Tupper 4pm seminar

Tuesday, March 28, 4pm seminar speaker will be Owen Lewis, University of Oxford
Using insect food webs to investigate tropical biodiversity

Bambi seminar

Thursday, March 30, Bambi seminar speaker will be Bob Stallard, USGS, STRI
Landscape history of the Panama Canal Basin as it relates to global change research opportunities

Ciclo de Conferencias

STRI, McGill University y la Fundación Ciudad del Saber invitan a su II Ciclo Internacional de Conferencias que iniciará Alberto Chirif Tirado, el jueves, 30 de marzo, Auditorio del Centro Tupper
Imaginario del indígena americano: evolución del concepto del salvaje a través de los siglos

Arriving next week

Annemarie Surlykke, University of Odense, Denmark, to make comparisons of behavior, physiology, and ecology of sympatric bat species, on BCI.

Andrew Crawford, STRI, con continue studies on Panama.

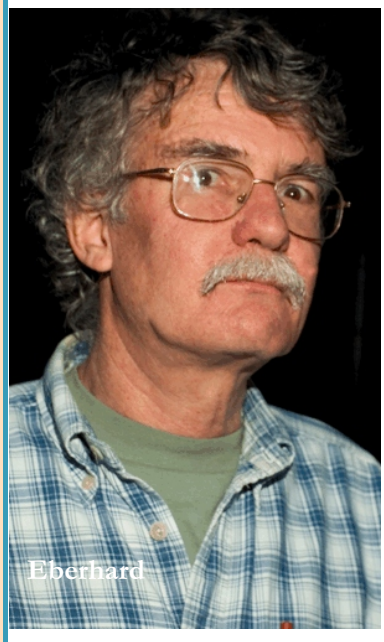
Thomas Lamy, Ecole Normale Supérieure, to study what governs host specificity of trematode parasites in crabs at Punta Culebra.

Jonathan Kelley, University of Washington, to study the influences of predator risk and climate on avian physiology in varying microhabitats, on BCI, Tupper and Gamboa.

Smithsonian Tropical Research Institute, Panamá www.stri.org March 24, 2006

STRI Science Symposium... "annual intellectual feast"

STRI held its annual Science symposium on Wednesday, March 22, at the Tupper Center Auditorium, our "annual intellectual feast... an all-day series of presentations by people doing cutting edge work in a number of fields at this brilliant outpost of...academia" forecasted Eric Jackson, of the *Panama News*.


Eberhard

The symposium, traditionally organized and led by staff scientist Allen Herre included 21 short talks on a wide diversity of topics. CTFS Latin American coordinator Rick Condit opened the symposium with a clever analysis of forest dynamics at various scales, and managed to make a cogent series of deductions about what was driving what in a subject that had frustrated many, using data from Forest Dynamics Plots (FDP). Also based on FDP, postdoctoral fellow Andy Jones discussed the integration of long-term demographic data to understand the spatial population genetic structure of trees.

In related themes, Bettina Engelbrecht, long-term visiting researcher from the University of Kaiserslautern in Germany, addressed the rainfall gradient across the Isthmus of Panama, using data spanning 100 years. STRI´s research associate Kaoru Kitajima selected the relationship of trade-offs in plants between growing fast or slow, noting that fast growth is incompatible with high survival.

The study of anoles lizard returned to STRI from the days of Stan Rand and Brian Bock *et al.* with Jessica Stapley, STRI´s postdoctoral visiting fellow from the Australian National University in Canberra. In her analysis she described the behavioral interactions of dewlap morphs, yellow or white in local *Norops limifrons*.

STRI´s Bill Eberhard extended his now famous studies of


Condit

arthropod genitalia with the novel suggestion that the act of copulation involves classic display elements from both partners in a continuation of the display process. Males, listen to the females for adaptive reasons, concluded Eberhard.

Do parasites control the abundance of snails? Mark Torchin, of the STRI staff, showed how parasitic *Digenean trematodes* castrate intertidal marine snails, and the influence of parasites on population densities.

Heterochromy in the Metazoa was the subject of discussion of Maria Pia Migietta, a postdoc

More arrivals

Owen Lewis, Oxford University, to visit with Yves Basset, and pursue the understanding of tropical biodiversity, using the Canopy Crane Access Systems.

