

STRI newsletter

June 11, 1993

SMITHSONIAN TROPICAL RESEARCH INSTITUTE - Apartado 2072, Balboa, Panamá

No. 24



During a ceremony held on June 4 at the Corotú Plaza, Prof. Mireya Correa, STRI botanist and director of the herbarium at the U. of Panama, gave information about the natural history and practical uses of the "corotú" (monkey ear) tree at the Tupper Center.



Acting mayor Dionisio Sánchez and Elena Lombardo, STRI assistant director of external affairs, presided at the recent ceremony to place a plaque at the STRI corotú tree, as part of a program to identify and protect long-living trees throughout the city.

(Foto: M.A. Guerra)

TUPPER CENTER SEMINARS

No noon seminar scheduled for Tuesday, June 15.

PEOPLE

Arrivals

- Calvin Snyder, American Museum of Natural History, NY, Jun 15-31 Jul, to work with Patricia Miller, on BCI.
- Maria Lazaridou, University of Thessaloniki, Greece, Jun 18-27, to study the phylogeny of the genus *Helix*, at Naos.

Departures

- Jeremy B.C. Jackson, Jun 12-18, to Aspen, CO, to give a talk at the International Design Conference.

- Noris Salazar, Jun 17-11 Jul, to Peru, to participate in the BIOLAT field research.
- Nancy Knowlton, Jun 18-1 Aug, to Snowbird, Utah, to attend the meetings of the Society for the Study of Evolution, and then on vacation.
- Shawn McCafferty, Jun 18-23, to attend the meetings of the Society for the Study of Evolution.

THINGS YOU SHOULD KNOW

Jacana Back in Operation

Se Reanuda la Operación de la Jacana

BCI's speedy passenger boat, the Jacana, is back in operation since June 4. The Jacana will be used to transport passengers from Monday to Friday and the "Las Cruces" launch on weekends, according to the normal schedule, available at all facilities. ••• *El bote de velocidad para los pasajeros de Barro Colorado, Jacana, reanudó operaciones a partir del 4 de junio. Esto permitirá transportar a los pasajeros de Lunes a Viernes y "Las Cruces" en los fines de semana, en sus horarios normales, disponibles en todas las oficinas.*

THINGS YOU SHOULD KNOW

From ADEA Office

De la Dirección para Asuntos Externos

STRI and the National Ocean Service (NOS) of the National Oceanic and Atmospheric Administration, U.S. Department of Commerce, signed an agreement to allow NOS to maintain a Global Sea Level Station at the Naos Marine Laboratories. NOS will install, operate and maintain water level and meteorological instruments including a satellite transmitter, since both STRI and NOS are interested in the monitoring of long term ocean changes ••• *El Servicio Oceánico Nacional (NOS) de la Administración Atmosférica y Oceánica Nacional del Departamento de Comercio de los Estados Unidos y STRI firmaron un tratado que permite a NOS el acceso a las instalaciones de los Laboratorios Marinos de Naos para mantener una Estación de Niveles Globales del Mar. NOS instalará, operará y mantendrá instrumentación meteorológica para medir niveles marinos incluyendo un transmisor vía satélite. Este acuerdo responde al mutuo interés del STRI y NOS en monitorear los cambios oceánicos a largo plazo.*

At Tupper Center

- Mon, Jun 14 ■ *Fundación NATURA* meeting, Small Meeting Room, 9 am-12 noon.
- *Instituto Richard Newman*, to visit exhibition, Exhibit Hall, 9-11:30am.
- Tue, Jun 15 ■ *Fundación NATURA* workshop, Conference Hall, 8am-5pm.
- *Instituto Richard Newman*, to visit exhibition, Exhibit Hall, 9-11:30am.
 - TREC meeting, Small Meeting Room, 1:15-3pm.
 - *Escuela Primer Ciclo*, to visit exhibition, Exhibit Hall, 2-4:30pm.
- Wed, Jun 16 ■ *Fundación NATURA* workshop, Conference Hall, 8am-4pm.
- *Instituto Celestín Freinet*, to visit exhibition, Exhibit Hall, 9-11:30am.
 - Visit of the National Legislative Assembly, Conference Center, 8pm.
- Thu, Jun 17 ■ *Fundación Natura* workshop, Conference Hall, 9am-6pm.
- *Instituto Celestín Freinet*, to visit exhibition, Exhibit Hall, 9-11:30am.
- Fri, Jun 18 ■ *Escuela San Antonio*, Chorrera, to visit exhibition, Exhibit Hall, 9-11:30am.
- Sat, Jun 19 ■ Gigante Field Methods Course certificate ceremony, Large Meeting Room, 8 am-11 am.

