

STRI news

November 28, 1997

Smithsonian Tropical Research Institute • Apartado 2072, Balboa, Panamá • Tel. 227-6022 • Fax 232-5978

TUPPER CENTER SEMINARS

Tuesday, December 2, noon seminar speaker will be Nérida Gómez, STRI

Use of Plant-Derived Secondary Metabolites: Evidence of Chemical Defense in Tortoise-Beetle Larvae (Chrysomelidae: Cassidinae)

Abstract

Tortoise-beetle larvae use waste materials (fecula and cast skins) to construct maneuverable dorsal structures, known as fecal shields, which have been shown to provide protection against natural enemies. However, the role of these structures in chemical defense has received little attention. I have performed chemical analysis of the fecal shields of *Eurypedus nigrosignata* and the foliage of its host plant, *Cordia curassavica* (Boraginaceae). The fecal shields presented the same terpenoid profile as did their host plant. Indeed, *C. curassavica* foliage contained at least three different types of terpenoids; younger foliage contained the highest amounts. The concentrations of plant-derived compounds in the fecal structures appeared to depend upon larval age and plant chemical type. The fecal shields increased larval survival in the field; and in the laboratory, they were feeding deterrents to ants. Fecal shields of *E. nigrosignata* seemed to retain volatile terpenes much better than did loose fecula. Preliminary histochemical analysis suggests that construction of fecal structures may be controlled by complex biochemical mechanisms.

SPECIAL

Wed, Dec 3, noon seminar speaker will be Fbo Gwinner, Max-Planck-Institut für Vögelphysiologie, Germany
Circannual Clocks in the Control of Reproduction and Migration in Afrotropical Birds



The STRI exhibit "Parting the Green Curtain: The Evolution of Tropical Biology in Panama" returned to Panama and is currently on display at the Culebra Marine Exhibition Center. Georgina de Alba, STRI, describes to visitors one of its panels, during an event organized by the Fundación Smithsonian de Panamá and STRI, on Tuesday, Nov 18 ••• La exhibición de STRI "Descorriendo la Cortina Verde" regresó a Panamá, y está abierta al público en el Centro de Exhibiciones Marinas de Culebra. Georgina de Alba, STRI, describe uno de los paneles de la exhibición a visitantes, durante un evento organizado por STRI y la Fundación Smithsonian, el martes 18 de noviembre.

Abstract

Many behavioural and physiological functions of organisms are adjusted to the periodic changes in their environment, particularly to those related to the natural day and year. This adjustment is often achieved through the action of endogenous daily (circadian) and annual (circannual) clocks. Studies of the control of avian moult, migration and reproduction have played a major role in understanding how biological clocks function and interact with rhythms in the environment. Investigations on tropical birds such as the East African subspecies of the Stonechat (*Saxicola torquata axillaris*) and long-distance migrants like the Garden Warbler (*Sylvia borin*) have provided the longest records of circannual rhythms, some of them running for more than 12 years, with periods ranging from about 9 to 13 months. Avian circannual rhythms are organized in a characteristic way for a particular species or population, and cross-breeding experiments have shown that some of the differences found among them are genetically determined. In African Stonechats circannual rhythms

guarantee that seasonal events occur at the appropriate times of the year and in the characteristic sequence. They also control a "reproductive window" that provides the temporal framework for breeding. The width of this window is rather inflexible but the performance of a bird within this framework (e.g. whether it breeds once or twice per season) is subject to modification by environmental conditions. In migratory birds circannual programs are involved in determining the time course, distance and direction of migration. Circannual rhythms are synchronized with and modified by environmental factors in a complex way, but the endogenous mechanisms usually respond to environmental cues such that an optimal adjustment to season and latitude is guaranteed.

CONFERENCIA ABIERTA

La Fundación Smithsonian y el Instituto Smithsonian de Investigaciones Tropicales ofrecen una conferencia abierta al público el jueves 4 de diciembre, a las 7:30pm, en el Auditorio del Centro Tupper. Los expositores de la conferencia son Carlos Ayarza, del Ministerio de Salud, y Luis D'Croz, de STRI.

La Bahía de Panamá: Condiciones de la Contaminación y Soluciones

Para reservaciones favor llamar a la extensión 2276 ó 2247 de STRI.

BAMBI

Thursday, December 4, seminar speaker will be Mark Travassos, Harvard University

Sound Production in Butterfly-Ant Mutualisms

Transportation and dinner reservations are essential. Please call BCI at 272-2124.

NAOS LUNCHEON

Friday, December 5, Naos Marine Lab Luncheon seminar speaker will be Courtney Murren, University of Connecticut, at the Surfside Conference Room.

