

Tupper 4pm seminar

Tuesday, July 22, 4pm seminar speaker will be Brian Gratwicke, SI's Center for Species Survival, National Zoological Park

Responding to the global amphibian decline crisis

Paleo-Talk

Monday, July 21, 4pm Paleo-Talk speaker will be David Buchs, University of Lausanne at the Center for Tropical Paleocology & Archaeology (CTPA)

Cretaceous Arc Initiation in Southern Central America"

Bambi seminar

Thursday, July 24, Bambi seminar speaker will be Christopher Moore California State University, Fullerton

Effects of fire on rodent community structure in the Mojave Desert

Bocas' open house

STRI's Bocas del Toro Research Station will hold weekly "Open House and Tour" every Thursday and Friday, 3pm.

Arrivals

Hamilton Farris, Louisiana State University, to join the female choice project in Túngara frogs, in Gamboa.

Steven Vollmer and Elizabeth Hemond, Northeastern University, to join the Coral Reef Health project, at Bocas del Toro.

Molly Cummings, Ashley Lamb and Sarah Holloway, University of Texas at Austin, to work on the project "Poison or passion: warning and attraction in a color polymorphic frog" at Bocas



Smithsonian Tropical Research Institute, Panamá

www.stri.org

July 18, 2008

Birmingham to lead "best tropical research center of the world"

In a wide SI announcement SI acting secretary for Science Charles Alcock announced that Eldredge "Biff" Birmingham, 55, is the new director of STRI. "It is largely because of the STRI community of scholars and support staff that I had the confidence to accept the position of Director knowing that as a team we will accomplish great science of extraordinary relevance" commented Birmingham.

Birmingham joined STRI in 1989 where he established a new program in DNA-based molecular systematics and evolution, and introduced a generation of young scientists to molecular tools used to study tropical biodiversity. Biff has played a principal role in expanding STRI's Center for Tropical Forest Science (CTFS) into the cross-unit Smithsonian Global Earth Observatories (SIGEO), and promote inter-governmental collaborations associated with SIGEO.

Birmingham spearheaded SI's participation in the HSBC Climate Partnership, which uses the CTFS/SIGEO framework to establish large-scale cooperative experiments that test pivotal ideas about climate change and global warming, including the role tropical forests play in the

availability and quality of water provided to the Panama Canal under different conditions of land use. He has published more than 135 peer-reviewed articles and edited the book *Tropical Rainforests: Past, Present and Future* with Christopher Dick y Craig Moritz in 2005.

Birmingham has a Ph.D. from the University of Georgia. He is married to Chimene Longwater, they have three children: Sara, 16, Georgia, 14 and Samuel, 10.

En un anuncio general a SI, el subsecretario encargado para Ciencias Charles Alcock anunció que Eldredge Birmingham, 55, es el nuevo director de STRI. "Es principalmente debido a la comunidad de académicos de STRI y al personal de apoyo que tuve la confianza de aceptar la posición de Director, sabiendo que como equipo podemos lograr ciencia excelente y de extraordinaria relevancia" comentó Birmingham.

"Biff" Birmingham se unió a STRI en 1989 donde estableció un programa con base en evolución y sistemática molecular de ADN e introdujo a una generación de nuevos científicos a las herramientas moleculares usadas para estudiar biodiversidad tropical. Jugó el rol principal en la expansión del CTFS hacia la unidad inter-institucional de los Observatorios Globales de la Tierra del Smithsonian



(SIGEO) y ha promovido colaboraciones inter-gubernamentales con SIGEO.

Birmingham impulsó la participación de SI en el HSBC Climate Partnership, que usa el marco de CTFS/SIGEO para establecer experimentos de cooperación que prueban ideas cruciales sobre cambio climático y calentamiento global incluyendo el rol de los bosques tropicales en la disponibilidad de agua para el Canal de Panamá bajo diferentes condiciones de usos de suelo. Ha publicado más de 135 artículos en revistas auditadas por pares y editó *Tropical Rainforests: Past, Present and Future* con Christopher Dick y Craig Moritz en 2005.

