

STRI newsletter

January 11, 1991

SMITHSONIAN TROPICAL RESEARCH INSTITUTE - Apartado 2072, Balboa, Panama

No. 2

SEMINARS

Tupper Center Auditorium

Tuesday, Jan 15, noon seminar speaker will be Dr. Piet J. Den Boer, Agricultural U. of Wageningen.

Estimating the survival time of populations.

Abstract

Natural populations are often thought to persist for a long time because they were being "regulated" by density-dependent processes. However, local populations ("interaction groups") usually survive some decades and proper tests for density dependence have shown that populations generally are not regulated in the strict sense. In interaction groups that are integrated into multipartite populations, however, the total survival time may be prolonged to up to millennia. Thirty years of data on carabid beetles will be used to illustrate these points.

Thursday, Jan 17, noon seminar speaker will be Dr. Douglas Futuyma, State University of New York at Stony Brook.

Phylogeny and evolution of insect/plant associations: chrysomelids and composites.

Abstract

Hypotheses about insect/plant coevolution are grounded in systematic data, and provide an opportunity to explore relationship between phylogenetic and population biological studies. A phylogenetic analysis of the beetle genus *Ophanela* is described, which addresses the congruence between the phylogenies of the insects and their host plants and the role of plant secondary compounds in host associations. Together with preliminary genetic studies, the phylogeny is used to explore genetic constraints on the evolution of host associations.

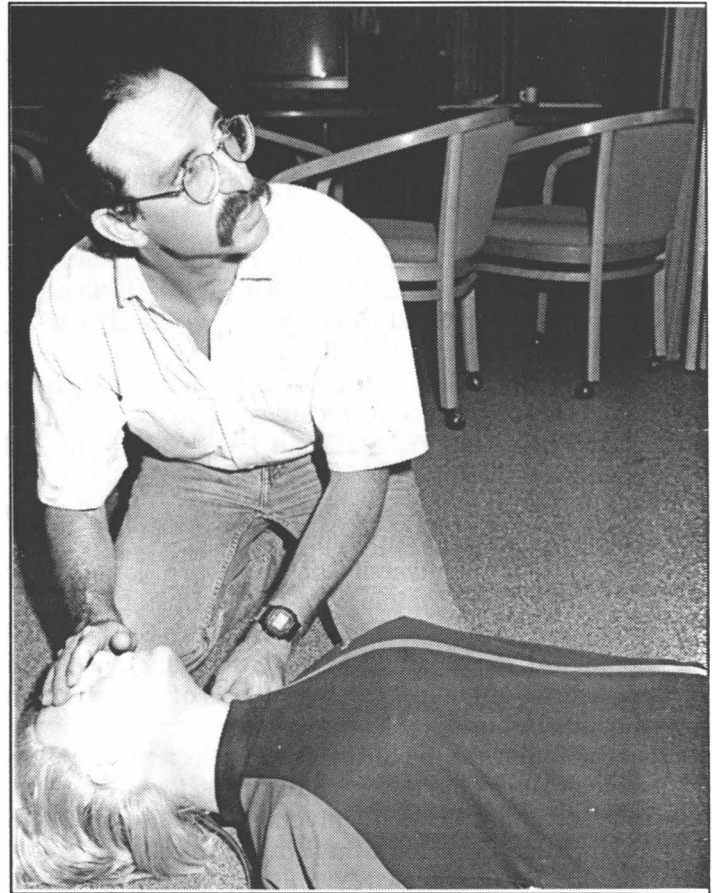
Next Week

Tuesday, January 22, noon seminar speaker will be Dr. Piet Den Boer, Agricultural U. of Wageningen.

The evolution of flight capacity and its consequences for the survival of species.

UPCOMING EVENTS

- Jan 21, Martin Luther King's Birthday. STRI Holiday.
- Jan 14-17, International Donors Meetings to fund Panama's Forestry Action Plan will take place at the Hotel Marriot. Participating organizations include the Interamerican Development Bank, World Bank, CATIE, European Community, FAO, ITTD, PNUD, Canadian International Development Agency, Finnish International Development Agency, USAID, etc.



