Tropinet

Volume 16 No. 1 March 2005 Supplement to BIOTROPICA Vol 37 No. 1

The Association for Tropical Biology and Conservation

Organization for Tropical Studies
where science and nature converge

Editor: **Lyn Loveless**, Department of Biology, The College of Wooster, Wooster, OH 44691. Phone: (330) 263-2022. Fax: (330) 263-2378. Email: mloveless@wooster.edu

Tropinet is accessible on the ATB website at http://www.atbio.org

Production Editor:**Carol Mozell** OTS
Design by **Katherine Hartman**

HOW MANY TROPICAL RAIN FORESTS?

G. Bruce Williamson, Meghan G. Radtke, and Jessica L. Deichmann
Department of Biological Sciences, Louisiana State University, Baton Rouge, La 70803, USA and Biological Dynamics of Forest Fragments Project, National Institute for Amazonian Research (INPA), C.P. 478, Manaus, AM 69011-970, Brazil

In his Presidential Address, ATBC's Richard Primack argued convincingly for "Cross-Continental Comparative Studies in Tropical Ecology" (2003. Tropinet 14(3/4):1-3). The question for tropical biologists is how to orient comparative research in order to maximize our results. Hypothesis-oriented scientists are set on discovering differences, so what differences should we explore? Fortunately, a simple, but astute, outline was presented recently for "Tropical Biology in the 21st Century" (Bawa et al. 2004. Biotropica 36:437-446). The three topics for "Basic Research on Tropical Ecosystems" are (1) describing tropical diversity, (2) maintenance of tropical diversity, and (3) functioning of tropical ecosystems. Overlaying these guidelines onto the call for cross-continental comparative studies provides us with a roadmap for research.

The best known global comparisons are biogeographical differences in taxa–that is, tropical rain forests around the globe do not have the same taxonomic or functional elements. In fact, they are not even random assemblies drawn from a common species pool. Instead, history in the form of evolution, vicariance, dispersal and extinction has played a formidable role, evident in the composition of today's rain forest ecosystems. Not surprisingly, then, the ATBC Presidential Address focused attention on these transcontinental differences in diversity. Who among us has not wondered what the Megachiroptera could achieve in the Neotropics or what havoc *Atta* would wreak in the Old World? These compositional differences are phenomenal and clearly a research priority, especially as extinctions loom over the tropics (Wright & Muller-Landau, 2004. Tropinet 15:1-2).

However, here we draw attention to less conspicuous differences–namely, the ecological dynamics of tropical rain forests. To what degree do tropical rain forests share a common set of interactions and processes? Obviously, rain forests are alike if we speak in the broadest of generalities – namely, there is disturbance, diversity, and supra-annual variation. But, if we actually define disturbance regimes, biotic interactions, and phenologies, then tropical rain forests around the equator show striking incongruities.

Perhaps most striking among rain forests are the mast-cropping ecosystems of SE Asia. There, trees reproduce, not just supra-annually, but in synchrony across vast stretches of terrain. El Niño droughts leave dead adult trees standing throughout the forest, exposing the understory to raised light levels. Coincident with the end of the drought is mast reproduction, which carpets the forest floor with new seedlings of shade tolerant trees. Cohort competition reigns supreme as the primary form of tree regeneration, completely unlike the gap-phase dynamics characteristic of other rain forests. In the masting Asian forests, classical pioneer species such as *Macaranga* are relegated to forest edges, streamsides and landslides, given the paucity of openings from treefalls. Nothing like this occurs in the Neotropics, nor in the adjacent Malesian forests just east of Wallace's Line. In fact,

continued from page 1

the reproductive dynamics of New Guinea trees may resemble the Neotropics more than neighboring Borneo.

Equally intriguing is how masting resonates through all other biotic interactions. Predator satiation, postulated by a precocious entomologist in 1974 (Biotropica 6:61-103), remained undocumented until the last decade (Curran et al. 2000. Ecol.Monogr 70:121-170): vertebrate seed predators, such as pigs and parrots, employ nomadic behavior in order to track masting events across the landscape and to avoid death during mast-free intervals that last 3-7 years.

Much less explored are mast's reverberations through the rest of the food web. As seed survival depends on predator satiation, there has been little selection for seed toxicity, so common in other rain forests. There is no guild of highly host-specific, insect seed predators (Lyal & Curran 2000. J. Nat. History 34:1743-1847). Seeds of the dominant tree family, Dipterocarpaceae, are palatable and poorly dispersed by Neotropical or even temperate standards.

Herpetofauna abundance is about 1/10 that in Central America, perhaps due to a paucity of forest floor arthropods, whose densities are whipsawed through masting and non-masting years (Inger 1980, Amer. Nat. 115:761-70). Other taxa, such as woodpeckers and squirrels, are over-represented in masting forests compared to the Neotropics (Styring & Ickes 2001. J. Trop. Ecol. 17:261-8). Are they exploiting the mast crops some way, or simply benefitting from the high density of snags left standing by El Nino droughts?

LSU colleagues in our Museum of Natural Science estimate that Neotropical frugivores account for 30% of the increase in avian diversity from temperate North America.. However, mast cropping Dipterocarp forests harbor only a 5% increase from frugivores over Asian temperate zones. Again, masting creates temperate-like discontinuities in fruit availability that limit the presence of frugivorous birds (Pearson 1977. Condor 79:232-44; Wong 1986 Auk 103:100-16.).

