

Tupper 2pm seminar

No seminar on Tuesday. On Friday, at 2pm, special seminar speaker will be Timothy J. DeVoogd, US Department of State
Singing in the brain — neurobiology of birdsong and implications for brain evolution

Bambi seminar

Thursday, October 16, Bambi seminar speaker will be Sarah Meiss, California University of Pennsylvania.
A mutant Phaseolus vulgaris with the ability to selectively restrict nodulation

Colon talk

Thursday, October 16, the monthly talk in Colón will be given by Argelis Ruiz, STRI
¿Por qué las tortugas marinas visitan Panamá?
Hotel Melía Panamá, 7pm

Arrivals

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

Margaret Crofoot, Harvard University, to study the distribution and movement patterns of white-faced capuchins on BCI.

Ron Eytan, Louisiana State University, to conduct a phylogenetic analysis of microhabitat differentiation and metabolic rate in the reef fish genus *Acanthemblemaria*, at Bocas.

Owen McMillan, North Carolina State University, to study the evolution of mimicry in *Heliconius*.



Smithsonian Tropical Research Institute, Panamá

www.stri.org

October 10, 2008

APANAC and SENACYT held annual congress

Panama's Association for the Advancement of Science and the Secretariat for Science and Technology held their XII annual National Congress for Science and Technology at the Convention Center, City of Knowledge, on Wednesday, October 1st. The congress was presided over by Oris Sanjur, president of APANAC, and manager of STRI's Molecular Laboratories on Naos Island.

The congress, dedicated to the integration of scientific and technical knowledge into the society included a keynote presentation by Miguel José Yacamán from the University of Texas. The opportunity was also used to present STRI botanist Mireya Correa (also with the University of Panama) with the 2008 Science Award.

STRI researchers and associates Marcy J. Balunas, Moisés Bernal, Ana Celis, Roberto Cipriani, Phyllis Coley, Richard Cooke, Aydeé Cornejo, Mireya D Correa, Catherina Caballero-George, William H. Gerwick, Gretehun Grajales, Mahabir P. Gupta, Héctor M. Guzmán, Stanley Heckadon Moreno, Ilean Isaza, Liliana Iturrado, María del Carmen Ruiz Jaén, Carlos Jaramillo, Máximo Jiménez, Thomas Kursar, Jorge Lezcano, Omar R. López-Alfano, Sergio Martínez, Indira Martínez, Juan Maté, Julia Mayo, Camilo Montes, Enrique Moreno, Aaron O'Dea, Catherine Potvin, Félix Rodríguez, Noris Salazar-Allen, Oris Sanjur, Larissa Segundo, Gwen Keller and Michiel Van-Breugel participated in the research presentations.

La Asociación Panameña para el Avance de la Ciencia (APANAC) y la Secretaría Nacional para Ciencias y Tecnología (SENACYT) llevó a cabo su XII Congreso Nacional de Ciencia y Tecnología en el Centro de Convenciones de la Ciudad del Saber, el miércoles, 1ro de octubre. El congreso fue presidido por Oris Sanjur, presidenta de APANAC y administradora de los Laboratorios Moleculares de STRI en Isla Naos.

El congreso, dedicado a la integración de la ciencia y la tecnología en la sociedad, incluyó la conferencia magistral de Miguel José Yacamán, de la Universidad de Texas. Durante la ocasión, se presentó



el Premio Ciencia 2008 a Mireya D. Correa, científica de STRI, y profesora de la Universidad de Panamá.

Investigadores y afiliados de STRI Marcy J. Balunas, Moisés Bernal, Ana Celis, Roberto Cipriani, Phyllis Coley, Richard Cooke, Aydeé Cornejo, Mireya D Correa, Catherina Caballero-George, William H. Gerwick, Gretehun Grajales, Mahabir P. Gupta, Héctor M. Guzmán, Stanley Heckadon Moreno, Ilean Isaza, Liliana Iturrado, María del Carmen Ruiz Jaén, Carlos Jaramillo, Máximo Jiménez, Thomas Kursar, Jorge Lezcano, Omar R. López-Alfano, Sergio Martínez, Indira Martínez, Juan Maté, Julia Mayo, Camilo Montes, Enrique Moreno, Aaron O'Dea, Catherine Potvin, Félix Rodríguez, Noris Salazar-Allen, Oris Sanjur, Larissa Segundo, Gwen Séller y Michiel Van-Breugel participaron en el congreso en las diferentes presentaciones.

