

STRI newsletter

June 25, 1993

SMITHSONIAN TROPICAL RESEARCH INSTITUTE - Apartado 2072, Balboa, Panamá

No. 25



Lucas Zarak, president of the National Assembly, thanks STRI for the invitation to visit the Tupper Center and to learn more about STRI activities ... Lucas Zarak, presidente de la Asamblea Nacional, agradece a STRI por la invitación al Centro Tupper para familiarizarse más con las actividades de STRI.

TUPPER CENTER SEMINARS

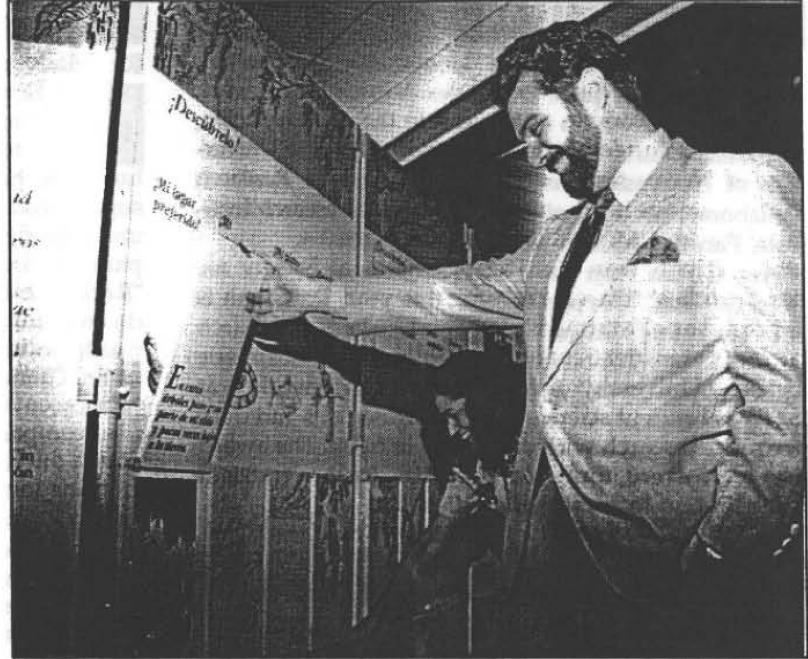
Tue, Jun 29, noon seminar speaker will be Egbert Leigh, STRI

Do Insect Pests Enhance Mutualisms Among Tropical Forest Trees?

PEOPLE

Arrivals

- Ola Fincke, University of Oklahoma, Jul 1-14 Aug, to study the ecology and behavior of tree-hole odonates, frog and mosquitos, on BCI.
- Anne and Peter Meylan, Florida Marine Research Institute, Jul 1-30, to study the ecology and migration of marine turtles of Cocas del Toro Province, Panama, on Bocas.
- Wayne Sousa, Betsy Mitchell, Cynthia Sagers, Dereck Hitchcock and Arja McCray, University of California at



Legislator Milton Henríquez enjoys viewing the exhibit "Nuestros Bosques: Nuestra Herencia" during the reception that brought members of the National Legislative Assembly, our neighbors, to the Tupper Center on Wednesday, June 15 ... El Legislador Milton Henríquez disfrutó recorriendo la exhibición "Nuestros Bosques: Nuestra Herencia" durante una recepción que trajo a nuestros vecinos, los miembros de la Asamblea Nacional Legislativa, a visitar el Centro Earl S. Tupper, el día miércoles 15 de junio.

(Fotos: M.A. Guerra)

Berkeley, Jul 1-30 Sep, to study light gap reneration in a Caribbean mangrove forest, at Galeta.

- Joshua Schwartz, Short-term visitor from the University of Missouri, Jul 2-6 Aug, to study the male chorusing and strategies of female choice in the tree frog *Hyla microcephala*.

Departures

- Ira Rubinoff, Jun 30-29 Jul, to Washington D.C. on official bussiness at SI, and to Cambridge, MA, to attend meetings of the CTFS Board of Directors.
- Jeremy Jackson, Jun 30-1 Aug, on vacation.
- Eldredge Bermingham, Jul 1-16, to Peru, to participate in the BIOLAT field research.
- Andrew Martin, Jul 1-16, to Peru, to participate in the BIOLAT field research.

