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## Natural History Highlight



### Building Expertise at Research Locations: Relying upon Parataxonomists (May, 2001)

Past Highlights



**Biologists recognize the tremendous diversity in the earth's tropical rainforests, and many pursue research projects in them.** Despite the great interest in studying the rainforests, there aren't enough highly trained taxonomists who are resident in those locations, which means that the existing capacity to collect and analyze specimens is not great enough to support the high amount of research to be done. A strategy has emerged for developing on-site expertise, a form of "capacity building", while pursuing research - and NMNH entomologists and their colleagues provide examples of this growing trend. In

pursuing the goal of understanding the earth's biodiversity, scientists increasingly are training and relying upon **parataxonomists** when collecting and identifying insects, plants and animals. (Pictured above: [Agra ewilsoni Erwin](#), Illustration by George L. Venable.)



Parataxonomists Brus Isua, at work in the "Bus lab" in Madang, Papua New Guinea. Photo by Lukas Cizek.

NMNH Entomologist Scott Miller and his colleagues Yves Basset, Vojtech Novotny, and others have an on-going project in Papua New Guinea that effectively melds the gathering of biodiversity information and training of local people in fundamental aspects of collecting, taxonomic identification and insect collections care while benefiting from the local peoples' detailed knowledge of plant/insect relationships. In their October, 2000, paper "Quantifying Biodiversity: Experience with Parataxonomists and Digital Photography in Papua New Guinea and Guyana" as published in *BioScience* volume 50 no. 10, pp.899-908, they describe the development of a core of parataxonomists at research sites in Papua New Guinea and Guyana, and demonstrate that ecological research can benefit from collaboration with local people. Miller's professional collaborator Vojtech Novotny is from the Institute of Entomology of the Czech Academy of Science, the Biological Faculty of the University of South Bohemia. Yves Basset is based at the Smithsonian Tropical Research Institute (STRI).

### What is a "taxonomist", and what is a "parataxonomist"?

**Taxonomists, also known as systematists**, are scientists who study the relationships between groups or "taxa" of living things. They collect and preserve plants and animals. Taxonomists analyze and identify the specimens that have been collected by giving them their proper, scientific names according to the classification system first established by Carolus Linneaus in the 1700s. Once an organism's scientific name is known, scientists can communicate about them clearly and reliably - and even if researchers speak different languages, the language of taxonomy is universally understood. Researchers across the world understand exactly what insect is being discussed when they hear or read the words "*Anopheles*", the genus name for the mosquitoes that spread malaria.

Used in a manner similar to "paralegal" and "paramedic", the term



Parataxonomists Brus Isua, at work in the "Bus lab" in Madang, Papua New Guinea. Photo by Lukas Cizek.

Another example of the fruitful collaboration between scientists and parataxonomists is in the on-going research project Arthropods of La Selva, Costa Rica (ALAS). This project is a joint effort by the National Institute of Biodiversity in Costa Rica (INBio) and the Organization for Tropical Studies (OTS). The ALAS project is contributing to the understanding of insect species richness in Costa Rica by combining both traditional systematics approaches to estimating biodiversity as well as ecological approaches. Parataxonomists are responsible for all day-to-day operations, including specimen mounting, labeling, database entry, loans of specimens, as well as local financial management and outreach. NMNH entomologists are participating in that project as taxonomic collaborators, including Jonathan Coddington, Don Davis, Marc Epstein, Terry Erwin, David Furth and NMNH research associate Charles Staines. Also collaborating are resident entomologists hailing from NMNH's affiliated agency, the US Department of Agriculture, Systematic Entomology Laboratory, including John W. Brown, David Nickle, Alan Norrbom, Ron Ochoa, David R. Smith, Alma Solis, Chris Thompson, and Norm Woodley.

**"parataxonomist"** was first coined by NMNH research associate Daniel Janzen in 1993. Parataxonomists work along side taxonomists, collecting, sorting, preserving and analyzing plant and animal specimens. Generally speaking, parataxonomists have not received the same amount of highly specialized education or training and rarely have doctoral degrees (Ph.D.s) as do their taxonomist counterparts. In many cases, parataxonomists come from very different occupations - in Costa Rica, for example, some are former cattle farmers.

Parataxonomists usually receive their training during one or more visits to the field by taxonomists. Subsequently, the parataxonomists carry on the field and laboratory work locally while maintaining contact with the taxonomists. Parataxonomists are not mere "helpers" however - they are specialists in their own right, and frequently have a unique and well-tuned knowledge of the local plants and animals based upon years of direct observation and information sharing. In training local people in taxonomy and specimen preparation, taxonomists seek to rely on that unique knowledge and build upon it.

**To learn more about these projects, parataxonomists, and entomology at NMNH visit these sites:**

<http://entomology.si.edu/>

<http://www.bishopmuseum.org/bishop/natsci/ng/ngpara.html>

<http://viceroy.eeb.uconn.edu/ALAS/ALAS.html>

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