Examination of the ecological dynamics of different rain forests, illustrated here by masting Dipterocarp forests, has now returned us to differences in taxonomic assemblies–i.e., functional differences in rain forest ecosystems foster taxonomic differences, just as taxonomic differences contribute to functional differences. In some cases, we may never solve the riddle of what came first–mast cropping or its taxonomic components such as the bearded pigs and the Dipterocarpaceae. But regardless of the origins, as ecologists and conservationists in 21st Century, we must come to understand how the components of rain forests function differently around the globe. Otherwise, human efforts to conserve tropical rain forests are destined to failure, even in large reserves, because our knowledge of ecological dynamics must guide forest management (Curran et al. 1999. Science 286:2184-8).

Incongruities in rain forest dynamics occur within continents as well as across them. In South America, Amazonian rivers are literally dyed by geological history. Whitewater rivers are laden with cloudy sediments from the recently uplifted soils of the Andes. Clearwater rivers carry a low sediment load and drain the 300-M year old Guyanan Shield and Brazilian Highlands. The blackwater rivers arose in the lowlands and are nutrient and sediment poor, as well. Food chains in the three river types are different as are the fishes, although the latter migrate among rivers and river types in order to capitalize on allochthonous foods from flooded forests. The floodplains of these rivers likewise support two nearly distinct assemblages of tree species, *varzea* around whitewater rivers and *igapó* around black and clearwater rivers.

Above the floodplains the *terra firme* rain forests on both young and ancient soils share many taxa of plants and animals. Even so, tropical biologists initially deemed the Western Amazon to be more speciose, most notably in trees and birds (Gentry 1988. PNAS, USA 85:156-9). However, the paucity here was data, not species. When a couple of grad students tackled the taxonomic complexity inherent in such comparisons, the west-east gradient disappeared. The old soils at BDFFP support 281 tree species/ha. equaling the richness of the Western Amazon (Oliveira & Mori 1999. Biodiversity and Conservation 8:1219-44). Avian richness on a habitat basis on the old soils is equal to that on the young soils, although habitat diversity changes faster on the young soils of the Western Amazon due to topography (Cohn-Haft 1997. Ornithological Monographs 48:205-35).

So, do *terra firme* forests throughout the Amazon Basin exhibit similar dynamics? The functional processes appear very similar, but the rate of change is drastically different. Thanks to recent biomass studies, we know that arboreal turnover rates on the young soils of the Western Amazon Basin are 100% faster than turnover on the old soils (Table 1). Limited productivity on the old soils appears to translate into slower growth rates of trees, higher wood densities, fewer large diameter trees and less reproduction. The added productivity in the Western Amazon has a magnified effect up the food web resulting in 5-10 fold increases in animal abundance: litter frogs (Allmon 1991), mammals (Emmons 1984. Biotropica 16:210-22), primates (Peres 1997 Oecologia 122:175-89) and dung beetles (Vulinec 2000. Florida Entomologist 83:229-41). Remarkably, these differences occur without changes in species richness. No wonder that visitors to the BDFFP, are surprised by the rarity of animals–the prophetic J. Terborgh's label was "the quietest rain forest that I've every heard".

Turnover Rates for Trees >10cm DB

(percent mortality per year)

Central & East Amazon	1.01
Western Amazon	1.94
La Selva	2.02
Barro Colorado Island	2.03

Data from Phillips et al. 2004. Phil. Trans. R. Soc. Lond. B. 359:381-407, Phillips et al. 1994. PNAS USA 91:2805-09, and Condit et al. 1999. Phil. Trans R. Soc. Lond, B 354:1739-1748.

While these differences in abundance or biomass don't match cross-continental incongruities in forest dynamics, they do have huge implications for conservation. Simply put, forest reserves on the old soils may require 4-6 times the area of those on recent soils in order to accommodate the same

population sizes of vertebrates. More generally, turnover dynamics must be included, along with reserve size, when pondering the viability of rain forest reserves (Gascon et al. 2000. Science 288:1356-8). The late Wim Sombroek has mapped these Amazonian landforms and soils for South America (2000. Acta Amazonica 30:81-100).

In this context, it's noteworthy that the Central American landforms are more like the Western Amazon in that their soils, having been derived from recent uplifts, are nutrient rich relative to the old Amazon. Here, lie both premier research and training stations for Neotropical biology: OTS's La Selva Biological Station and the Smithsonian Institution's Barro Colorado Island (BCI). Again, tree turnover rates are high (Table 1), and animal abundances are high. Couple the increased abundance with a biogeographically depauperate biota (by tropical standards), and you find exceptional abundances of many species. These are ideal locations for introductions to tropical biology, but they are not representative of the Neotropics in many respects. On the other hand, the thrust of our essay is that most tropical rain forests are not representative of other tropical rain forests.

Ecologists have benefitted enormously from classifications of ecosystems. The first principle for classification defines the ecological units (biomes, life zones or ecoregions) on the basis of climate often presented graphically as climate diagrams. In the lowland tropics, the most obvious variation in climate is annual and seasonal precipitation. No surprise then that most of us would recognize lowland wet or rain forests, dry forests, savannas and thorn scrubs, as well as various grades among them. In large part, tropical fields courses offered by OTS or modeled after them, have instilled in us that these biomes function differently from each other. The question we have posed here is to what degree does one biome, the tropical rain forest, actually function similarly throughout the world?

Our response has been mostly by example, but there are commonalities of tropical rain forests that should engender differences among them. Most notably is the prevalence of biotic interactions, in contrast to harsher biomes with abiotic constraints. Couple the dynamic of increased biotic interactions together with historical vagaries that sorted taxa non-randomly, and what emerged is an enormous variety of tropical rain forests differing both in composition and in function.