Sun, Jul4, is U.S. Independence Day and Jul 5th is a STRI holiday. The Library will close on Sat, Jul 3, to allow its staff a long week-end ... El domingo 4 de junio el es día de independencia de los Estados Unidos, y el lunes 5 es libre para STRI. La biblioteca cerrará el sábado 3 de julio para permitir a su personal un fin de semana largo.

AWARDS

- **Héctor Guzmán** received a "Honourable Mention" by the Spirit of Enterprise 1993 Rolex Awards for his work transplanting coral to restore reef in the eastern Pacific. Guzmán is currently completing a Ph.D. at the University of Newcastle, United Kingdom, and is Research collaborator at the Smithsonian Tropical Research Institute, Panama. More information on pages 3-4.
- **Peter Glynn** won the The International Society for Reef Studies' "Darwin Award" this year. Dr. Glynn is a professor of Marine Biology and Fisheries Research at the Rosenstiel School of Marine and Atmospheric Science, University of Miami, Florida. He worked at STRI as resident scientist at the Marine Labs and does frequent research with colleagues at STRI. The award is given every four years for the most significant contribution to coral reef studies.

THINGS YOU SHOULD KNOW

At Tupper Center

- Mon, Jun 28 ■ *Escuela Puerto Rico*, 9am. *Colegio Anglo-Mexicano*, 10:30am.
- *Stephan Schmid Leiny Luncheon*, Large Meeting Room, 1pm.
- Mon, Jun 28-Jul 1 *Senior Latin Medical Officers Conference*, Conference Hall, 8am-5:30pm.
- Tue, Jun 29 ■ *Aseguradora Mundial Hospital Insurance Meeting*, Large Meeting Room, 8:30am.
- *Escuela Comercial Panamá*, 9am.
- Noon seminar by Bert Leigh, Auditorium, 12 noon.
- *Fellowships Meeting*, Small Meeting room, 1pm.
- Wed, Jun 30 ■ *Colegio San Patricio*, 9am. *Escuela Bilingüe Emanuel (Arraiján)* 10:30am. *Ministerio de Obras Públicas* 1:15 pm.
- Thu, Jul 1 ■ *Fundación Natura Meeting*, Small Meeting Room, 8am-5pm.
- *Colegio San Patricio*, 9am, *Instituto Episcopal San Cristóbal* 10:30am.
- Fri, Jul 2 ■ *Instituto Cultural Libre Americano* 9am. *IPA* 10:30am. *Universidad de Colón* 2pm.

At the Culebra Marine Biological Reserve



- Tue, Jun 29 *Casa Esperanza Pro Rescate al Niño de la Calle*, 9am.
- Wed, Jun 30 *Escuela Presidente Roosevelt (Chilibre)*, 8:30am
- Thu, Jul 1 *Centro Regional Universitario de Colón, Escuela de Biología*, 8:30am.

ANNOUNCEMENTS

Reciclado en STRI



El programa de reciclado en STRI está vivo y marchando. Gracias a miembros del personal comprometidos, y el esfuerzo de muchos voluntarios, el programa está ganando "momentum". Se sugiere que obtenga un contenedor apropiado (como una caja de cartón, un basurero extra o una canasta) para poner el papel que usted desea reciclar y lo marque "Reciclado de Papel". Periódicamente, vacíe su contenido en el contenedor para reciclar de su edificio. También puede pedirle al personal de limpieza que haga esto por usted. Cuando el contenedor de su edificio esté lleno, el papel se envía al departamento de compras para llevarlo a las compañías que se dedican a este trabajo. Si tiene alguna duda, sugerencias o preguntas, dirija sus ideas al coordinador de reciclado de su estación de trabajo. Recuerde: solo papel blanco se acepta por el momento. No contamine el papel para reciclar con papel de colores, hojas engrapadas, sobres con ventana plástica, facsímiles en papel termal, periódicos, cartón o simple basura. ¡Gracias!

Warning ••• Atención

The Tupper Center animal cages building next to the Pastor's House is housing green iguanas under a dietary efficiency project. Feeding, stress, or unmonitored diet items will adversely affect the study. Your cooperation will be appreciated. Kathleen Francis, in charge of the project, thanks the several people who help to look for the green iguanas ••• *El edificio de jaulas de animales del Centro Tupper, cerca del Pastor's House tiene un grupo de iguanas verdes bajo un estudio de eficiencia dietética. Alimentarlas, molestarlas y cualquier alimento no monitoreado afectaría el estudio. Se le agradece su cooperación. Así mismo, Kathleen Francis, a cargo del proyecto, agradece a quienes ayudaron buscando las iguanas verdes.*

HUMAN RESOURCES • RECURSOS HUMANOS

New Collective Hospitalization Insurance Plan for STRI Employees

STRI has accepted a new medical insurance plan with Aseguradora Mundial (AM) that will become effective on July 22, 1993. This decision was reached by the majority of employees who are currently subscribed to the group plan after comparing the new plan with the old IS (Internacional de Seguros) plan.