Birmingham tiene un doctorado de la Universidad de Georgia. Está casado con Chimene Longwater, y tienen tres hijos: Sara, de 16, Georgia de 14 y Samuel, de 10.

More arrivals

Sibylle Hassler, University of Potsdam, Agua Salud Project, on BCI.

Departures

Fernando Pascal to Washington DC on official business at SI, then on a short vacation.

Eldredge Bermingham to Washington DC on official business and to attend Workshop on Latitudinal Patterns of Marine Invasions at Smithsonian Environmental Research Center.

STRI in the news

“Smithsonian halla fósiles en el Canal” by José Somarriba Hernández. 2008. *La Prensa* (July 16): front page, page 1.

“Bright bugs clue for plant medicinals” by Christopher Intagliata. 2008. *Scientific American.com* July 15.

“Expansión en riesgo” by José Arcia. 2008. *La Prensa* (July 13): cover story, page 1, and: “Desarrollo que causa inquietud” by José Arcia: 8A.

“Amenaza a la vida marina” by Yalena Ortiz. 2008. *La Crítica* (July 13): 16.

“Especies amenazadas” by Tamara Del Moral. 2008. *La Prensa* (July 12): 4B.

“Smithsonian coral biodiversity survey of Panama's Pearl Islands” 2008. *ScienceDaily* (July 8).

"Areas revertidas: Piden cambio a uso de suelo" por José Arcia. 2008. *La Prensa* (July 17): Front page, and "Devastación de manglares en Colón causa preocupación. Piden que se modifique plan de uso de suelo" por José Arcia: 10A.

One third of reef-building corals face extinction

A third of reef-building corals around the world are threatened with extinction, according to the first-ever comprehensive global assessment to determine their conservation status. The study findings, authored by a group of 39 researchers including STRI's Héctor Guzmán was published on July 10 by *Science Express*. See New publications for full citation.

Leading coral experts joined forces with the Global Marine Species Assessment (GMSA)—a joint initiative of the International Union for Conservation of Nature (IUCN) and Conservation International (CI)—to apply the IUCN Red List Categories and Criteria to this important group of marine species.

Researchers identified the main threats to corals as climate change and localized stresses resulting from destructive fishing, declining water quality from pollution, and the degradation of coastal habitats. Climate change causes rising water temperatures and more intense solar radiation, which lead to coral bleaching and disease often resulting in mass coral mortality. The researchers predict that ocean acidification will be another serious threat facing coral reefs. As oceans absorb increasing amounts of carbon dioxide from the atmosphere, water acidity increases and pH decreases, severely impacting corals' ability to build their skeletons that form the foundation of reefs.

The Caribbean has the highest number of highly threatened corals including the iconic elkhorn coral (*Acropora palmata*). The high biodiversity



"Coral Triangle" in the western Pacific's Indo-Malay-Philippine Archipelago is very vulnerable.

The results of the coral species assessment will be placed on the *IUCN Red List of Threatened Species* in October. Currently, the assessments are at: <http://www.sci.edu/gmsa/about/corals.shtml>

Un tercio de los corales que componen los arrecifes alrededor del mundo se encuentran en peligro de extinción, de acuerdo a la primera evaluación global comprensiva para determinar su estatus respecto a la conservación. El estudio, publicado por un grupo de 39 científicos incluyendo a Héctor Guzmán de STRI, fue publicado el 10 de julio por *Science Express*.

Los expertos líderes en corales han unido fuerzas con Global Marine Species assessment (GMSA)—un esfuerzo colaborativo entre International Union for Conservation of Nature (IUCN) y Conservation International (CI)—para aplicar las categorías y criterios de la Lista Roja de IUCN a este importante grupo de especies marinas.

