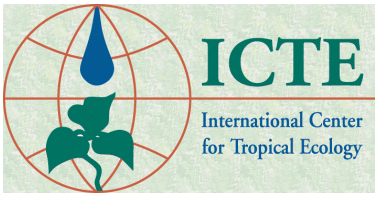
International Center for Tropical Ecology

at the University of Missouri-St. Louis



Research Interests of Faculty Associates

International Center for Tropical Ecology
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Faculty Associates

Bruce H. Allen, Ph.D.: Missouri Botanical Garden. Botany: A revision of the Dicnemonaceae (Musci); Peristone variations in the genus *Fissidens*: an SEM study.

Ihsan Al-Shehbaz, Ph.D.: Missouri Botanical Garden. Systematics and phylogeny of the Brassicaceae.

Cheryl S. Asa, Ph.D.: Saint Louis Zoological Park. Comparative reproductive biology.

John G. Blake, Ph.D.: Biology, UM-St. Louis. Avian ecology: factors influencing the distribution and abundance of birds in tropical and temperate habitats; effects of resource variation on bird populations.

Eldredge Bermingham, Ph. D. Smithsonian Tropical Research Institute. Molecular population genetics and evolutionary biology; historical biogeograpy and molecular systematics of neotropical fishes and Caribbean island birds.

Godfrey R. Bourne, Ph.D.: Biology, UM-St. Louis. Behavioral ecology and tropical biology.

Stanton Braude, Ph.D.: Washington University. Demography and social behavior of social rodents in Africa.

James F. Campbell, Ph.D.: School of Business Administration, UM-St. Louis. GIS for business and conservation.

David B. Clark, Ph.D.: Biology, UM-St. Louis. Tropical forest ecology.

Deborah A. Clark, Ph.D.: Biology, UM-St. Louis. Tropical forest ecology, tree life history patterns, plant demography, landscape ecology, edaphic and climatic controls of tropical forest productivity, carbon cycling at ecosystem and global scales.

Mario Cohn-Haft, Ph.D. Instituto Nacional de Pesquisas da Amazônia (INPA). Ecology and systematics of Amazonian birds.

Thomas B. Croat, Ph.D.: Missouri Botanical Garden. Systematics and ecology of Araceae of Central America.

Marshall R. Crosby, Ph.D.: Missouri Botanical Garden. Systematics of tropical and temperate mosses.

Terry L. Erwin, Ph.D.: Smithsonian Institution and Biology, UM-St. Louis. Tropical entomology and conservation biology.

Peter Goldblatt, Ph.D.: Missouri Botanical Garden. Systematics and cytogenetics of Iridaceae.

Michael H. Grayum, Ph.D.: Missouri Botanical Garden. Systematics of Araceae; Flora of Costa Rica.

Paule Gros, Ph.D.: Research Associate. Biodiversity research in Bosawas Reserve in Nicaragua.

Peter C. Hoch, Ph.D.: Missouri Botanical Garden. Systematics and evolution of Onagraceae.

James H. Hunt, Ph.D.: Biology, UM-St. Louis. Evolution of sociality in Hymenoptera.

Andrew Hurley, Ph.D.: History, UM-St. Louis. Environmental history of Urban Growth.

Peter M. Jørgensen, Ph.D.: Missouri Botanical Garden. Floristics and plantgeography of the Andes. Catalogues of Ecuadorian and Bolivian plants. Systematics of Neotropical Passifloraceae, Santalaceae, and Olacaceae.

Elizabeth A. Kellogg, Ph.D: Biology, UM-St. Louis. Evolution of plant development; systematics of the grass family; evolution of genes and genomes.

Timothy J. Killeen, Ph.D.: Missouri Botanical Garden. Dendrological inventory of Pilón Lajas, Beni, Bolivia.

Bette A. Loiselle, Ph.D.: Biology, UM-St. Louis. Tropical conservation biology; plant-bird interactions.

Robert Magill, Ph.D.:	Missouri Botanical Garden. Bryophyte systematics, evolution and biogeography, with a current emphasis on mosses of Africa.
Robert J. Marquis, Ph.D.:	Biology, UM-St. Louis. Plant evolutionary ecology: Role of herbivores in the evolution of plant traits; evolution of defense and tolerance to herbivores; constraints on carbon and nutrient movement in plants and their significance for plant-herbivore interactions; effect of forest management on insect herbivore populations; tritrophic interactions; tropical ecology.
James S. Miller, Ph.D.:	Missouri Botanical Garden. Systematics of Boraginaceae; plant natural products as medicinals.
David A. Neill, Ph.D.:	Missouri Botanical Garden. Flora of lowland Ecuador; systematics of Leguminosae.
Patrick L. Osborne, Ph.D.:	Biology, UM-St. Louis. Tropical limnology, wetland ecology, watershed management.
Patricia G. Parker, Ph.D.:	Biology, UM-St. Louis. Ecology and evolution of social behavior and by applying principles of population biology and behavioral ecology to wildlife conservation.
Peter H. Raven, Ph.D.:	Missouri Botanical Garden. Systematics and evolution of Onagraceae; tropical forest conservation.
Susanne S. Renner, Dr. habil.:	Biology, UM-St. Louis, Systematics of flowering plants, evolution of plant breeding systems.
P. Mick Richardson, Ph.D.:	Missouri Botanical Garden. Biochemical plant systematics and cladistics.
Robert E. Ricklefs, Ph.D.:	Biology, UM-St. Louis. Evolution and ecology of avian life histories, particularly energetics, development and parental care of chicks, aging, and immune system function; multivariate and ecomorphological analyses of community structure; historical development of regional biotas; biogeograhy of the West Indies; molecular phylogenetics of birds and their blood parasites.
David B. Robertson, Ph.D.:	Political Science, UM-St. Louis. Environmental politics.
George E. Schatz, Ph.D.:	Missouri Botanical Garden. Systematics of Annonaceae; Flora of Madagascar.
Eduardo Silva, Ph.D.:	Political Science, UM-St. Louis. Politics of conservation and sustainable development.
Victoria L. Sork, Ph.D.:	Biology, UM-St. Louis. Population biology and conservation genetics of woody plants.
Peter F. Stevens, Ph.D.:	Biology, UM-St. Louis. Systematics of flowering plants, especially those in the Old World Tropics.
Zuleyma Tang-Martinez, Ph.D.:	Biology, UM-St. Louis. Chemical communication and social behavior of mammals.
Charlotte M. Taylor, Ph.D.:	Missouri Botanical Garden. Systematics of Rubiaceae; floristics of Colombia and Chile.
M. Carmen Ulloa Ulloa, Ph.D.:	Missouri Botanical Garden. Floristics and biogeography of Andean plants. Systematics of tropical Andean Berberidaceae and Neotropical Santalaceae and Olacaceae.
Patricia Wright, Ph.D.:	Missouri Historical Society and Anthropology, UM-St. Louis. Paleoethnobotany of the Americas.
Henk van der Werff, Ph.D.:	Missouri Botanical Garden. Systematics of Lauraceae.
James L. Zarucchi, Ph.D.:	Missouri Botanical Garden. Systematics of Fabaceae and Apocynaceae.

IHSAN AL-SHEHBAZ, Curator, Missouri Botanical Garden and Co-Director of the Flora of China Project
E-mail: ial-shehbaz@lehmann.mobot.org
Ph.D., Harvard University (1973)

Major interests are the phylogeny and systematics of the mustard family Brassicaceae (Cruciferae) on a worldwide basis, but with special interests in the genera *Arabidopsis*, *Cardamine*, *Draba*, and *Lepidium*, as well as in the representatives of the family in North and South America, China, and the Himalaya.

Al-Shehbaz, I.A. 1999. *Twisselmannia* (Brassicaceae), a remarkable new genus from California. Novon 9:132-135.

Al-Shehbaz, I.A. 1999. (1393) Proposal to conserve the generic name *Lesquerella* against *Physaria* (Cruciferae). Taxon 48:163-164. (with Steve L. O'Kane, Jr. and Nicolas J. Turland).

Al-Shehbaz, I.A. 1998. Genetic variability of *Lepidium meyenii* and other Andean *Lepidium* species (Brassicaceae) assessed by molecular markers. Annals Bot. 82:523-530. (with J. Toledo, P. Dehal, F. Jarrin, J. Hu, M. Hermann, and C.F. Quiros).

Al-Shehbaz, I.A. 1998. History of the Modern Flora of China. Pp. 43-55 *in* A.L. Zhang and S.G. Wu (editors), Proceedings of the International Floristic Characteristics and Diversity of East Asian Plants. China Higher Education Press (Beijing) and Springer Verlag (Berlin and other cities). (with Daniel I. Axelrod and Peter H. Raven)

Al-Shehbaz, I.A. 1998. Delimitation of the Chinese genera *Yinshania*, *Hilliella*, and *Cochleariella* (Brassicaceae). Harvard Papers Bot. 3:79-94. (with Yang Guang, Lu Lian-li, Cheo Tai-yen).

Al-Shehbaz, I.A. 1997. Re-evaluation of the tribe Heliophileae (Brassicaceae). Mitt. Inst. Allg. Bot. Hamburg 27:85-92. (with Oliver Appel).

Al-Shehbaz, I.A. 1997. Synopsis of *Arabidopsis* (Brassicaceae). Novon 7:323-327. (with Steve L. O'Kane, Jr.).

Al-Shehbaz, I.A. 1997. The origins of *Arabidopsis suecica* (Brassicaceae), as indicated by nuclear rDNA sequences, and implication for concerted evolution. Syst. Bot. 21:559-566. 1996 (1997). (with Steve L. O'Kane, Jr. and Barbara Schaal).

Al-Shehbaz, I.A. 1994. Systematic relationships of *Arabidopsis*: a molecular and morphological perspective. Pp. 7-19 *in*: E.M. Meyerowitz & C.R. Sommerville (eds.), *Arabidopsis*. Cold Springs Harbor Laboratory Press, New York. (with R.A. Price and J.D. Palmer).

CHERYL S. ASA, Adjunct Assistant Professor and Research Assistant Professor
Director of Research, St. Louis Zoological Park
E-mail: asa@slu.edu
Ph.D., University of Wisconsin, Madison

My research interests concentrate on comparative, adaptive mechanisms of reproductive processes. I am intrigued by the vast array of reproductive strategies which all have evolved to one end: the production of young. Investigations of morphology, physiology (especially endocrinology) and behavior of a wide variety of animals provide data on conserved versus unique features. Results from captive studies have particular application to conservation programs of captive breeding and reintroductions.

Asa, C.S. 1999. Male reproductive success in free-ranging feral horses. Behavioral Ecology and Sociobiology.47: 89-93.

Asa, C.S., and Valdespino, C. 1998. Canid reproductive biology. Integration of proximate mechanisms and ultimate causes. American Zoologist 38: 251-259.

Asa, C.S., London, G.D., Wilson, C., Goellner, R.R., Haskell, N., and Roberts, G. 1998. Thermoregulatory behavior of captive American alligators (*Alligator mississippiensis*). Journal of Herpetology. 32: 191-197.

London, G.D., Bauman K.L., and Asa C.S. 1998. Time-lapse infrared videography for animal behavior observations. Zoo Biology 17:535-543.

Asa, C.S. 1997. Hormonal and experiential factors in the expression of social and parental behavior in canids. In J.A. French and N.G. Solomon, Eds., Cooperative Breeding in Mammals, pp. 129-149. Cambridge University Press, Cambridge.

Asa, C.S., Houston, E.W., Fischer, M.T., Bauman, J.E., Bauman, K.L., Hagberg, P.K., and Read B.W. 1996. Ovulatory cycles and anovulatory periods in the addax (*Addax nasomaculatus*). Journal of Reproduction and Fertility 107: 199-124.

Asa, C.S., Zaneveld, L.J.D., Munson, L., Callahan, M., and Byers, A.P. 1996. Efficacy, safety and reversibility of a bisdiamine as a maledirected oral contraceptive in gray wolves (*Canis lupus*). Journal of Zoo and Wildlife Medicine 27: 501-506.