PEOPLE AT STRI

Steve Miller, STRI's Diving Officer, is responsible for the oversight of all aspects of scientific diving done by Smithsonian Institute certified divers in Panama. The safety and training of STRI divers and the efficient management of a safe diving program are the principle objectives that determine the specific duties, responsibilities, and activities of the diving officer.

In order to achieve this Steve Miller ensures that all STRI divers have had the proper training and meet the requirements as specified in the Smithsonian Scientific Diving Manual. He also provides program oversight and development of modifications and supplements to the STRI diving safety program in conjunction with the STRI and SI Scientific Diving Control Boards. He plans, coordinates and conducts courses in first aid, CPR, and safe diving practices; in the photo he is shown (on the) conducting a recent CPR course. In the future he will also offer specialized courses related to diving safety, physiology, and advanced diving techniques. If necessary, he will plan, coordinate and participate in rescue

efforts for all dive-related emergencies.

The STRI Diving Officer, in addition, works with the Office of Visitor Services and the Office of Education and Conservation to plan for the diving needs of visitors and fellows, and represents the STRI diving community in meetings, both locally and in Washington, D.C.

Arrivals

- David Challinor, Science Advisor to the Secretary, and Joan Challinor, Jan 12-18, to visit STRI facilities.
- George Angehr, STRI Development Office, Jan 13-30, for official business at STRI.
- Piet Der Boer, Short-term visitor, Jan 13-30, to give seminars and visit STRI facilities.
- Jeremy Jackson, STRI Staff, Jan 13-Feb 17, for official business at STRI.
- Giselle Mora, University of Costa Rica, Jan 15-30, to work with Dolores Piperno.
- Gerhard Zotz, University of Wurzburg, Jan 15-May 31, to work on physiology of tropical plants.
- Eugene Morton & Kim Derrickson, SI National Zoological Park, Jan 15-Mar 31, to work on test of predictions of the ranging hypothesis of the evolution of songs in birds.
- Mark Moffett, National Geographic Society, Jan 16, to survey canopy biology research at BCI.
- Tom Mazorlig, Cornell University, Jan 16-Mar 31, to work with S. Emlen on the *Jacana* project.
- Douglas Futuyma, SUNY University, Jan 16-21, to give seminar and consult with staff.
- Jeff Brawn, Virginia Polytechnic Institute and State University, Jan 17-31, to participate in Oil Spill review board meeting and consult with STRI staff.
- Ross Simons, Deputy Assistant Secretary for Research & Maria Ballantyne, Jan 18-24 to visit STRI facilities and meet with the staff.

On Leave

Jan 16-24, Vielka Chan Yau.

Condolencias

Nuestro más sincero pésame al Sr. Leoncio Rodríguez en la muerte de su padre el 7 de enero de 1991.

THINGS YOU SHOULD KNOW

On Sale at STRI-Mini Bookstore

1991 Wall calendars reduced from \$9.95 to 6.50 and Engagement calendars from \$12.95 - \$9.

Info for all STRI Official Travelers

Effective January 1, 1991, per diem outside of the US will now be divided into Lodging and Meals and Incidental Expenses, the same as has been done within

the US for the past years. There is no longer a flat rate. The reimbursement for Lodging requires presentations of receipts as well. All travel orders will indicate the breakdown, showing the maximum allowances for each. If you have any questions about this change, please contact the Travel Office.

ANNOUNCEMENTS

Fellowships and Assistantships Available

The Tropical Conservation and Development Program (TDC) and the Program for Studies in Tropical Conservation (PSTC) in the Center for Latin American Studies at the University of Florida have a limited number of graduate fellowships and assistantships for study at M.A. and Ph. D. level in various fields. The two programs offer a broad range of classroom and field opportunities for students desiring and interdisciplinary understanding of issues of conservation and development in Latin America.

Preference is given to Latin American students for fellowship support. Details of the program can be obtained by writing: Steven Sanderson, Director, Tropical Conservation and Development Program, 319 Grinter Hall, Center for Latin American Studies, University of Florida, Gainesville, FLA 32611.

