

## Tupper seminar

Tuesday, June 15, 4pm seminar speaker will be Justin Touchon, Boston University  
**Plasticity, selection and reproductive mode: What can a treefrog teach us about evolution of terrestrial reproduction?**

## Monthly talk

Wednesday, July 7, the monthly talk will be presented by Margaret Crofoot, STRI, at the Tupper Center, 7pm  
**La vida secreta de los animales**

## Two Bambi seminars

Wednesday, July 7, Bambi seminar speaker will be Brian Sedio, University of Michigan  
**Character displacement of anti-herbivore defenses in a world without specialists**

Thursday, July 8, Bambi seminar speaker will be Kris Callis, University of Florida  
**Silica as a physical plant defense**

## Arrivals

Wayne Sousa and students Stephanie Panlasigui, Sierra Flynn, Glenn Sousa and Rosemary Romero, University of California at Berkeley, to study the patterns and mechanisms of canopy tree regeneration in a Caribbean mangrove forest, at Galeta.

Grace Chen, Michigan State University, to study the effects of biotic interactions and abiotic stress on plant adaptation in the tropics, in Gamboa and BCI

Ingrid Parker, University of California-Santa Cruz, to study the geographic origin and recruitment patterns in *Chrysophyllum*, in Gamboa.



Smithsonian Tropical Research Institute, Panamá

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

July 2, 2010

## "Look for the answer under the ground" Allen Herre

A team of researchers led by former STRI fellow Scott Mangan from the University of Wisconsin–Milwaukee shows that soil-borne pathogens are one important mechanism that can maintain species diversity and explain patterns of tree abundance in a forest.

In a self-limiting process called "negative feedback," authors of a study published online by *Nature* (June 25) have corroborated the results of a study published last week in *Science* by Comita *et al* (see *STRInews*, June 25). They observed that the farther from the parent tree a seed falls, the better it fares.

In both greenhouse and field experiments, Mangan found clues that tree species differ in their susceptibilities to enemies found in the soil, such as viruses, bacteria and fungi. "This research reinforces the conclusion that certain tree species are abundant in forests because they are less susceptible to pathogens in the soil than rarer tree species," said Mangan.

"Two completely different approaches —analyses of long-term forest dynamics observations and direct experiments on Barro

Colorado Island —are telling us to look for the answer under the ground" said Allen Herre, long-term researcher at STRI and co-author of the article published in *Nature*.



Un grupo de investigadores liderados por Scott Mangan, ex-becario de STRI de University of Wisconsin-Milwaukee, demuestra que los patógenos que crecen bajo la tierra son un mecanismo importante que puede mantener la diversidad de las especies y explicar los patrones de abundancia de árboles en el bosque.

En un proceso de autolimitación llamado "negative feedback" [retroalimentación negativa], autores del estudio publicado en línea en *Nature* (25 de junio) corroboran los resultados de un estudio publicado la semana pasada en *Science*, por Comita *et al.* (*STRInews*, 25 de junio). Ellos observan que mientras más lejos crece un árbol de sus progenitores, mayores serán sus posibilidades de éxito.

Tanto en el bosque, como en experimentos en un invernadero,

Mangan encontró claves de que las diferentes especies de árboles varían en susceptibilidad a enemigos que se encuentran en la tierra, como virus, bacterias y hongos. "Esta investigación refuerza la conclusión de que ciertas especies de árboles son abundantes en el bosque porque son menos susceptibles a los patógenos de la tierra de lo que son las especies poco comunes.

"Dos formas completamente diferentes —análisis de observaciones a largo plazo de la dinámica de bosques, y experimentos directos en la Isla de Barro Colorado— nos dicen que busquemos la respuesta bajo la tierra, aseguró Allen Herre, científico de STRI por largo tiempo, y uno de los co-autores del artículo en *Nature*.

## More arrivals

Benjamin Carter, Muhlenberg College, to carry out a pilot study using carbon and oxygen stable isotopes to source the marine bivalve *Spondylus*, at the CTPA, Ancon.

Sebastien Tilmans, Stanford University, to study sustainable stormwater and sanitation methods in Bocas del Toro.

Lynne Beaty and Amada Arner, Texas Technological University, to study female choice in Túngara frogs, in Gamboa.

Verónica Orillana Pereira, Universidad de El Salvador, to study rodents as conditional mutualists of trees: When are agoutis effective seed dispersers?, on BCI.