Investigadores han identificado que las amenazas más importantes que enfrentan los corales son el cambio climático y el estrés localizado que resulta de la pesquería destructiva, una menor calidad de agua debido a

la contaminación, y la degradación de los hábitats costeros. El cambio climático eleva la temperatura del agua y causa mayor intensidad de radiación solar, que lleva al blanqueamiento de los corales y frecuentemente resulta en mortandad masiva en los corales. Los investigadores predicen que la acidificación del océano también será otra seria amenaza a los corales. Cuando los océanos absorben mayor cantidad de dióxido de carbono de la atmósfera, se eleva la acidez del agua mientras que el pH disminuye, lo que afecta severamente la habilidad de los corales de construir sus esqueletos que conforman la fundación de los arrecifes.

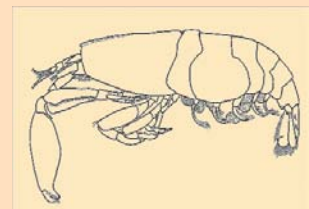
El Caribe tiene el mayor número de corales en alto riesgo, incluyendo el icónico coral cuernos de ciervo (*Acropora palmata*). El "Triángulo Coralino" centro de biodiversidad marina del Archipiélago Indo-Malasio-Filipino del Pacífico occidental también tiene una alta incidencia de especies vulnerables.

Los resultados de la evaluación de especies coralinas se ubicará en la Lista Roja de Especies en Peligro de IUCN en octubre. Actualmente las evaluaciones aparecen en: <http://www.sci.edu/gmsa/about/corals.shtml>

More publications

Aliaga-Rossel, Enzo, Kays, Roland W., & Fragoso, Jose M.V. 2008. "Home-range use by the Central American agouti (*Dasyprocta punctata*) on Barro Colorado Island, Panama." *Journal of Tropical Ecology* 24(4): 367-374.

Carpenter, Kent E., Abrar, Muhammad, Aeby, Greta, Aronson, Richard B., Banks, Stuart, Bruckner, Andrew, Chiriboga, Angel, Cortes, Jorge, Delbeek, J. Charles, DeVantier, Lyndon, Edgar, Graham J., Edwards, Alasdair J., Fenner, Douglas, Guzman, Hector M., Hoeksema, Bert W., Hodgson, Gregor, Johan, Ofri, Licuanan, Wilfredo Y., Livingstone, Suzanne R., Lovell, Edward R., Moore, Jennifer A., Obura, David O., Ochavillo, Domingo, Polidoro, Beth A., Precht, William F., Quibilan, Miledel C., Reboton, Clarissa, Richards, Zoe T., Rogers, Alex D., Sanciangco, Jonnell, Sheppard, Anne, Sheppard, Charles, Smith, Jennifer, Stuart, Simon, Turak, Emre, Veron, John E. N., Wallace, Carden, Weil, Ernesto, & Wood, Elizabeth. 2008. "One-third of reef-building corals face elevated extinction risk from climate change and local impacts." *Scienceexpress*. July 10.



De Grave, S., & Anker, Arthur. 2008. "*Leptathanas powelli* gen. nov., sp nov, a new infaunal alpheid shrimp associated with upogebiid mudshrimps in Nigeria (Crustacea, Decapoda)." *Zootaxa* (1750): 43-52.



'World of the Jaguar' inaugurated at Summit

Almost never seen in the wild, Panama's largest predator is featured at Summit's new "World of the Jaguar", inaugurated on Saturday, July 12. A waterfall and massive trees offer shelter to the big cats to lounge in full public view.

The exhibits are designed to encourage visitors to understand how this endangered species makes its living in a biologically rich, but shrinking world. Next to the jaguar domains the visitors will appreciate the jaguar's forest neighbors: ocelots, crocodiles, capybara, tapirs, and large river turtles—all potential prey items on a jaguar menu. The "World of the Jaguar" aims to soon become Summit's most popular exhibit.

Taken from
www.summitpanama.org

STRI director Eldredge Bermingham attended the inauguration as collaborator partner in the project. "It is a spectacular exhibit, a real special view" commented Bermingham to Summit director Adrian Benedetti, who invites all the STRI community to visit, and feel "the magic."