JOHN G. BLAKE, Associate Professor
E-mail: blakej@msx.umsl.edu
Ph.D., University of Illinois

I am primarily interested in avian community ecology, in both tropical and temperate forests. Two major areas of interest are: a) effects of resource variation (e.g. fruit) on the spatial and temporal variation in distribution and abundance of birds (e.g. frugivores); and b) effects of habitat alteration (e.g. fragmentation, prescribed burning) on bird communities. My research activities range from forests of Missouri to Costa Rica, Ecuador, Bolivia, and Argentina. Students in my lab represent a range of countries (Argentina, Bolivia, Chile, Colombia, Ecuador, Luxembourg, and Venezuela); some current research projects include: bird communities along elevational gradients in Argentina, including effects of resource variation and habitat loss; biogeography and phylogeny of *Myioborus*; foraging ecology of cracids in Colombia and Peru; ecology of carnivores in caatinga (Brazil); and plant communities of isolated forest patches on the Serrania de Huanchaca, Bolivia.

Blake, J. G., and B. A. Loiselle. 2000. Diversity of birds along an elevational gradient in the Cordillera Central, Costa Rica. Auk 117:663-686.

Blake, J. G., and B. Schuette. 2000. Restoration of an oak forest in east-central Missouri: early effects of prescribed burning on woody vegetation. Forest Ecology and Management (in press).

Loiselle, B.A., and J. G. Blake. 1999. Dispersal of melastome seeds by fruit-eating birds of tropical forest understory. Ecology 80:330-336.

Calvo, L., and J. G. Blake. 1998. Bird diversity and abundance on two different shade coffee plantations in Guatemala. Bird Conservation International 8:297-308.

Blake, J. G., and M. R. Rougès. 1998. Variation in capture rates of understory birds in El Rey National Park, northwestern Argentina. Ornitología Neotropical 8:185-193.

Renjifo, L. M., G. P. Servat, J. M. Goerck, B. A. Loiselle, and J. G. Blake. 1997. Patterns of species composition and endemism in the northern neotropics: a case for conservation of montane avifaunas. Ornithological Monographs 48:577-594.

ELDREDGE BERMINGHAM, Research Associate Professor
Staff Scientist, Smithsonian Tropical Research Institute
E-mail: eb@naos.si.edu
Ph.D., University of Georgia

My lab carries out studies in the areas of evolutionary biology, genetics and molecular systematics. Our principal research focus is biogeographical analysis of community assembly, diversification and maintenance. We are carrying on long-term studies of two regional community assemblages:1) birds of the Lesser Antilles, and 2) freshwater fishes of lower Central America. The lab uses the tools of molecular biology to infer the phylogenetic and demographic histories of the taxa comprising these avian and freshwater fish communities. Because we are interested in the tempo as well as the mode of evolutionary change in these communities, we also study the behavior of molecular clocks. Our molecular clock studies have tended to focus on the molecular divergence between marine species pairs found on either side of the isthmus of Panama. The lab is part of Smithsonian Tropical Research Institute's Molecular Systematics and Evolution Group (nmg.si.edu) and is located near the Pacific entrance of the Panama Canal in the Republic of Panama.

Bermingham, E., S. McCafferty and A. Martin. 1997. Fish biogeography and molecular clocks: perspectives from the Panamanian Isthmus. Pp. 113-126 in Kocher T. and C. Stepien (eds.), Molecular Systematics of Fishes. Academic Press, NY, USA.

Bermingham, E. and C. Moritz. 1998. Comparative phylogeography: concepts and applications. Molecular Ecology 7: 367-369.

Bermingham, E. and A. P. Martin. 1998. Comparative mtDNA phylogeography of neotropical freshwater fishes: Testing shared history to infer the evolutionary landscape of lower Central America. Molecular Ecology 7: 499-517.

Lovejoy, N. R., Bermingham, E., and A. P. Martin. 1998. Marine incursion into South America. Nature 396: 421-422.

Lovette, I. J. and E. Bermingham. 1999. Explosive speciation in the New World Dendroica warblers. Proc. R. Soc. Lond. B 266:1629-1636.

Ricklefs, R. E. and E. Bermingham. 1999. Taxon cycles in the Lesser Antillean avifauna. In: Adams, N. J. and R. H. Slotow (eds.) Proc. 22 Int. Ornithol. Congr., Durban. Ostrich 70: 49-59.

Martin, A. P. and E. Bermingham. 2000. Regional endemism and cryptic species revealed by molecular and morphological analysis of a widespread species of Neotropical catfish. Proceeding of the Royal Society 267:1135-1142.

GODFREY R. BOURNE, Associate Professor
E-mail: bourne@jinx.umsl.edu
Ph.D., University of Michigan

My current research activities encompassing several years of data collection per study, are focused on the roles of sexual and natural selection in the evolution and maintenance of fitness traits primarily of frogs. My students' research interests are centered on Neotropical animal behavioral ecology, particularly in using field and laboratory experiments to understand sexual selection, mate choice and the evolution of sex differences in parental behavior. The evolution of life history phenotypes, sexual dimorphism and breeding systems in fishes, anurans, lizards, birds, and mammals are also of concern. Other studies deal with unravelling the nature of determinants of fish assemblages in small Neotropical streams, multispecies frog breeding assemblages, and wetland bird assemblages. This will be accomplished by applying Legendre et al's (1997. Ecology 78:547-562) fourth-corner method to estimate the variables describing the relationships among habitat characteristics, ecology and behavior, and test their statistical significance. Most of these projects are centered at CEIBA Biological Center Inc., Guyana. Preliminary collaborative studies combining mtDNA, and feeding, reproductive and vocal behavioral data in cladistic methods to clarify taxonomic and phylogenetic relationships within closely related taxa of birds and frogs are underway. Applied ecology interests encompass problems of biodiversity erosion in the Neotropics, especially the fate of fish communities in small backwater streams damaged by gold mining in Guyana, and the exploitation of lizards, parrots and monkeys for international trade in wildlife species.

Bourne, G.R., Collins, A.C., Holder, A.M. & McCarthy, C.L. *Accepted*. Vocal communication and reproductive behavior of the frog *Colostethus beebei* in Guyana. Journal of Herpetology.

Bourne, G.R. & York, H. Vocal behaviors are related to nonrandom structure of anuran breeding assemblages in Guyana. Ethology Ecology and Evolution

Bourne, G.R., Collins, A.C. & McCarthy, C.L. Nonreproductive sociality allows territorial frogs *Colostethus beebei* to monitor water availability. Herpetological Journal

Bourne, G.R. Observations of somatic effort in the frog *Colostethus beebei.* Herpetologica

Bourne, G.R., Weisrock, D.W., Prince, W. & Clarke, D. Rediscovery of *Dendrobates azureus* (Anura: Dendrobatidae) in Guyana. Herpetologica

Consiglio, T.K. & Bourne, G.R. Pollination and breeding systems of the palm *Astrocaryum vulgare* in Guyana. Journal of Tropical Ecology

Bourne, G.R. 1998. Amphisexual parental behavior of a terrestrial breeding frog *Eleutherodactylus johnstonei* in Guyana. Behavioral Ecology 9:1-7.

Bourne, G.R. 1997. Reproductive behavior of terrestrial breeding frogs *Eleutherodactylus johnstonei* in Guyana. Journal of Herpetology 31:221-229.

STANTON BRAUDE, Adjunct Assistant Professor and Research Assistant Professor
E-mail: braude@biology.wustl.edu
Ph.D., University of Michigan

Rodents are often keystone mammals in tropical ecosystems. My work focuses on the evolution of social behavior in fossorail rodents. I have been monitoring a marked population of over 8,000 naked mole-rats in Kenya for 14 years and have mapped the fluctuations onto climatic and other ecological variables. The demography of this population has strongly contradicted the argument that eusociality in this species evolved as a result of obligate inbreeding. I also work with Argentine Tuco-tucos, comparing the habitat use by social and non-social species.

Braude, S. 2000. Dispersal and new colony formation in wild naked mole-rats: evidence against inbreeding as the system of mating. Behavioral Ecology 11:7-12.

Braude, S., Tang-Martinez, Z., and Taylor, G. 1999. Stress, Testosterone and the Immunoredistribution Hypothesis. Behavioral Ecology 10(3):345-350.

Braude, S., Schilder, K., and Muli, J. 1999. Interspecific interactions between ants and naked mole-rats. African Journal of Ecology 37(2):242-246.

Lacey, E., Braude, S., and Weiczorek, J. 1998. Spatial distribution of adult patagonian tuco-tucos (*Ctenomys haigi*). J. Mamm 79(3):986-991.

Braude, S. 1998. The predictive power of evolutionary biology and the discovery of eusociality in the naked mole-rat. NCSE Reports, 17(4):12-15.

Lacey, E., Braude, S., and Weiczorek, J. 1997. Burrow sharing by colonial tuco-tucos (*Ctenomys sociabilis*). Journal of Mammalogy 78(2):556-562.

JAMES F. CAMPBELL, Associate Professor of Management Science and Information Systems, School of Business Administration
E-mail: campbell@umsl.edu
Ph.D., University of California-Berkeley

My general area of research is mathematical modeling and optimization. I am also interested in the use of geographic information systems (GIS) in ecology and conservation. I am currently involved in a collaborative project with faculty from Ecole Polytechnique de Montreal to develop a decision support systems to help mitigate environmental impacts from urban snow removal and disposal. My research has also included modeling and analysis of air quality impacts of proposed policies to restrict large truck operations in urban areas.

Campbell, J.F. and Langevin, A. 1995. The snow disposal assignment problem. Journal of the Operational Research Society 46:919-929.

Campbell, J.F. and Langevin, A. 1995. Operations management for urban snow disposal. Transportation Research 29A:359-370.

Campbell, J.F. 1995. Peak period large truck restrictions and a shift to off-peak operations: Impact on truck emissions and performance. Journal of Business Logistics 16(2):227-248.

Campbell, J.F. 1995. Using small trucks to circumvent large truck restrictions: Impacts on truck emissions and performance measures. Transportation Research 29A:445-459.

DAVID B. CLARK, Adjunct Associate Professor and Research Associate Professor
E-mail: dbclark@sloth.ots.ac.cr
Ph.D., University of Wisconsin, Madison

My research centers on forest ecology of old-growth tropical forest. Together with Dr. Deborah A. Clark, I have been studying the demography of 9 species of trees in an old-growth tropical rain forest in the Republic of Costa Rica since 1983. Recently with other colleagues, we have begun an ecosystem-level project to investigate the controls of primary productivity in old-growth forest, as well as the stores and fluxes of carbon at the landscape scale. I am also using remote sensing techniques and Geographic Information System analyses to extend our demographic studies of emergent trees to much larger spatial scales. This work builds on recent work with Deborah Clark examining the relation of tree species distributions and edaphic factors over medium-sized tropical landscapes. Finally, I am collaborating with colleagues in the United States as part of the Science Team for the new Vegetation Canopy Lidar satellite, scheduled to fly in the year 2000. I will help ground-truth the tropical forest part of this mission, which is scheduled to map canopy height and ground topography of 97% of the world s forest to 1-m accuracy over the course of a 3-year mission.

Clark, D.A. and D.B. Clark. In press. Getting to the canopy: tree height growth in a neotropical rain forest. Ecology.

Clark, D.B. and D.A. Clark. In press. Landscape-scale variation in forest structure and biomass in a tropical rain forest. Forest Ecology and Management.

Oberbauer, S.F., H.W. Loescher, and D.B. Clark. In press. Climate effects on daytime carbon exchange from an old growth f forest in Costa Rica. Selbyana.

Clark, D.B. In press. Factores edáficos y la distribución de plantas a nivel del paisaje en bosques húmedos neotropicales. *In* M. Guariguata and G. Kattan, ed. Ecología de Bosques Lluviosos Neotropicales, IICA, San Jose, Costa Rica.