Gregory Gilbert, University of California-Santa Cruz, to study Phylogenetic structure of plant pathogen host ranges, in Gamboa.

## Departures

Haris Lessios to Belize City and the Smithsonian Field Station at Carry Bow Cay, to collect sea urchins and sand dollars.

Hector Guzmán to Puerto Quepos, Costa Rica, to collect specimens of new species of Pacific softcoral.

Rachel Collin to Phuket, Thailand, to participate in the 2010 World Congress of Malacology.

## STRI in the news

“Profile: Dolores Piperno. In Archaeobotanist’s hands, tiny fossils yield big answers” by Michael Balter. 2010. *Science* 329(5987): 28-29 (July 2).

## “In-house” insect journal makes it to the top four

Launched in 2008, *Insect Conservation and Diversity*, a Wiley journal published on behalf of the Royal Entomological Society is edited by Simon R. Leather, Imperial College London, STRI’s Yves Basset (photo at right), and Raphael K. Didham, from the University of Western Australia.

*Insect Conservation and Diversity* explicitly associates the two concepts of insect diversity and insect conservation for the benefit of invertebrate conservation. The journal places an emphasis on wild arthropods and specific relations between arthropod conservation and diversity. Key topics covered in the journal will include biogeography, climate change (and its impacts on distributions and range), conservation genetics, global biodiversity, integrating conservation science and policy, and long-term planning and implementation.

This year, *Insect Conservation and Diversity* got its first impact factor for 2009, 2.828, which augurs very well for the journal. In the field of Entomology *Insect Conservation*

and *Diversity* was ranked in the top four after *Annual Review of Entomology* (11.271), *Advances in Insect Physiology* (10.500) and *Insect Biochemistry and Molecular Biology* (3.117). ISI (Thomson Reuters) have

confirmed that *Insect Conservation and Diversity* will be fully indexed in the SCIE (Science Citation Index Expanded) index.

On behalf of the editors and the Royal Entomological Society, we would like to warmly thank the scientific community for their continued support of *Insect Conservation and Diversity*, as well as invite the STRI community to submit new papers to this journal.

Inaugurada en 2008, *Insect Conservation and Diversity*, una revista Wiley publicada por Royal Entomological Society, está editada por Simon R. Leather, Imperial College London, Yves Basset, de STRI (foto a la derecha), y Raphael K. Didham, de University of Western Australia.

*Insect Conservation and Diversity* asocia explícitamente los dos conceptos de conservación y diversidad de insectos en beneficio de la conservación de invertebrados. La revista se centra en artrópodos silvestres y las relaciones específicas entre la conservación y la diversidad de artrópodos. Los tópicos clave que se cubren en esta revista incluyen biogeografía, cambio

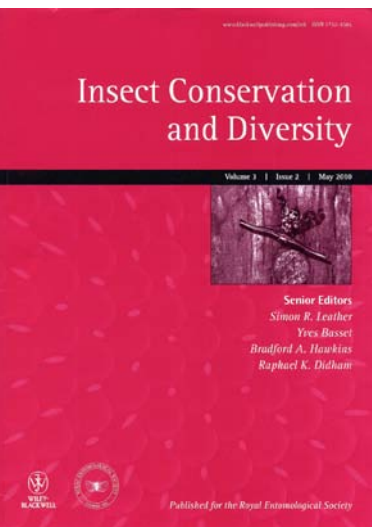


Yves Basset, 2007

climático (junto con el impacto que tiene sobre distribuciones y rango), genética de la conservación, biodiversidad global, la integración entre la ciencia de la conservación y las políticas, y el planeamiento e implementación a largo plazo.

Este año, *Insect Conservation and Diversity* recibió su primer factor de impacto para 2009, 2.828, lo que augura éxitos para esta revista. En el campo de la entomología, *Insect Conservation and Diversity* obtuvo un cuarto lugar después de *Annual Review of Entomology* (11.271) *Advances in Insect Physiology* (10.500) e *Insect Biochemistry and Molecular Biology* (3.117). ISI (Thompson Reuters) confirmó que *Insect Conservation and Diversity* aparecerá en su totalidad en SCIE (Science Citation Index Expanded).

En nombre de los editores y Royal Entomological Society queremos agradecer a toda la comunidad científica por su caluroso apoyo a *Insect Conservation and Diversity*, así como invitar a la comunidad de STRI a someter nuevos estudios para su publicación en esta revista.