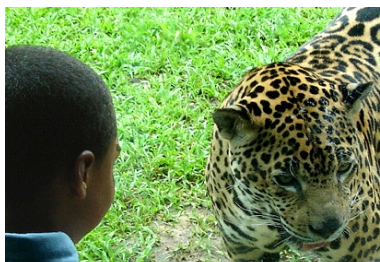
Casi nunca visto en la naturaleza, el depredador más grande de Panamá aparece en el nuevo "Mundo Jaguar" del Summit, inaugurado el sábado 12 de julio. Una fuente y árboles

macizos son refugio para que estos enormes gatos puedan pasearse a la vista del público.

Las exhibiciones estimulan a los visitantes para que conozcan cómo esta especie en peligro vive en un mundo que, aunque es biológicamente rico, es cada vez más estrecho. Al lado de los predios del jaguar, los visitantes podrán apreciar a los vecinos del jaguar en el bosque: ocelotes, cocodrilos, capibaras, tapires y grandes tortugas de río —todos potenciales presas en su menú. Se espera que "Mundo Jaguar" pronto se convierta en la exhibición más popular del Summit.

Tomado de
www.summitpanama.org

El director de STRI Eldredge Bermingham, participó en la inauguración como socio colaborador en el proyecto. "Es una exhibición espectacular, una vista realmente especial" comentó Bermingham al director del Summit, Adrián Benedetti, quien invita a toda la comunidad de STRI a visitar, y a "sentir la magia."



More publications

Guzman, Hector M., Benfield, Sarah L., Breedy, Odaliska, & Mair, James M. 2008. "Broadening reef protection across the Marine Conservation Corridor of the Eastern Tropical Pacific: distribution and diversity of reefs in Las Perlas Archipelago, Panama." *Environmental Conservation* 35(1): 46-54.

Laurance, William F. 2008. "International perspective: Conservation research in the Australian wet tropics." In Stork, Nigel E., & Turton, Stephen M. (Eds.) *Living in a dynamic tropical forest landscape*: 357-359. Malden: Blackwell.

Laurance, William F., & Goosem, Miriam. 2008. "Impacts of habitat fragmentation and linear clearings on Australian rainforest biota." In Stork, Nigel E., & Turton, Stephen M. (Eds.) *Living in a dynamic tropical forest landscape*: 295-306. Malden: Blackwell.

Laurance, William F. 2008b. "Theory meets reality: how habitat fragmentation research has transcended island biogeographic theory." *Biological Conservation* 141(7): 1731-1744.

Miro, R.R., & Kaufmann, Karl W. 2008. "Panama: conservation with government collaboration." *Ornitología Neotropical* 19: 321-327.

Santos, C., Jaramillo, Carlos A., Bayona, German, Rueda, Milton J., & Torres, V. 2008. "Late Eocene marine incursion in north-western South America." *Paleogeography, Palaeoclimatology, Palaeoecology* 264(1-2): 140-146.

Wells, Kentwood D., Kalko, Elisabeth K.V., Lakim, Maklarin B., & Pfeiffer, Martin. 2008. "Movement and ranging patterns of a tropical rat (*Leopoldamys sabanus*) in logged and unlogged rain forests." *Journal of Mammalogy* 89(3): 712-720.

Continues on page 5

Nitrogen partitioning in montage forest at the Fortuna Reserve

Story and photo:
Ben Turner
Edited by M Alvarado
& ML Calderon

Nitrogen is an essential element for plants, but plant-available nitrogen is in short supply in the extensive tropical montane forests of Panama. Plants typically take up inorganic forms of nitrogen from soil, although some can also directly take up organic forms of nitrogen, such as simple amino acids. This raises the possibility that co-existing plants partition soil nitrogen by specializing in the acquisition of certain chemical forms.

Such resource partitioning is being studied by Kelly Andersen (University of Illinois, USA) and colleagues in lower montane tropical forest at the STRI field station in the Fortuna Forest Reserve, western Panama. The forest at Fortuna spans a mosaic of soil types that form a gradient in soil nitrogen availability and support distinctly different communities of understory palms.

Using stable nitrogen isotopes, Kelly is testing whether the palm species differ in their preference for the various nitrogen compounds. This may explain in part the distribution of palms species at Fortuna and could have important implications for understanding the co-existence of plants in hyper-diverse tropical forests.