Orchids, Genes, and Small Islands

For more information about the Naos Luncheon seminars please contact Bailey Keissing at Naos, ext. 3330 or consult the Web at http://160.111.136.12/Naos_Luncheon_Schedule.html

PEOPLE

Arrivals

- Erik Lindquist, University of Indiana, and Daniel Badgley, Columbus Zoological Gardens, Dec 1-17, to conduct studies on the conservation of the Panamanian golden frog, *Atelopus zeteki*, on mainland.
- Martin Wikelski and Michaela Hau, University of Washington, Dec 2-15, to study the mechanisms of reproductive seasonality in the rainforest dwelling spotted antbird, in Gamboa.
- Dennis O'Connor, SI Provost, Dec 4-7, on official business at STRI.
- Ingrid Kaipf, University of Tubingen, Dec 5 - Jan 15, to work with Elisabeth Kalko on the echolocation and foraging behavior of neotropical bats, on BCI and mainland.

Departures

- Anthony Coates, Dec 1-4, to Miami, FL, to consult with colleagues at the Florida International University and the University of Miami.
- Stanley Rand, Dec 1-7, to Washington D.C., to participate in the SI/NASA workshop at the Goddard Space Center.

FROM THE DIRECTOR

Senior Scientist Emeritus Status for Dr. Stanley Rand *Stanley Rand: Científico Emérito "Senior"*

Effective January 1998 Dr. Rand will become Senior Scientist Emeritus. He plans to divide his time between his new home in Virginia where he will work out of STRI's Washington Office and STRI's Gamboa facility where he will spend four months each year conducting research and continuing to advise students.

Dr. Rand began his distinguished career at STRI in 1964 with studies on the evolution and ecology of lizards of the genus *Anolis*. He developed the concept of aspect diversity and its evolutionary function in predator avoidance. His pioneering work on the behavior and reproductive biology of iguanas provided the basis for both their conservation in the wild and for their agricultural domestication. He has conducted innovative research into the acoustic communication in Anurans and developed the sophisticated analyses of the competing selective costs between mate acquisition and predator avoidance in the Tungara Frog, *Physalaemus pustulosus*.

His scientific career is particularly noted for the quality and number of research students he has advised. Hundreds of scholars from all over the world performed their dissertation and post-doctoral training under his tutelage and they have influenced all fields of tropical biology. He plans to continue his work on anuran communication including a book on the status of research in this field ••• A partir de enero de 1998, el Dr. Stanley Rand será nombrado científico emérito "senior". Rand planea dividir su tiempo entre su nuevo hogar en Virginia trabajando con la Oficina de STRI en Washington, y la estación de Gamboa, donde pasará cuatro meses cada año llevando a cabo investigaciones y continuando su programa de consejería a estudiantes.

El Dr. Rand empezó su distinguida carrera en STRI en 1964 con estudios sobre la evolución y ecología de lagartijas del género *Anolis*. Desarrolló el concepto de la diversidad del aspecto y su función evolutiva para evitar depredadores. Su trabajo pionero sobre la conducta y biología reproductiva de iguanas suministró la base tanto para su conservación natural, como para su domesticación y uso en zoológicos. Rand ha llevado a cabo investigaciones innovativas en la comunicación acústica de los anuros y desarrolló análisis sofisticados sobre el costo selectivo de la competencia entre adquirir pareja y evitar depredadores en la rana *Túngara*, *Physalaemus pustulosus*.

La carrera científica de Rand se ha caracterizado particularmente por la calidad y número de estudiantes investigadores que ha dirigido. Cientos de académicos de todas partes del mundo han llevado a cabo sus tesis de doctorado y entrenamiento postdoctoral bajo su tutela, y ellos han influenciado todos los campos de la biología tropical. Rand planea continuar su trabajo en la comunicación de anuros, lo que incluye producir un libro sobre el estatus de la investigación en este campo.



Aida Carrasco and Doris Martiz, of the STRI Mini-Bookstore, attended public at the "Feria Exposición del Medio Ambiente", at the Smithsonian School in Gamboa, on Saturday, November 22, to Sunday, November 23 ••• Aida Carrasco y Doris Martiz, de la Mini-Librería, atendieron el pabellón de STRI durante la Feria Exposición del Medio Ambiente, en la Escuela del Smithsonian en Gamboa, los días 22 y 23 de noviembre. (Foto: M.A. Guerra)