STRI in the news

My own private rainforest, by By Erik Stokstad. 2006. ScienceNOW Daily News March 22, at: **http://sciencenow.sciencemag.org/cgi/content/full/2006/322/4**

"A tribute to A. Stanley Rand" (1932-2005) by Michael Ryan. *Animal Behaviour* Online.

New publications

Eberhard, William G. 2006. "Sexually antagonistic coevolution in insects is associated with only limited morphological diversity." *Journal of Evolutionary Biology* Online.

Hardesty, Britta Denise, Hubbell, Stephen P., and Bermingham, Eldredge. 2006. "Genetic evidence of frequent long-distance recruitment in a vertebrate-dispersed tree." *Ecology Letters* Online.

Hartshorn, Gary S. 2006. "Understanding tropical forests." *BioScience* 56(3): 264-265.

Mitchell, Charles E., Agrawal , Anurag A., Bever, James D., Gilbert, Gregory S., Hufbauer, Ruth A., Klironomos, John N., Maron, John L., Morris, William F., Parker, Ingrid M., Power, Alison G., Seabloom, Eric W., Torchin, Mark E., and Vazquez, Diego P. 2006. "Biotic interactions and plant invasions." *Ecology Letters* Online.

from Duke doing research on both sides of the Isthmus. She feels that the difference of high productivity in the Panamanian Pacific and the low productivity of the Atlantic can be used to understand the complex life cycles of this group.


Migglietta

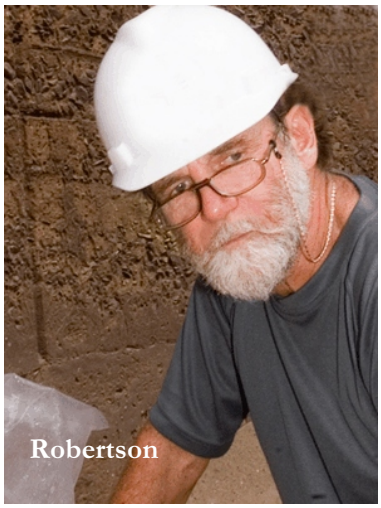
A highlight of the seminars were the analyses of the number and distribution of the fishes of the Pacific Ocean; and genetic connections in reef fishes across the Central Pacific Barrier, covered in separate talks by STRI´s D. Ross Robertson and Haris Lessios, respectively. Robertson, co-author of the book *Tropical fishes of tropical eastern Pacific* and the CD-ROM *Shorefishes of the tropical eastern Pacific*, uses large computer data to show how many more species are expected to be discovered—overall and endemic—when and where in water column. Using an example of 20 reef fishes with similar morphology, tons and years of computer and molecular data, Lessios highlighted how the impassable (as Charles Darwin had asserted) Central Pacific Barrier—deep and islandless—is the world's largest deepwater barrier to the dispersal of marine organisms, and almost, but not quite impassable.

Is the fungus hinting members of the *Atta columbica* species what they want? Visiting scientist Hubert Herz offered an update of his observations on the fungus growing ant *Atta columbica*, the great diversity of plants they are collecting —about 50% of all plants available—and their change of preference over days. On the plant side, STRI´s Nélida Gómez teamed up with Allen Herre to discuss chemical insights of fig/wasp interactions.

Recently recruited postdoctoral fellows Jeremy Niven from Cambridge University and Marc Seid from the University of Zurich working with the new Neurobiology Laboratory, also joined the speakers at the Symposium. Seid talked about biogenic amines and repertoire size in ants, the "super organisms". Niven presented a fascinating video showing how orthopterans use their vision to guide their movements, while others have to rely on the length of their anthenas.

Staff soil biologist Ben Turner explained the ecological significance of organic phosphorous, and how even small changes in soil carbon could have important effects on atmospheric climate. His colleague, Marife Corre, visiting scientist from the University of Goettingen, offered an introduction and initial results from a project to assess the impact of elevated nitrogen inputs on tropical forests.