At the Culebra Marine Biological Reserve



- Tue, Jun 15 ■ *Escuela José Gabriel Duque (Chepo)*, 8:30am.
- Wed, Jun 16 ■ *Escuela Santa Isabel (Chepo)*, 8:30am.
- Thu, Jun 17 ■ *Escuela José del Carmen (Las Margaritas, Chepo)*, 8:30am.
- Fri, Jun 18 ■ *Escuela Cristóbal A. de Urriola (Arraiján)*, 8:30am.

De la Oficina de Recursos Humanos

José Herrera fue seleccionado como operario de la grúa instalada en el Parque Natural Metropolitano para la observación y el estudio del dosel del bosque, a partir del 13 de junio. Herrera posee una extensa experiencia en la conducción de grúas de construcción en Panamá. Nos complace darle una cordial bienvenida a la comunidad de STRI.

Juan B. Dutari fue escogido como cocinero de Barro Colorado quien empezará a laborar a partir del 24 de junio. Dutari tiene estudios en sociología y posee experiencia como "chef" en el Hotel Contadora, el Hotel California y el Restaurante Los Capriles. Deseamos éxito a este nuevo miembro de STRI y le damos nuestra bienvenida.

From STRI Mini-Bookstore

The STRI Mini-Bookstore will be closed from Thu, Jun 17 through Fri, Jun 18, due to inventory.

ANNOUNCEMENTS

From the Office of Education

The fourth edition of *The Environmental Grantmakers Association Directory*, 1992, is available for consultation at the STRI Office of Education, Tupper Center.

BCI Derby Day • Día de Carreras de Sapos de BCI



BCI Derby Day will take place on Sunday morning, June 13. Boat leaves Gamboa at 8:55am. Contribution \$3. per person plus usual lunch fee. Commemorative T-Shirts \$10. Please make your reservation with Vielka Liao, BCI ••• El "Día de Carreras de Sapos" en Barro Colorado será el domingo 13 de junio en la mañana. El bote sale de Gamboa a las 8:55am. Contribución por persona \$3, además del cargo usual por el almuerzo. Camisetas con motivo de la carrera \$10. Recuerde reservar su cupo con BCI.

RESEARCH UPDATE

**Hitchhikers Fight to Fly
the Love Bug**

by John L. Elliot

National Geographic, June 1993

Giant harlequin beetles of the American's tropical rain forest often change addresses by flying from one rotten fig tree to another when it's time to start a new generation.

Dozens of tiny hitchhiker —male and female pseudoscorpions also seeking a new home— swarm aboard each three-inch-long beetle before it departs from its old tree. Larger males shove many smaller pseudoscorpions off, then set up territories on the beetle's belly and fight to defend them. As the beetle takes wing, the pseudoscorpion hangs on by spinning safety harnesses of silk and clutching with their claws.

When the beetle shuttle lands, large male pseudoscorpions kick off remaining rivals and mate with females. But once life in the new tree begins, smaller, quicker males appear to be better at finding mates than the big bullies, say researchers David and Jeanne Zeh of the Smithsonian Tropical Research Institute in Panama, who are conducting DNA tests on the pseudoscorpions.

STRI NEW PUBLICATIONS

- Duke, Norman. 1992. "Mangrove Floristics and Biogeography." In: *Coastal and Estuarine Studies 41: Tropical Mangrove Ecosystems*: 63-100. Edited by A.I. Robertson and D.M. Alongi. Washington D.C., American Geophysical Union.
- Eberhard, William G. 1992. "Copulatory Courtship and Notes on the Natural History of *Ochthera occidentalis* Clausen (Diptera: Ephydriidae)." *Pan-Pacific Entomologist* 68(4): 261-267.
- Eberhard, William G. 1992. "Web Construction by *Modisimus* sp. (Araneae, Pholcidae)." *The Journal of Arachnology* 20: 25-34.



Con el patrocinio de Canon Latin America Inc., el Parque Natural Metropolitano y STRI, se entregaron los premios correspondientes a los ganadores del II Concurso Fotográfico "Día de la Tierra 1993" el viernes 4 de junio en el centro de visitantes del Parque Natural Metropolitano. Canon premió la foto "Oda al Esplendor" con una cámara EOS 10S Edición Especial del joven fotógrafo Heriberto Valdés. El segundo y tercer premios fueron otorgados a Javier Pinzón e Iván Pinzón respectivamente, quienes, entre otras distinciones, fueron invitados junto con Heriberto Valdés y dos otros fotógrafos ganadores de menciones honoríficas, a visitar Barro Colorado. Las fotos ganadoras serán publicadas próximamente en los medios de comunicación.