Clark, D.B. and D.A. Clark. 2000. Tree growth, mortality, physical condition, and microsite in old-growth lowland tropical rain forest. Ecology 81:294 and Ecological Archives: http://esa.sdsc.edu/Archive/E081-003/main.html.

Weishampel, J.F., J.B. Blair, R.G. Knox, R. Dubayah, and D.B. Clark. 2000. Volumetric lidar return patterns from an old-growth tropical rainforest canopy. International Journal of Remote Sensing 21:409-415.

Palmer, M.W., D. B. Clark, and D.A. Clark. 2000. Is the number of tree species in small tropical forest plots nonrandom? Community Ecology 1:95-101.
Clark, D.B., M. Palmer and D.A. Clark. 1999. Edaphic factors and the landscape-scale distributions of tropical rain forest trees. Ecology 80:2662-2675.

Clark, D.A., and D.B. Clark. 1999. Assessing the growth of tropical rain forest trees: issues for forest modeling and management. Ecological Applications 9:981-997.

Sterck, F.J., D.B. Clark, D.A. Clark, and F. Bongers. 1999. Light fluctuations, crown traits, and response delays for tree saplings in a Costa Rican lowland rain forest. Journal of Tropical Ecology 15:83-95.

Clark, D.B., D.A. Clark and J.M. Read. 1998. Edaphic variation and the mesoscale distribution of tree species in a neotropical rain forest. Journal of Ecology 86:101-112.

Dubayah, R., Blair, J. B., Bufton, J. L., Clark, D. B., JaJa, J., Knox, R. G., Luthcke, S. B., Prince, S., and Weishampel, J.F. 1997. The Vegetation Canopy Lidar mission. Pages 100-112. Land Satellite Information in the Next Decade II: Sources and Applications. American Society for Photogrammetry and Remote Sensing, Bethesda, MD.

DEBORAH A. CLARK, Adjunct Associate Professor and Research Associate Professor
E-mail: dclark@sloth.ots.ac.cr
Ph.D., University of Wisconsin, Madison

My long-term research over the last 19 years has focused on the diversity of patterns of regeneration and other demographic processes in canopy and emergent trees in tropical lowland rain forest. I am currently also focusing on the climatic and edaphic controls on forest productivity and carbon cycling in tropical rain forests, as well as on the edaphic and human effects on the landscape-scale distributions of tree species in these forests.

Sterck,F.J., D.B. Clark, D.A. Clark, and F. Bongers. 1998. Light fluctuations, crown traits, and response delays for tree saplings in a Costa Rican lowland rain forest. Journal of Tropical Ecology 15:83-95.

Clark, D.A. 1998. Deciphering landscape mosaics of neotropical trees: GIS and systematic sampling provide new views of tropical rain forest diversity. Annals of the Missouri Botanical Garden 85:18-33.

Clark, D.B., D.A. Clark, and J.M. Read. 1998. Edaphic variation and the mesoscale distribution of tree species in a neotropical rain forest. Journal of Ecology 86:101-112.

MARIO COHN-HAFT Adjunct Assistant Professor and Research Assistant Professor
Postdoctoral Fellow and Acting Curator of Birds, Instituto Nacional de Pesquisas da Amazônia (INPA)
E-mail: mario@buriti.com.br
Ph.D., Louisiana State University, Baton Rouge

The unifying theme in my research and that of my students is ornithology in the Amazon basin. In the region with the world's greatest avian diversity and perhaps lowest density of ornithologists, all areas of avian research are poorly explored and subject to rapid advancement. My interests include virtually all aspects of ecology, evolutionary biology, and conservation of all avian taxa that occur in the Amazon. Ongoing studies focus on factors influencing patterns of species richness and distribution; habitat selection and specialization; diet; reproductive, social, and foraging behavior; patterns of geographic variation and biogeography; vocalizations and bioacoustics; molecular and traditional systematics; taxonomic revision and description of new avian forms. There is a strong emphasis in my research on descriptive biology and natural history, field work, specimen collecting, and tape recording. In addition to conducting research, I teach and advise students at the graduate level, am curator of an avian specimen collection, and lead regular collecting expeditions and rapid avifaunal inventories throughout the Brazilian Amazon. I emphasize publication in popular as well as technical
media and strongly encourage the role of scientist as public educator and influential contributor to the political decision-making process.

Borges, S. H., M. Cohn-Haft, A. M. P. Carvalhaes, L. M. Henriques, J. F. Pacheco, José Fernando, and Whittaker, Andrew. 2001. Birds of the Jaú National Park, Brazilian Amazon: Species checklist, biogeography and conservation. Ornitologia Neotropical 12: 109-140.

Cohn-Haft, M. 2000. A case study in Amazonian biogeography: Vocal and DNA-sequence variation in *Hemitriccus* flycatchers. Ph.D. Dissertation. Louisiana State University, Baton Rouge, USA.

Cohn-Haft, M. 1999. Family Nyctibiidae (Potoos). Pp. 288-301 *in* J. del Hoyo, A. Elliott, and J. Sargatal (eds.) Handbook of Birds of the World. Lynx Edicions, Barcelona.

Cohn-Haft, M. 1999. O Curupira das Noites de Luar. Eco-21 (Revista de Ecologia do Século 21) 9: 40-41.

Cohn-Haft, M., A. Whittaker and P. C. Stouffer. 1997. A new look at the species-poor central Amazon: The avifauna north of Manaus, Brazil. Ornithological Monographs 48: 205-235.

Bierregaard Jr, R. O., M. Cohn-Haft, and D. F. Stotz. 1997. Cryptic biodiversity: An overlooked species and new subspecies of antbird (Aves:Formicariidae) with a revision of *Cercomacra tyrannina* in northeastern South America. Ornithological Monographs 48: 111-128.

Cohn-Haft, M. 1996. Why the Yungas Tody-Tyrant (*Hemitriccus spodiops*) is a *Snethlagea*, and why it matters. Auk 113: 709-714.

Cohn-Haft, M., and T. W. Sherry. 1994. Evolution of avian foraging stereotypes in tropical rainforest habitats. Journal für Ornithologie 135: 481-481.

THOMAS B. CROAT, Adjunct Associate Professor and Research Associate Professor,
P. A. Schulze Curator of Botany, Missouri Botanical Garden.
E-mail: Thomas.Croat@mobot.org; telephone: (314) 577-5163.
Ph.D. University of Kansas

Research involves the Systematics and ecology of Araceae with current research project involving a completion of a revision of the genus *Dieffenbachia* for Cental America and and South America, of *Anthurium* sect. *Porphyrochitonium* for neotropics, floristic treatments of the Araceae for the Flora of Ecuador, Flora of the Guianas, and several local florulas in Colombia (Araceae of La Planada, in Nariño and Araceae of Bajo Calima in Valle) and Ecuador, especially the Flora of the Lita Area- San Lorenzo Region in Esmeraldas Province of Ecuador. Work is also currently underway for a revision of the Araceae of Bolivia for the Checklist of the Plants of Bolivia. Finally work is progressing on a Checklist of the Araceae of Colombia. With the completion of the two latter projects a definite number of the approximate number of South Ameican species of Araceae will be known for the first time.

1999. Araceae in W. G. Stevens & O. M. Montiel, Flora de Nicaragua. Missouri Botanical Garden Press. [with T. Stiebel].

1999 (2000). The Araceae of Peru-Distribution, Species Diversity and Centers of Endemism. Arnaldoa 6(2): 45-79.

1999. Araceae, in P. M. Jorgensen & S. Leon (eds.), Catalogue of the Vascular Plants of Ecuador. Monogr. Syst. Bot. Missouri Bot. Gard. (in press)

1998. History and current status of systematic research with Araceae. Aroideana 21: 26-145.

1998. Tropical Aroids: Taxonomy, Diversity and Ecology In: Mathew & Sivadasan, Diversity and Taxonomy of Tropical Flowering Plants, pp. 235-286. Mentor Books, Calicut.

1997. Araceae. In: Mori, S., G. Cremers, C. Gracie, J. J. de Granville, M. Hoff & J. D. Mitchell. Vascular Plants of Central French Guiana: Part 1. Pteridophytes, Gymnosperms and Monocotyledons. Mem. New York Bot. Gard. 76:

1997. A revision of Philodendron subgenus Philodendron (Araceae) and Central America. Ann. Missouri Bot. Gard. 84:311-704.

MARSHALL R. CROSBY, Adjunct Associate Professor and Research Associate Professor of Biology
Senior Advisor to the Director and Senior Botanist, Missouri Botanical Garden
E-mail: marshall.crosby@mobot.org
Ph.D., Duke University

General systematics and floristics of mosses worldwide, especially North America, southern South America, and China; compilation of a worldwide checklist of the recognized species of mosses and a revision of the *Dictionary of Mosses*.

Crosby, M.R. 1997. Proposal to conserve the name Desmotheca (Musci). Taxon 46:337-338.

Crosby, M.R. and R.E. Magill. 1997. Index of Mosses 1993-1995. Monogr. Syst. Bot. Missouri Bot. Gard. 62. 106 pp.

Crosby, M.R. and R.E. Magill. 1994. Index of Mosses 1990-1992. Monogr. Syst. Bot. Missouri Bot. Gard. 50.

TERRY L. ERWIN, Adjunct Professor and Research Professor of Biology
Entomology, Smithsonian Institution
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Ph.D., University of Alberta-Edmonton

My research interests are: 1) Evolution and biogeography of Carabid beetles; 2) tropical forest beetle biodiversity and ecology; and, 3) evolutionary pathways which lead to the rise and fall of evolving lineages of organisms, i.e., taxon pulses, and at present particularly focused on the Forest Refugium and Inundation hypotheses in the Amazon Basin. My research within these areas utilizes my knowledge of beetles, particularly Carabidae, and my familiarity with neotropical ecosystems. In addition, I am interested in estimations of biodiversity on the planet in terms of numbers of species and how alpha-seasonal and beta diversity can be used for regional estimations of total biodiversity. At present, I am working on a large project that measures the impact of oil-drilling, extraction, and pumping on amazonian insect populations in Ecuador.

Erwin, T.L. 1995. Measuring arthropod biodiversity in the tropical forest canopy. Pp. 109-127. In, M. Lowman and Nadkarni, N. eds. Forest Canopies, Academic Press Inc.

Erwin, T.L. 1994. Arboreal beetles of tropical forests: The Xystosomi group, subtribe Xystosomina (Coleoptera: Carabidae: Bembidiini) Part I. Character analysis, Taxonomy, and Distribution. The Canadian Entomologist 126(3):549-666. 155 figures, 2 tables.

Kremen, C., R.K. Colwell, T.L. Erwin, D.D. Murphy, R. F. Noss, and M.A. Sanjayan. 1993. Terrestrial Arthropod Assemblages: Their Use in Conservation Planning. Conservation Biology 7(4):796-808.

Erwin, T.L. 1991. An evolutionary basis for conservation strategies. Science 253:750-752.

Erwin, T.L. 1991. Natural History of the Carabid Beetles at the BIOLAT Rio Manu Biological Station, Pakitza, Perú. Revista Peruana de Entomologia, Vol. 33, pp. 1-85.

PETER GOLDBLATT, Adjunct Associate Professor and Research Associate Professor
B.A. Krukoff Curator of African Botany, Missouri Botanical Garden
E-mail: pgoldblatt@hotmail.com
Ph.D., University of Cape Town

My research interests lie mainly with the petaloid monocots (the Liliidae), particularly with the systematics, phylogeny and evolution of the family Iridaceae which has its center in Africa where over 1000 of the approximately 1800 species of the family occur. With the systematics of the family fairly well understood, I am currently studying the pollination biology and ecology of several genera. In addition to bee pollination, one or more lineages in several genera have species adapted to pollination by sunbirds, long-tongued flies of the families Nemestrinidae and Tabanidae, and Lepidoptera including night-flying moths and butterflies. The family appears to adapt readily to selection for novel pollination systems. Examination of pollinating insects also shows that the site of pollen deposition on an insect s body is an important factor in these systems. The diversity of pollination systems among the African genera of the family is one of the reasons that the family is so diverse there, but the exact relationship between species richness and diversity of pollination systems is uncertain. Preliminary research mapping geopgraphy and ecology, including pollination system, of species on to phylogenetic trees suggests that related species diverge as a result of different soil or climate preferences and that difference in pollination strategy help to reinforce reproductive isolation. My research methods include classical taxonomy and biogeography, comparative morphology and anatomy, as well as chromosome cytology, palynology, and cladistics. Other research interests include the phytogeography of southern and tropical Africa and the delimitation and relationships of the petaloid monocot families usually included in the catchall Liliaceae of older classifications as well as Iridaceae, Amaryllidaceae and Orchidaceae.