The Center for Tropical Forest Science (CTFS)

at the Smithsonian Tropical Research Institute (STRI) invites proposals for their Research Grants Program. These grants provide opportunities for senior researchers, post-doctoral fellows, and graduate students to utilize existing CTFS Forest Dynamics Plots (FDP) and to conduct research with scientists associated with these plots. Projects can be field-oriented, laboratory-based, or analytical. Awards are made for projects three months to three years in length. For more information please visit www.ctfs.si.edu The deadline for applications is **JULY 29, 2005.**

ATBC ANNUAL MEETING IN BRAZIL IN 2005

The 2005 Annual Meeting of the Association for Tropical Biology and Conservation will take place from July 24 –28, 2005, in the city of Uberlândia, in Minas Gerais, Brazil. The theme for the meeting is "Frontiers in Tropical Biology and Conservation". The meeting is sponsored by the Federal University of Uberlândia, through its Institute of Biology and Graduate Program in Ecology and Conservation of Natural Resources. The Brazilian Society of Ethology is also collaborating in the organization of the Meeting, and a special symposium of the SBEt will take place during the ATBC meeting.

Morning plenary sessions will include talks by the following invited speakers:
John N. Thompson – University of California , Santa Cruz , USA . *"The Dynamics of Coevolution in Changing Landscapes"*
W. John Kress - United States National Herbarium – National Museum of Natural History-Smithsonian Institution, *"Evolution and Ecology of Plant-Pollinator Interactions in the Tropics"*
Gustavo Fonseca – Conservation International – Universidade Federal de Minas Gerais, Brazil. *"Conservation Science and the Reality of Implementation: Can they be Reconciled?"*
Peter W. Price - Northern Arizona University, USA . *"The Phylogenetic Basis for Similar Ecologies of Tropical and Temperate Insect Herbivores"*
Victor Rico-Gray – Instituto de Ecologia, A.C., Xalapa, Veracruz, Mexico *"Future Perspectives in the Study of Ant-Plant Interactions in Latin America"*
Ari Teixeira de Oliveira-Filho – Universidade Federal de Lavras, Brazil. *"Floristic and Geo-Ecological Patterns of Central Brazilian Seasonal Forests"*
Catherine Pringle – University of Georgia , USA . *"Tropical river conservation: Managing hydrologic connectivity on regional scales to protect the biotic integrity of ecosystems"*
Douglas W. Schemske – Michigan State University , USA . *"Evolution in the tropics: Dobzhansky revisited"*

There are 16 planned symposia, covering the following topics:
1) Amazonian Floodplain Forests: Diversity, Ecophysiologial Process and Conservation.
2) Tropical Forest Phenology: the effect of ENSO and Consequences for Frugivores and Tree Recruitment.
3) Ecology and Conservation of Fragmented Tropical Landscapes.
4) Floristics in the Western Hemisphere.
5) Human and Biophysical Dimensions of Tropical Dry Forests.
6) Forest Regeneration in the Tropics: the role of Mammals from species to community level.
7) The Tropical Ecology Assessment and Monitoring (TEAM) Initiative: First results and next steps.
8) Biology and Ecology of Tropical Chrysomelidae Beetles.
9) Arthropods of Tropical Canopies: Current Themes of Research.
10) The Challenge to use Ant Ecology Studies in Conservation.
11) Survival Strategies and Ecology of Terrestrial arthropods in Pantanal Wetlands of Brazil.
12) Linking Ecology, Culture and Conservation across ecological and economic scales.
13) Effects of Disturbance on Tropical vegetation: Dynamics and Plant-Animal Interactions.
14) Spatio-Temporal Variations of Mutualisms.
15) Behavioral Ecology in the Tropics: A Special Symposium of the Brazilian Society of Ethology.
16) Passion fruit pollination and sustainable use of *Xylocopa* bees.

Abstracts for posters and contributed papers are due on March 31, 2005. For more details, including travel information, lodging, and other important matters, go to the meeting website, at http://www.atbc2005.ufu.br/atbcmain.htm

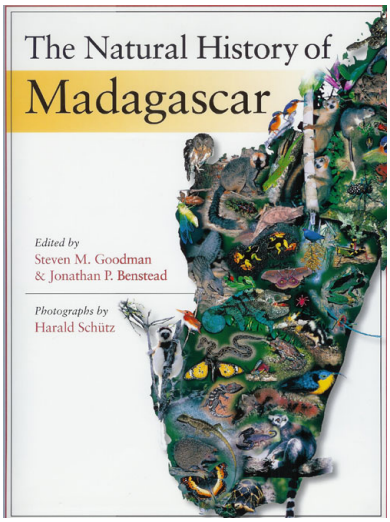
BOOK REVIEWS

BIODIVERSITY ON THE GREAT RED ISLAND

Richard Lehtinen
Department of Biology, The College of Wooster
rlehtinen@wooster.edu

Review of Goodman, S. M. and J. P. Benstead (eds). 2003. *The Natural History of Madagascar*. University of Chicago Press, 1709 pp.

"The hyper-diverse biota of the island of Madagascar is yet very poorly known". This statement, or another like it, is one that many have used often to begin descriptions of research conducted on the world's fourth largest island. With the publication of *The Natural History of Madagascar*, one can no longer make this statement in good conscience. This mammoth tome is fully 1,709 pages in length and weighs in at 4.2 kg. Don't even think about toting this one along in your luggage. From amphibians to the Zahamena protected area, this volume is the ultimate source of information about biodiversity in Madagascar.