What's up in the forest? On BCI, at least one more species of bat. The old record of 73 species must be changed to 74, highlighted STRI´s Elisabeth Kalko, who also presented a comparative perspective of community composition and functional diversity of bats, ecologically, the most diverse family among mammals. Also looking up was Corey Tarwater. Tarwater presented results from long- and short-term studies


Robertson

conducted by Jeff Brawn and his team, of which she is part, on the ecology of lowland forest birds.

Representing STRI anthropologists and challenging traditional concepts of slavery, Fernando Santos-Granero put aside arguments that defend pre-colonial Amerindians from slavery practices. Concentrated on the characteristics shown by expeditions to capture women and children to be eaten, married or used for different servitude purposes, the treatment of captive or surrendered enemies as inferiors in need to be domesticated, Santos-Granero showed that 5 to 19% of Amerindian were slaved and assimilated as a "life force", sometimes becoming slavers themselves.

In the closing talk, STRI's Carlos Jaramillo showed a graphic of plant diversity comprising more than 40 million years. According to his data, the highest speciation coincides with global warming events, when tropical areas increased. However, states Jaramillo, today's human activity and forest fragmentation will not allow for the same kind of speciation during the present global warming event.

Edited by Neal G. Smith

“El Océano en Peligro” por Jeremy B.C. Jackson

El científico de STRI, Jeremy B.C. Jackson (también con el Instituto Scripps de Oceanografía) presentará la charla magistral “El Océano en Peligro”, el miércoles, 29 de marzo, a las 6pm, en el Auditorio del Centro Earl S. Tupper, patrocinado por STRI y la Autoridad Marítima Nacional.

Jackson, activo vocero de la situación actual de los océanos, expondrá la situación de peligro en que se encuentran los océanos de todo el mundo como consecuencia de su degradación, debido al manejo inadecuado.

La ponencia presentará una lista de nuevos fenómenos que ocurren en los océanos, a consecuencia de la actividad humana. Según Jackson, en esta lista sobresalen: la pérdida de casi todos los animales marinos grandes debido a la pesca excesiva; el aplanamiento del fondo marino y la pérdida de hábitats marinos complejos y diversos debido a los arrastres y otras prácticas pesqueras físicamente destructivas; la globalización de la distribución de especies por la introducción intencionada o accidental de especies en hábitats no nativos; el calentamiento de los océanos que amenaza mortalemtne, entre otras cosas, la vida de los arrecifes coralinos; el envenenamiento de las cadenas alimenticias; y el sobre enriquecimiento de las aguas costeras con sustancias que hacen proliferar bacterias, microbios y algas.

De acuerdo a Jackson, hay muy poca conciencia pública y científica sobre la magnitud y escala de los daños que se han dado. “Los océanos están al borde de una catástrofe, que no sólo afectará los recursos naturales, sino también la salud humana. Lo más alarmante es que no sabemos cómo arreglar el daño que hemos hecho. La buena noticia es que muy pocas de las especies más importantes se han extinguido. Si actuamos ahora y de manera decidida, podremos contrarrestar este daño.”


Jackson

La asistencia a esta conferencia, que se llevará a cabo en español, es por invitación solamente.

Click here! Presione aquí para ver K´nes y algo más: BCI con Chelina Batista

“Turismo sostenible es un buen negocio para todos”

La Iniciativa Darwin y STRI ofrecerán la charla magistral “Turismo sostenible es un buen negocio para todos” por Ana Báez, presidenta de Turismo y Conservación Consultores de Costa Rica, el miércoles, 29 de marzo, en el Centro de Conferencias Earl S. Tupper, a las 8am.

Travel reminder

Klassic Travel Agency offers the STRI community purchase of air tickets, car rentals, hotels’ reservations, cruises, local tours and much more. For more information please call 212-8272 or contact Catherine A. Barnfield, Procurement Office, tel. 212-8272, e-mail: **barnfieldc@si.edu**

La Agencia de Viajes Klassic ofrece a toda la comunidad de STRI los servicios de venta de boletos aéreos a cualquier destino del mundo, alquileres de auto, reservaciones de hotel, circuitos terrestres, cruceros, giras locales y traslados. Comuníquese con Catherine A. Barnfield, Oficina de Compras, tel. 212-8272, e-mail: **barnfieldc@si.edu**