New publications

Albrecht, Larissa, Meyer, Christoph F. J., and Kalko, Elisabeth K. V. **2007.**

"Differential mobility in two small phyllostomid bats, *Artibeus watsoni* and *Micronycteris microtis*, in a fragmented Neotropical landscape." *Acta Theriologica* 52(2): 141-149.

Anker, Arthur, and Jeng, Ming Shiou. **2007.**

"Establishment of a new genus for *Arete borradalei* Coutiere, 1903 and *Athanas verrucosus* Banner and Banner, 1960, with redefinitions of *Arete* Stimpson, 1860 and *Athanas* Leach, 1814 (Crustacea: Decapoda: Alpheidae)." *Zoological Studies* 46(4): 454-472.

Anker, Arthur. **2007.**

"*Pseudalpheopsis guana* gen. nov., sp. nov. (Crustacea: Decapoda), a new alpheid shrimp from the British Virgin Islands, Caribbean Sea." *Zoological Studies* 46(4): 428-440.

Baer, Boris, Dijkstra, Michiel B., Mueller, Ulrich G., Nash, David R., and Boomsma, Jacobus J. **2008.** "Sperm length evolution in the fungus-growing ants." *Behavioral Biology Online*.

Baeza, Juan Antonio. **2007.** "The origins of symbiosis as a lifestyle in marine crabs (genus *Petrolisthes*) from the eastern Pacific: does interspecific competition play a role?" *Revista de Biología Marina y Oceanografía* 42(1): 7-21.

Safety number:
212-8211

Biodiversity in a warmer world

Will climate change exceed life's ability to respond? "Biodiversity in a warmer world" published in today's issue of *Science*, illustrates that cross-disciplinary research fostered by STRI clearly informs this urgent debate.

As an extremely diverse region of rainforest and coral reefs, the tropics may have the most to lose as a result of global warming. Some disagree, arguing that tropical organisms will be favored as their ranges expand into temperate areas. Few empirical studies provide specific answers to help us choose conservation and mitigation measures.

Science asked Jens Svenning, University of Aarhus, and STRI's Richard Condit to review two papers about species range change: "In a range analysis for plants and insects on a mountain slope in Costa Rica, Colwell *et al.* show that a 3.2°C increase in temperature threatens 53% of the area's species with lowland extinction and 51% with range shift gaps, meaning that they have nowhere else to go."

The other study they reviewed, by Moritz *et al.*, follows historical range expansions and contractions for small mammals in Yosemite National Park in California, USA and shows that ranges may contract dangerously as they are pushed further and further up mountain slopes.

To provide the proper perspective for this work Svenning, who held a postdoctoral fellowship with the Smithsonian Global Earth Observatories (SIGEO) in 2000-2002 and Condit cite empirical work by colleagues at the Smithsonian and others: in a 2001 *Science* article by STRI's Carlos Jaramillo *et al.*, plant pollen diversity in rock cores from northern South America revealed that warming events in the tropics over 60 million years were not particularly detrimental, with the caveat that warming in fragmented



More publications

Baeza, Juan Antonio, Reitz, Jennifer M., and Collin, Rachel. **2007.** "Protandric simultaneous hermaphroditism and sex ratio in *Lysmata nayaritensis* Wicksten, 2000 (Decapoda: Caridea)." *Journal of Natural History* 41(45-48): 2843-2850.

Bellemain, Eva, and Ricklefs, Robert E. **2008.** "Are islands the end of the colonization road?" *Trends in Technology and Evolution* 23(8): 461-468.

Boyero, Luz, Rincon, P.A., and Pearson, R.G. **2008.** "Effects of a predatory fish on a tropical detritus-based food web." *Ecological Research* 23(4): 649-655.

Breedy, Odalisca, and Guzman, Hector M. **2008.** "*Leptogorgia ignita*, a new shallow-water coral species (Octocorallia: Gorgoniidae) from the tropical eastern Pacific." *Journal of the Marine Biological Association of the United Kingdom* 88(5): 893-899.

Caballero-George, Caterina, Sorkalla, T., Bermingham, Eldredge, and Haberlein, H. **2008.** "Fluorescence correlation spectroscopy (FCS) a powerful biophysic method for drug discovery: Study of Alexa532-endothelia 1 binding on the endothelia ETA receptor on living cells." *Planta Medica* 74(9): 1156-1157.

Cadena, Edwin R., Jaramillo, Carlos M., and Paramo, Maria. **2007.** "The first late pleistocene record of Kinosternon (Cryptodira: Kinosternidae) turtles for northern South America, Pubenza locality, Colombia." *South American Journal of Herpetology* 2(3): 201-205.