Nearly every organismal group known to occur on the island (and some offshore, though the focus is predominantly terrestrial) are covered. While there are only 14 chapters, each chapter is broken up into numerous individual sections that are individually authored. There are so many separate sections within each chapter that the list of contributors at the end of the book tops 16 pages, with 281 authors total (about ¼ of which are Malagasy). Unsurprisingly, vertebrates comprise a hefty chunk of the book, but the plant (273 pages) and invertebrate (345 pages) chapters are quite sizeable as well (together making up over a third of the volume). Some Malagasy vernacular names are provided where necessary, but in general, only scientific names are given. Many of these taxon-specific sections are of primary interest to specialists in these groups, but not all sections are simply taxonomic descriptions and extensive species lists (although one table in the section on terrestrial snails was 39 pages long!). The diversity of topics covered is actually quite extensive (if seemingly haphazard at times, including: the evolution of pollination systems in the plant family Bignoniaceae, the Mesozoic terrestrial vertebrate fossil record, guild structure in birds, the effects of forest loss and fragmentation, physiological adaptations of mammals, plant-insect interactions and a multitude of phylogenetic analyses (to name just a few).

In addition to the taxon-specific sections (which comprise the bulk of the book), there are also useful chapters on the history of scientific exploration, geology, climate and a large (and, unfortunately, all too necessary) section on conservation. Most sizeable protected areas are also profiled in some depth. Recognizing that humans are very much a part of the natural history of the island, a large chapter is devoted to human ecology, even delving into the rich cultural landscapes and archaeological data. As with any volume with this many contributors, the quality varies from section to section but the consistent format and attractive layout are excellent throughout. The entire volume is in English (although many chapters have been translated from other languages). Every chapter is laboriously referenced, and most include useful maps, figures or striking photographs.

Given the massive amount of diverse information presented in this book, it is difficult to think of anything that has been left out. That may well be one of the few failings of this volume: everything (including the kitchen sink) has been included. And yet, this only serves to highlight the uniqueness of this very special place. In short, *The Natural History of Madagascar* is a large and tremendous grab-bag of fascinating information about Madagascar and its inhabitants, past and present. Those few experts who didn't author a portion of this book (and anyone else who has interest in the Great Red Island) should waste no time in getting their copy. While much remains to be done before the scientific exploration of Madagascar can be said to be even partially complete, *The Natural History of Madagascar* is a damn good start.

AL GENTRY'S MAGNUM OPUS

PATTERNS IN GLOBAL PLANT DIVERSITY: THE DATA IN NEW PROSE FORM

Jimmy Grogan
Yale School of Forestry and Environmental Studies
New Haven, CT

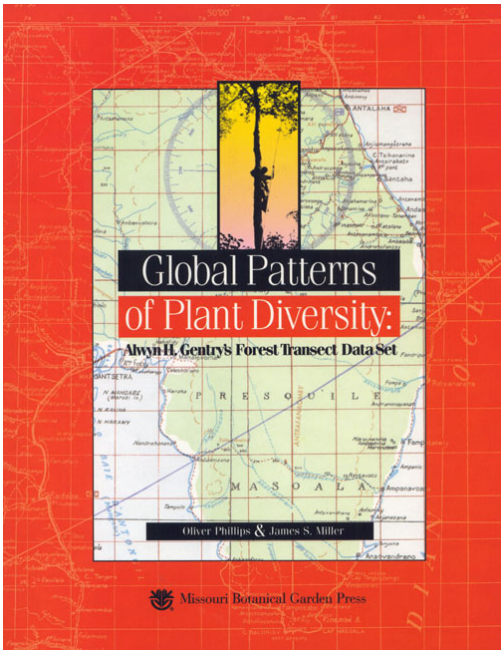
Review of Oliver Phillips & James S. Miller (eds). 2002. *Global Patterns of Plant Diversity: Alwyn H. Gentry's Forest Transect Data Set* . Missouri Botanical Garden Press.

Much of what we understand and take for granted about global patterns of plant diversity has its origins, directly or indirectly, in the blitz of human endeavor that was Al Gentry from the early 1970s until his untimely death in 1993. Gentry tackled big questions – why some forests are more diverse than others, and how floristic composition varies from place to place, among others – with big methods, sampling forests the world over (but especially western Amazonia) in standardized 0.1-ha transects describing forest composition and structure. These transects – 211 of his own, plus 15 by colleagues and collaborators – provided Gentry the empirical basis for testing hypotheses about environmental correlates for species richness. Latitude, altitude, and rainfall turn out to matter, as had long been speculated; nearly all hyper-diverse sites sampled by Gentry and colleagues were equatorial, lowland, and wet. But that's only the meta narrative of the Gentry transects, which yielded many other kinds of stories too, about scientific community,

education, extension, conservation, and above all, the practice and art of field botany.

In this book, Oliver Phillips and James Miller introduce the questions driving Gentry's transect studies, describe and evaluate the methodology, and outline principal findings from this work before presenting one-page summaries of 226 transects installed by Gentry and colleagues. Twenty-five pages of color plates offer glimpses of many of these forest communities.

