

## Tupper 4pm seminar

Tuesday, November 20, 4pm seminar speaker will be Pierre Sepulchre, University of California, Santa Barbara

**Constraining human evolution at different timescales: A climate modeling approach**

## Paleo-Talk

Wednesday, November 21, Paleo-Talk speaker will be Pierre Sepulchre, University of California, Santa Cruz, at 4pm, CTPA, Ancon

**Impact of uplifts on climate through time: From Africa to South America**

## Bambi seminar

Thursday, November 22 is Thanksgiving Day, and there will be no Bambi seminar on BCI.

## Arrivals

Kate Kirby, University of British Columbia, Canada, to study agrobiodiversity in Central American homegardens: An investigation at multiple scales, at Tupper.

Fred Ogden, University of Wyoming, to join a project to quantify environmental services provided by tropical forests, in Agua Salud, Gamboa.

Anthony G. Coates, STRI, to host Smithsonian Channel crew filming a program on STRI.

## Departures

Eldredge Bermingham, Inez Campbell, John Christy, Rachel Collin, Luis D'Croz, Hector Guzman and Mark Torchin traveled to Washington DC this week, to participate at the Marine Science Network Symposium.



Smithsonian Tropical Research Institute, Panamá

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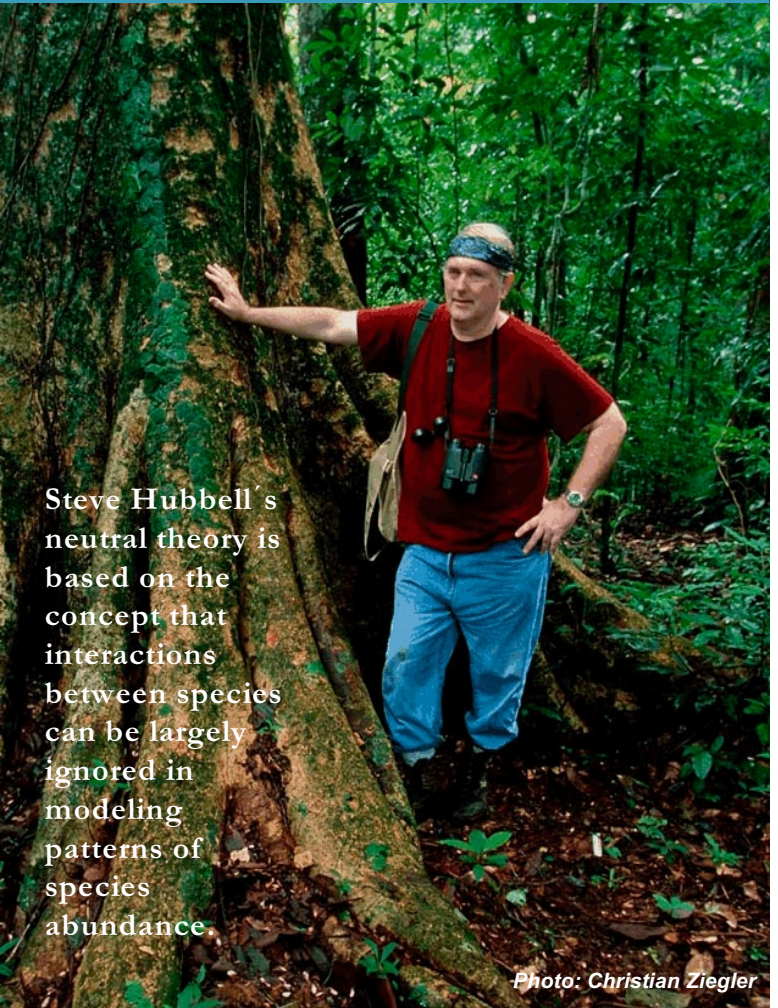
November 16, 2007

## Why do so many species live in tropical forests and coral reefs?

**Debate over a controversial hypothesis of biodiversity and species abundance**

A group of scientists including STRI plant biologist Stephen P. Hubbell published the article “Patterns of relative species abundance in rainforests and coral reefs” in the November 1<sup>st</sup> issue of *Nature* (450: 45-49). The team, that includes Igor Volkov (leading author) and Jayanth Banavar from Penn State, and physicist Amos Maritan of the University of Padua in Italy, report good agreement between the species richness of two of the world's most vulnerable ecosystems —tropical forests and coral reefs— and a simple mathematical model building on the so-called “neutral theory of biodiversity” Hubbell’s brainchild.