Information taken from EurekAlert!, by Beth King

More publications

Castro, E.A., Trejos, D.E., Berovides-Alvarez, V., Arias, Tomas D., and Ramos, C.W. **2007.** "Genetic polymorphism and forensic parameters of nine short tandem repeat loci in Ngobe and Embera Amerindians of Panama." *Human Biology* 79(5): 563-577.

Cipriani, Roberto, Guzman, Hector M., and Lopez, Melina. **2008.** "Harvest history and current densities of the pearl oyster *Pinctada mazatlanica* (Bivalvia: Pteriidae) in Las Perlas and Coiba Archipelagos, Panama." *Journal of Shellfish Research* 27(4): 691-700.

Cipriani, Roberto, Guzman, Hector M., Vega, Angel J., and Lopez, Melina. **2008.** "Population assessment of the conch *Strombus galeatus* (Gastropoda, Strombidae) in Pacific Panama." *Journal of Shellfish Research* 27(4): 889-896.

Collin, Rachel, and Miglietta, Maria Pia. **2008.** "Reversing opinions on Dollo's Law." *Trends In Ecology & Evolution* Online.

Collo, G., Astini, R. A., Cardona, A., Do Campo, M. D., and Cordani, U. **2008.** "Metamorphic ages of low-grade units in the central region of Famatina: The signature of the Ocloyic Orogeny (Ordovician)." *Revista Geologica de Chile* 35(2): 191-213.

Condit, Richard, Le Boeuf, Burney J., Morris, Patricia A., and Sylvan, Marshall. **2007.** "Estimating population size in asynchronous aggregations: a Bayesian approach and test with elephant seal censuses." *Marine Mammal Science* 23(4): 834-855.

CTFS/SIGEO Database II Workshop



STRI's Center for Tropical Forest Science/Smithsonian Institution Global Earth Observatories (CTFS/SIGEO) held a training workshop from Monday, September 29 to Monday, October 6. The workshop was held at the Gamboa School and the Tupper Center Exhibit Hall.

The aim of the workshop was to offer training in the use of the recently developed MySQL database for much greater standardization and security for the global network of forest plot data. Eighteen participants from 12 CTFS/SIGEO Forest Dynamic Plots in Latin America, North America, Africa and Oceania received training from Richard Condit and Suzanne Lao.

A similar workshop will be held in Singapore in November for the CTFS/SIGEO plots in Asia.

Month of the Oceans

As part of the celebration of the Month of the Ocean, a forum "Océanos: generadores de riquezas" was held at STRI. The participants presented an introduction to the diversity of coastal marine resources in Panama, its importance, threats and the necessary measures to avoid its destruction.

Como parte de la celebración del Mes de los océanos, un foro "Océanos: generadores de riquezas" se llevó a cabo en

El Centro de Ciencias Forestales del Trópico de STRI/Observatorios Globales de la Tierra del Smithsonian (CTFS/SIGEO) llevaron a cabo un taller de capacitación del lunes 29 de septiembre al lunes, 6 de octubre en la Escuela de Gamboa y el Centro de Exhibiciones del Centro Tupper.

El objetivo del taller fue ofrecer capacitación en el uso de la base de datos recién creada MySQL, para una mayor estandarización y seguridad para la red global de datos de parcelas de bosques. Dieciocho participantes de 12 parcelas de dinámica de bosques de CTFS/SIGEO en América Latina, Norteamérica, África y Oceanía recibieron capacitación por Richard Condit y Suzanne Lao.

Un taller similar se llevará a cabo en Singapur en noviembre para las parcelas CTFS/SIGEO de Asia.



STRI. Los expositores presentaron un pantallazo sobre la diversidad de recursos marinos costeros de Panamá su importancia, amenazas, y acciones a seguir para evitar su destrucción.

More publications

Crawford, Andrew J. **2007.** "Chiasmocleis panamensis (Panama humming frog). Predation." *Herpetological Review* 38(2): 181.

Cubilla Rios, Luis, Cherigo, L., Rios, C., Togna, G. D., and Gerwick, William H. **2008.** "Phytochemical analysis and antileishmanial activity of *Desmodium incomparabile*, an endemic plant from Panama." *Planta Medica* 74(9): 963-963.

Daws, Matthew I., Crabtree, Lora M., Dalling, James W., Mullins, Christopher E., and Burslem, David F.R.P. **2008.** "Germination responses to water potential in Neotropical pioneers suggest large-seeded species take more risks." *Annals of Botany* Online.

Eberhard, William G. **2007.** "Radial organisation in the web of a pisaurid, *Thaumasia* sp. (Araneae: Pisauridae)." *Bulletin of the British Arachnological Society* 14(2): 49-53.