Those STRI employees who are not part of the old IS plan and who might be interested in participating in this new medical plan should call the STRI Human Resources Department. Remember the saying "It is better to be

insured and not need the insurance, than to be uninsured and in need."

This new AM insurance plan includes good benefits with only \$50 deductible. Aseguradora Mundial will be offering a seminar to explain the plan's benefits in detail. This seminar will be held on Tuesday, June 29, 1993 at 8:30 pm at Tupper's Large Meeting Room. Everyone is invited to attend and to participate. For more information contact the Office of Human Resources at Tivoli. Supervisors are encouraged to allow all interested personnel to attend this meeting.

Nuevo Plan Colectivo de Hospitalización para los Empleados del STRI

STRI ha logrado para sus empleados una mejor póliza de hospitalización con Aseguradora Mundial que comenzará a regir a partir del 22 de julio de 1993. Aquellos empleados que no están suscritos a ningún plan médico deben considerar la posibilidad de inscribirse en este seguro. Es muy cierto el refrán que dice: "Mas vale estar asegurado y no necesitarlo, que necesitarlo, y no estar asegurado."

Este es un plan colectivo de hospitalización con buenos beneficios, con primas razonables y un deducible de \$50 solamente. Aseguradora Mundial nos brindará una charla explicativa sobre el plan el próximo martes 29 a las 8:30 am en el Salón de Reuniones del Centro Tupper. Todos están invitados. Para mayor información, comuníquese con la Oficina de Recursos Humanos al 27-6022. Se urge a los supervisores que permitan a todo el personal interesado a acudir a esta reunión.

STRI NEW PUBLICATIONS

THE ECONOMY OF NATURE 3RD EDITION ROBERT E. RICKLEFS

No brief introduction to ecology is more enduring or widely respected than Robert E. Ricklefs's **THE ECONOMY OF NATURE**. It makes the full spectrum of this evolving science supremely accessible to students of all backgrounds.

Fully revised and updated, this eagerly awaited new edition offers the most up-to-date coverage of ideas, data, and directions in modern ecology available. With a careful balance of theory and principles plus hundreds of vivid examples of structure and function in natural systems, Ricklefs's text will help unravel the often complex interrelationships of organisms and their environment.

Ricklefs, Robert E. 1993. *The Economy of Nature*. Third Edition. New York: W.H. Freeman.

Safety News ••• Sobre Seguridad

This is just a reminder for STRI employees and visitors about the SI Indoor Air Quality Program. This policy encourages all employees and visitors to refrain from smoking indoors at any Smithsonian Institution Facility. This policy was drafted due to the greater number of recirculating air conditioning and heating units being used across most of SI facilities. There is a director's prerogative which permits smoking outdoors. Thank you for your cooperation in this matter ••• *Esto es sólo para recordarles a todos los empleados y visitantes en el STRI sobre el programa de la Institución Smithsonian sobre calidad de aire en las oficinas. Este programa advierte a todos los empleados y visitantes que deben abstenerse de fumar dentro de cualquier instalación del Smithsonian. Esta política obedece al gran número de unidades de aire acondicionado que recirculan el aire dentro de las oficinas. Una excepción del director permite fumar fuera de los edificios. Gracias por su colaboración.*

FROM OTHER SOURCES

Transplanting coral to restore reefs in the eastern Pacific

by Héctor M. Guzmán

Natural and man-induced disturbances have devastated coral reefs in the eastern Pacific in the past decade. Local artisanal fisheries have been depleted, and the capacity of coral reefs to act as protective barriers against coastal erosion, storms, etc, has been reduced. Eastern Pacific coral reefs are therefore now vulnerable to the predicted rising sea level associated with global warming, and in small islands and low-lying coastal developing countries the consequences may be serious.