Bernhardt, P. & P. Goldblatt. 2000. The diversity of pollination mechanisms in the Iridaceae of southern Africa. Pp. 301-308 *in* K. Wilson & P. Weston (editors), *Systematics and Biology of the Monocots.* Royal Botanic Gardens, Sydney.

Goldblatt, P. & J. C. Manning. 2000. The long-proboscid fly pollination system in southern Africa. Ann. Missouri Bot. Gard. 87:146-170.

Goldblatt, P. & J. C. Manning. 1998. *Gladiolus* in Southern Africa: Systematics, Biology, and Evolution. Fernwood Press,

Cape Town.

Goldblatt, P., P. Bernhardt & J. C. Manning. 1998. Pollination by of petaloid geophytes by monkey beetles (Scarabaeidae: Rutelinae: Hopliini) in southern Africa. Ann. Missouri Bot. Gard. 85:215-230.

Goldblatt, 1997. Floristic diversity in the Cape Flora of South Africa. Biodiversity & Conserv. 6:359-377.

Goldblatt, P. & A. Le Thomas. 1997. Palynology, phylogenetic reconstruction and the classification of the Afro-Madagascan genus *Aristea* Aiton (Iridaceae). Ann. Missouri Bot. Gard. 84:263-284.

Goldblatt, P. & M. Takei. 1997. Chromosome cytology of Iridaceae base numbers, patterns of variation and modes of karyotype change. Ann. Missouri. Bot. Gard. 84:285-304.

MICHAEL H. GRAYUM, Associate Curator, Missouri Botanical Garden
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Ph.D., University of Massachusetts

My chief research interests include the taxonomy, phylogeny, phytogeography and morphology of vascular plants (especially Araceae, Arecaceae, and pteriodophytes); pollination and reproductive biology (ecological and evolutionary aspects of beetle pollination; relationships between pollen morphology and pollination biology); and revisionary and floristic studies within the Neotropics. I am presently co-coordinating the production of a comprehensive identification manual to the Costa Rican vascular flora.

de Nevers, A. Henderson & M.H. Grayum. 1996. Mesoamerican *Bactris*. Proc. Calif. Acad. Sci. 49:171-210.

Grayum, M.H. 1996. Revision of *Philodendron* subgenus *Pteromischum* (Araceae) for Pacific and Caribbean tropical America. Syst. Bot. Monogr. 47:1-233.

Grayum, M.H. 1996[=1995']. Notes on Costa Rican *Peperomia* (Piperaceae), with four new species. Phytologia 79:108-113.

Grayum, M.H. & B.E. Hammel. 1996[=1995']. The genus *Tetranema* (Scrophulariaceae) in Costa Rica, with two new species. Phytologia 79:269-280.

PETER C. HOCH, Adjunct Associate Professor and Research Associate Professor
Curator, Missouri Botanical Garden
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Ph.D., Washington University

My primary research interests concern plant evolution, especially using the methods of systematics and phylogenetic analysis. My research mainly focuses on the plant family Onagracaeae (evening primrose), a moderately large (c. 650 sp.), diverse group of species that vary from trees to small annual plants and that range from tropical/subtropical forests and savannas to the arctic tundra. Modern systematic treatments of most genera are available, and phylogenetic analyses of a rich pool of both morphological and molecular characters are providing an exceptionally detailed picture of relationships within the family. Our current work aims to refine our understanding of the evolution of the diverse co-terminal tribes Onagreae and Epilobieae, and to use the resulting phylogeny to examine the complex cytogenetic evolution of those tribes, the co-evolution of the plants and their diverse pollinators, and the historical biogeography of the Madrean Floristic province of southwestern North America, within which Onagreae has its primary radiation.

Gu, H.Y. & P.C. Hoch.1997. Systematics of *Kalimeris* (Asteraceae: Astereae). Ann. Missouri Bot. Gard. 84: 762--814.

Hoch, P.C. & P.H. Raven.1999. Onagraceae. Pp. 224-246, in Iwatsuki, K., D.E. Boufford & H. Ohba (eds.), Flora of Japan, Vol. IIc. Kodansha, Tokyo.

Wagner, W.L. & P.C. Hoch. 2000. Proposal to reject the name *Gaura mollis* (Onagraceae). Taxon 49: 101-102.

Hoch, P.C. (editor). 2001 (in press). Proceedings of the XVI International Botanical Congress. Missouri Bot. Gard. Press.

Clinebell, R.R., D. Gregory & P.C. Hoch. 2001 (in review). Pollination ecology of the *Gaura-Calylophus* Clade (Onagraceae) in the Permian Basin and Transpecos Texas, U.S.A. Ann. Missouri Bot. Gard. 88.

JAMES H. HUNT, Professor
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Ph.D., University of California-Berkeley

Research in this lab addresses the evolution of social insects, especially wasps (order Hymenoptera, family Vespidae). Emphasis is placed on empirical studies of life history, nourishment, development, caste differentiation, and the relationships among these. Most of the research involves coordinated field and lab studies of the paperwasp *Polistes metricus* in Missouri. Short-term studies on the natural history of tropical social wasps are undertaken when possible. Recent student research has included the conservation biology of Orthoptera (grasshoppers and allies) in Missouri prairie remnants.

Hunt, J. H. 1999. Trait mapping and salience in the evolution of eusocial vespid wasps. Evolution 53:225-237.

Hunt, J. H., R. J. Brodie, T. P. Carithers, P. Z. Goldstein and D. H. Janzen. 1999. Dry season migration by Costa Rican lowland paper wasps to high elevation cold dormancy sites. Biotropica 31:192-196.

Hunt, J. H., A. M. Rossi, N. J. Holmberg, S. R. Smith and W. R. Sherman. 1998. Nutrients in social wasp (Hymenoptera: Vespidae, Polistinae) honey. Annals of the Entomological Society of America 91:466-472.

Hunt, J. H., D. K. Schmidt, S. S. Mulkey and M. A. Williams. 1996. Caste dimorphism in the wasp *Epipona guerini* (Hymenoptera: Vespidae; Polistinae, Epiponini): further evidence for larval determination. Journal of the Kansas Entomological Society Supplement 69:362-369.

ANDREW HURLEY, Assistant Professor of History
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Ph.D., Northwestern

My research focuses on the environmental dimensions of urban growth in the nineteenth and twentieth century United States. I am particularly interested in issues relating to industrial pollution and environmental justice.

Hurley, A. (ed.). 1997. Common fields: An Environmental History of St. Louis. (St. Louis: Missouri Historical Society Press).

Hurley, A. 1995. "Environmental Inequalities: Class, Race, and Industrial Pollution in Gary, Indiana, 1945-1980", (Chapel Hill: University of North Carolina Press).

Hurley, A. 1994. "Creating Ecological Wastelands: Oil Pollution in New York City, 1870-1900", Journal of Urban History 20 (May), Pp. 340-364.

PETER MØLLER JØRGENSEN, Adjunct Associate Professor and Research Associate Professor
Assistant Curator, Director of the *Catalogue of the Vascular Plants of Bolivia*, Missouri Botanical Garden
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Ph.D., Aarhus University

My research interest lies in floristic, plant geography, and conservation. I am also interested in the systematic, phylogenetic, and evolutionary aspects of the families Passifloraceae, Santalaceae, and Olacaceae; and have started to get interested in the Verbenaceae. My interests in Passifloraceae are old and wide-ranging, covering the Neotropical area, and for the genus Passiflora even the old world. I am interested all ecological aspects of the family, but particularly their pollination. Dr. Carmen Ulloa and I are writing treatments of the Santalaceae and Olacaceae for the Flora of Ecuador, and our interest in those families are so far restricted to this geographical area.

Coppens d'Eeckenbrugge, G., V.E. Barney, P.M. Jørgensen & J.M. MacDougal 2001. *Passiflora tarminiana*, a New Cultivated Species of *Passiflora* subgenus *Tacsonia* (Passifloraceae). Novon 11: 8–15.

Valencia, R., N. Pitman, S. León-Yánez & P.M. Jørgensen 2000. Libro Rojo de las Plantas Endémicas del Ecuador 2000. Herbario QCA, Pontificia Universidad Católica del Ecuador. Quito.

Arbeláez, A.L. & P.M. Jørgensen. 1999. Pteridaceae. In: Catalogue of the Vascular plants of Ecuador. (P.M. Jørgensen & S. León-Yánez, eds.) — Monograph. Syst. Bot. Missouri Bot. Gard. 75: 168–176.

Jørgensen, P.M. (ed.) 1999. Abstracts. Pp. 1–759, addendum 1–30. XVI International Botanical Congress. St. Louis.

Jørgensen, P.M. 1999. History of Collecting. In: Catalogue of the Vascular plants of Ecuador. (P.M. Jørgensen & S. León-Yánez, eds.) — Monograph. Syst. Bot. Missouri Bot. Gard. 75: 25–41.

Jørgensen, P.M. 1999. Format of the Catalogue. In: Catalogue of the Vascular plants of Ecuador. (P.M. Jørgensen & S. León-Yánez, eds.) — Monograph. Syst. Bot. Missouri Bot. Gard. 75: 41–42.

ELIZABETH A. KELLOGG, E. Desmond Lee Professor of Botanical Studies
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Ph.D., Harvard University

My work addresses the evolution and classification of flowering plants, studying both their morphological and molecular characteristics. The generation of evolutionary trees for both genes and species is an important aspect of this work. Understanding the nature of evolutionary change requires not only a phylogeny of species, but also detailed study of development and the underlying genetics of the organism. Studies are underway that include molecular genetics in studies of evolutionary history. Much of this work focusses on the members of the grass family, which is uniquely suited to a combined study of genetics and phylogenetics. Current projects are 1) a molecular phylogeny of relatives of maize, sugar cane and sorghum, 2) developmental morphology and gene expression in unisexual flowers, 3) comparative development of inflorescences, and 4) molecular phylogeny of the grass family, the latter a combination of data
from seven different genes, plus morphology.

Le Roux, L.G., and E.A. Kellogg. 1999. Floral development and the formation of unisexual spikelets in the Andropogoneae (*Poaceae*). American Journal of Botany 86:354-366.

Bharathan, G., B.-J. Janssen, E.A. Kellogg, and N.R. Sinha. 1999. Phylogenetic relationships and evolution of the KNOTTED class of plant homeobox proteins. Molecular Biology and Evolution 16:553-563.

Kellogg, E.A. 1999. Phylogenetic aspects of the evolution of C4 photosynthesis. Pp 411-444 in R.Sage and R.Monson, eds. C4 plant biology. Academic Press, New York.

W.S. Judd, C.S. Campbell, E.A. Kellogg, and P.F. Stevens. 1999. Plant Systematics: A phylogenetic approach. Sinauer Associates, Sunderland, MA.

Mason-Gamer, R.J., C.F. Weil, and E.A. Kellogg. 1998. Granule-bound starch synthase: structure, function, and phylogenetic utility. Molecular Biology and Evolution 15:1658-1673.

Angiosperm Phylogeny Group. 1998. An ordinal classification for the families of flowering plants. Annals of the Missouri Botanical Garden 85:531-553.

Kellogg, E. A. 1998. Relationships of cereal crops and other grasses. Proceedings of the National Academy of Sciences, USA 95:2005-2010.