More at: <http://www.wiley.com/bw/journal.asp?ref=1752-458X>



## New publications

Budd, Ann F., and Pandolfi, John M. 2010. "Evolutionary novelty is concentrated at the edge of coral species distributions." *Science* 328(5985): 1558-1561.

Garrish, Valerie, Cernusak, Lucas A., Winter, Klaus, and Turner, Benjamin L. 2010. "Nitrogen to phosphorus ratio of plant biomass versus soil solution in a tropical pioneer tree, *Ficus insipida*." *Journal of Experimental Botany* Online.

Gnezdilov, Vladimir M., Bonfils, Jacques, Aberlenc, Henri-Pierre, and Basset, Yves. 2010. "Review of the Neotropical genus *Oronoqua* Fennah, 1947 (Insecta, Hemiptera, Issidae)." *Zoosystema* 32(2): 248-257.

Hamilton, Andrew J., Basset, Yves, Benke, Kurt K., Gribbacher, Peter S., Miller, Scott E., Novotny, Vojtech, Samuelson, G. Allan, Stork, Nigel E., Weiblen, George D., and Yen, Jian D.L. 2010. "Quantifying uncertainty in estimation of tropical arthropod species richness." *The American Naturalist* 176(1): 90-95.

Hesselberg, Thomas. 2010. "Ontogenetic changes in web design in two orb-weaver spiders." *Ethology* 116(6): 535-545.

Jung, Kirsten, and Kalko, Elisabeth. 2010. "Where forest meets urbanization: foraging plasticity of aerial insectivorous bats in an anthropogenically altered environment." *Journal Of Mammalogy* 91(1): 144-153.

Leidner, Allison K., Haddad, Nick M., and Lovejoy, Thomas E. 2010. "Does tropical forest fragmentation increase long-term variability of butterfly communities?" *PLoS ONE* 5(3): e9534.



## Panamanian Ombudsman visits Galeta

Panamanian Public Ombudsman Ricardo Vargas visited Galeta with nine senior members of his staff, on Friday, June 25.

As per invitation of Stanley Heckadon Moreno, director of STRI's Office of Communications and Public Programs, Vargas visited Galeta to get a first-hand look at the ongoing destruction of the mangroves around Colón and surrounding areas of STRI's Marine Laboratory located on the Caribbean entrance to the Panama Canal.

The visitors were briefed on the research, education and public outreach programs conducted at Galeta, and were toured to the facilities. Vargas enjoyed talking with a large contingent of students from Colón who were also visiting that day. He showed keen interest in the wind turbines that, in the near future, will generate electricity for the Laboratory. The photo, taken by Roberto Molina, photographer at the Office of the Ombudsman, shows Vargas touching a turtle from one of Galeta's touching pools, with logistic coordinator Jorge Morales at the Laboratory.

El Defensor del Pueblo de Panamá Ricardo Vargas, visitó Galeta con nueve miembros

senior de su personal, el viernes 25 de junio.

Por invitación de Stanley Heckadon Moreno, director de la Oficina de STRI de Comunicaciones y Programas Públicos, Vargas visitó Galeta para familiarizarse de primera mano, con la destrucción de los bosques de manglar alrededor de Colón y las áreas aledañas al Laboratorio Marino de STRI localizado en la entrada caribe del Canal de Panamá.

Los visitantes recibieron información sobre las investigaciones y programas de extensión públicos que se llevan a cabo en Galeta y recorrieron las instalaciones. Vargas disfrutó hablando con un extenso grupo de estudiantes colonenses que estaban de visita ese día. El Defensor mostró un gran interés en las turbinas de viento que, en un futuro cercano generarán electricidad para las operaciones del Laboratorio. La foto, tomada por Roberto Molina, videógrafo de la Defensoría del Pueblo, muestra a Vargas tocando una tortuga de uno de los acuarios de contacto de especies marinas de Galeta, con Jorge Morales, coordinador logístico en el Laboratorio.

## More publications

Mangan, Scott A., Schnitzer, Stefan A., Herre, Edward A., Mack, Keenan M.L., Valencia, Mariana C., Sanchez, Evelyn I., and Bever, James D. 2010. "Negative plant-soil feedback predicts tree-species relative abundance in a tropical forest." *Nature* Online.