Among ecological theorists, the “neutral theory of biodiversity” has sparked a six-year quarrel over the fundamental assumptions of their discipline. The *Nature* paper counters another scientific team's claim in 2006 that coral-reef diversity “refutes” the neutral theory. At



**Steve Hubbell’s neutral theory is based on the concept that interactions between species can be largely ignored in modeling patterns of species abundance.**

*Photo: Christian Ziegler*

the same time, the paper by Volkov *et al.* modifies the classical version of neutral theory that appeared in a 2001 book by Hubbell. Banavar, Maritan, Volkov, and their collaborators have been active in the development of a mathematical framework for understanding ecosystems that builds on and clarifies Hubbell's neutral theory.

“Despite its controversial nature, neutral theory has proved to be a good starting point for understanding ecosystems,” said Maritan. And according to Banavar, “The six-year saga of neutral theory is an intriguing example of how a scientific hypothesis can fertilize stimulating new research while evolving over time in response to scientific critiques”

*Source: Penn State University*

## Departures

Ross Robertson to Washington DC to participate at the Marine Science Network Symposium, then to Brisbane, Australia.

Margarita Pearce to Montreal, Canada, to participate in the coordination of STRI-McGill programs, NEO and Universities Consortium.

Fernando Santos-Granero to Washington, DC, to attend Annual Meeting of the American Anthropological Association and contribute a talk to the Symposium.

## New publications

Holst, Irene, Moreno P., Jorge Enrique, and Piperno, Dolores R. 2007.

"Identification of teosinte, maize, and *Tripsacum* in Mesoamerica by using pollen, starch grains, and phytoliths." *Proceedings of the National Academy of Sciences* 104(45): 17608–17613.

Juliao, Genimar Reboucas. 2007. Riqueza e abundância de insetos galhadores associados ao dossel de florestas de terra firme, várzea e igapó da Amazônia Central. PhD. dissertation, Instituto Nacional de Pesquisas da Amazonia (INPA). Universidade Federal do Amazonas (UFAM), Manaus, Brazil.

Pontes Ribeiro, Servio, and Basset, Yves. 2007. "Gall-forming and free-feeding herbivory along vertical gradients in a lowland tropical rainforest: the importance of leaf sclerophylly." *Ecography* 30: 663–672.



## CTFS–TEAM network meeting and analytical workshop

The Tropical Ecology, Assessment and Monitoring (TEAM) network is an effort led by Conservation International, with long-term funding from the Gordon and Betty Moore Foundation, to develop a global network of sites and scientists to monitor quantitative trends in biodiversity using standardized methods, to make this data publicly available, and to forecast changes in biodiversity.

The Network's Science Meeting held from November 4-7 at STRI's Tupper Center was co-hosted by STRI's Center for Tropical Forest Science and Conservation International. The main objectives of the meeting was to strengthen ties and exchange information and experiences with CTFS scientists, one of the most important tropical forest networks in the world. The event brought together ideas about the science, protocols, and data analysis generated by these two networks through a combination of plenary sessions, working groups and poster sessions. The participants also discussed science accomplishments at Manaus, Volcan Barva, Caxiuana, Rio Doce in Brazil, the Yasuní CTFS Plot in Ecuador, the Nanjenshan/Fushan plots in Taiwan, and the

Ituri Plot in the Democratic Republic of Congo, and had the opportunity to visit BCI and the CTFS historical 50-hectare Forest Dynamic Plot on the Island.

TEAM Initiative vice-president Sandy Andersman thanked STRI and scientists Stuart Davies, Richard Condit and Steve Hubbell for co-hosting the meeting. Very special thanks went to CTFS' Jeannette Egger for the organization of the "best TEAM workshop ever."

La red Ecología Tropical, Estudio y Monitoreo (TEAM, por sus siglas en inglés) es un esfuerzo liderado por Conservation International, con fondos a largo plazo de la Fundación Gordon y Betty Moore, para desarrollar una red global de sitios y científicos para monitorear las tendencias cuantitativas en biodiversidad, usando métodos estandarizados para que la información sea accesible al público, así como para preveer cambios en la biodiversidad.

