



2009 Nutting Award Announcement

The recipient of the 2009 William L. and Ruth D. Nutting Award is **Thomas Chouvenc** from the Department of Entomology and Nematology, University of Florida Fort Lauderdale Research and Education Center in Fort Lauderdale, Florida. Thomas was selected for his body of work on the defense mechanisms in termites against the infection by pathogenic fungi.

Biological control of subterranean termites with entomogenous fungi was once considered a realistic goal. The original idea for the use of fungal pathogens, such as *Metarhizium anisopliae*, against subterranean termites was based on the assumption that the favorable soil environment, the social interaction of termites, the relatively high temperature and humidity in termite nests, and the self-replicating nature of the fungus would sustain infection and promote an epizootic. The literature is littered with laboratory studies that demonstrated the capacity of many soil fungi to kill termites, but few field trials, either positive or negative, have ever been published. Field trial usually failed and the failures have never been properly analyzed and reported.

Rather than continue to search for another pathogen, Thomas posed the following question: Why is it that entomogenous fungi cannot complete their life cycle and cause an epizootic in a termite colony? This led to a series of experiments that revealed termite defense mechanisms against entomogenous fungi at multiple levels, including chemical defense with fungicidal antibiotics in the gut of termites, cellular defense by encapsulation of fungal spores, behavioral defense by mutual grooming, avoidance, and burial of cadavers and/or necrophagy of infected termites. He concluded that these integrated defense mechanisms of termites against soil fungi are the result of natural selection through which termites co-evolved with these microbes. His results have taught us that if we are to successfully use soil fungi as biological control agents, we need to circumvent at least one or more of these defense mechanisms.

As the great-grand-student of the French biologist, P.P. Grasse, who established the foundation of modern termitology, Thomas looked at the biological problem with the eyes of a naturalist; a tradition that is gradually being lost among entomologists. Thomas has made an outstanding contribution to our understanding of the interaction between entomogenous fungi and subterranean termites, one of the most important urban insect pests. Because of his efforts, we are now one step closer to the biological control of subterranean termites, a dream that has been unrealized for decades.