy spectral reflectance from the Metropolitan Natural Park and Fort Sherman canopy cranes, at Tupper.

Bettina Englebrecht, University of Bayreuth, to study regional distribution patterns in tropical forest direct and indirect consequences of drought periods, in Gamboa.

road building. Lianas respond quickly to an increase in atmospheric carbon dioxide—growing faster than associated tree species in several experiments.

In North American forests, invasive vines such as kudzu, oriental bittersweet, English ivy and Japanese honeysuckle often reduce native tree regeneration and survival, although there is no obvious trend as there is in the American tropics. In contrast, two studies of forests in tropical Africa did not detect vine overgrowth.

To understand the nature of this contemporary spell that has been cast on the tropical forests of the Americas, the authors of the paper, propose to take advantage of the widespread network of large-scale, long-term monitoring plots—the Smithsonian Institution Global Earth Observatory network coordinated by the Center for Tropical Forest Science—combined with experiments to reveal what gives vines a competitive edge over trees.

Business models for investment in climate-mitigation schemes through carbon storage, climate models and water availability all rely upon accurate information about tree growth and cover in tropical forests. The major physical transformations indicated by this research call the reliability of such models into question.

Adapted from EurekaAlert!

Investigadores del Smithsonian en Panamá y la Universidad de Wisconsin en Milwaukee recibieron fondos de National Science Foundation de los Estados Unidos para averiguar por qué las lianas están acaparando los trópicos

americanos. Información de ocho sitios boscosos muestra que las lianas están creciendo más que los árboles en todos ellos.

"Estamos viendo un cambio estructural y fundamental en la forma que están tomando los bosques, lo que afectará profundamente a animales, comunidades humanas y negocios que dependen de ellos para su sustento," comenta Stefan Schnitzer, investigador asociado de STRI y profesor en la Universidad de Wisconsin en Milwaukee, quien acaba de publicar "Increasing liana abundance and biomass in tropical forests: Emerging patterns and putative mechanisms" [Aumento en la abundancia y biomasa de lianas en bosques tropicales: Surgen patrones y mecanismos falsos] con Frans Bongers, de Wageningen University, en *Ecology Letters*.

En Barro Colorado, la proporción de lianas en las copas de los árboles se ha más que duplicado en los últimos 40 años. En la Guayana Francesa, las lianas aumentaron un 60% más que los árboles, de 1992 a 2002. Informes similares de Brasil, el Amazonas boliviano y bosques subtropicales en Carolina del Sur, en Estados Unidos, confirman que las lianas son cada vez más comunes y representan una mayor proporción del total de la biomasa del bosque.

Los árboles poseen inmensos troncos leñosos que toman mucho tiempo y energía en producirse. Las lianas se aprovechan de los árboles creciendo rápidamente sobre tallos delgados subiendo al dosel del bosque, donde sus hojas pueden competir por luz junto con las hojas de los árboles que las sostienen.

Aún no hay un consenso de por qué las lianas están ganándole a los árboles. Estas pueden sobre-

vivir a las sequías que cada vez son más comunes al ser el clima más variable. Se recuperan rápidamente de alteraciones naturales como huracanes y eventos como El Niño, y de alteraciones humanas como la tala de árboles, la roza para la agricultura y la construcción de carreteras. En varios experimentos, al aumentar el dióxido de carbono atmosférico, la respuesta rápida de las lianas fue crecer con mayor velocidad que los árboles de especies asociadas.

En bosques de Norteamérica, las lianas invasivas como el Kudzu, la dulcamara oriental, la hiedra inglesa, y la madreSelva japonesa, a menudo reducen la regeneración y sobrevivencia de árboles nativos, aunque no hay una tendencia clara como la que experimentan los trópicos americanos. Por otro lado, dos estudios en bosques en África tropical no detectaron crecimiento en las lianas.

Para comprender la naturaleza de este cambio en los bosques tropicales americanos, los autores de este artículo proponen aprovechar la amplia red de parcelas de monitoreo a gran escala de los Observatorios Globales de la Tierra del Smithsonian que coordina el Centro de Ciencias del Trópico, combinado con experimentos para averiguar cuál es la ventaja que tienen las lianas actualmente sobre los árboles.

Modelos empresariales para la inversión en estrategias de mitigación del clima por medio del almacenamiento de carbono, modelos climáticos y disponibilidad de agua dependen de información acertada sobre el crecimiento de árboles y la cobertura boscosa en los trópicos. Las principales transformaciones físicas que esta investigación indica, ponen en duda la credibilidad de estos modelos.

More arrivals

Sarah Batterman and Stephen Pascala, Princeton University, to participate as instructor in the 2011 Princeton Field Course, in Gamboa.

Scott Swearingen, Randy Ramer and Ben Ilhoff, Gilcrease Museum in Tulsa, to take photographs and videos of landscapes and archaeological sites, which will accompany a forthcoming exhibit on the Precolumbian archaeology of Panama. They will be accompanied by Aureliano Valencia and Conrado Tapia from Richard Cooke's laboratories.

