

## ANNOUNCEMENT

**2007 Biotropica Award for Excellence in Tropical Biology and Conservation**

The Association for Tropical Biology and Conservation and the Editorial Board of *Biotropica* proudly announce the winner of the 2007 *Biotropica* Award for Excellence in Tropical Biology and Conservation, presented to the author of a paper published in *Biotropica* during 2006. We recognize an outstanding contribution based on original research conducted in tropical regions. Criteria include clarity of presentation, strong basis in natural history, well-planned experimental and/or sampling design, and novel insights gained into critical processes that influence the structure and functioning of tropical biological systems.

The 2007 Award is presented to Heraldo Vasconcelos, Ernane Vieira-Neto, Fabiane Mundim, and Emilio Bruna for their paper entitled “Roads Alter the Colonization Dynamics of a Keystone Herbivore in Neotropical Savannas” published in *Biotropica* 38(5): 661–666.

**Heraldo Vasconcelos****Ernane Vieira-Neto****Fabiane Mundim****Emilio Bruna**

An ever-increasing proportion of the global natural landscape is in close proximity to roads, and in recent years it has become evident that roads may facilitate biological invasion. The causal

factors that drive these processes, however, are frequently misunderstood, and rarely confirmed by rigorous testing. Vasconcelos *et al.* approached this theme by studying a prime example of native species proliferation and range expansion in the Neotropics—the dramatic increase of leaf-cutting ants.

The study of Vasconcelos *et al.* has two supreme merits that justify the award. First, the authors conclusively demonstrate that roads facilitate the spread of leaf-cutting ants, and they also explain the mechanism by which this occurs. Second, they carefully emphasize the far-reaching consequences that this has for the conservation of the highly threatened Cerrado biome. As such, this article offers a superb lesson in both functional ecology and conservation biology.

From my own perspective, given my own interests in the causes of fragmentation- and edge-driven increases in leaf-cutting ant populations, Vasconcelos *et al.*'s study represents a major contribution to understanding the dramatic spread of leaf-cutting ants. It makes me realize that the mechanisms are manifold and context-dependent. Whereas in forest islands high *Atta* densities have been attributed to the loss of natural enemies, Vasconcelos *et al.* show that along roadsides they are benefited by favorable landing and nest initiation sites despite higher predation on founding queens. Additionally, their study shows that colonies may persist after colonization because roads enhance the availability of pioneer species (which are highly palatable to leaf-cutting ants), and act in much the same way as secondary forests or forest edges.

Road ecology is a young but rapidly growing field, not least because of the role roads have as corridors that promote the spread of native or exotic species. Undoubtedly, this work will stimulate future research in this fascinating subject. I would like to express my sincere appreciation and congratulate the four authors on this distinguished work.

**Rainer Wirth**

Perhaps like many of my fellow myrmecologists, I became interested in ants during my first field trip to a tropical rain forest. That was many years ago, just after I became a graduate student at the Instituto Nacional de Pesquisas da Amazônia (INPA) in Manaus, Brazil. While I was searching for arthropods in the leaf litter, ants immediately caught my attention, in part because of their sheer abundance. Paradoxically, I chose to do my thesis work with leaf-cutter ants (*Atta* spp.), which are actually very rare in mature forests near Manaus. To find an *Atta* nest I often had to walk several kilometers through the forest, where nests were usually located in treefall gaps and other clearings. Leaf-cutter ants have long fascinated biologists, and one of the memorable images visitors to tropical rain forests remember is that of a trail of leaf-cutter ants winding its way through the forest. Although there is a rich literature on their behavior, ecological impacts, and their complex symbioses with fungi, there is surprisingly

little known about the factors influencing what is arguably the most important process in the formation of a colony—the decision by newly mated queens of where to initiate their nests.

Five years ago I joined the faculty at the Universidade Federal de Uberlândia (UFU), where I initiated a research program on the ecology of the *Cerrado*—the incredibly diverse savannas that are among the most threatened biomes in South America. Soon I was surrounded by a dynamic group of undergraduate and graduate students looking for opportunities to gain research experience. Two of these undergraduates—Fabiane Mundim and Ernane Vieira Neto—were particularly interested in working with me and my long-time collaborator Emilio Bruna on our projects involving leaf-cutter ants, which appear much more common in the *Cerrado* than in Amazonia. While conducting some preliminary studies on the spatial distribution of *Atta* colonies, we found that they were often found near roads, and wondered why. Because we knew that *Atta* queens actively search for sites in which to establish a new colony, we hypothesized that dirt roads (and the verge of paved roads) were preferred landing sites for founding queens. To test this hypothesis we had to wait diligently for the mating flight, which takes place only once or twice a year at the beginning of the rainy season. This

is a truly amazing event, in which males and females synchronously emerge from all of the colonies within a given area to reproduce. Our study focused on *Atta laevigata*, one of the most widespread leaf-cutter ant species in the *Cerrado*, and also one of the most distinctive due to the shiny head of the soldier caste, which gives this species its common name of *saiwa cabeça-de-vidro*, or glass-head leaf-cutter ant.

We were surprised to find how strong the preference of *A. laevigata* founding queens was for dirt roads as opposed to the nearby *cerrado* vegetation. Even more surprising was that this is true even though one of its main predators, the scarab beetle *Canthon virens*, is much more abundant on roads and kills large numbers of queens there. The preference of *A. laevigata* queens for relatively open sites is probably adaptive, and we are currently exploring the factors influencing the success of incipient colonies in sites with different amounts of vegetation. Our ultimate goal is to determine the relative importance of biotic and abiotic factors on the demography of these ants, and to evaluate how changes in ant abundance could in turn affect the demography of *Cerrado* plants.

**Heraldo L. Vasconcelos**