STRI volleyball season

#1 Gamboa
#2 Ancon
#3 Tupper
#4 Naos

More publications

Muller-Landau, Helene C., Condit, Richard S., Chave, Jerome, Thomas, Sean C., Bohlman, Stephanie A., Bunyavejchewin, Sarayudh, Davies, Stuart James, Foster, Robin, Gunatilleke, Savitri, Gunatilleke, Nimal, Harms, Kyle E., Hart, Terese, Hubbell, Stephen P., Itoh, Akira, Kassim, Abd Rahman, LaFrankie, James V., Lee, Hua Seng, Losos, Elizabeth, Makana, Jean-Remy, Ohkubo, Tatsuhiro, Sukumar, Raman, Sun, I-Fang, Nur Supardi, M.N., Tan, Sylvester, Thompson, Jill, Valencia, Renato, Munoz, Gorky Villa, Wills, Christopher, Yamakura, Takuo, Chuyong, George, Dattaraja, Handanakere Shivaramaiah, Esufali, Shameema, Hall, Pamela, Hernandez, Consuelo, Kenfack, David, and Kiratiprayoon, Somboon. 2006. "Testing metabolic ecology theory for allometric scaling of tree size, growth and mortality in tropical forests." *Ecology Letters* Online.

Warkentin, Karen M., Buckley, Christine R., and Metcalf, Kelly A. 2006. "Development of red-eyed treefrog eggs affects efficiency and choices of egg-foraging wasps." *Animal Behaviour* 71(2): 417-425.

Miscellaneous

For sale: two new laser pointers $35 each. Interested please contact Fernando Pascal at 212-8096 or e-mail: **pascalf@si.edu**

For sale: Nissan Pathfinder, 2000 $11,200. Interested please contact Roger Linington at 6-613-1297 or 317-1143.

science in progress:

Keeping cacao plantations, and keeping them healthy

Story: E. Allen Herre
Edited by ML Calderon
Photos: MA Guerra

Keeping the Bocas del Toro plantations of *Theobroma cacao* is not only important to locals and the chocolate industry, but to habitat conservation in general.

The cacao plants are suffering from disease caused by pathogen fungi that affect their productivity.

A group of scientists led by Allen Herre, staff scientist at the Smithsonian Tropical Research Institute in Panama and Sunshine Van Bael, are looking into the effect endophytes and mycorrhizal fungi (AMF) have on *T. cacao.*

With the support of plant physiologists, chemists and geneticists overseas, and the interest of international chocolate manufacturers, Allen and colleagues have shown that both AMF and endophytes help protect *T. cacao* from disease.

But how do they do it? "We find that the plants that have endophytes express at least three dozen more genes than the ones that do not have them. And about 50% of the genes are known to be involved with host defense pathways."

Further, there are at least a few cases where it appears that the fungus itself produces chemicals that the host could not produce without having the endophytes inside them.

The studies by Herre and colleagues aim to find natural biocontrol agents, to keep the cacao trees, and keep them healthy.

Mantener las plantaciones de *Theobroma cacao* en Bocas del Toro no es sólo importante para locales y la industria chocolatera, sino también para la conservación del hábitat en general.

Las plantas de cacao sufren de enfermedades causadas por un hongo patógeno que afecta su productividad.

Un grupo de investigadores, liderados por Allen Herre, científico del Smithsonian Tropical Research Institute en Panamá y Sunshine Van Bael, estudian el efecto que los hongos endófitos y de micorriza (AMF) ejercen sobre *T. cacao*.

Con el apoyo de fisiólogos, químicos y genetistas vegetales en otras latitudes, y el interés de la industria chocolatera internacional, Allen y sus colegas han mostrado que tanto los endófitos como los AMF ayudan a proteger a *T. cacao* de las enfermedades.

Pero, ¿cómo lo hacen? "Encontramos que las plantas que tienen endófitos exhiben por lo menos tres docenas más de genes que los que no los tienen. Y cerca del 50% de los genes se sabe que juegan un papel en diferentes formas de defensa del hospedero."

Mas aún, en algunos casos parece que el hongo mismo produce químicos que la planta no podría producir sin tener los endófitos dentro de ellos.

El objetivo de los estudios de Herre y sus colegas es encontrar controles biológicos naturales para mantener a los árboles de cacao, y mantenerlos saludables.