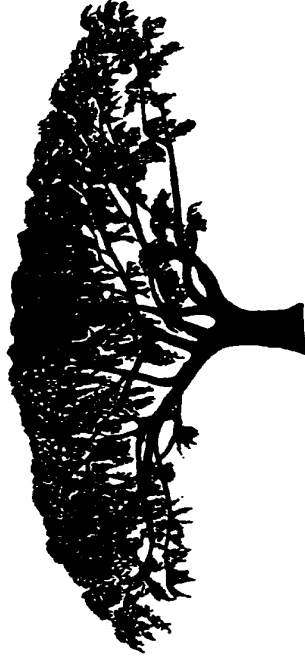


# 30th Anniversary of the Association for Tropical Biology



Thirty Years of Tropical Biology:  
Organisms to Global Change

El Convento Hotel  
San Juan, Puerto Rico  
June 1-4, 1993

Meeting with The Organization For Tropical Studies

Hosted by:

University of Puerto Rico  
USDA Forest Service  
Puerto Rico Science Teachers Association  
Caribbean Chapter of the Association for the  
Advancement of Science

ROISIN, YVES\*, MAURICE LEPONCE, and JACQUES M.  
PASTEELS. Laboratoire de biologie animale et cellulaire,  
CP 160/12, Université Libre de Bruxelles, Ave F.D.  
Roosevelt 50, 1050 Brussels, Belgium.

## Competition among Neo-Guinean arboreal termites with different dispersal and warfare strategies

Three arboreal-nesting termite species occur in coconut plantations of northern New Guinea: *Nasutitermes princeps*, *N. novaeumbridarum* and *Microcerotermes biroi*. All feed on dead vegetable matter. *N. princeps* forms large colonies, often polygynous, occupying polydomous nests and expanding by budding. *N. novaeumbridarum* colonies are monogynous, usually monodominous and confined to a dead or dying tree. *M. biroi* forms small colonies occupying 1-5 trees; in polydomous systems, only one nest contains reproductives. Most *M. biroi* colonies are headed by the primary pair, multiple neotenic are present in 21% of them. Some observations suggest that *M. biroi* is tolerant a wider range of environmental conditions than the other species. The three species exclude each other so that no tree is colonized by more than one of them. *N. novaeumbridarum* is less abundant than the other species and rarely seen in overt competition with them. Detailed mapping of termite nests and covered galleries revealed, in one plot, a spectacular progression of *N. princeps* at the expense of *M. biroi*. In another plot, the removal of *N. princeps* nests allowed the recolonization by *M. biroi*. Thus *M. biroi* appears as a pioneer species, well adapted for colonizing new sites, but can be dislodged by *N. princeps*. This can be related to the warfare methods of the two species. The defensive system of *M. biroi* consists in blocking small passages between nest chambers by individual soldiers, whereas *N. princeps* heavily relies upon the mobility and coordination of its soldiers and workers. As *N. princeps* foragers are comparatively large-sized, populous nests of this species seem well adapted for attacking and outcompeting neighbouring societies.