(Foto: A. Montaner)

- Nichols, Beth A.D., Cholewiak, Linda B. and Condit, Richard. 1992. "The Struggle for Existence: Competition Between Bacterial Strains." In: *Tested Studies for Laboratory Teaching Vol 13: Proceedings of the 13th Workshop /Conference of the Association for Biology Laboratory Education (ABLE) 1991*: 77-92. Edited by C.A. Goldman, University of Toronto.
- Pullin, A.S. and Wolda, Henk. 1993. "Glycerol and Glucose Accumulation During Diapause in a Tropical Beetle." *Physiological Entomology* 18: 75-78.
- Srygley, Robert B. and Dudley, Robert. 1993. "Correlations of the Position of Center of Body Mass with Butterfly Escape Tactics." *Journal of Experimental Biology* 174: 155-166.
- Zeh, David W., Zeh, Jeanne A., Coffroth, Mary Alice and Birmingham, Eldredge. 1992. "Population-Specific DNA Fingerprints in a Neotropical Pseudoscorpion (*Cordylochernes scorpioides*)." *Heredity* 69: 201-208.

Safety News *Sobre Seguridad*

The Panamanian National Assembly passed on April 16, 1993 "Ley 9" which establishes the compulsive use of safety belts for operators and passengers riding on particular, commercial and official vehicles. This most welcomed law will be in effect on August 16, 1993. As STRI's Safety Officer I would like to encourage the observance of this very important piece of legislation at all times, not just while riding a STRI vehicle.

Being mindful that habits are hard to change, I would like to encourage every STRI employee to comply with "Ley 9", and help friends and relatives to protect themselves by doing so also. Although we might be careful drivers and practice defensive driving techniques, we have very little or no control over the actions of others.

Here I also include some current information about the use of safety belts:

- When used, lap/shoulder safety belts reduce the risk of fatal and serious injury to front seat passengers by 45 to 55 percent.
- Discomfort and inconvenience are poor excuses for compromising one's own safety and the safety of one's children.
- It is the short trips that lead to the greatest number of crashes. About 75 percent of all crashes occur within 25 miles of home and on roads where the posted speed limits are 45 mph or less. Low speed crashes or even a panic stop can cause serious injuries.
- In a car crash, an unrestrained child can slam into a dash-board at a force equal to a fall from a three story building.
- Remember, the belt cannot protect you when it hangs loosely around you. Periodically check the slack and adjust if necessary.
- Wear the lap belt low and snug across your hips, not over your stomach. **NEVER** place the shoulder belt under your arm as it can cause broken ribs, and/or rupture internal organs such as the liver or the spleen.
- If your car is equipped with lap belts only in the back seat, use them. They offer better protection than riding unbelted.

Note: The above cited information was taken from the 1993 *Occupant Protection Idea Sampler*.

If you would like some more information about the usage of safety belts, please do not hesitate to contact me (Jose Ramon Perurena) at the Safety Office located in Tupper Room 210, ext. 259.

La Asamblea Nacional panameña aprobó el 16 de abril de 1993, la Ley 9, que establece el uso sistemático de los cinturones de seguridad tanto para los conductores como para los pasajeros que viajan en autos particulares, comerciales y oficiales. Esta acertada ley entrará en vigencia el 16 de agosto de 1993. El director de seguridad laboral del STRI desea exhortar al cumplimiento de esta importante legislación en todo momento, no solamente al conducir los vehículos de STRI.

"Aunque sabemos que los hábitos son difíciles de cambiar, insto a todos los empleados del STRI a cumplir con esta Ley 9 de la República y, al mismo tiempo, servir como portadores de sus beneficios entre amigos y parientes para que se protejan a sí mismos de esta manera. Aunque podamos ser conductores cuidadosos y practiquemos un manejo defensivo, tenemos, en realidad, poco control sobre las acciones de los demás."