The Gentry transect method is relatively simple. In your forest community of choice, choose a starting point and direction, randomly if possible (Gentry didn't always). Lay out a 50-m line. Record diameter and identity of all stems above 2.5 cm dbh rooted within 1 m either side of the transect line, including lianas, stemless palms if petiole diameters exceed 2.5 cm dbh, and hemiepiphytes whose aerial roots also exceed this diameter. Collect voucher specimens – most will be sterile – for each unique or potentially unique morphospecies encountered. At the end of the line, choose a random direction within the forward 180° and repeat, stringing nine zigzagging 2 x 50 m transects to the first to complete 0.1 ha. Avoid subjective tampering with transect directions to include favorite mystery trees of the moment (Gentry couldn't always). Expect to record 50 – 1000 stems and 17 – 275 morphospecies in 1 – 3 days depending on where you are in the world, IF you are already familiar with your chosen community. Contemplate the fact that Gentry could do this confidently anywhere on the globe. Remember to follow up on IDs in the herbarium, calling on specialists when needed. Computerize, compile, analyze, publish.



The authors discuss sampling assumptions underlying the 0.1-ha transect method and examine its relative advantages compared to permanent plots sampling larger areas (1 – 50 ha). Gentry usually did not fully randomize his transect locations, preferring to stratify communities by elevation, geomorphology, or soil type, and to systematically avoid large new treefall gaps, anthropogenic edges, and successional habitats. These biases are consistent with his primary objective of sampling plant diversity in mature forests. As for whether the 0.1-ha area is sufficiently large to characterize communities, the authors assert that the method was adequate for Gentry's objective, which was to enable comparisons among communities rather than to wholly describe their diversity. Not only does the Gentry protocol's small (2.5 cm dbh) minimum diameter limit include plant forms often ignored in other sampling methods, describing a more representative slice of phytodiversity, but duplicate samples within sites all yield nearly identical results in terms of species numbers, if not actual species sampled. And the technique is rapid compared to larger fixed plots, allowing more sites to be sampled, including those too remote or too threatened to consider installing permanent plots.

Chapter 4 describes primary findings about α diversity and global patterns, and provides useful summary tables listing numbers of sites by Holdridge life zones, sites with 200 or more species recorded and Fishers α values exceeding 200, sites with highest stem density and highest annual precipitation totals, and scientific publications based on these data.

Site-by-site summary pages are organized by continent and sub-region, with maps clearly indicating relative locations. Summary pages are all formatted identically, listing site number, name, detailed location, geographical coordinates, collector name, voucher numbers, collection date, Holdridge life zone, elevation, annual rainfall, whether soil data were collected, the area sampled in m^2, and Fisher's α. A chart shows the species area curve by 50-m transect. The first of two tables lists the number of species, individuals, families, and basal area by life form (trees/shrubs, lianas, and hemiepiphytes). A second table lists dominant families (to 10) by number of species and number of individuals, and dominant species (to 10) by number of individuals.

With these maps and summary pages you can know, at a glance, what's out there – what is or was out there in 0.1 ha – in forests across the planet. Granted, no more than 10 families or species are listed at any site, but those are 10 more than I've otherwise seen listed from actual inventory data for such a broad range of forest communities in so compact and accessible a format. Field botanists, particularly those working in the neotropics, will discover much here that broadens perspective. This book is a terrific resource, and will surely astonish you all over again with what Al Gentry could and did do.

THE FRUITS OF HISTORY: WALLACE'S NON-LEGACY

Michelle J. Solensky
Department of Biology, The College of Wooster
Wooster, OH 44691
e-mail: msolensky@wooster.edu

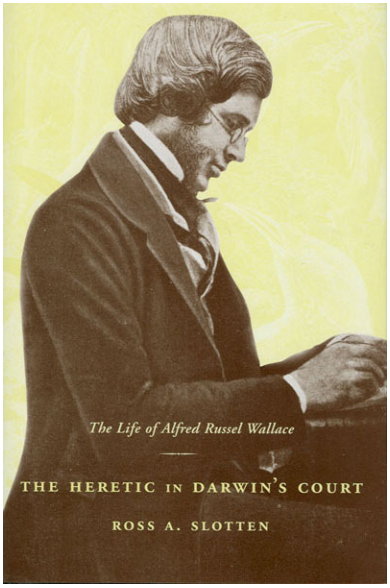
Slotten, Ross A. 2004. The Heretic in Darwin's Court: The Life of Alfred Russel Wallace. **Columbia University Press**, 648 pp.,

The Heretic in Darwin's Court is the most recent effort to pay tribute to the life of Alfred Russel Wallace, and to understand why his contribution to evolutionary theory has been largely forgotten by all but professional biologists and historians of science. The author has used a remarkable range of resources (80 pages of notes + selected bibliography) to describe the travels, ambitions, and rallying causes of the man who co-authored with Charles Darwin the original publications proposing the theory of evolution by natural selection. Aptly titled, this book includes substantial coverage of the ideas and work of Charles Darwin, but focuses on the interactions between the two men and the reactions of each to the others ideas. The book leaves the reader with a strong sense of how Wallace's background, experiences and character, rather than the overall quality of his work, contributed to his current relative obscurity.

The introductory chapter is a brilliantly succinct overview of the rise and fall of Wallace's long career. The next few chapters review Wallace's early life, while maintaining focus on the events that led to his four years of exploration of the Amazon and Rio Negro rivers in Brazil. His Amazon years ended in tragedy, when he lost a substantial portion of his collections, the majority of his scientific notebooks, and most of his other personal belongings on his return voyage to England when his shcaught fire and sank. After spending 10 days adrift aboard a leaky lifeboat before being rescued by a passing merchant vessel, Wallace swore never to travel again. However, after four days ashore in London he changed his mind, and soon began planning his next naturalistic

Continued from page 5

expedition to the Malay archipelago, where he would fully develop and pen his theory of natural selection during a several-day bout of malaria-induced fever. This first third of the book (Ch. 1-8) nicely summarizes Wallace's formative traveling years, including descriptions of his interactions and relationships with other eminent naturalists (like Henry Bates and Richard Spruce) and the influence on Wallace of these and other naturalist explorers (such as Charles Darwin and William Henry Edwards).