In the photo, Andersen injects a solution

containing isotopically-labeled nitrogen compounds into the soil of an experimental plot in Fortuna. The experiment will assess whether palm species differ in their preference for inorganic or organic nitrogen compounds.

El nitrógeno es un elemento esencial para las plantas, pero el nitrógeno disponible para las plantas es escaso en los extensos bosques tropicales montañosos de Panamá. Típicamente, las plantas obtienen formas inorgánicas de nitrógeno del suelo, aunque algunas pueden obtener directamente formas orgánicas de nitrógeno, como los aminoácidos simples. Esto eleva la posibilidad de que plantas co-existentes dividan el nitrógeno del suelo al especializarse en la adquisición de ciertas formas químicas.

Kelly Andersen, y colegas de la Universidad de Illinois en EU estudian las divisiones de los recursos del suelo en bosques tropical montañosos bajos en la estación de campo de STRI en la Reserva Forestal de Fortuna, al oeste de Panamá. El bosque de Fortuna

ofrece un mosaico de tipos de suelo que forman un gradiente en la disponibilidad de nitrógeno en el suelo y apoya comunidades diferentes distintivas de palmas del sotobosque.

Usando isótopos de nitrógeno estables, Kelly examina si las especies de plantas difieren en sus preferencias por los variados compuestos de nitrógeno. Esto puede explicar, en parte, la distribución de especies de palmas en Fortuna y puede tener implicaciones importantes para comprender la co-existencia de plantas en bosques tropicales súper diversos.

En la foto, Andersen inyecta una solución que contiene compuestos de nitrógeno isotópicamente etiquetados en el suelo de una parcela experimental en Fortuna. El experimento medirá si las especies de plantas difieren en sus preferencias por compuestos orgánicos o inorgánicos de nitrógeno.



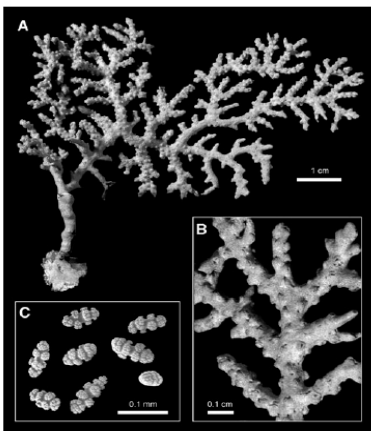
STRI new publications update

We thank Alvin Hutchinson from SI Libraries for his contributions to the STRI bibliography.

Diaz-Marrero, Ana R., Cueto, Mercedes, D'Croz, Luis, & Darias, Jose. 2008. "Validating an endoperoxide as a key intermediate in the biosynthesis of elysiapyrones." *Organic Letters* 10(14): 3057-3060.

Dick, Christopher W. 2008. "New interpretations of fine-scale spatial genetic structure." *Molecular Ecology* 17(8): 1873-1874.

Domingues, V.S., Alexandrou, M., Almada, V.C., Robertson, D. Ross, Brito, A., Santos, R.S., & Bernardi, Giacomo. 2008. "Tropical fishes in a temperate sea: evolution of the wrasse *Thalassoma pavo* and the parrotfish *Sparisoma cretense* in the Mediterranean and the adjacent Macaronesian and Cape Verde Archipelagos." *Marine Biology* 154(3): 465-474.



***Leptogorgia christiae* (named in honor of Christy Walton, marine enthusiast and supporter of biodiversity conservation in North America and the tropics) was described by Héctor Guzmán & Odalisca Breedy**

Guzman, Hector M., & Breedy, Odalisca. 2008. "*Leptogorgia christiae* (Octocorallia: Gorgoniidae) a new shallow

water gorgonian from Pacific Panama." *Journal of the Marine Biological Association* 88(4): 719-722.

Kawakita, Atsushi, Ascher, John S., Sota, Teiji, Kato, Makoto, & Roubik, David Ward. 2008. "Phylogenetic analysis of the corbiculate bee tribes based on 12 nuclear protein-coding genes (Hymenoptera: Apoidea: Apidae)." *Apidologie* 39(1): 163-U118.

