

## **Variation of social insect assemblages in Singapore primary and secondary forests**

Theodore A. Evans<sup>1</sup>, Justine Jacquemin<sup>2</sup>, Lee Gang<sup>1</sup> and Thomas Bourguignon<sup>1</sup>

<sup>1</sup>Department of Biological Sciences, National University of Singapore, 117543 Singapore, Singapore

<sup>2</sup>Biological Evaluation Section, Royal Belgian Institute of Natural Sciences, Rue Vautier 29, B-1000 Brussels, Belgium

As primary forests globally decline, secondary forests represent a growing part of the world tropical forests. Even though nothing can replace primary forests, which host the highest species diversity including many endemic species, the conservative value of secondary forest is increasingly recognized in a world deprived of untouched forests. Studies of biodiversity in secondary forests usually consider either the age of the forest or the distance of the forest from potential source primary forest habitat in influencing the number of species living within them. Here, we studied ant and termite assemblages in primary, old secondary (>100 year old) and young secondary forests, at distances either close to or far from primary forest in Singapore, in order to consider the relative influence of age and distance on diversity. We found that primary forests hosted the highest species diversity, both for ants and termites, including many unique species absent in other sites. Old secondary forest did not differ from young secondary forests in term of species diversity, except for young secondary forests distant from primary forest patches that consistently hosted fewer species. Similarly, while distance to primary forest did not affect ant diversity, it considerably reduced termite diversity and abundance. Altogether, our results show that primary forests retain higher species diversity, and this even after 100 years of site rehabilitation. However, not all secondary forests are of equal conservative value and, at least for termites, close distance to primary forest has a positive effect of species diversity.