Kellogg, E. A. 1998. Who's related to whom? Recent results from molecular systematic studies. Current Opinion in Plant Biology 1:149-158.

Kellogg, E. A., and N. D. Juliano. 1997. Structure and function of RuBisCO and their implications for phylogenetic studies. American Journal of Botany 84:413-428.

Catalan, P., E. A. Kellogg, and R. G. Olmstead. 1997. Phylogeny of Poaceae subfamily *Pooideae* based on chloroplast ndhF gene sequencing. Molecular Phylogenetics and Evolution 8:150-166.

Bharathan, G., B.-J. Janssen, E. A. Kellogg, and N. R. Sinha. 1997. Homeodomain proteins duplicated before the origin of angiospermae, fungi, and metazoa. Proceedings of the National Academy of Sciences, USA 94:13749-13753.

BETTE A. LOISELLE, Associate Professor
Director, International Center for Tropical Ecology
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Ph.D., University of Wisconsin

My primary research is directed towards understanding interactions between plants and animals. I focus on tropical fruit-eating birds and the plants that produce animal-dispersed seeds. I am interested in how frugivores select fruits and the consequences of such selection for seed survival, seedling establishment, and the spatial distribution of plants and their genotypes. Moreover, I am interested in how composition and abundance of fruit resources affect frugivore distribution, resource use, and movement patterns. Conservation of tropical plants that rely on animals as seed dispersers, and the structure and function of tropical forests are tied to the conservation of frugivorous vertebrates. Projects related to seed dispersal are on-going with collaborators in the Andes of Colombia and a project is planned for lowland forests in the Ecuadorian Amazon. A secondary research goal is the application of Geographic Information System (GIS) technology to modeling distributions of birds using museum records and environmental data such as rainfall, vegetation, elevation, geology, and soils. Hypothesized historic range models are then evaluated in light of present day vegetation cover to determine conservation status of birds. A pilot project is underway using two families of birds in the Atlantic Forest of Brazil; this research is in collaboration with Brazilian colleagues, colleagues from the British Museum of Natural History, and Conservation International.

Loiselle, B.A. and J.M. Goerck. In press. Assessing impact of deforestation on range size of birds of the Atlantic forests, Brazil. In K.G. Smith, T. Brooks, D. Mehlman, and R. Roca (eds.), Conservation priorities for birds at risk in Latin America: from continental priorities to local action. Cornell Univ. Press, Ithaca, NY.

Loiselle, B.A. and J.G. Blake. 2001. Potential consequences of extinction of frugivorous birds for shrubs of a tropical wet forest. *In* D.J. Levey, W.R. Silva, and M. Galetti (eds.) Levey, D.J., Seed Dispersal and Frugivory: Ecology, Evolution and Conservation. CABI Publishing, Wallingford, Oxfordshire, UK.

Loiselle, B.A. and R. Dirzo. 2001. Plant-animal interactions and community structure. Introduction of Section 8 *in* R. Chazdon and T.C. Whitmore (eds.), Foundations of Tropical Forest Biology: Classic Papers with Commentaries. University of Chicago Press, Chicago, IL.

Blake, J.G. and B.A. Loiselle. 2000. Diversity of birds along an elevational gradient in the Cardillera Central, Costa Rica. Auk 117.

Loiselle, B.A., and J.G. Blake. 1999. Dispersal of Melastome seeds by fruit-eating bird of tropical forest understory. Ecology 80:330-336.

Renjifo, L.M., G.P. Servat, J.M. Goerck, B.A. Loiselle, and J.G. Blake. 1998. Patterns of species composition and endemism in the northern Neotropics: a case for conservation of montane avifaunas. Pages 577-594 in Natural History and Conservation of Neotropical Birds, Ted Parker Memorial Volume, J.V. Remsen, ed., Louisiana State University, Baton Rouge, LA.

ROBERT MAGILL, Adjunct Associate Professor and Research Associate Professor
Director of Research, Missouri Botanical Garden
E-mail: bob.magill@mobot.org
Ph.D. Texas A&M University

My research interests are in bryophyte systematics, evolution and biogeography, with a current emphasis on mosses of Africa. I have recently published the third fasicle of the moss flora of southern Africa. I am also interested in the use and development of computer databases in systematics. I serve on the IAPT Nomenclature committee for Bryophytes.

Magill, R. 1998. Flora of Southern Africa, Cryptogams Bryophyta, part 1, fascicle 3 (*Erpodiaceae* to *Hookeriaceae*), I-vii. 445-622.

Magill, R. 1993. Conserved names for mosses: A brief history. Taxon 42(1):5-15.

Magill, R. 1993. A revision of the genus Cladopodanthus (*Leucobryaceae*, Musci). The Bryologist 96(2):233-241.

Magill, R. 1993. Practical links between specimen and taxon databases. In F.A. Bisby et al. Designs for a Global Point Species Information System. Systematics Association, Special Volume. No. 48. Pp. 275-283.

ROBERT J. MARQUIS, Associate Professor
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Ph.D., University of Iowa

My research centers on the role herbivores play in the evolution of plant traits. I am currently investigating how the third trophic level might modify the impacts of herbivores on their host plants. The relevant third trophic level members are birds and parasitoids in the case of white oak, *Quercus alba*, and ants in the north temperate ant-plant *Chamaecrista fasciculata*. In addition, I am investigating how leaf-tying caterpillars, by creating shelters for other herbivore and non-herbivore species, may influence plant damage and the overall diversity of the arthropod fauna found on white oak. Finally, I am applying knowledge gained from these natural systems to investigate the factors that might

affect insect herbivore populations and levels of attack in managed systems, specifically native tropical tree species grown in abandoned pastures and native oak forests of the Missouri Ozarks.

Marquis, R. J., H. Morais, and I. Diniz. 2001. Patterns and correlates of interspecific leaf damage by insects and pathogens in Brazilian cerrado. Journal of Tropical Ecology 17:1-23.

Lill, J. T., and R. J. Marquis. 2001. The effects of leaf quality on herbivore fitness and attack from natural enemies. Oecologia 126:418-428.

Gram, W. K., V. L. Sork, R. J. Marquis, R. B. Renken, R. L. Clawson, J. Faaborg, D. K. Fantz, J. Le Corff, J. T. Lill, and P. A. Porneluzi. 2001. Evaluating the effects of ecosystem management: a case study in a Missouri Ozark forest. (in press, Ecological Applications).

Oliveira, P. S., and R. J. Marquis (eds.). 2001. Ecology and natural history of a neotropical savanna: The cerrados of Brazil. Columbia University Press., in press.

Marquis, R. J., and R. Dirzo. 2001. Tropical foundations in coevolution. In: R. Chazdon and T. C. Whitmore (eds.). Key papers in tropical ecology. University of Chicago Press, in press.

Marquis, R. J., H. Morais, and I. Diniz. 2001 Interactions between Cerrado plants and their herbivores: unique or typical? In: P. Oliveira and R. J. Marquis (eds.). Ecology and natural history of a neotropical savanna: the cerrados of Brazil. Columbia Univ. Press., in press.

Marquis, R.J., R Forkner, J. E. Lill, and J. Le Corff. 2001. Effects of alternative forest harvesting regimes on species accumulation curves for oak herbivore communities of the Missouri Ozarks. General Technical Report, USDA Forest Service, North Central Experiment Station, in press.

Hochwender, C., R. J. Marquis, and K. Stowe. 2000. The potential for and constraints on the evolution of compensatory ability in *Asclepias syriaca*. Oecologia 122:361-370.

Mothershead, K. M., and R. J. Marquis. 2000. Indirect effects of leaf herbivores on plant-pollinator interactions in *Oenothera macrocarpa* (Onagraceae). Ecology 81:30-40.

Stowe, K. A., R. J. Marquis, C. Hochwender, and E. L. Simms. 2000. Plant tolerance to herbivory and disease. Annual Review of Ecology and Systematics 31:565-595.

Le Corff, J., R. J. Marquis, and J. B. Whitfield. 2000. Temporal and spatial variation in a parasitoid community associated with the herbivores that feed on Missouri *Quercus*. Environmental Entomology 29:181-194.

Le Corff, J., and R. J. Marquis. 1999. Difference between understorey and canopy in herbivore community composition and leaf quality for two oak species in Missouri. Ecological Entomology 24:46-58.

de la Fuente, M. A. S., and R. J. Marquis. 1999. The role of ant-tended extrafloral nectaries in the protection and benefit of a Neotropical rainforest tree. Oecologia 118:191-202.

Whitfield, J. B., R. J. Marquis, and J. Le Corff. 1999. Host associations of braconid parasitoids (Hymenoptera: Braconidae) reared from Lepidoptera feeding on oaks (*Quercus* spp.) in the Missouri Ozarks. Entomological News 110: 225-230.

JAMES S. MILLER, Adjunct Assistant Professor and Research Assistant Professor
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Ph.D., St. Louis University

My research interests span three areas all united by the common theme of plant systematics. I am interested in applying systematic knowledge in programs that aim to discover new pharmaceutical, nutritional, or agricultural products from plant-derived chemicals. Several collaborative programs with which I am involved address systematic relationships of plants, their chemistry, and history of their use by indigenous people. I am also interested in tropical floristics and am currently completing an inventory of the plants of the Réserve Intégrale de Marojejy in northeastern Madagascar. Finally, I continue taxonomic studies of the *Cordoideae* and *Ehretioideae*, two subfamilies of woody, tropical *Boraginaceae*.

Miller, J.S. 1999. New Boraginaceae from Tropical America 1: New species of *Bourreria* and *Tournefortia* from Costa Rica and a note on the publication of *Cordia collococca*. Novon 9:230-235.

Miller, J.S. and A. Randrianasolo. 1998. New taxa and nomenclatural notes on the flora of the Marojejy Massif-II. Anacardiaceae: A new species of *Campnosperma*. Novon 8:170-172.

Randrianasolo, A. & J.S. Miller. 1998. A revision of *Campnosperma* (Anacardiaceae) in Madagascar. *Adansonia, Sér*. 3,20:285-293.

Miller, J.S. 1998. New taxa and nomenclatural notes on the flora of the Marojejy Massif-I. Capparaceae: A new species of *Crateva*. Novon 8:167-169.

Yang, S.-W., B.-N. Zhou, J.H. Wisse, R. Evans, H.vander Werff, J.S. Miller, and D.G.I. Kingston. 1998. Three new ellagic acid derivatives from the bark of *Eschweilera coriaceae* from the Suriname rainforest. J. Nat. Prod. 61:901-906.

Miller, J.S. 1998. Cyrillaceae. Pp. 663-664. *In*: J.A. Steyermark, P.E. Berry, and B.K. Holst (eds.) The Flora of the Venezuelan Guayana. Vol. 4. Missouri Botanical Garden.

Miller, J.S. and H.H. Schmidt. 1998. The Missouri Botanical Garden s DNA Bank. *In*: R.P. and J.E. Adams (eds.) Conservation of Plant Genes III: Conservation and Utilization of African Plants. Mongr. Syst. Bot. Misssouri Bot. Gard. 71:175-182.

DAVID A. NEILL, Adjunct Associate Professor and Research Associate Professor of Biology
Associate Curator, Missouri Botanical Garden
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Ph.D., Washington University

My research interests focus on the systematics of the legume family, Fabaceae, as well as on floristic studies and patterns of plant diversity in northwestern South America. For the past ten years, I have been a resident in Ecuador, coordinating the Missouri Botanical Garden's floristic inventory program there. We have contributed to the institutional development of the National Herbarium of Ecuador as well as professional training for Ecuadorian botanists. I am currently working on the treatment of the Caesalpinioid legumes for the Flora of Ecuador. With Ecuadorian foresters, I have recently initiated research on tropical forest restoration on degraded pastures in upper Amazonia using nitrogen-fixing legume trees.

Neill, D.A. 1995.. Gran Sumaco and upper Napo River region; Ecuadorian moist and wet coastal forest. *In* Davis. S.V. Heywood and O. Herrera-MacBryde (editors). Centres of Plant Diversity: A Guide and Strategy for their Conservation. Volume 3: The Americas. London: International Union for the Conservation of Nature.