Kluger, Arnold, Dalling, James W., Gallery, Rachel E., Sanchez, Evelyn, Weeks-Galindo, Cheyenne, & Arnold, A. Elizabeth. 2008. "Host generalists dominate fungal communities associated with seeds of four neotropical pioneer species." *Journal of Tropical Ecology* 24: 351-354.

Little, Ainslie E. F., & Currie, Cameron R. 2008. "Black yeast symbionts compromise the efficiency of antibiotic defenses in fungus-growing ants." *Ecology* 89(5): 1216-1222.

Logue, David M., Chalmers, C., & Gowland, A.H. 2008. "The behavioural mechanisms underlying temporal coordination in black-bellied wren duets." *Animal Behaviour* 75: 1803-1808.

Marin, Ivan N., & Anker, Arthur. 2008. "A new species of *Pontonia* Latreille, 1829 (Crustacea, Decapoda, Palaemonidae) associated with sea squirts (Tunicata, Ascidiacea) from the Pacific coast of Panama." *Zoosystema* 30(2): 501-515.

Miura, Osamu, Mori, H., Nakai, S., Satake, K., Sasaki, T., & Chiba, Satoshi. 2008. "Molecular evidence of the evolutionary origin of a Bonin Islands endemic, *Stenomelania boninensis*." *Journal of Molluscan Studies* 74: 199-202.



***Pontonia panamica* nov. sp. (Upper individual in the photo and male) from the Pacific coast of Panama, described by Ivan N. Marin & Arthur Anker**

Murphy, M., Balsler, T., Buchmann, N., Hahn, V., & Potvin, Catherine. 2008. "Linking tree biodiversity to belowground process in a young tropical plantation: Impacts on soil CO₂ flux." *Forest Ecology and Management* 255(7): 2577-2588.

Osorio-Gil, E.M., Forero-Montana, J., & Otero, J.T. 2008. "Variation in mycorrhizal infection of the epiphytic orchid *Ionopsis utricularioides* (Orchidiaceae) on different substrata." *Caribbean Journal of Science* 44(1): 130-132.

Rocha, Luiz A., Rocha, Claudia R., Robertson, D. Ross, & Bowen, Brian W. 2008. "Comparative phylogeography of Atlantic reef fishes indicates both origin and accumulation of diversity in the Caribbean." *BMC Evolutionary Biology* 8: 157.

Toth, Eva, & Bauer, Raymond T. 2008. "*Synalpheus paranepthumus* (Crustacea: Decapoda: Caridea) populations with intersex gonopores: a sexual enigma among sponge-dwelling snapping shrimps." *Invertebrate Reproduction & Development* 51(1): 49-59.

Please send your citations and .pdfs to Marialuz Calderon at: calderom@si.edu or to STRI, Attn. Marialuz Calderon Unit 0948, APO AA 34002-0948



Alpheus xanthocarpus sp. nov. (male)



Female

***Alpheus xanthocarpus* sp. nov. (male & female) from Sao Tomé, described by Arthur Anker, Carla Hurt & Nancy Knowlton**

Anker, Arthur, Hurt, Carla, & Knowlton, Nancy. 2008. "Revision of the *Alpheus cristulifrons* species complex (Crustacea: Decapoda: Alpheidae), with description of a new species from the tropical eastern Atlantic." *Journal of the Marine Biological Association* 88(3): 543-562.

Boero, F., Bouillon, J., Gravili, C., Miglietta, Maria Pia, Parsons, T., & Piraino, S. 2008. "Gelatinous plankton: irregularities rule the world (sometimes)." *Marine Ecology Progress Series* 356: 299-310.

Coomes, O.T., Grimard, F., Potvin, Catherine, & Sima, P. 2008. "The fate of the tropical forest: carbon or cattle?" *Ecological Economics* 65(2): 207-212.

Deichmann, J. L., Duellman, William E., & Williamson, G. Bruce. 2008. "Predicting biomass from snout-vent length in new world frogs." *Journal of Herpetology* 42(2): 238-245.