Muñoz, A.G., Salazar, Camilo A., Castaño, J., Jiggins, C.D., and Linares, M. 2010. "Multiple sources of reproductive isolation in a bimodal butterfly hybrid zone." *Journal of Evolutionary Biology* 23(6): 1312-1320.

Salazar, Camilo A., Baxter, Simon W., Pardo-Diaz, Carolina, Wu, Grace, Surridge, Alison, Linares, Mauricio, Birmingham, Eldredge, and Jiggins, Chris D. 2010. "Genetic evidence for hybrid trait speciation in *Heliconius* butterflies." *Plos Genetics* 6(4): e1000930.

Salazar-Allen, Noris, and Tan, B.C. 2010. "*Octoblepharum arthrochormoides* (Calymperaceae) N. Salazar Allen & B.C. Tan, sp. nov., a new species from tropical Asia." *Botany* 88: 439-442.

Santos, Leandro M., Tierney, Simon M., and Wcislo, William T. 2010. "Nest descriptions of *Megalopta aegis* (Vachal) and *M. guimaraesi* Santos & Silveira (Hymenoptera, Halictidae) from the Brazilian Cerrado." *Revista Brasileira de Entomologia* 54(2): 332-334.

ter Hofstede, Hannah M., Kalko, Elisabeth, and Fullard, James H. 2010. "Auditory-based defence against gleaning bats in Neotropical katydid (Orthoptera: Tettigoniidae)." *Journal of Comparative Physiology A-Neuroethology Sensory Neural and Behavioral Physiology* 196(5): 349-358.



Story: Katia Silvera  
and Klaus Winter  
Edited by M Alvarado  
and ML Calderon  
Photo: MA Guerra

Orchids are the largest family of flowering plants with over 20,000 species worldwide, from which about 75% are epiphytes. Orchids occupy a diverse variety of habitats, but little was known about how diverse they were at avoiding drought stress associated with life in the canopy.

Recently, former STRI fellow Katia Silvera obtained a Ph.D. from the University of Nevada Reno. With colleagues Louis Santiago, from the University of California Riverside, John Cushman, from the University of Nevada Reno and Klaus Winter, from STRI, she measured 1,000 orchid species for the presence of Crassulacean Acid Metabolism (CAM), a water-conserving photosynthetic pathway. They surveyed 61% of the total number of orchids for Panama and Costa Rica, thus providing a useful checklist for researchers.

"This is an important piece of modern functional biodiversity research in the tropics," said Winter. "Orchids comprise about 10% of all vascular plants. The more we learn about the CAM mechanism in this huge family, the more we will know about the global significance of this specialized process of carbon sequestration and how it is affected by climate change."

The report of this study was published in the June issue of the *Botanical Journal of the Linnean Society*, 2010. It can be obtained from [calderom@si.edu](mailto:calderom@si.edu)

Las orquídeas pertenecen a la familia más extensa de plantas que florecen, con más de 20,000 especies alrededor del mundo, de las cuales el 75% son epifitas. Ocupan una gran diversidad de hábitats, aunque poco se sabía sobre qué tan diversas eran al evitar el estrés de la sequía asociado con la vida en el dosel.

Katia Silvera, ex-becaria de STRI quien recibió recientemente un doctorado de la Universidad de Nevada en Reno, y colegas Luis Santiago, de la Universidad de California en Riverside,

John Cushman, de la Universidad de Nevada en Reno y Klaus Winter, de STRI, analizaron 1,000 especies de orquídeas en busca de la presencia del Metabolismo Ácido Crasuláceo (CAM), una estrategia fotosintética para el ahorro de agua. El grupo hizo un censo del 61% del total de las orquídeas de Panamá y Costa Rica, y han confeccionado una lista de utilidad para los investigadores.

"Este es un estudio importante de biodiversidad funcional moderna en los trópicos"

manifestó Winter. "Las orquídeas comprenden cerca del 10% de todas las plantas vasculares. Mientras más aprendamos sobre el mecanismo CAM en esta familia, mejor conoceremos el significado global de este proceso especializado de obtención de carbono y cómo se afecta por el cambio climático.

Los resultados de este estudio se publicaron en el número de junio de la revista *Biological Journal of the Linnean Society*, 2010. Puede pedirlo a [calderom@si.edu](mailto:calderom@si.edu)

*Orchids tested for CAM in Panama and Costa Rica*

**Functional  
biodiversity of  
photosynthesis in  
tropical orchids**

