

Tupper 4pm seminar

Tuesday, December 6, 4pm seminar speaker will Sunshine Van Bael, STRI
Birds provide biocontrol of insects pests in cacao farms of Bocas del Toro, Panama.

Bambi seminar

Please check GroupWise for information on the next Bambi.

Paleo-talk

Wed, Dec 7, Paleo-talk speaker will be Flavia Fiorini at the CTPA, 4pm
Characterization of paralic paleoenvironments and identification of hurricane deposits based on benthic foraminiferal analysis of early Cretaceous sediments (Scotian Shelf)

Arrivals

James Engman, Henderson State University, to conduct a survey of the Tardigrade fauna of Panama, at Naos Island Laboratories.

Patty Gowaty, University of Georgia, to study flexible sex roles in a tropical leaf beetle, in Gamboa.

Steve and Myla Frankel, Canada, to study the effect of anthropogenic stress on white band disease transmission, at Naos and Bocas del Toro.

Olga Lucia Celis, Bioestratigrafía ICP, to join the Neotropical Biostatigraphy project, at the CTPA.

Roland Kays, New York State Museum, to continue work with BCI's Automated Radio-Telemetry Project.



Smithsonian Tropical Research Institute, Panamá

www.stri.org

December 2, 2005

Family Day on BCI

This year's celebration of BCI's Family Day on November 10, gathered 72 visitors on the island. Nature guides Wendy Vásquez, Karla Aparicio, Ruby Zambrano, Ian Sánchez, Chelina Batista, Belkys Jiménez and Helena Fortunato volunteered their time guiding their co-workers, family and friends into the forest, while Grismel Rangel proved his talent painting children's faces with animal motives.

The day turned out to be great to watch different animals in the forest, and it included games and artistic activities.

Oris Acevedo BCI's scientific coordinator, who has been organizing the event for the last 12 years, showed great satisfaction for the attendance and involvement of the STRI employees families. "On 1993, when the first family day was held, we only had ten kids with six adults" she concluded.

El Día Familiar de Barro Colorado se celebró este año el 10 de noviembre, con 72 visitantes en la isla. Los guías naturalistas Wendy Vásquez, Karla Aparicio, Ruby Zambrano, Ian Sánchez, Chelina Batista, Belkys Jiménez



y Helena Fortunato ofrecieron su tiempo voluntariamente para guiar a sus compañeros de trabajo, familiares y amigos, mientras que Grismel Rangel demostró su talento pintando las caras de algunos niños con motivos animales.

El día resultó ser excelente para observar diferentes animales en el bosque, e incluyó juegos y actividades artísticas.

Oris Acevedo, coordinadora científica de BCI, quien ha organizado este evento durante los últimos 12 años, mostró gran satisfacción por la cantidad de asistentes y por la forma en que las familias de los empleados de STRI se compenetraron con las actividades. "En 1993 cuando se llevó a cabo el primer día familiar, sólo tuvimos diez niños y seis adultos, concluyó.

More arrivals

James Maley, University of Alaska Museum, to study the phylogeography of Central American birds, at Naos.

Departures

Eldredge Bermingham to Montreal, for meetings at McGill University regarding STRI-NEO program in Panama.

Mark Wishnie to New York, to meet with PRORENA donors, and to New Haven and Boston on CTFS business.

New publications

Floeter, S.R., Behrens, M.D., Ferreira, C.E.L., Paddock, M.J., and Horn, M.H. 2005. "Geographical gradients of marine herbivorous fishes: patterns and processes." *Marine Biology* 147: 1435-1447.

Gamon, John A., Kitajima, Kaoru, Mulkey, Stephen S., Serrano, Lydia, and Wright, S. Joseph. 2005. "Diverse optical and photosynthetic properties in a Neotropical dry forest during the dry season: Implications for remote estimation of photosynthesis." *Biotropica* 37(4): 547-560.

Goodard, Jeffrey H.R., Torchin, Mark E., Kuris, Armand M., and Lafferty, Kevin D. 2005. "Host specificity of *Sacculina carcini*, a potential biological control agent of the introduced European green crab *Carcinus maenas* in California." *Biological Invasions* 7(6): 895-912.