Fellowship applicants must be admitted to the Graduate School at the University of Florida in a degree program. Students must present GRE scores, and TOEFL scores, as well as relevant transcripts, and letters of recommendation. Application forms available from the Graduate Admissions Office, Tigert Hall, University of Florida.

Recitals at San Marcos Church (Nuevo Reparto El Carmen)

- Thursday 17, 7:30 p.m., Woodwinds (Telemann, Beethoven, Milhand, Stravinsky)
 - Thursday 24, 7:30 p.m. Oberlin Conservatory. Quartet and Basson. (Beethoven, Dvorak, Villalobos etc.)
- Free, but donations are requested.

STRI New Publications

- Fincke, Ola M., Higgins, Linden and Rojas, Edgar. "Parasitism of *Nephila clavipes* (Araneae, Tetragnathidae) by an Ichneumonid (Hymenoptera, Polysphinctini) in Panama." *Journal of Arachnology* 18: 321-329 (1990).
- Lessios, Harilaos A. "A Program for Calculating Nei's Genetic Distances and Their Jackknifed Confidence Intervals." *The Journal of Heredity* 81(6): 490 (1990).

- Peckol, P., Levings, S.C. and Garrity, S.D. "Kelp Response Following the World Prodigy Oil Spill". *Marine Pollution Bulletin* 21(10): 473-476 (1990).
- Salazar Allen, Noris. "Bryophyte Ecology in Panama." *The Bryological Times* 57-58: 12-13 (1990).

FROM OTHER SOURCES

Smithsonian News Service

"Scotland Yard" for Animals Thwarts Wildlife Crime

It is called the "Scotland Yard" of wildlife crime, but from the outside, it hardly resembles its historic namesake in London. The National Fish and Wildlife Forensics Laboratories, nestled in the southern Oregon's bucolic Rogue Valley, looks more like a new elementary school, complete with a flagpole out front and an American flag flapping in the breeze.

The lab's central repository is enormous. Like most new warehouses, this one is nearly spotless with many of its contents wrapped in tidy packages. But closer inspection of the 60,000 items stored in the two gymnasium-size rooms reveals a grim legacy of illegal slaughter.

Its appalling inventory includes elephant tusks, coral jewelry, stuffed and mounted bald eagles, turtle-shell guitars, leopard-skin coats, python boots, crocodile belts and purses and a number of "remedies" containing ground rhino horn and crushed tiger bones. All of these and more represent forfeited contraband used as evidence in court cases involving crimes against wildlife.

"Hard and fast numbers" are difficult to come by, wildlife officials say, "but poaching - and the illegal market for the animal parts and products - is growing and the problem is global".

In the past, wildlife law enforcement agents had few options when it came to using physical evidence to convict criminals engaged in illegal wildlife trade. "In most cases, we would bluff - and hope the perpetrator would confess and plead guilty," says Kenneth Goddard, director of the wildlife crime lab. "Or we had to catch them in the act of killing the animal."

The first of its kind lab - which supports state, federal and international wildlife law enforcement efforts - has three goals: to identify the species in question, determine the cause of death and connect a suspect to the crime.

The World Wildlife Fund estimates that the international trade in wildlife - imports and exports - is a five billion



Forensic specialist Wayne Ferguson obtains blood and tissue samples from a mountain lion. The samples will be used for protein and DNA analyses.

dollar a year industry, with more than one billion going to the illegal market. The United States is the world's largest trader of live wildlife and wildlife products, followed by Japan and Western Europe.

By "illegal," officials do not only mean the killing of protected or endangered species. "We are talking about any action that violates the law," Goddard says. "That includes commercialization and poaching as well as a sportsman hunting out of season." He also cites more deliberate acts of slaughter. "Greed often plays a role when dozens or hundreds of animals are killed by people wanting to profit from resources that simply are not theirs."

