BIOTROPICA 41(5): 647–648 2009 10.1111/j.1744-7429.2009.00579.x

ANNOUNCEMENT

2009 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 2009 *Biotropica* Award for Excellence in Tropical Biology and Conservation, presented to the author of a paper published in *Biotropica* during 2008. 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 2009 Award is presented to Timothy Paine, Kyle Harms, Stefan Schnitzer and Walter Carson for their paper entitled '*Weak competition among tropical tree seedlings: implication for species coexistence*' published in *Biotropica* 40(4): 432–440.

Understanding the mechanisms that maintain high diversity of tropical trees has for a long time been the focus of an intense research effort. This effort continues, as while we are far more advanced in our understanding than a few decades ago, we are also only too aware that there are many plausible theories and we remain a long way from understanding their relative contributions in different contexts. Many, and perhaps most, theories assume intense direct competition among seedlings. This assumption may seem to be well justified to observers within tropical forests—as indeed my own familiarity with the seedling carpets of dipterocarp forests after a mast fruiting event suggests. But is such an assumption warranted? There have, surprisingly, been few direct tests of this seemingly essential element of many tropical diversity theories. By experimentally reducing seedling densities Paine *et al*. have provided an excellent test of seedling competition in a Neotropical forest, and found seedling competition to be weak or absent. This elegant experiment has broad implications for mechanisms of species coexistence in that competitive hierarchies unfolding across local niche heterogeneity is unlikely to be a major contributor to species coexistence, at least at seedling life-stages. Other theories that do not depend on the assumption of competitive exclusion, including neutral dynamics, and density-dependent interactions with plant consumers and pathogens, are not so undermined.

Paine *et al*. are the first to recognise the limitations of their study which was conducted on three species at one ingle site—but to level such criticism would be to miss the broader point: we need

to test our assumptions before elaborating on our theories. Paine *et al*. have provided us not only with an excellent study on tropical ecology's central question, but also a gentle reminder that when assumptions are, eventually, tested the outcomes might turn out to be counter-intuitive.

Congratulations to all authors.

Jaboury Ghazoul

Seedlings of tropical trees are ideal study subjects for my main research interest, experimental community ecology. Not only beautiful and diverse, they also form a key phase of regeneration. Unlike saplings and adult trees, seedlings are conveniently sized for manipulative experiments. And, being rooted, they can't run away. On the other hand, they're small, bafflingly similar in appearance, and easily damaged. Nevertheless, seedlings are rewarding to work with, having great potential to yield insight into the forces that structure forest communities.

This study grew out of the observation that there just aren't that many seedlings in Neotropical forests. In some vague way, this observation did not jibe with my understanding of the traditional paradigm that interactions among individuals and interactions between individuals and their environment generate community structure. The question began to crystallize after reading about efforts to quantify the zones of influence (ZOIs) of individual plants. In discussions with my advisor, Kyle Harms, we realized that we could measure ZOIs directly, and thus infer the potential for competition among plants, as plants can compete only if their ZOIs overlap.

Thus inspired, I returned to Peru, ready to investigate whether seedlings could compete. With Pamela Weisenhorn, I set a camera with a wide-angle lens on a tripod to take 'aerial photos' of seedlings' leaves, to see how much they shaded one another. Then we excavated those seedlings, to see how much their roots overlapped. Over a series of dinner-time conversations at Cocha Cashu Biological Station, Harald Beck and others suggested that we measure the intensity of competition, as well as its potential. We did so, clipping seedlings out of high-density plots to generate seedling plots of varying densities. The study later expanded, following a conversation with Stefan Schnitzer in which I learned that he and Walt Carson had un-published data from similar clipping experiments they had performed in Panama. By joining forces as co-authors, we transformed three interesting but isolated cases into a more general study of the intensity of and potential for competition among seedlings.

In hindsight, our study design was risky, because in presupposing competition to be weak, we studied plots with the greatest possible densities of seedlings. If we had been wrong, and had found competition to be intense, we would have been unable to state what minimum density is necessary for competition to occur. As it was, we were able to conclude that competition can occur among seedlings, but only at stem densities much greater than those normally observed in forests. Gratifyingly, within months of our paper's appearance in Biotropica, similar results were obtained by Svenning *et al*. (2008, Oecologia 155: 143–150), independently confirming our conclusions. A clear follow-up to this study would be to examine whether older seedlings or saplings compete among themselves, particularly in canopy gaps where more light is available.

Timothy Paine