Neill, D.A. 1993. The genus *Erythrina*: taxonomy, distribution and ecological differentiation. Pp. 15-27 *In* S.B. Westley and M.H. Powell (editors). *Erythrina* in the New and Old Worlds: Proceedings of an International Conference in Honor of Dr. Gerardo Budowski. Paia, Hawaii: Nitrogen Fixing Tree Association.

Neill, D.A. 1993. Development of training programs for conservation research and natural resource management in Ecuador. Pp. 197-187 *In* C.S. Potter, J.I. Cohen, and D. Janczewski (editors). Perspectives on Biodiversity: Case Studies of Genetic Resource Conservation and Development. Washington: AAS Press.

PATRICK L. OSBORNE, Adjunct Associate Professor and Research Associate Professor
Associate Director, International Center for Tropical Ecology and Graduate Studies
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Ph.D., University of East Anglia

My research has focused on the interpretation of sediment deposition patterns and layers in tropical wetlands and lakes as a means to understanding ecosystem function and change. I am interested in how these patterns develop and how they can be used to monitor change in lakes and wetlands and to devise management strategies for these systems.

Osborne, P.L. 2000. Tropical Ecosystems and Ecological Concepts. Cambridge University Press, Cambridge, England.

Osborne, P.L., N.V.C. Polunin and R.G. Totome. 1996. Sediments as indicators of ecosystem function in four contrasting lakes in Papua New Guinea. In: F. Schiemer and K. Boland, eds., Perspectives in tropical limnology. Pp. 131-149. SPB Academic Publishing, The Netherlands.

Osborne, P.L. 1995. Biological and cultural conservation in Papua New Guinea: Conservation, conflicts, constraints and compromise. Ambio 24:231-237.

Osborne, P.L. 1995. Limnology in the wet tropics: Papua New Guinea. In: B. Gopal and R.G. Wetzel, eds., Limnology in developing countries: Volume 1. Pp. 121-161. SIL and International Scientific Publications, New Delhi.

Osborne, P.L. and P.A. Adcock. 1995. Creating environmental kidneys: Wetland ecosystems as sustainable pollution filters and habitat restoratives. Wetlands (Australia) 14:37-43.

Osborne, P.L. 1993. Wetlands of Papua New Guinea. In: D. Whigham, D. Dykyjova and S. Hejny, eds., Wetlands of the World I. Inventory, Ecology and Management. Handbook of Vegetation Sciences. Pp. 305-344. Dr W. Junk, The Hague.
Osborne, P.L., G.S. Humphreys and N.V.C. Polunin. (1993). Sediment deposition and late Holocene environmental change in a tropical lowland basin: Waigani Lake, Papua New Guinea. Journal of Biogeography 20:599-613.

PATRICIA G. PARKER, E. Desmond Lee Professor of Zoological Studies
Director of Graduate Studies
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Ph.D., University of North Carolina, Chapel Hill

My students and I study the ecology and evolution of social behavior and we apply principles of population biology and behavioral ecology to wildlife conservation. Recent behavioral studies examine the interactions among genetic relatedness, demography and social behavior in natural populations of temperate and tropical bird species. I am particularly interested in island populations as they often exhibit significant between-island variation that may facilitate identification of ecological and genetic correlates of behavior. Conservation studies involve the application of molecular techniques to examine effects of variation in life history characteristics and behavioral dynamics of populations on their genetic structure, focusing on natural and captive populations of birds, mammals, reptiles, fish, and arthropods.

Huyvaert, KP, DJ Anderson, TC Jones, W Duan, PG Parker. 2000. Extra-pair paternity in waved albatrosses. Molecular Ecology.

Fiumera, AC, PG Parker, PA Fuerst. 2000. Maintenance of genetic diversity in captive breeding populations of the endangered cichlid fish *Prognathochromis perreiri*. Conservation Biology.

Worden, BD, PG Parker, PW Pappas. 2000. Parasites reduce attractiveness and reproductive success in male grain beetles. Animal Behaviour 59:543-550.

Parker, PG, TC Jones, J Haydock, J Dickinson, BD Worden. 1999. Multilocus minisatellite DNA fingerprinting and cooperative breeding. Behav. Ecol. Sociobiol. 47:108-111.

Mauck, R.A., E.A. Marschall and P.G. Parker. 1999. Adult survival and imperfect assessment of parentage: effects on male parenting decisions. American Naturalist 154:99-109.

Parker, PG, AA Snow, G Booton, M Schug and P Fuerst. 1998. What molecules can tell us about populations: Choosing and using a molecular marker. Ecology 79:361-382.

Parker, P.G. and N.T. Burley (eds.). 1998. Avian Reproductive Tactics: Female and Male Perspectives. Ornithological Monograph #49. American Ornithologists' Union, Washington, D.C., 195 pp.

Parker, P.G. and T.A. Waite. 1997. Mating systems, effective population size, and conservation of natural populations. Pages 244-262 In Behavioral Approaches to Conservation in the Wild (J. Clemmons and R. Buchholz, eds.) Cambridge University Press.

Parker, P.G., T.A. Waite and T. Peare. 1996. Paternity studies in animal populations. Pages 413-423 In Molecular Genetic Approaches in Conservation (T.B. Smith and R.K. Wayne, eds.) Oxford University Press, New York.

Peare, T, PG Parker. 1996. Local genetic structure within two rookeries of *Chelonia mydas* (the green turtle). Heredity 77: 619-628.

Faaborg, J., P.G. Parker, L. DeLay, T. de Vries, J.C. Bednarz, S.M. Paz, J. Naranjo, T.A. Waite. 1995. Confirmation of cooperative polyandry in the Galapagos Hawk (*Buteo galapagoensis*) using DNA fingerprinting. Behav. Ecology and Sociobiology 36:83-90.

PETER H. RAVEN, Adjunct Professor and Research Professor
Director, Missouri Botanical Garden
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Ph.D., University of California-Los Angeles

My primary research interests are the systematics, evolution and biogeography of the plant family *Onagraceae*, which is one of the most thoroughly studied plant families of its size (16 genera, about 653 species). We have been able to develop *Onagraceae* as a powerful model for understanding patterns and processes of plant evolution in general, a truly exciting prospect that has already paid rich dividends. Monographic and comparative studies of the anatomy, embryology, cytology and chemosystematics of *Onagraceae* have resulted in a nearly comprehensive revision of all species. We also have numerous molecular systematic analyses underway with various collaborators that complement our morphological studies, and together will provide an in-depth picture of relationships in the family. Another particular interest of mine is plant biogeography — the evolutionary history of entire biota and the individual taxa found in certain regions — and the ways in which these organisms have been influenced by continental movements. The major emphasis of the research program at the Missouri Botanical Garden is in the tropics, where much of the biotic diversity of the earth is concentrated but scarcely known and is severely threatened by human activities.

Tobe, H., Jaffré, T. and Raven, P.H. 2000. Embryology of *Amborella* (Amborellaceae) : descriptions and polarity of character states. J. Pl. Res. 113 : 271-280.

Raven, P.H. 2000. Science, technology and sustainability. Int. J. Biotech. 2: 7-15.

Pimm, S.L. and Raven, P.H. 2000. Extinction by numbers. Nature 403: 843-845.

Raven, P.H. and Johnson, G.B. 1999. Biology. 5th ed. Boston, etc.: WCB/McGraw Hill; 1284 Pp.

Raven, P.H. 1999. *Flora of China. Cycadaceae through Fagaceae. Vol. 4*. Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis (with Wu Zheng-yi). 464 Pp.

Raven, P.H. 1998. Biological Extinction: Its Scope and Meaning for Us *in* Guruswamy, Lakshman D., *Protection of Global Biodiversity. Converging Strategies*. Duke University Press. Durham and London (with J.A. McNeely). 13-32 Pp.

Raven, P.H. 1998. History of the Modern Flora of China in Zhang, Aoluo and Sugong Wu in cooperation with Peter H. Raven, Kunio Iwatsuki and Klaus Kubitzki (eds.), *Floristic Characteristics and Diversity of East Asian Plants*. China Higher Education Press, Beijing (with D. Axelrod and I. Al-Shehbaz). 43-55 Pp.

Dietrich W., Wagner, W.L. and Raven, P.H. 1997. Systematics of *Oenothera* section *Oenothera* subsection *Oenothera* (Onagraceae). Syst Bot Monogr 50:1-234.

SUSANNE S. RENNER, Pofessor of Biology
E-mail: renner@umsl.edu
Dr. habil., University of Hamburg

My research focuses on flowering plant phylogeny, classification, and reproductive biology, mostly of tropical groups. Currently I am working on sexual system evolution and biogeography of Melastomataceae, families in the Laurales, and Himalayan cobra lilies (*Arisaema*). A grad student in my lab is working on Gnetum, focusing on cone evolution and biogeography and using molecular and morphological data.

Ricklefs, R. E., and S. S. Renner. 2000. Evolutionary flexibility and flowering plant familial diversity: a comment on Dodd, Silvertown, and Chase. Evolution 54(3): 1061-1065.

Lippok, B., A. A. Gardine, P. S. Williamson, and S. S. Renner. 2000. Pollination by flies, bees, and beetles of *Nuphar ozarkana* and *N. advena* (Nymphaeaceae). Am. J. Bot. 87(6): 898-902.

Renner, S. S., and G. Hausner. 2000. New Species of Siparuna (Siparunaceae) III. Three new species and one newly ranked entity from Colombia, Ecuador, and Peru. Novon 10(2): 134-143.

Clausing, G., K. Meyer, and S. S. Renner. 2000. Correlations among fruit traits and evolution of different fruits within Melastomataceae. Bot. J. Linn. Soc. 133(3): 303-326.

Renner, S. S., D. Murray, and D. Foreman. 2000. Timing transantarctic disjunctions in the Atherospermataceae (Laurales): evidence from coding and noncoding chloroplast sequences. Syst. Biol. 49(3): 579-591.

Renner, S. S., and A. Chanderbali. 2000. What is the relationship among Hernandiaceae, Lauraceae, and Monimiaceae, and why is this question so difficult to answer? Intern. J. Plant Science 161(6 Suppl.): S109-S119.

Clausing, G., and S. S. Renner. 2001. Evolution of growth form in epiphytic Dissochaeteae (Melastomataceae). Org. Divers. Evol. 1(1): 45-60.

Clausing, G., and S. S. Renner. 2001. Molecular phylogenetics of Melastomataceae and Memecylaceae: implications for character evolution. Am. J. Bot. 88(3): 486-498.

Chanderbali, A. S., H. van der Werff, and S. S. Renner. 2001. Phylogeny and historical biogeography of Lauraceae: evidence from the chloroplast and nuclear genomes. Ann. Missouri Bot. Gard. 88(1): 104-134.

Renner, S. S., G. Clausing and K. Meyer. 2001. Historical biogeography of Melastomataceae: the roles of Tertiary migration and long-distance dispersal. Am. J. Bot. 88(7): 1290-1300.

Renner, S. S., and K. Meyer. 2001. Melastomeae come full circle: biogeographic reconstruction and molecular clock dating. Evolution 55(7): 000-000.

Wurdack, J., and S. S. Renner. 2001. Melastomataceae. In S. A. Mori, G. Cremers, C. A. Gracie, J.-J. de Granville, S. V. Heald, M. Hoff, and J. D. Mitchell, eds., Guide to the vascular plants of central French Guiana. Part 2. Dicotyledons. Mem. New York Bot. Gard. 76(2): 437-463.

Renner, S. S., and H. Won. 2001. Repeated evolution of dioecy from monoecy in Siparunaceae (Laurales). Syst. Biol. 50: 00- 00.