La reunión científica de la red llevada a cabo del 4 al 7 de noviembre en el Centro Tupper de STRI, fue co-patrocinada por el Centro de Ciencias Forestales del Trópico de STRI y Conservation International. Los objetivos principales de la

reunión fueron fortalecer las relaciones con el CTFS y compartir información y experiencias con sus científicos, una de las redes de bosques tropicales más importantes del mundo. En el evento se presentaron ideas sobre ciencia, protocolos y análisis de información generada por estas dos redes a través de una combinación de sesiones plenarias, grupos de trabajo y sesiones de afiches. Los especialistas también discutieron los logros científicos en Manaus, Volcan Barva, Caxiuana, Rio Doce en Brasil, la parcela de Yasuní del CTFS en Ecuador, las parcelas Nanjenshan/Fushan en Taiwan, y la parcela Ituri Plot en la República Democrática del Congo, y tuvieron la oportunidad de visitar Barro Colorado y la histórica parcela de 50 hectáreas de Dinámica de Bosques del CTFS en la Isla.

La vice-presidenta de la Iniciativa TEAM Sandy Andersman agradeció a STRI y a los científicos Stuart Davies, Richard Condit y Steve Hubbell por el co-patrocinio de la reunión. Jeannette Egger, del CTFS recibió un agradecimiento muy especial por la organización del "mejor taller que ha tenido el TEAM."

## New publications

Retallack, Gregory, and Kirby, Michael Xavier. 2007. "Middle Miocene global change and paleogeography of Panama." *Palaos* 22: 667-679.

Vargas, Sergio, Guzman, Hector M., and Breedy, Odalisca. 2007. "Distribution patterns of the genus *Pacifigorgia* (Octocorallia: Gorgoniidae): track compatibility analysis and parsimony analysis of endemism." *Journal of Biogeography* Online.

Basset, Yves, Corbara, Bruno, Barrios E., Hector V., Cuenoud, Philippe, Leponce, Maurice, Aberlenc, Henri-Pierre, Bail, Johannes, Bito, Darren, Bridle, Jon R., Castano Meneses, Gabriela, Cizek, Lukas, Cornejo Remice, Aidee, Curletti, Gianfranco, Delabie, Jacques H.C., Dejean, Alain, Didham, Raphael K., Dufrene, Marc, Fagan, Laura L., Floren, Andreas, Frame, Dawn M., Halle, Francis, Hardy, Olivier J., Hernandez, Andres, Kitching, Roger L., Lewinsohn, Thomas M., Lewis, Owen T., Manumbor, Markus, Medianero, Enrique, Missa, Oliver, Mitchell, Andrew W., Mogia, Martin, Novotny, Vojtech, Odegaard, Frode, Gama de Oliveira, Evandro, Orivel, Jerome, Ozanne, Claire M.P., Pascal, Olivier, Pinzon, Sara, Rapp, Mathieu, Pontes Ribeiro, Servio, Roisin, Yves, Roslin, Tomas, Roubik, David Ward, Samaniego, Mirna, Schmidl, Jurgen, Sorensen, Line L., Tishechkin, Alexey, Van Osselaer, Christian, and Winchester, Neville N. 2007. "IBISCA-Panama, a large-scale study of arthropod beta-diversity and vertical stratification in a lowland rainforest: rationale, study sites and field protocols." *Bulletin de L'Institut Royal des Sciences Naturelles de Belgique Entomologie* 77(1): 39-69.

Invasive species, fiddler crabs, mangroves and coral reefs are some of the topics that will be discussed as more than 70 Smithsonian scholars and their collaborators present marine research at the two-day Smithsonian Marine Science Symposium, held at SI's S. Dillon Ripley Center Auditorium in Washington DC from Thursday, November 15 to Friday, November 16.

The symposium, convened by the Smithsonian's Under Secretary for Science, will highlight individual and long-term, pan-institutional marine research, with particular focus on ecology, systematics, developmental biology and geology.

The scholars will discuss marine research findings from the Chesapeake Bay; Indian River lagoon and Florida Keys; Mesoamerican Barrier Reef in Belize; the Atlantic and Pacific coasts off the Isthmus of Panama; and other international research sites.

The symposium advances a tradition of marine science that began nearly 150 years ago and resulted in some of the world's foremost collections of marine specimens.

Presentations and posters include subjects on Caribbean coral reef ecosystems: 35 years of Smithsonian marine science in Belize; Biogeography of marine invasions: Current status and future predictions; The turtles' tale: flagships and instruments for marine research; Education and conservation; Contribution of commercial fishing to the decline in Hawaiian monk seals; The private life of shrimps: Sex, conflict and sexual selection in hermaphrodites; and Rising CO<sub>2</sub>, rising sea level and rising (or sinking?) coastal wetlands.