Guzman, Hector M., Cipriani, Roberto, and Jackson, Jeremy B.C. **2008.** "Historical decline in coral reef growth after the Panama Canal." *Ambio* 37(5): 342-346.

Guzman, Hector M., Cipriani, Roberto, Vega, Angel J., Lopez, Melina, and Mair, James M. **2008.** "Population assessment of the Pacific green spiny lobster *Panulirus gracilis* in Pacific Panama." *Journal of Shellfish Research* 27(4): 907-915.

Healy, C., Gotelli, Nicholas J., and Potvin, Catherine. **2008.** "Partitioning the effects of biodiversity and environmental heterogeneity for productivity and mortality in a tropical tree plantation." *Journal of Ecology* 96(5): 903-913.

Continues on page 5

Danger, sex, and mysteries behind colors in Bocas

Story: Andreas Rudh
Edited by M Alvarado &
ML Calderón
Photos: MA Guerra

Speciation, the evolution of new species, is a very active field of research. The basis of speciation is often thought to be divergence in morphologic and genetic traits among different areas of a species geographic range.

For his PhD project on the population differentiation in Strawberry Poison Frogs (*Dendrobates pumilio*) Andreas Rudh, from Uppsala University, Sweden and colleague Björn Rogell, investigate possible causes and consequences of the unique morphologic divergence exhibited by this species found on islands, and along the mainland of Bocas del Toro.

The variation in coloration is interesting from an evolutionary perspective since it is thought to work both as a warning signal to potential predators but also be involved in sexual selection.

During the visits of Rudh and Rogell to Bocas del Toro in the last four years, they have been collecting spectral measurements, photographic documentation and behavioral observations together with tissue samples for genetic analysis.

With these data they will assess questions on how different properties of the frogs, both behavioral and morphological, might co-evolve and possibly explain the amazing variation that these frogs exhibit today.



divergencia morfológica única que esta especie exhibe tanto en las islas como en tierra firme de Bocas del Toro.

La variación en la coloración es interesante desde el punto de vista evolutivo ya que se piensa que trabaja tanto como señal de peligro para depredadores potenciales como para la selección sexual.

La especiación, o evolución de nuevas especies, es un campo de investigación muy activo. Frecuentemente se piensa que la base de la especiación es la diversificación de características morfológicas y genéticas entre diferentes áreas del rango geográfico de las especies.

Durante sus visitas a Bocas del Toro durante los últimos cuatro años, Rudh y Rogell han colectado medidas espetrales, documentación fotográfica y observaciones de comportamiento junto con muestras de tejido para análisis genéticos.

Con esta data esperan encontrar las respuesta sobre cómo las diferentes características de las ranas, tanto morfológicas como en su comportamiento pueden co-evolucionar y posiblemente explicar la asombrosa variación que estas ranas exhiben hoy día.

More publications

The present update of the STRI bibliography 2007-2008 was possible thanks to the collaboration of Alvin Hutchinson, from the Smithsonian Institution Libraries