Nature: Density dependence explains tree species abundance and diversity in tropical forests

STRI staff scientist Stephen P. Hubbell with colleagues Igor Volkov and Jayanth R. Banavar, from Pennsylvania State University, Fangliang He, from the University of Alberta and Amos Maritan from Università di Padova in Italy, just published the article "Density dependence explains tree species abundance and diversity in tropical forests" in this week's issue of *Nature* (December 1st). "The recurrent patterns in the commonness and rarity of species in ecological communities—the relative species abundance—

have puzzled ecologists for more than half a century. In this article, the authors show that the framework of the current neutral theory in ecology can easily be generalized to incorporate symmetric density dependence. They can calculate precisely the strength of the rare-species advantage (RSA) that is needed to explain a given RSA distribution. Previously, they demonstrated that a mechanism of dispersal limitation also fits RSA data well. Here they compare fits of the dispersal and density-dependence

mechanisms for empirical RSA data on tree species in six New and Old World tropical forests and show that both mechanisms offer sufficient and independent explanations. Hubbell and colleagues suggest that RSA data cannot by themselves be used to discriminate among these explanations of RSA patterns—empirical studies will be required to determine whether RSA patterns are due to one or the other mechanism, or to some combination of both. Ask for the article at: calderom@si.edu

STRI in the news

"Scientists say more progress needed to slow Amazon deforestation." *Access News*, October 11, 2005.

"Study doubles rain forest destruction." *Mercury News*, October 21, 2005.

"Spirit of the Isthmus" by Silvana Paternostro. *The New*

York Times, November 20, 2005.

Isthmus flows with culture, history and gaming." *Chicago Sun Times*, November 27, 2005

"Fósiles marinos en Azuero" by Alcibiades Cortes. *La Prensa*, November 26, 2005.

"Despierta la conciencia ambiental" by Sofia K. de

Kosmas. *La Prensa Innova*, November 26, 2005.

"De Panamá para todo el mundo: Monumento Natural de Barro Colorado." *La Prensa* November 28, 2005.

"Un modelo para el estudio" by Sofia K. de Kosmas. *La Prensa*, November 10, 2005.



Jose Miguel Guevara

Inez Campbell

Beatriz Medina

Darwin Initiative scores three hits

Three Panamanian biologists obtained master degrees in "Marine Resource Development and Protection" from Heriot-Watt University (HWU) in Scotland. The Darwin Initiative Project started in 2003 to provide scientific information for the creation of a marine protected area in Las Perlas Archipelago, in the Pacific Panama. The United Kingdom Government funded the initiative for three years, with HWU's James M. Mair and STRI's Hector M. Guzman, providing three full scholarships for local students and

supporting the research projects of six other master candidates and one Ph.D. student from the UK. More information at: www.darwin.gov.uk/ www.sls.hw.ac.uk/courses/m-sc_marine_resource_development.htm

Tres biólogos panameños obtuvieron maestrías en "Protección y Desarrollo de Recursos Marinos" en la Universidad de Heriot-Watt, Escocia. El Proyecto de la Iniciativa Darwin que inició en 2003, tiene como propósito suministrar información

científica para crear un área protegida en el Archipiélago de Las Perlas, en el Pacífico panameño. El Gobierno del Reino Unido ha financiado la iniciativa por tres años junto con James M. Mair de HWU y Héctor M. Guzmán, de STRI, ofreciendo tres becas completas para estudiantes locales, y apoyo a investigación de seis otros estudiantes de maestría y uno de doctorado en el Reino Unido. Mayor información en: www.darwin.gov.uk/ www.sls.hw.ac.uk/courses/m-sc_marine_resource_development.htm

Beca "Abdiel Adames" para Ciencias Naturales

STRI anuncia el concurso de la beca Abdiel Adames en reconocimiento a este destacado científico quien impulsó la ciencia, la tecnología y la educación en Panamá. Adames fue rector de la Universidad de Panamá y un buen amigo de STRI. Doctor en Zoología, Adames lideró la organización y desarrollo del contenido científico del proyecto del Museo Gehry, y aportó valiosas

contribuciones al tema de la biodiversidad.

Los candidatos interesados deben ser estudiantes de último año de licenciatura o maestría en una carrera afín a las ciencias naturales. Deben presentar una propuesta de investigación (1,500 palabras o menos) que incluya resumen, objetivos, metodología, fuentes bibliográficas y presupuesto, así

como dos cartas de recomendación (que no sean de científicos de STRI), copia de sus créditos y hoja de vida. Se requerirán dos copias de toda la documentación, una impresa y otra digital (CD, disquete o por correo electrónico).