FROM THE STRI OFFICE OF PHYSICAL PLANTS

Nota de Interés

Mucho se ha hablado en Panamá sobre el edificio Inteligente que fue construido en Calle 50. Pero la verdad es que el Centro Tupper fue el primer Centro Inteligente construido en Panamá si consideramos cómo fue diseñado. Primeramente, las luces fluorescentes son economizadores de energía. En lugar de usar lámparas fluorescentes de 4 tubos de 40 watts cada uno, se usan lámparas de 3 bombillos de 34 watts cada uno, ayudados por una pantalla que optimiza la iluminación de la lámpara. El ahorro por lámpara es 58 watts ó 36%. Esto es significativo si consideramos la gran cantidad de lámparas que se usan en el Centro Tupper. Otro sistema que utiliza optimización de energía es el de recuperación de calor, el cual se utiliza en el sistema de aire acondicionado. Todos nos hemos parado detrás de una refrigeradora o de un aire acondicionado de ventana y nos hemos dado cuenta del calor que se genera. Normalmente, ese calor se pierde. En el Centro Tupper, este calor se aprovecha utilizando esta energía para calentar el agua potable, disponible en los baños, laboratorios, departamento de fotografía, cocina, etc. Más

aún, para ser más eficiente en su operación, lo cual ayuda enormemente al aire acondicionado aumentando su capacidad de enfriamiento, esta agua caliente es recirculada garantizando al usuario agua caliente casi inmediatamente abre el grifo. Cabe aclarar que el Centro Tupper cuenta con un calentador de agua, el cual no se ha tenido que usar nunca. El ahorro de energía para el Instituto ha sido considerable.

Fernando Pascal (*)

(*) Agradezco a Erick Lam, Técnico especialista de Facilities Management por la información suministrada para la preparación de esta nota de interés.)

ANNOUNCEMENTS

Combined Federal Campaign

This is to inform all interested employees that all the necessary material has just arrived. Each facility secretary has been sent a package of pledge cards, pamphlets, posters, etc. Remember! The Campaign has become a meaningful way to voluntarily reach out... to touch the lives of people who need our help... to help create a better world. The amount each charity receives is totally determined by what people indicate on their pledge card. Your contribution is by payroll deduction—an easy way to give. A reasonable, affordable amount withheld from your paycheck each payday does not disrupt your budget and, over a year's time, amounts to a meaningful gift, a gift that you can feel good about.

NEW STRI PUBLICATIONS

Aiello, Annette and Jolivet, Pierre. 1996. "Myrmecophily in Keroplatidae (Diptera: Sciaroidea)." *Journal of the New York Entomological Society* 104(3-4): 226-230.

Coley, Phyllis D. and Kursar, Thomas A. 1996. "Causes and Consequences of Epiphyll Colonization." In: *Forest Plant Ecophysiology*: 337-362, edited by Alan P. Smith, Stepehn S. Mulkey and R. Chazdon. New York: Chapman and Hall.

Zotz, Gerhard. 1997. "Photosynthetic Capacity Increases With Plant Size." *Botanica Acta* 110: 306-308.

Correction

Lessios, H.A. and Macintyre, Ian G. 1997. *Proceedings of the 8th International Coral Reef Symposium, Panama, June 24-29, 1996*. Panama: Smithsonian Tropical Research Institute, Two Volumes.



STRI Mini-Bookstore Christmas Sale

Baratillo de Navidad en la Librería

This year's STRI Mini-Bookstore Christmas Sale will be from Mon, Dec 1, to Fri, Dec 5. Both *Tienditas* at BCI and Culebra will also be on sale. On BCI, from Mon, Dec 1, to Sun, Dec 7. In Culebra, from Sat, Dec 6, to Sun, Dec 7 ••• El Baratillo de Navidad de la Mini-Librería de STRI será del lunes 1 de diciembre, al viernes 5 de diciembre. Ambas "Tienditas" en Barro Colorado y Culebra también estarán de baratillo: en Barro Colorado, del lunes 1 de diciembre, al domingo 7 de diciembre. En Culebra, del sábado 6 de diciembre, al domingo 7 de diciembre.

STRI December Birthdays

Dionisio Osos	4
Luis Castillo	6
Mirna Samaniego	8
Irma Echeverría	11
José Ramón Perurena	12
Eileen Jones	15
Alejandro Garrido	15
Pierre Jacinto-Fuentes	17
Andrés Ramos	17
Bailey Kessing	18
Julio Polo	20
Ira Rubinoff	21
Yira Ventocilla	22
José Nuñez	22
Aníbal Velarde	22
Adriana Bilgray	24
Raúl Ríos	25
Elizabeth Sánchez	26
Mario Santamaría	27



MISCELLANEOUS

Fiesta Navideña para Niños

El grupo de amigos de los niños del Camarón y El Macho, Corregimiento de El María, Veraguas, está organizando una fiesta navideña para niños de estas comunidades. Se solicitan juguetes para niños de hasta 11 años (60 niños); ropa en buen estado, libros educativos, etc. La actividad se organizará el 20 de diciembre en El Camarón. El organizador es Juan Guerra, 232-5516 ó 232-5552. Para mayor información puede comunicarse con Mónica Alvarado, en Tivoli.

STRI Telephone Book Correction in Page 14

Jennions, Michael. E-mail: gam128@gamboia.si.edu