To convict criminals engaged in illegal wildlife trade, enforcement agents must prove what species are being traded. Because of this, the lab's forensics experts must devote much of their time to identifying evidence. They may work with an animal part - a piece of meat, hair, tooth or ivory - or a product such as a briefcase, handbag or piece of jewelry.

While the lab is building a collection of animals and animal parts that will represent the species the scientist will most encounter during their daily work, it relies on other resources to help make identifications. "We often use the Smithsonian collection for comparative purposes when we get something we're not familiar with," Dr.



These animal parts and products are from protected and endangered species. The global market in such illegal goods is estimated to exceed \$1 billion a year.

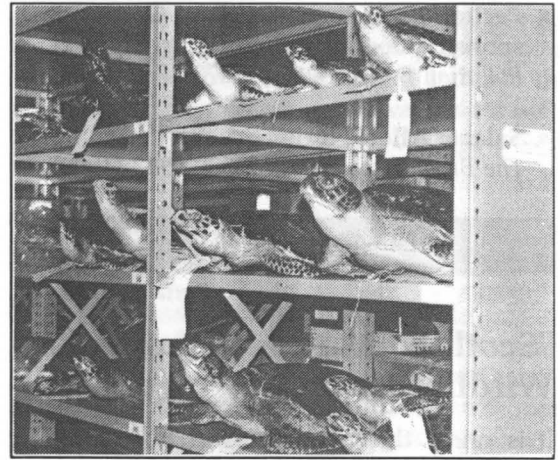
Steve Busack, the lab's chief morphologist, says. The monitor lizard is an example. He notes that since the creature is indigenous to Africa, Asia and Australia, "there were none in Oregon to which we can compare our sample."

Dr. Robert Reynolds, a collections manager in the division of herpetology at the Smithsonian's National Museum of Natural History, says that the museum often loans materials for research purposes. As for the forensic lab, "It would be up to Steve to first try to identify as closely as possible what he has," Reynolds says. "He would then be able to eliminate what the specimen is **not** and fine-tune his loan request." Once that's done, the Smithsonian will ship skins, skeletons, whatever is necessary, to the lab's forensic scientists for them to use to make an accurate identification.

If an identification based on morphology is impossible, the specimen is sent to the lab's serology division or the criminalistic section for further scrutiny. Serological examinations employ electrophoresis, an electrochemical process used to analyze proteins, and the latest in recombinant DNA techniques. Specimens typically examined with these methods include suspected big game meats or dried blood on a hunter's clothing.

DNA is the basic genetic material found in cells of every living organism. By analyzing the DNA of hair, hide, blood or muscle, Dr. Steven Fain, a forensic specialist, says, "We can determine whether the evidence belonged to a human or a deer. Furthermore, we can be species specific and tell if the evidence was from a mule deer or an elk." DNA analysis can also pinpoint the sex of a mammal.

One of the lab's first major scientific breakthroughs was a technique devised to distinguish between ivory of modern Asian and African elephants, which is illegal to trade, and the ivory of their prehistoric predecessors - mastodons and mammoths - which is legal. "Our problem has been telling the difference between the two," Goddard points out. The



These sea turtles are stored at the Wildlife Forensics Lab's repository in Ashland, Ore. The endangered reptiles are often poached for their shells and hides.

techniques can also determine whether a piece of ivory is a walrus, hippo or warthog. The Smithsonian loaned the lab a number of ivory samples to aid this research.

Dr. Edgard Espinosa, the forensic specialist who developed the ivory- identification techniques, is now working on identifying the age of an ivory specimen with respect to the time of the animal's death. "Dates are important in determining which samples were legally taken versus those that were not," he explains.

The lab also conducts more traditional investigations by collecting and examining evidence such as fingerprints, tire tracks, and bullets.

As for the central repository, Goddard says he'd like to see that stuff put to some useful purpose, and not just rot away in the warehouse. "We intend to use these items as educational tools, perhaps in displays at schools and airports, so people can see what is happening to the world's animal population."

"Law enforcement alone can't stop crimes against wildlife," he adds. "But I'm certain that the efforts of this lab, along with an informed public, will create a drop in demand for these things and put a significant dent in the illegal market."