Renner, S. S. 2001. Heterodichogamy, how common is it? Trends in Ecology and Systematics (September issue)

PETER (MICK) RICHARDSON, Adjunct Assistant Professor and Research Assistant Professor
Coordinator of Graduate Studies, Missouri Botanical Garden
E-mail: mick.richardson@mobot.org
Ph.D., University of London

My major interest is biochemical systematics--the evolution of chemicals in plants and the use of these chemicals for taxonomic purposes. I study flavonoids and other phenolic compounds with particular interest in congruence between phylogenies based on chemical versus other types of data.

Richardson, P.M. 1998. New Tools for Investigating Biodiversity Symposium: Introduction. Ann. Missouri Bot. Gard. 85:1.

Richardson, P.M. 1996. National Biological Service, the 42nd Annual Systematics Symposium of the Missouri Botanical Garden: Introduction. Ann. Missouri Bot. Garden 83:534-535.

Richardson, P.M. 1996. The Systematics Agenda 2000 Symposium: Introduction. Ann. Missouri Bot. Garden 83:1-2.

Richardson, P.M. 1995. Economic Botany Symposium: Introduction. Ann. Missouri Bot. Garden 82:1-2.

Richardson, P.M. 1994. Origin and relationships of the major plant groups: Dedication and introduction. Ann. Missouri Bot. Garden 81:403-444.

Richardson, P.M. 1992. Structure, biosynthesis, evolution, and physiological and ecological roles of plant flavonoids and related compounds important in chemoprevention. In Cancer Chemoprevention, Wattenberg, L., Lipkin, M., Boone, C.W., and Kelloff, G.J. (eds.), pp. 353-360. CRC Press, Boca Raton, FL.

Richardson, P.M. 1992. The chemistry of the Labiatae: an introduction and an overview. In Advances in Labiate Science, R.M. Harley and T. Reynolds, (eds.), pp. 291-297. Royal Botanic Gardens, Kew.

ROBERT E. RICKLEFS, Curators Professor

E-mail: ricklefs@umsl.edu
Ph. D., University of Pennsylvania

I am interested in the diversity of ecological systems. One aspect of my research program addresses the evolutionary diversification of the life histories of birds, emphasizing comparative and theoretical analyses of variation in life tables, including aging, and physiological and experimental studies of growth, development, and parental care. A key issue centers on differences between tropical and temperate species. On a higher level of ecological organization, I am investigating the historical development of ecological communities and regional species richness, using comparative analyses of diversity, ecomorphological analyses of niche relationships, and molecular analyses of genetic divergence in West Indian birds. I am also investigating phylogenetic relationships and geographical distributions of genetically characterized lineages of blood parasites of birds. Each of these studies seeks to understand how factors that promote diversification, such as selection, speciation, and dispersal, are balanced by constraints of the system that limit response to selection or coexistence of species.

Hunt, J.S., E. Bermingham, and R.E. Ricklefs. 2001. The molecular systematics and biogeography of Antillean thrashers, tremblers, and mockingbirds (Aves: Mimidae). Auk 118: 35-55.

Krijgsveld, K.L., J.M. Olson, and R. Ricklefs. 2001. Catabolic capacity of the muscles of shorebird chicks: maturation of function in relation to body size. Physiological and Biochemical Zoology 74(2): 250-260.

Nealen, P.M. and R.E. Ricklefs. 2001. Early diversification in the avian brain: body relationship. Journal of Zoology 253: 291- 404.

Ricklefs, R.E. and A. Scheuerlein. 2001. Comparison of age-related mortality among birds and mammals. Experimental Gerontology 36: 845-857.

Ricklefs, R. E. 2000. Intrinsic aging-related mortality in birds. Journal of Avian Biology 31: 103-111.

Qian, H., and R. E. Ricklefs. 2000. Large-scale processes and the Asian bias in temperate plant species diversity. Nature 407: 180-182.

Apanius, V., N. Yorinks, E. Bermingham, and R. E. Ricklefs. 2000. Island and taxon effects in the prevalence of blood parasites and activity of the immune system in Lesser Antillean birds. Ecology 81: 1959-1969.

Schwarzbach, A. E., and R. E. Ricklefs. 2000. Systematic affinities of Rhizophoraceae and Anisophyllaceae, and intergeneric relationships within Rhizophoraceae, based on chloroplast DNA, nuclear ribosomal DNA, and morphology. American Journal of Botany 87: 547-564.

Ricklefs, R. E. 2000. Density dependence, evolutionary optimization, and the diversification of avian life histories. Condor 102: 9-22.

Ricklefs, R. E., and I. J Lovette. 1999. The roles of island area *per se* and habitat diversity in the species-area relationships of four Lesser Antillean faunal groups. Journal of Animal Ecology 68: 1142-1160.

Fair, J. M., E. S. Hansen, and R. E. Ricklefs. 1999. Growth, developmental stability and immune response in juvenile Japanese quail (*Coturnix coturnix japonica*). Proceedings of the Royal Society of London B 266: 1735-1742.

Lovette, I. J., E. Bermingham, and R. E. Ricklefs. 1999. Mitochondrial DNA phylogeography and the conservation of endangered Lesser Antillean *Icterus* orioles. Conservation Biology 13: 1088-1096.

Qian, H., and R. E. Ricklefs. 1999. A comparison of the taxonomic richness of vascular plants in China and the United States. American Naturalist 154: 160-181.

Ricklefs, R. E., and J. M. Starck. 1998. The evolution of developmental mode in birds. Pp. 366-380 in J. M. Starck and R. E. Ricklefs (Eds.), Avian Growth and Development. Evolution within the Altricial-Precocial Spectrum. Oxford University Press, New York.

Ricklefs, R. E. 1998. Evolutionary theories of aging: confirmation of a fundamental prediction, with implications for the genetic basis and evolution of life span. American Naturalist 152: 24-44.

Ricklefs, R. E. 1997. Comparative demography of New World populations of thrushes (*Turdus spp.)*. Ecological Monographs 67(1): 23-43.

Dietz, M., and R. E. Ricklefs. 1997. Growth rate and maturation of skeletal muscles over a size range of galliform birds.

Physiological Zoology 70(5): 502-510.

DAVID B. ROBERTSON, Adjunct Associate Professor of Political Science
E-mail: daverobertson@umsl.edu
Ph.D., Indiana University-Bloomington

I am interested in historical and institutional approaches to American and West European public policy, particularly economic, social welfare, labor market, and environmental programs. I am the Associate Editor of the *Journal of Policy History*, and I edit *Clio*, the newsletter of the Politics and History section of the American Political Science Association. Publications are on such issues as policy implementation and international lesson-drawing. Currently, I am writing a study of the development of American labor market policy over the past century. I have contributed an article on "Jobs and the Environment" to the forthcoming *Encyclopedia of Conservation and Environmentalism*.

Robertson, D. B. 1995. "Jobs and the Environment," in Robert Paehlke, ed., The Encyclopedia of Conservation and Environmentalism, pp. 380-381. (New York; Garland Publishing)

Robertson, D.B. 1994. "Politics and the Past: History, Behavioralism, and the Return to Institutionalism in American Political Science," in Eric Monkkonen, ed., Engaging the Past: The Uses of History Across the Social Sciences, pp. 113-153. (Durham, NC: Duke University Press)

Robertson, D.B. 1993. "The Politics of Policy Borrowing," in Something Borrowed, Something Learned, edited by David Finegold, Laurel McFarland, and William Richardson. Washington: Brooking Institution, 1993. Also in Oxford Studies in Comparative Education, 2:2 (1992), pp. 25-49 Coauthored with Jerold L. Waltman.

Robertson, D.B. 1989. The Development of American Public Policy: The Structure of Policy Restraint. Glenview: Scott, Foresman, 1989. Coauthored with Dennis R. Judd.

Robertson, D.B. 1989. "Planned Incapacity to Succeed? Policymaking Structure and Policy Failure" Policy Studies Review 8:2 (Winter, 1989), pp. 241-263.

GEORGE E. SCHATZ, Adjunct Assistant Professor and Research Assistant Professor
Associate Curator, Missouri Botanical Garden
E-mail: george.schatz@mobot.org
Ph.D., University of Wisconsin-Madison

My research interests include the systematics and evolution of the plant family Annonaceae, particularly in Mesoamerica, as well as the flora of Madagascar, in general, with a current emphasis on permanent plot establishment for long-term ecological monitoring.

Schatz, G.E. and A. Le Thomas. 1993. Annonaceae: a primitive dicot family with an ancient center in Africa-South America. In P. Goldblatt, ed., Biological Relationships Between Africa and South America. Yale University Press, New Haven.

Schatz, G.E. 1992. Taxonomic notes on Mesoamerican *Annona* Section *Atta* (Annonaceae), including Annona pruinosasp. nov. Novon 2:249-251.

Schatz, G.E. and A. Le Thomas. 1990. The genus *Polyalthia* (Annonaceae) in Madagascar. Bull. Mus. Natl. Hist. Nat., ser. 4, Sect. B. Adansonia 12:113-130.

EDUARDO SILVA, Assistant Professor of Political Science
E-mail: e.silva@umsl.edu
Ph.D., University of California, San Diego

My research interests focus on the politics of conservation and sustainable development. I am particularly interested in how competing ideas about conservation and sustainable development get translated in policies and projects. I am currently conducting a comparative research topic on these issues focusing on natural forest policy in Chile, Venezuela, Mexico, and Costa Rica. Other research interests include business-state relations and economic policy making in Latin America, and the impact of that interaction on social policy.

Silva, E. 1999. Forests, Livelihood, and Grassroots Politics: Chile and Costa Rica Compared, European Review of Latin American and Caribbean Studies 66 (June):67-102.

Robert N. Gwynne and Eduardo Silva. 1999. The Political Economy of Sustainable Development, in Robert N. Gwynne and Cristobal Kay, eds., Latin American Transformed: Globalization and Modernity, London: Arnold, pp. 153-180.

Silva, E. 1998. The Politics of Environment and Development, Latin American Research Review, 33, 3:230-247.

Silva, E. 1997. The Politics of Sustainable Development: Native Forest Policy in Chile, Venezuela, Mexico, and Costa Rica, Journal of Latin American Studies 29(2):457-493.

Silva, E. 1997. Sustainable Development and the Plight of the Forest in Chile, North-South Issues 6(2):1-8.

Silva, E. 1997. National Environmental Policies: Capacity-Building in Chile, *in* Martin Jaenicke and Helmut weidener, eds., National Environmental Policies: A Comparative Study of Capacity-Building. Berlin: Springer. Pp. 213-235.

Silva, E. 1997. Conservation, Sustainable Development, and the Politics of Native Forest Policy in Chile, *in* Gordon MacDonald, Daniel Nielson, and Marc Stern, eds. Latin American Policymaking in International Perspective. Boulder, Westview Press. Pp. 60-87.

Silva, E. 1996. Democracy, Market Economics, and Environmental Policy in Chile, Journal of Interamerican Studies and World Affairs 38(4):1-33.

Silva, E. 1995. Environmental Policy in Chile, in Michael Black and Frank Fischer, eds., Greening Environmental Policy: The Politics of a Sustainable Future. London: Paul Chapman Publishing. Pp. 104-126.

Silva, E. 1994. Thinking Politically about Sustainable Development in the Tropical Forests in Latin America, Development and Change 25(4):697-721.

VICTORIA L. SORK, Professor
E-mail: sork@umsl.edu
Ph.D., University of Michigan

My general area of research lies within plant evolutionary ecology, particularly focussing on the ecology, ecological genetics, and conservation biology of woody plants. I have worked on many plant species in temperate and tropical habitats, but my program has emphasized oaks as a focal species. Oaks are ecologically and economically significant constituents of temperate deciduous and tropical montane forests. As such, they provide a valuable opportunity to address critical evolutionary, ecological, and conservation biological questions about forest angiosperm species. A major theme of my research program is to understand how the opposing forces of gene flow and natural selection interact within heterogeneous environments to influence local adaptation, patterns of genetic differentiation, and overall genetic structure. Ongoing projects include: (1) Gene flow in Missouri Ozark managed forest ecosystems; (2) Pollen movement and reproductive isolation in fragmented populations of California Valley oak; and (3) Evolutionary ecology of mast seeding in tree species.