The latter two-thirds of the book describes the meteoric rise of Wallace's scientific reputation, followed by his subsequent fall from scientific grace prompted in part by Wallace's advocacy of the scientific merits of spiritualism, a financially motivated quest to demonstrate the earth's rotundity to an eccentric, if not quite sane, man, and a number of other minor, but compounding, events. The last few chapters highlight events of Wallace's golden years, when his scientific and social reputation found redemption. This came perhaps in part as a result of his having outlived the majority of his most vocal critics. He died at the age of ninety, impressive even by today's standards.

In assuming little or no prior knowledge of his reader, the author has written a book that is widely accessible and should be an enjoyable read for a very general audience. However, professional historians of science and biologists are treated to references throughout to scientific contemporaries of Wallace and to additional interpretations of various events by other historians of science. Biographies of Charles Darwin tend to focus solely on his life and relevant events. In contrast, Slotten's book is not only a wonderful tribute to the life of this relatively underappreciated scientist and naturalist, but it also provides a nice overview of the early years of the field of evolutionary biology and of the science culture of Victorian England.

MISSOURI BOTANICAL GARDEN FELLOWSHIPS

Elizabeth E. Bascom Fellowships in Botany for Latin American Women

The fellowship covers travel to St. Louis, lodging, and a small stipend for 1-3 months. The competition is open to young Latin American women who work in botany or are botanists at universities scientific institutions in Mexico, Central America, and South America. Applicants must have an undergraduate degree from a university. The fields of investigation are limited to systematic botany, ecology, or conservation. Details at: www.mobot.org/MOBOT/Research/bascom/bascom.shtml.

Alwyn H. Gentry Fellowships in Botany for South American Researchers

The fellowship covers travel to St. Louis, lodging, and a small stipend for 1-3 months. Young Latin American botanists are eligible to apply. Applicants must have an undergraduate degree from a university. The fields of investigation are limited to systematic botany, ecology, or conservation. Details are at :www.mobot.org/MOBOT/Research/bascomgentry/gentry.shtml

Deadline for both these fellowships Is June 1, 2005 For more Information, contact Alina Freire-Fierro, P.O. Box 299, St. Louis, MO 63166-0299, USA. e-mail alina.freire@mobot.org.

FIELD STATION PROFILE

Bellavista Cloud Forest Reserve Research Station

Bellavista Reserve is a cloud forest reserve – more correctly designated upper montane rain forest reserve - at 1600 to 2400 metres altitude northwest of Quito, just south of the Equator. This private reserve covers approximately 700 hectares. The reserve and surrounding area are still well-forested, and provide a home to such rare mammals as the Andean Spectacled Bear. Over 330 species of birds have been recorded in and around the reserve, including some range-restricted birds such as the Tanager-Finch, Toucan Barbet, Plate-billed Mountain-Toucan and the Gorgeted Sunangel. Rainfall is high, and the forest is characterized by abundant epiphytes, including many species of bromeliads and orchids.

The bird life is fairly well-known, but few studies have been carried out to investigate the behavior and ecology of individual species. In the areas of herpetology, entomology, botany, etc., very little serious work has been done. Biodiversity is extremely high —in fact, this region on the southern edge of the Chocó is considered one of five hotspots of diversity globally, and the Mindo/Nambillo/Tandayapa region was declared by Bird Life International the first Area of International Importance for Birds in South America.

The **Research Station** operates as a base for research, and volunteers who come to work on a variety of conservation-related activities within the reserve are lodged there. While the station does not have laboratory facilities, it gives access to the forest, and provides a place to work and live. Since Quito is less than 2 hours away, it is easy to take specimens for identification at the National Herbarium, or through the Catholic University of Quito or the San Francisco de Quito University. Our intention is to collaborate with institutions of higher learning both within Ecuador and internationally, to set up a station that can become a basis for further long-term study projects.

The station also provides low-cost lodging for student groups who wish to use the facilities and the reserve for a study program in cloud forest ecology, or for studies or internships in ecotourism. Bellavista is happy to provide the logistics for such a program. There is space for up to twenty people at the station, and further lodging options exist in the main lodge area a short distance from the station. Richard Parsons and his wife Gloria are owners and general managers of Bellavista Reserve including the Research Station. They can be contacted by email at aecie3@ecnet.ec.

A new journal

CONSERVATION AND SOCIETY

'Conservation and Society' is a peer-reviewed interdisciplinary journal that aims to promote work on the theory and practice of conservation. The journal is committed to disseminating information in the developing world. Free online access is available for all articles, and subscriptions are highly subsidised for Asia, Africa and Latin America.

'Conservation and Society' is dedicated to publishing work from both natural and social sciences and covers basic and applied research in areas including - but not restricted to - political ecology, human-wildlife conflicts, decentralised conservation, conservation policy, ecosystem structure and functioning, systematics, community and species ecology, behavioural ecology, landscape ecology, restoration ecology and conservation biology. The journal aims to serve as a bridge between conservation practitioners from a variety of disciplines in the natural as well as social sciences and therefore seeks to disseminate work presented in an integrative manner that is accessible to a large number of people. The journal accepts articles addressing conservation issues in developing countries around the world. Contributions pertaining to forest use and sustainable development in the tropics are particularly welcome.