Especies invasoras, cangrejos violinistas, manglares y arrecifes coralinos serán



algunos de los tópicos a discutirse mientras que 70 académicos del Smithsonian y sus colaboradores presentan sus estudios marinos en el Simposio de dos días de Ciencias Marinas del Smithsonian, que se lleva a cabo del jueves 14 al viernes 15 de noviembre en el Auditorio del Centro S. Dillon Ripley en Washington DC.

El simposio, convocado por el Subsecretario para Ciencias del Smithsonian, destacará las investigaciones marinas pan-institucionales individuales y a largo plazo, con énfasis particular en ecología, sistemática, biología del desarrollo y geología.

Los académicos discutirán los hallazgos en investigaciones marinas llevadas a cabo en la Bahía Chesapeake, la laguna de del Indian River, los Cayos de la Florida, la Barrera Mesoamericana en Belice, las aguas costeras del Pacífico y el Atlántico del Istmo de Panamá,

y otras estaciones de investigación internacionales.

El simposio adelanta la tradición de ciencias marinas que empezó hace cerca de 150 años y que ha dado como resultado algunas de las colecciones de especímenes marinos más prominentes del mundo.

Las presentaciones y afiches incluyen temas sobre ecosistemas de arrecifes coralinos: 35 años de ciencias marinas del Smithsonian en Belice; biogeografía de invasiones marinas: estado actual y predicciones para el futuro; la historia de las tortugas: grandes logros e instrumentos para la investigación marina; educación y conservación; contribución de la pesca comercial en la disminución de las focas monje de Hawaii; la vida privada de los camarones; selección sexual en hermafroditas; y el aumento de CO<sub>2</sub>, el aumento en el nivel del mar y el surgimiento o hundimiento de humedales costeros.

# Gaining a better understanding of biological invasions

Story:

Dominique Roche  
Edited by M Alvarado  
& ML Calderon  
Photo: Rob Nelson.

Through increased globalization, human-mediated introductions of exotic species have risen dramatically over the past two centuries. Despite significant economic and environmental consequences of introductions and broad scale initiatives to prevent them, researchers still struggle to understand the fundamental processes underlying the success of invasive species.

Among other factors considered important in invasion success (e.g., propagule pressure, resource availability, disturbance) the role of natural enemies (predators, parasites, pathogens) has yet to be fully evaluated.

Dominique Roche, a STRI-McGill NEO student working with Brian Leung, McGill and STRI staff scientist Mark Torchin, is evaluating the extent to which a reduced parasite load facilitates the demographic success of an exotic African tilapia introduced to Panama.

Specifically, Roche works in the Panama Canal Watershed, investigating the

parasites of Nile Tilapia, *Oreochromis niloticus*, and those of a native competitor, *Vieja maculicauda*, the only native cichlid not yet extirpated from lakes Gatun and Alajuela.

By examining parasite transfer between these two species as well as differences in the abundance of parasites in the hosts and their impact on host fitness, Roche hopes to gain a better understanding of an important mechanism influencing biological invasions.

que se basa el éxito de las especies invasoras.

Entre otros factores considerados importantes para el éxito de las invasiones (e.j. presión del propágulo, disponibilidad de recursos, disturbios), el papel de los enemigos naturales (depredadores, parásitos, patógenos) debe evaluarse en su totalidad.

Dominique Roche, estudiante del Programa NEO de STRI y McGill quien trabaja con Brian Leung, de McGill y el científico de STRI Mark Torchin, está evaluando hasta dónde la reducida carga de parásitos facilita el éxito demográfico de una tilapia africana introducida en Panamá.

Específicamente, Roche trabaja en la Cuenca del Canal de Panamá, investigando los parásitos de la tilapia del Nilo, *Oreochromis niloticus* y los de su rival nativo, *Vieja maculicauda*, el único cíclido nativo que no ha sido extirpado de los lagos de Gatún y Alajuela.

Al aumentar la globalización, la introducción de especies exóticas por la mano del hombre ha crecido dramáticamente durante los dos últimos siglos. A pesar de las significativas consecuencias económicas y ambientales, y las iniciativas a gran escala para prevenirlas, los investigadores aún luchan para entender los procesos fundamentales en los

Al examinar la transferencia de parásitos entre estas dos especies al igual que las diferencias en la abundancia de parásitos en los hospederos y su impacto en la salud del hospedero, Roche espera obtener un mejor conocimiento de un importante mecanismo que afecta las invasiones biológicas.