Sork, V.L., J. Nason, and D.R. Campbell. 1999. Landscape approaches to historical and contemporary gene flow in plants. Trends in Ecology and Evolution, June, 1999

Gram, W.K. and V.L. Sork. 1999. Does population density reflect genetic diversity? In press, Conservation Biology.

Sork, V.L., D. Campbell, R. Dyer, J. Fernandez, J. Nason, R. Petit, P. Smouse, and E. Steinberg. 1998. Proceedings from a workshop on gene flow in fragmented, managed, and continuous populations. National Center for Ecological Analysis and Synthesis Research Paper No. 3: http: //www.nceas.ucsb.edu/papers/geneflow.

Sork, V.L. A.L. Koop, M. A. de la Fuente, P. Foster, and J.A. Raveill. 1997. Patterns of genetic variation in woody plant species in the Missouri Ozark Forest Ecosystem Project (MOFEP). Pp. 233-249 in B. Brookshire and S. Shifley (Eds). Report of the Missouri Forest Ecosystem Project. General Technical Report, U.S.D.A. Forest Service.

Gram, W.K., V.L. Sork, and R.J. Marquis. 1997. Synthesis and integration of pretreatment results from the Missouri Ozark Forest Ecosystem Project. In , B. Brookshire and S. Shifley (Eds). Report of the Missouri Forest Ecosystem Project. General Technical Report, U.S.D.A. Forest Service.

Foster, P.F. and V.L. Sork. 1997. The population and genetic structure of theWest African rain forest liana, *Ancistrocladus korupensis* (Ancistrocladaceae). American Journal of Botany 84(8):1078-1091

Schellhorn, N. and V.L. Sork. 1997. Impact of weed diversity on insect population dynamics and crop yield in collards *Brassica oleraceae* (Brassicaceae). Oecologia 111(2):233-240

PETER F. STEVENS, Professor
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Ph.D., Edinburgh University

My prime interest is in the phylogeny and morphological systematics of flowering plants. Current projects include various studies on *Clusiaceae* - the phylogeny of the family, monographs of Old World genera, and generic circumscriptions throughout the range of the family. Characters of interest include seedling morphology, vegetative (including root) anatomy, testa anatomy, and growth patterns. I am very much concerned about the relationship between a phylogenetically-based systematics and its various user communities, and here my interests in the history of systematics and cognitive psychology are of direct relevance. Projects here include the development (with others) of an effective, stable, ordinal-level classification of flowering plants, and the stabilization of family limits and the development of hierarchical characterizations for all flowering plant taxa above the level of family - these should also be invaluable teaching tools. Similarly, a web-based and current list of all plant names, with accurate bibliographic citations, links to types, etc., will be of great value to the entire systematic community, and I am involved in cross-institutional efforts to develop this.

Stevens, P.F. 1998. What kind of classification should the practicing taxonomist use to be saved? Pp. 295-319 in J. Dransfield, M. J. E. Coode, & D. A. Simpson (eds), Plant Diversity in Malesia III. Royal Botanic Gardens, Kew.

Stevens, P.F. 1997. How to interpret botanical classifications: Suggestions from history. BioScience 47:243-250.

Stevens, P.F. 1997. (N. Gift & PFS.) Vagaries in the delimitation of character states - an experimental study. Syst. Biol. 46:112-125.

Stevens, P.F. 1997. J. D. Hooker, George Bentham, Asa Gray and Ferdinand von Mueller on species limits in theory and practice - a mid-nineteenth century debate and its repercussions. Hist. Records Australian Sci. 11:345-370.

Stevens, P.F. 1996. *Guttiferae* subfam. *Calophylloideae*. Pp. 61-126 in B. J. Conn (ed.), Handbooks of the Flora of Papua New Guinea, Vol. III. Melbourne University Press: Melbourne.

Stevens, P.F. 1996. (A. Cuerrier, R. W. Kiger, & PFS.) Charles Bessey, evolution, classification, and the New Botany. Huntia 9:179-213.

Stevens, P.F. 1994. The Development of Biological Classification: Antoine-Laurent de Jussieu, Nature, and the Natural System, xxiii + 616 pp. Columbia University Press: New York.

ZULEYMA TANG-MARTINEZ, Professor
E-mail: zuleyma@umsl.edu; Telephone: (314) 516-6498
Ph.D., University of California-Berkeley

My major area of interest is animal behavior, with an emphasis on the mechanisms, development and function of vertebrate social behavior. My students and I work in both the laboratory and field. Species of particular interest include rodents (prairie voles in particular), other mammals, and reptiles. Current laboratory projects using prairie voles are focused on understanding the role of olfactory communication, mechanisms of kin discrimination, effects of early social environment on adult behavior, and effects of genetic relatedness on social behavior and reproductive performance. In the field, current students work on dispersal, demography, and communication in opossums and river otters. One of my students works at the Saint Louis Zoo on the effects of prolactin on surrogate parenting in endangered fruit doves. In addition to the above, I also have a strong interest in the history of biology, particularly biological determinism and the history of ideas.

Tang-Martinez, Z. 2000. Paradigms and primates: Bateman's principle, passive females, and perspectives from other taxa. In: Primate Encounters: Models of Science, Gender, and Society (Fedigan, M.L. & Strum, C.S., eds.). University of Chicago Press, Chicago.

Braude, S. & Tang-Martinez, Z. 1999. Stress, testosterone, and the immunore distribution hypothesis. Behavioral Ecology 8:345-350.

Paz y Mino, G. & Tang-Martinez, Z. 1999. Effects of isolation on sibling recognition in prairie voles, Microtus Ochrogaster. Animal Behaviour 57:1091-1098.

Paz y Mino, G. & Tang-Martinez, Z. 1999. Effects of exposures to siblings or sibling odor on sibling recognition in prairie voles (*Microtus ochrogaster*). Canadian Journal of Zoology 77:118-123.

Paz y Mino, G. & Tang-Martinez, Z. 1999. Social interactions, cross-fostering, and sibling recognition in prairie voles (*Microtus ochrogaster*). Canadian Journal of Zoology 77:1631-1636.

Phillips, M.L. & Tang-Martinez, Z. 1998. Parent-offspring discrimination in the prairie vole and the effects of odors and diet. Canadian Journal of Zoology 76:711-716.

Tang-Martinez, Z. 1997. The curious courtship of sociobiology and feminism: A case of irreconcilable differences. In: Feminism and Evolutionary Biology: Boundaries, Intersections, and Frontiers (Gowaty, P.A., ed.). Chapman and Hall, New York.

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My principal research interests are the systematics, biogeography, and evolution of the plant family Rubiaceae, in particular the neotropical members. This family is the fourth largest in number of species and is ecologically important in most tropical habitats, but is relatively little-known in the neotropics. Additionally, my current research projects include collaboration on floristic inventories of several sites in poorly known, speciose habitats in western South America.

Taylor, C.M. 1999. New names, a new combination and a new species of *Psychotria* (Rubiaceae: Psychotrieae) from São Paulo State, Brazil. Novon 9:260-262.

Taylor, C.M. 1997. Conspectus of the genus *Palicourea* (Rubiaceae: Psychotrieae), with the description of some new species from Ecuador. Ann. Missouri Bot. Gard. 84:224-262.

Taylor, C.M. 1996. Taxonmic review of *Cruckshanksia* and *Oreopolus* (Rubiaceae: Hedyotideae). Ann. Missouri Bot. Gard. 83:459-477.

C.M. Taylor. 1996. Overview of the Psyochotrieae (Rubiaceae) in the Neotropics. Opera Bot. Belg. 7:261-270.

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My major interests are the distribution patterns, systematics, and evolution of tropical Andean plants, especially the genus Berberis. My field work has been carried out in the paramos and Andean forest of Ecuador. The major projects that I working on, together with collaborators, are the Olacaceae and Santalaceae for the "Flora of Ecuador", "A guide to the vascular plant genera of the paramos", and the Berberidaceae for the Catalogue of the vascular plants of Bolivia. I am coeditor of the recently published "Flora de Nicaragua", the first modern flora of that country and the first complete flora of a Latin American country published in Spanish. I am also currently envolved in the edition of the Manual to the plants of Costa Rica.

Ulloa Ulloa, C. & P.M. Jørgensen. *Acanthosyris annonagustata* (Santalaceae), a new species of from Eastern Ecuador. Novon 8: 84–86. 1998.

Ulloa Ulloa, C. Berberidaceae and Santalaceae. In: P.M. Jørgensen & S. León (eds). Catalogue of Vascular plants of Ecuador. — Monogr. Syst. Bot. Missouri Bot. Gard. 75: 319–320; 882. 1999.

Ulloa Ulloa, C. Berberidaceae, Costaceae, Heliconiaceae, Zingiberaceae. In: R. Valencia et al. Editors. Libro Rojo de las Plantas Endémicas del Ecuador 2000. Publicaciones del Herbario QCA, PUCE, Quito. 2000.

Stevens, W.D., C. Ulloa Ulloa, A. Pool & O.M. Montiel. Editors. 2001. Flora de Nicaragua. Monogr. Syst. Bot. Missouri Bot. Gard. 80: i--xl, 1–2666 (3 vol.).

Ulloa Ulloa, C. 2001. Julianaceae, Myricaceae, Strelitziaceae. In: Stevens, D.W, C. Ulloa Ulloa, A. Pool y O.M. Montiel (eds.). Flora de Nicaragua. — Monogr. Syst. Bot. Missouri Bot. Gard. 80.

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Major interests are taxonomy and evolution of the Avocado family (Lauraceae). Current projects are floristic treatments (Madagascar, Saül area in French Guyana, Bajio area in Mexico), generic revisions (preparing a computerized key to *Ocotea*, a genus of 300+ species), and a study of the phylogenetic relationships of lauraceous genera.

Werff, H. van der. 1994. Novelties in neotropical Lauraceae. Novon 4:58-76.

Werff, H. Van der. 1993. A revision of the genus *Pleurothyrium*. Ann. Missouri Bot. Gard. 80:39-118.

Werff, H. van der. 1992. substrate preference of Lauraceae and ferns in the Iquitos area, Peru. Candollea 47:11-20.

Werff, H. van der. 1991. A key to the genera of Lauraceae in the New World. Ann. Missouri Bot. Gard. 78:377-387.

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My work addressees the paleoethnobotany of the Americas. Currently, I am investigating plant utilization patterns among the area's prehistoric human occupants. I am synthesizing knowledge gained from my prior analyses of plant assemblages. These assemblages were recovered from local archaeological sites and span approximately 3000 years. My interests also include traditional field and foraging systems and their influence on biodiversity and the selective pressures that influence how we interpret the paleoethnobotanical record.

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My major research interests include the systematics of the dogbane or periwinkle and legume families (Apocynaceae and Fabaceae), with a focus on the Neotropics. I recently helped complete the Catalogue of the Flowering Plant and Gymnosperms of Peru, and I am currently embarking on a similar project for the plants of China. The development and management of large interdisciplinary databases is an additional interest, especially in light of our current need to document biodiversity worldwide.

Zarucchi, J.L., Winfield, P.J., Polhill, R.M., Hollis, S., Bisby, F.A. and Allkin, R. 1994. The ILDIS project on the world's legume species diversity. Bisby, Russell, Pankhurst, eds., Designs for a Global Plant Species Information System. Oxford University Press, pp. 131-144.

L. Brako and J.L. Zarucchi, editors. 1993. Catalogue of the Flowering Plants and Gymnosperms of Peru. Monographs in Systematic Botany, Missouri Botanical Garden 45:i-xl, 1-1286.

J. L. Zarucchi. 1992. A new species of *Macrolobium* (Fabaceae: Caesalpinoideae) from Mesoamerica. Annuals of the Missouri Botanical Garden 77:209-211.

J.L. Zarucchi. 1991. *Quiotania*: a new genus of Apocynaceae-Apocynoideae from northern Colombia.
Novon 1:33-36.