Fecha límite: 15 de enero. Adriana Bilgray, Oficina de Programas Académicos, 6to piso, Centro Tupper.

New publications

Griscom, Heather P., Ashton, Peter S., and Berlyn, Graeme P. 2005. "Seedling survival and growth of native tree species in pastures: Implications for dry tropical forest rehabilitation in central Panama." *Forest Ecology and Management* 218(1-3): 306-318.

Hooper, Elaine R., Legendre, Pierre, and Condit, Richard. 2005. "Barriers to forest regeneration of deforested and abandoned land in Panama." *Journal of Applied Ecology* 42(6): 1165-1174.

Kelber, Almut, Warrant, Eric J., Ptuff, Michael, Wallen, Rita, Theobald, Jamie C., Wcislo, William T., and Raguso, Robert A. 2005. "Light intensity limits foraging activity in nocturnal and crepuscular bees." *Behavioral Ecology Online*.

Kuris, Armand M., Lafferty, Kevin D., and Torchin, Mark E. 2005. "Biological control of the European green crab, *Carcinus maenas*: natural enemy evaluation and analysis of host specificity." *Second International Symposium on Biological Control of Arthropods*: 102-115. Davos, Switzerland: USDA Forest Service.

Little, Ainslie E. F., Murakami, Takahiro, Mueller, Ulrich G., and Currie, Cameron R. 2005. "Defending against parasites: fungus-growing ants combine specialized behaviours and microbial symbionts to protect their fungus gardens." *Biology Letters Online*.

Volkov, Igor, Banavar, Jayanth R., He, Fangliang, Hubbell, Stephen P., and Maritan, Amos. 2005. "Density dependence explains tree species abundance and diversity in tropical forests." *Nature* 438(7068): 658-661.

science in progress:

Diversity gives specialists a hard time

Information: Greg Gilbert

Edited by Marialuz Calderón

Photo: Marcos A. Guerra

By increasing the diversity of crops in the same field, farmers reduce plant diseases. A pathogen specialized on beans has a harder time spreading if beans are interspersed with maize, squash, and yucca. Similarly, specialized pathogens should find difficulty spreading in high-diversity tropical forests. But if pathogens are not strict specialists, each additional species they can attack increases the opportunity to spread. Current data suggest that rainforest pathogens are not strongly specialized, but little is known of whether the host range of a given pathogen is predictable.

Phytosanitary officials often assume that there is a phylogenetic signal in host range—that closely related plants are more likely to share a common pathogen than are more distantly related plants.

Together with collaborators, Greg Gilbert, from the University of California, Santa Cruz measures the phylogenetic signal in host range of plant pathogens in Panama. They measure the host range by isolating pathogens from diseased plants and then using a rapid inoculation technique to evaluate the susceptibility of neighboring plant species: some closely related, some not. Using estimates of the evolutionary distance between pairs of plant species, the phylogenetic signal of host range can be measured directly. This estimate will be used in computer models of pathogen spread through forest communities, and may be useful for phytosanitary practices.

Al aumentar la diversidad en los cultivos, los agricultores reducen enfermedades de plantas. A un patógeno especializado en frijoles se le dificulta extenderse en el cultivo si el frijol se combina con

maíz, calabazas y yucas. Así mismo se espera que patógenos especializados tengan dificultades extendiéndose a través de bosques tropicales de alta diversidad. Pero si los patógenos no son especialistas estrictos, cada especie adicional que atacan aumenta la oportunidad de dispersarse. Información actual sugiere que los patógenos de bosques tropicales no son muy especializados, pero poco se sabe si el rango de hospederos de un patógeno determinado es predecible.

Funcionarios de fitosanidad pueden asumir que hay señales filogenéticas en los rangos de hospederos—que es más fácil que plantas muy relacionadas compartan un patógeno que aquellas lejanamente relacionadas.

Junto con sus colaboradores, Greg Gilbert, de la Universidad de California en Santa Cruz mide la señal filogenética en el rango de hospederos en patógenos de plantas en Panamá. Miden el rango de hospederos aislando los patógenos de plantas enfermas y con una técnica rápida de inoculación evalúan la susceptibilidad de plantas vecinas: algunas muy relacionadas, otras no. Con estimados de la distancia evolutiva entre parejas de plantas, la señal filogenética del rango de hospederos se mide directamente. Este estimado se usará en simulaciones computarizadas sobre la extensión de patógenos en comunidades boscosas, y pueden ser útiles para prácticas fitosanitarias.