Visit the journal website http://www.conservationandsociety.org

RESOLUTIONS BY THE ATBC EXECUTIVE COMMITTEE

ISSUES IN TROPICAL CONSERVATION BIOLOGY

At its meeting in July, 2004, the ATBC Executive Committee approved the formation of the Conservation Committee, which receives suggests from members on Issues of conservation concern, and drafts resolutions for possible approval by the Executive Committee. Resolutions so approved are then released to appropriate media outlets, with the goal of bringing to bear the Influence of the ATBC on Issues of Importance to tropical biology. The following three resolutions have been approved by the Executive Committee, and are published herein to alert members to the formal position which has been taken on these concerns by the leadership of the **Association for Tropical Biology and Conservation.**

RESOLUTION IN SUPPORT OF REDUCING VISA RESTRICTIONS FOR VISITING SCIENTISTS TO THE U.S.A.

WHEREAS the Association for Tropical Biology and Conservation (ATBC) is the world's largest international scientific organization devoted to the study and wise management of earth's tropical ecosystems; and

WHEREAS the continued functioning of the ATBC depends critically upon its capacity to foster active intellectual exchanges and meetings among scientists working in tropical nations throughout the world; and

WHEREAS recent visa restrictions and related measures employed by the U.S. Government have greatly hindered efforts by foreign scientists, researchers, and students to obtain permission to visit the United States for scientific conferences and other intellectual endeavors; and

WHEREAS these new restrictions seriously reduced attendance at the 2004 Annual Meeting of the ATBC in Miami, Florida, particularly by scientists from Latin America and other tropical regions, to the extent that attendance was only about half of that at other recent annual meetings; and

WHEREAS future reductions in attendance of this nature will gravely compromise the scientific and conservation mission of the ATBC, as well as the ability of U.S.-based scientists to play an active role in tropical biology; and

WHEREAS reciprocal visa restrictions enacted by many tropical nations, in direct response to the recent U.S. restrictions, will seriously impede the efforts of U.S. scientists to conduct fieldwork, educational, and conservation-related activities in the tropics;

THEREFORE, BE IT RESOLVED that the Association for Tropical Biology and Conservation urges the Government of the United States to implement measures to simplify and facilitate visa applications for foreign scientists, particularly for the purpose of attending future scientific conferences in the U.S.A.

RESOLUTION IN SUPPORT OF HALTING ILLEGAL GOLD-MINING ACTIVITIES IN PROTECTED AREAS OF THE GUIANAS AND NORTHERN AMAZONIA

WHEREAS, parks and indigenous reserves in French Guiana, Guyana, Suriname, Venezuelan Guayana, and the northern Brazilian Amazon are critical for the conservation of biological diversity and maintenance of ecosystem functions, are vital locations for the protection of indigenous peoples' natural resources, and provide flagship resources for regional tourist industries; and

WHEREAS, the rapid proliferation of uncontrolled gold-mining activities into national parks and indigenous reserves has greatly impacted the environment, especially through mercury contamination of forest soils, fishes, people, and waterways; extensive stream sedimentation; loss of protective vegetative cover; and local decimation of fauna through poaching by miners; and

WHEREAS, existing measures to protect natural resources in most parks and indigenous reserves in the Guianas and northern Amazonia have been ineffective in preventing illegal mining and its associated impacts; and

WHEREAS, a serious shortage of law-enforcement personnel charged with protecting these parks and reserves permits illegal gold miners to freely invade parks and indigenous reserves; and

WHEREAS, unabated illegal mining leads to severe ecosystem degradation, especially for riverine habitats; threatens local tourism industries; and increases human misery from methyl-mercury contamination of fish and people, from declining water quality from uncontrolled sediment discharge and from the spread of life-threatening human diseases such as HIV/AIDS and malaria;

THEREFORE, be it resolved that the Association for Tropical Biology and Conservation urges the Governments of Brazil, France, Guyana, Suriname, and Venezuela to deploy rapidly in those national parks and indigenous reserves that suffer from rampant illegal gold mining, the equipped security personnel, infrastructure, and monitoring needed to uphold the legal status of these vital protected areas for the benefit of the local, national, regional, and global communities; and to closely regulate the sale of mercury, which is used in illegal mining operations.

RESOLUTION REGARDING ROAD CONSTRUCTION WITHIN YASUNÍ NATIONAL PARK AND BIOSPHERE RESERVE, ECUADOR

WHEREAS, Yasuní National Park is the largest national park in Ecuador and is internationally recognized for its environmental and cultural importance, being formally designated as a UNESCO Man and the Biosphere Reserve in response to an official request by the Government of Ecuador in 1989; and

WHEREAS, Yasuní National Park protects a large expanse of the Napo Moist Forests of the Western Amazon, a region of extraordinary biodiversity for plants, insects, freshwater fish, amphibians, reptiles, birds, and bats that has been declared by international scientists to be among the world's most biologically important areas; and

WHEREAS, Yasuní Park protects some of the last viable populations in Ecuador of the Giant Otter (*Pteronura brasiliensis*), Amazonian Manatee (*Trichechus inunguis*), and the critically endangered Wattled Curassow (*Crax globulosa*); provides the only large protected area for the rare Golden-mantled Tamarin (*Saguinus tripartitus*); and harbors many other species of rare and threatened wildlife; and