- Hultgren, Kristin M., and Stachowicz, John J. 2008 "Alternative camouflage strategies mediate predation risk among closely-related co-occurring kelp crabs." *Oecologia* 155(3): 519-528.
- Jorge, Maria Luisa S.P. 2008 "Effects of forest fragmentation on two sister genera of Amazonian rodents (*Myoprocta acouchy* and *Dasyprocta leporina*)."
Biological Conservation 141(3): 617-623.
- Laurance, William F. 2008 "Theory meets reality in fragmented forests."
Animal Conservation 11(5): 364-365.
- Laurance, Susan G., and Laurance, William F. 2007 "*Chaunus marinus* (cane toad). Predation."
Herpetological Review 38(3): 320-321.
- Liu, F., Roubik, David Ward, He, D., and Li, J. 2007 "Old comb for nesting site recognition by *Apis dorsata*? Field experiments in China."
Insectes Sociaux 54(4): 424-426.
- Martinez, Luis S., Della-Togna, G., Gerwick, William H., and Cubilla Rios, Luis. 2008 "Antileishmanial constituents of the panamanian endophytic fungus Phoma herbarum strain M16."
Planta Medica 74(9): 1047-1047.
- Mejia, Luis Carlos, Rojas, E.I., Maynard, Zuleyka, Van Bael, Sunshine A., Arnold, Anne Elizabeth, Hebbar, P., Samuels, G.J., Robbins, Nancy, and Herre, Edward Allen. 2008 "Endophytic fungi as biocontrol agents of *Theobroma cacao* pathogens."
Biological Control 46(1): 4-14.
- Mendoza-Franco, Edgar F., and Reina, Ruth G. 2008 "Five new species of Urocleidoidea (Monogenoidea) (Mizelle and Price 1964) parasitizing the gills of Panamanian freshwater fishes."
Journal of Parasitology 94(4): 793-802.
- Miura, Osamu, Nishi, Syuhei, and Chiba, Satoshi. 2007 "Temperature-related diversity of shell colour in the intertidal gastropod *Batillaria*."
Journal of Molluscan Studies 73(3): 235-240.
- Miura, Osamu. 2007 "Molecular genetic approaches to elucidate the ecological and evolutionary issues associated with biological invasions."
Ecological Research 22(6): 876-883.
- Otero, J. Tupac, Flanagan, Nicola S., Herre, Edward Allen, Ackerman, James D., and Bayman, Paul. 2007 "Widespread mycorrhizal specificity correlates to mycorrhizal function in the Neotropical, epiphytic orchid *Lonopsis utricularioides* (Orchidaceae)." *American Journal of Botany* 94(12): 1944-1950.
- Perez Gonzalez, Claudia Massiel. 2008 *Aplicacion de la tecnica de cultivo in vitro en alga roja *Kappaphycus alvarezii* (Rhodophyta, Gigartinales)*. University of Panama, Panama.
- Radtke, M.G., da Fonseca, C.R.V., and Williamson, G. Bruce. 2008 "Forest fragment size effects on dung beetle communities?"
Biological Conservation 141(3): 615-616.
- Rapp, Mathieu. 2007 "The immature stages of *Pantophtalmus planiventris* (Wiedemann, 1821) (Diptera: Pantophtalmidae)."
Studia Dipterologica 14(1): 27-36.
- Rubinoff, Ira, Birmingham, Eldredge, Lydeard, Charles, and Davies, Stuart James. 2007 "Smithsonian Institution Global Earth Observatories." In Achache, Jose (Ed.), *The full picture*: 82-84. Geneva: Group of Earth Observatories.
- Smith, Adam R., Wcislo, William T., and O'Donnell, Sean. 2008 "Body size shapes caste expression, and cleptoparasitism reduces body size in the facultatively eusocial bees Megalopta (Hymenoptera: Halictidae)." *Journal of Insect Behavior* 21(5): 394-406.
- Smith, Jaclyn A., Tierney, Simon M., Park, Yung Chul, Fuller, Susan, and Schwarz, Michael P. 2007 "Origins of social parasitism: The importance of divergence ages in phylogenetic studies."
Molecular Phylogenetics and Evolution 43: 1131-1137.
- Stouffer, Philip C., and Bierregaard, Jr., Richard O. 2007 "Recovery potential of understory bird communities in Amazonian rainforest fragments."
Revista Brasileira De Ornitologia 15(2): 219-229.
- Tieleman, B. Irene, Dijkstra, Thomas H., Klasing, Kirk C., Visser, G. Henk, and Williams, Joseph B. 2008 "Effects of experimentally increased costs of activity during reproduction on parental investment and self-maintenance in tropical house wrens."
Behavioral Ecology 19(5): 949-959.
- Vogler, Catherine, Benziger, John, Lessios, Harilaos A., Barber, Paul, and Worheide, Gert. 2008 "A threat to coral reefs multiplied? Four species of crown-of-thorns starfish."
Biological Letters Online.
- Wethington, Amy R., and Lydeard, Charles. 2007 "A molecular phylogeny of Physidae (Gastropoda: Basommatophora) based on mitochondrial DNA sequences."
Journal of Molluscan Studies doi: 10.1093: 1-17.
- Woodhams, Douglas, Kilburn, Vanessa, Reinert, Laura, Voyles, Jamie, Medina, Daniel, Ibáñez, Roberto, Hyatt, Alex, Boyle, Donna, Pask, James, Green, David, and Rollins-Smith, Louise. 2008 "Chytridiomycosis and amphibian population declines continue to spread eastward in Panama."
EcoHealth Online.
- Zigler, Kirk S., Lessios, Harilaos A., and Raff, Rudolf A. 2008 "Egg energetics, fertilization kinetics, and population structure in echinoids with facultatively feeding larvae."
Biological Bulletin 215(2): 191-199.
- Zuquim, Gabriela, Costa, Flavia R.C., Prado, JeVerson, and Braga-Neto, Ricardo. 2008 "Distribution of pteridophyte communities along environmental gradients in Central Amazonia, Brazil."
Biodiversity and Conservation Online.