Seguidamente, les adjunto información de actualidad sobre el uso de los cinturones de seguridad:

- Los cinturones que aseguran desde el hombro hasta la cintura reducen el riesgo de lesiones serias y fatales a los pasajeros que viajan en los asientos delanteros de un auto en un 45-55 por ciento en casos de accidente.
- Incomodidad e inconveniencias pasajeras son excusas pobres al arriesgar la seguridad propia y la de sus dependientes.
- La mayoría de los de accidentes ocurren en trayectos cortos. Alrededor del 75% de todos los choques se dan dentro de un radio de 40 kilómetros alrededor de nuestros hogares y donde el límite de velocidad es de 45 millas por hora o menos. Choques a baja velocidad o por frenazos por pánico también pueden causar lesiones severas.
- En un choque, un niño no asegurado puede golpearse contra el tablero de control de su auto con una fuerza equivalente a la caída desde el tercer piso de un edificio.
- Un cinturón de seguridad no protege si cuelga flácido alrededor de su cuerpo. Revíselo periódicamente para asegurarlo.
- Use el cinturón de seguridad sobre su cadera y no sobre su estómago. **NUNCA** coloque el cinturón bajo el brazo, ya que esta práctica puede resultar en costillas rotas o ruptura de órganos internos como el hígado o el bazo.
- Si su auto está equipado únicamente con cinturones de seguridad de cintura en los asientos de atrás, úselos: éstos ofrecen mayor protección que nada.

Nota: esta información ha sido tomada del 1993 *Occupant Protection Idea Sampler*

Para mayor información sobre el uso de los cinturones de seguridad, comuníquese con José Ramón Perurena, director de seguridad laboral en el Centro Tupper, oficina 210, extensión de tel. 259.

New View of Panamanian Isthmus Emerges from Research by Smithsonian Tropical Research Institute Scientists

*From: Smithsonian Institution News
June 11, 1993*

Scientists from the Smithsonian Tropical Research Institute (STRI) in Panama today (June 11) reported evidence from living and fossil organisms that revises long-held assumptions about the biological effects of the rise of the Panamanian Isthmus, a land bridge that connects Central and South America and that separates what are now two different oceans, the Atlantic and Pacific.

Two complementary reports, published in the June 11 issue of the journal *Science*, "dispel the myth that most of the changes were concentrated around the time of final closure 3 million to 3 million years ago," says Dr. Nancy Knowlton, a Smithsonian marine biologist and coauthor with STRI colleagues Lee A. Weigt, Luis Anibal Solórzano, DeEtta K. Mills and Eldredge Bermingham of *Divergence in Proteins, Mitochondrial DNA, and Reproductive Compatibility Across the Isthmus of Panama*.

The new evidence documents unsuspected complexity in the evolutionary divergence of marine organisms in the two oceans—complexity related to environmental changes touched off by the gradual rise of the land bridge—that began as far back as 6 million years prior to the final severing of the connection between the oceans.

The *Science* paper by Knowlton *et al.* and *Diversity and Extinction of Tropical American Mollusks and Emergence of the Isthmus of Panama* by Dr. Jeremy Jackson, a paleontologist, coauthored with Anthony Coates, also with STRI, and Peter Jung and Laurel S. Collins, provide data to support this new scenario. The papers are based on research on sister species of shrimp now found on opposite sides of the isthmus, as well as studies of more than 800 subgenera of fossil mollusks. Together, the reports detail the varying responses of marine organisms to the rise of the land bridge, and may help biologists refine an important molecular tool for measuring rates of evolution.

Moreover, the work suggests new ways for scientists to think about large-scale changes that might have

occurred when other land bridges—the Bering land bridge in the Arctic, for example—appeared or disappeared in Earth history. The rise of the Panamanian land bridge, Jackson says, "is one of the cleanest events we have to study."

Knowlton *et al.*'s work centered on investigations of the evolutionary divergence of snapping shrimp from the Atlantic and Pacific oceans. The evolutionary forebears of these sister species pairs, Knowlton explains, once lived in a continuous sea. She used three measures of divergence—proteins, mitochondrial DNA and reproductive compatibility—to determine the nature of the changes that have taken place since they were isolated.

Contrary to expectation, Knowlton found that some pairs of shrimp had diverged far more than others. The fact that all three measures of divergence told the same story provided compelling evidence that the measures were accurate, and that simultaneous separations at the time of final closure were therefore not possible. She used the rate of divergence of the most similar pairs, which presumably do reflect isolation at final closure, to estimate that the others had already gone their separate ways millions of years earlier.

"Once understood, complexity is an asset rather than a hindrance," Knowlton says. "For example, the new data allow one to focus on the most similar pairs for estimating rates of evolution, thus increasing precision substantially. Rates observed in these shrimp, where the dating of the time of divergence is relatively good, can be used in other situations where no single geological event can be precisely tied to time of separation."

Other findings emerge from these studies. For example, the ecological requirements of the most divergent shrimp show that animals requiring clear or slightly deeper water were the first to be affected by the changes caused by the rising land mass. The shrimp also show that 3 million years of isolation generally disrupts the ability to interbreed—in these shrimp, and the few other