WHEREAS, Yasuní National Park is of global conservation significance because it is one of the few "strict protected areas" (i.e. National Parks of IUCN Level II) in the far Western Amazon, and is predicted to have minimal weather changes from global warming, thereby having great importance as a biological refuge in the future; and

WHEREAS, current plans by the Brazilian oil corporation, Petrobras, to construct a 54-kilometer road from the Napo River into one of the most intact portions of Yasuní National Park to facilitate oil extraction in Block 31 are likely to have severe impacts on the conservation and scientific values of the park, and its wilderness character; and

WHEREAS, past research has demonstrated that previous road construction within Yasuní National Park and the surrounding region has had large detrimental environmental impacts on forest ecosystems, such as sharply increased local deforestation, illegal commercial hunting, and predatory logging; and

WHEREAS, Petrobras, known for being an environmentally responsible corporation in Brazil, should recognize that its proposed road project in Yasuní National Park in Ecuador would have serious, negative environmental consequences; and

WHEREAS, roadless petroleum-extraction activities in Ecuador's Block 10 Oil Reserve have clearly demonstrated the feasibility of such methods, which could be used by Petrobras in Yasuní National Park with greatly reduced environmental impacts relative to those caused by a major new road;

THEREFORE, BE IT RESOLVED that the Association for Tropical Biology and Conservation urges the Ecuadorian Government, in order to greatly minimize the environmental impacts of future petroleum-extraction activities, to revoke the license for the proposed Petrobras road into Block 31, to prohibit any future roadworks within Yasuní National Park and Biosphere Reserve, and to consult closely with appropriate scientific and cultural organizations that have expressed an interest in the conservation and development of the area, thereby helping to ensure the long-term viability of Yasuní National Park's globally important tropical ecosystems and biodiversity.

JOIN THE ATBC CONSERVATION COMMITTEE!

ATBC members who are interested in environmental issues are invited to join the ATBC Conservation Committee, which is playing an active role in focusing public and media interest on vital tropical environmental problems. Committee members can devote as much or as little time as they like. Individuals from developing countries are especially encouraged to join.

For further information, contact the Committee Co-chairs, Dr William Laurance (laurancew@tivoli.si.edu) and Dr Jose Fragoso (fragoso@hawaii.edu).

MEETINGS CALENDAR - 2005

The Palms – An International Symposium on the Biology of the Palm Family. 6 – 8 April, 2005, the Linnean Society of London and the Royal Botanic Gardens, Kew, UK. Papers will center around four main themes: Phylogeny & Evolution, Structural Biology, Ecology, Conservation & Sustainable Use. For further details and registration form, visit the conference pages at www.linnean.org or contact Dominic Clark, The Linnean Society of London, Burlington House, Piccadilly, London W1J 0BF, UK. Email dominic@linnean.org, Tel +44 (0)20 7434 4479, Fax +44 (0)20 7287 9364.

Fifth North American Forest Ecology Workshop, 12 –16 June, 2005, Aylmer, Quebec, Canada. The theme is: Ecosystem management - Can we conserve the pieces while managing the matrix? For more information visit the web site at http://www.unites.uqam.ca/gref/nafew2005/

85th Annual Meeting of the American Society of Mammalogists, 15-19 June, 2005 at Southwest Missouri State University, Springfield, Missouri. For additional information, please visit the meeting website at http://www.asm.smsu.edu. For more information about the ASM, please visit our website at http://www.mammalsociety.org.

11th Symposium on the Natural History of the Bahamas, June 23-27, 2005, Gerace Research Center (formerly the Bahamian Field Station) on San Salvador Island, Bahamas. Biologists who do research in the Bahamas and in the wider Western Atlantic, including Florida and parts of the Caribbean, are invited to present their research on any aspect of natural history, including botany, entomology, vertebrate zoology, marine science, etc. The deadline for registration is March 31, 2005 and the deadline for abstracts is April 22, 2005. There is a charter flight from Fort Lauderdale. Further details are available on the web site at: Geraceresearchcenter.com

ATBC Annual Meeting, July 24-28, 2005, Uberlandia, Brazil. The theme is "Frontiers in Tropical BIology and Conservation. " Information is at www.atbio.org.

Tropinet

Vol. 16 No. 1
March 2005
Box 90632
Durham, NC 27706-0632

Tropinet is published quarterly by the Association for Tropical Biology and Conservation (ATBC) and the Organization for Tropical Studies (OTS) and is distributed free of charge to interested readers. To receive *Tropinet*, please send name and address to OTS. Suggested contributions of $15 or more are gratefully appreciated. Please write *Tropinet* on check payable to OTS and mail to OTS at address indicated below.

ATBC is an international society that promotes tropical biology and conservation in its broadest sense. ATBC publishes the quarterly journal BIOTROPICA and sponsors annual meetings and symposia. Information: W. John Kress, ATBC Executive Director, Smithsonian Institution, US National Herbarium, Department of Botany, NBH 166, Washington, DC 20560.

OTS is a non-profit consortium of 65 academic and research institutions in the United States, Australia, Latin America, and Asia. Its mission is to provide leadership in education, research and the responsible use of natural resouces in the tropics. Graduate, undergraduate, and professional training and research facilities are provided at three field stations in Costa Rica. Information on OTS and *Tropinet* contributions: OTS, Box 90630, Durham, NC 27708-0630.

Nonprofit Org.
US Postage
PAID
Durham, NC
Permit No. 60

Tropinet
Vol. 16 No. 1
March 2005
Duke University
Organization for Tropical Studies
Box 90632
Durham, NC 27706-0632
Official Business
Penalty for Private Use, $300