New publications

Eberhard, William G. 2011. "Are smaller animals behaviourally limited? Lack of clear constraints in miniature spiders." *Animal Behaviour* doi:10.1016/j.anbehav.2011.01.016

Edgar, Graham J., Banks, Stuart A., Bessudo, Sandra, Cortés, Jorge, Guzmán, Hector M., Henderson, Scott, Martínez, Camilo, Rivera, Fernando, Soler, German, Ruiz, Diego, and Zapata, Fernando A. 2011. "Variation in reef fish and invertebrate communities with level of protection from fishing across the Eastern Tropical Pacific seascape." *Global Ecology and Biogeography* doi:10.1111/j.1466-8238.2010.00642.x

Hall, Jefferson S., Ashton, Mark S., Garen, Eva J., and Jose, Shibu. 2011. "The ecology and ecosystem services of native trees: Implications for reforestation and land restoration in Mesoamerica." *Forest Ecology and Management* doi:10.1016/j.foreco.2010.12.011

CTFS Symposium

Tupper Center Auditorium
Tuesday, 22 February 2011

CTFS research on forest ecology will be the focus of a one day symposium at the Tupper Center at the Smithsonian Tropical Research Institute in Panama on Monday, February 22. Talks will focus on new analytical approaches to understanding the long-term dynamics of forests. Talks will also address

From ELTI

The Philippines has suffered the most extensive deforestation in Southeast Asia, with less than 3% of the entire land area constituting primary forest. Much of that primary forest lies within legally protected areas, though facing mounting pressures and threats.

In order to begin restoring the degraded areas and adjacent buffer zones, the Asia office of STRI/Yale Environmental Leadership & Training Initiative (ELTI) held a five-day training on "Rainforestation" for protected area superintendents, early this month, with Visayas State University on the island of Leyte, Central Philippines.

The course, attended by 30 participants from Mindanao, provided the necessary information to implement "Rainforestation", a local form of forest restoration deriving direct and indirect economic benefits.

From: David Neidel, ELTI

Filipinas ha sufrido la mayor deforestación en el Suroeste de Asia, con menos de 3% del área cubierta de bosques primarios. Gran parte de este bosque primario se encuentra dentro de áreas protegidas legalmente, pero enfrentan gran presión.



new research directions of the CTFS network. This event is open to the public, and will be broadcast live online at: <http://stri.si.edu/english/webcast/index.php>



Con el propósito de empezar a restaurar las áreas degradadas y zonas de amortiguamiento, la oficina de ELTI en Asia ofreció capacitación de cinco días a principios de este mes, sobre "Rainforestation" para superintendentes de áreas protegidas, a principios de este mes, con Visayas State University en la isla de Leyte, en Filipinas central.

El curso, aprovechado por 30 participantes de Mindanao, ofreció información para aplicar la "Rainforestation" o Reforestación para Bosques Lluviosos, una fórmula de restauración forestal de la que se derivan beneficios económicos directos e indirectos.



New publications

Santana, Sharlene E., Strait, Suzanne, and Dumont, Elizabeth R. 2011. "The better to eat you with: Functional correlates of tooth structure in bats." *Functional Ecology* doi:10.1111/j.1365-2435.2011.01832.x

Schnitzer, Stefan A., and Bongers, Frans. 2011. "Increasing liana abundance and biomass in tropical forests: Emerging patterns and putative mechanisms." *Ecology Letters* doi:10.1111/j.1461-0248.2011.01590.x

Wells, Konstans, Böhm, Stefan M., Boch, Steffen, Fischer, Markus, and Kalko, Elisabeth K.V. 2011. "Local and landscape-scale forest attributes differ in their impact on bird assemblages across years in forest production landscapes." *Basic and Applied Ecology* doi:10.1016/j.baae.2011.01.002

Recommended

[Recycling Matters Newsletter](#)

You'll learn how recycling at the Smithsonian began, why we like to measure our waste, which group to contact for help with recycling, and much more.

Sabrà cómo empezó el programa de reciclado en el Smithsonian, por qué queremos medir nuestra basura, qué grupo buscar para que nos ayude a reciclar, y mucho más.

**Safety number:
212-8211**

Conversaciones en el Smithsonian *Ciclo de Conferencias Centenario*

es parte del programa de actividades organizado para celebrar
los Cien Años de Ciencia del Smithsonian en Panamá y reconocer
el apoyo que hemos recibido de millares de panameños a través de los años.

Peristeria elata Hook., descrita en 1831.




Historia de las Colecciones Botánicas en Panamá

Profesora Mireya Correa

Entrada Libre
Auditorio del Centro Earl Tupper
Instituto Smithsonian
23 de febrero de 2011
5:30 p.m.

Información: 212-8111, 212-8000 ext. 0

 Smithsonian



100 años
de ciencia en Panamá

A partir de enero de 2011, investigadores del Smithsonian
presentarán charlas mensuales sobre la historia de la relación centenaria
entre el Smithsonian y Panamá y sobre la investigación científica
que el Smithsonian adelanta desde Panamá para el mundo.