Eastern Pacific coral reefs at risk

Slow reef recovery combined with intense reef erosion has led to extensive destruction of the reef frameworks. Some reefs along the Pacific coast of Costa Rica, Panama, Colombia and Ecuador have experienced 100 per cent mortality of the dominant coral *Pocillopora* spp. Also, some coral species can be considered locally and regionally endangered or extinct. Surviving individuals of some coral species are extremely rare, and reef recovery by sexual or asexual means has been lowered.

No recent physical or biological disturbances have been identified in the tropical eastern Pacific that can match the widespread and catastrophic coral mortality during the 1982-1983 *el Niño* warming. Other disturbances such as red tides, strong upwellings and pollution have continued to affect the region's reefs causing coral mortality as high as 95 per cent of total life cover. Additional threats include increases in sedimentation, oil and pesticide pollution, and coral extraction.

We have carried out a restoration experiment in two different shallow habitats inside a Costa Rican marine

biological reserve and have found that 80 per cent of coral fragments (imported from nearby reefs) transplanted onto dead reef frameworks have survived after three years. Furthermore, natural fragmentation has produced an increase of between 41 and 115 per cent in the number of new colonies. These results suggest that coral transplantation for reef management and restoration is a feasible tool in the eastern Pacific region, and the only available resource to improve and preserve biodiversity. We now propose to implement a large-scale, regional restoration programme to increase population sizes of some local and regionally endangered coral species, to a manageable level. This programme will help to restore reefs with less than 5 percent living coral cover in order to increase the likelihood of stabilizing the sea level and increasing fish productivity for the benefit of artisanal fishermen.

Reef recovery is dependent on many factors

Recovery of eastern Pacific reefs is linked to such factors as: coral reproduction, availability and location of source populations, dispersal mechanisms, coral destruction and reef-framework destruction. It is known that *Pocillopora damicornis* (Linnaeus), one of the main reef-building species, has low reproductive potential in the region. Propagation in eastern Pacific pocilloporid corals is, therefore mainly through asexual fragmentation instead of larva (sexual or asexual) production. Asexual fragments are produced by bioerosion, breakage during storms and disturbance by fish. Although some eastern Pacific reefs still have large areas of pocilloporids that may provide fragments and promote reef recovery, there are reefs in the Galapagos and Costa Rica where pocilloporid coral populations are small and restricted in distribution. In these latter areas, coral fragmentation and reef recovery are minimal. It is from patches which still contain live corals that recovery may be expected.

The objectives of our project are to: rehabilitate reef areas suffering natural and man-made destruction during the past decade, using coral transplantation and replenishment, increase local, and maintain regional coral biodiversity (eastern Pacific region); increase population sizes of some local and regionally endangered coral species to a manageable level; undertake a regional programme to restore unprotected reefs by exporting coral clones to nearby reef areas, restore shallow reef areas with native and original species to increase living corals on dead reef frameworks that are exposed to erosion. This may help to protect coastal areas from the erosion associated with rising sea level (predicted 25-40 cm by the middle of the next century.)

Potential implications

Coral transplantation has been practised on a small scale for many years and the good results achieved suggest that transplantation by be used as a management tool. Therefore in addition to restoring biological diversity, protecting the coastline from erosion, and increasing rural economic opportunities (artisanal fisheries), we will be testing the large-scale application of this restoration technology with a view to applying it in different regions of tropical seas with similar problems.

About 42 coral reefs have been identified along the Pacific coast of Costa Rica, Panama and Colombia. Half of those reefs have less than 1 per cent of living coral coverage. Only nine are protected as national parks and biological reserves. We propose to continue restoring the reefs which are protected and start with some unprotected ones. The WWF has provided funding for the restoration of nine reefs. So far, we have restored two reefs in Colombia and three reefs in Panama. During May 1992, we plan to continue with three more reefs in Costa Rica. Coca-Cola Co. has provided funding for three more reefs in Panama. As at February 1992, we had transplanted 3,574 fragments, replenished 43,600 fragments and restored 32,500m² of reefs.

We will restore reef frameworks built up exclusively by pocilloporid corals, and totally killed during the 1980s. Only native species will be transplanted. Fragments will be collected from surviving colonies found around selected reefs, and transported to the transplanting sites. An area will be established at each locality, and coral fragments will be placed on the reef-frame. Coral fragments will also be dispersed onto large dead areas of reefs from boats. All the restored reefs will be visited and survival rates estimated over the next two years.

Vea el próximo "Newsletter" para la versión en español.

