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Grande salle + visio

## **BIOLOGICAL CONTROL OF AN INVASIVE, HIGHLY DAMAGING AMBROSIA BEETLE: THE POLYPHAGOUS SHOT-HOLE BORER IN SOUTH AFRICA**

par

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- The polyphagous shot-hole borer, *Euwallacea fornicatus* (Coleoptera: Curculionidae: Scolytinae) is an invasive ambrosia beetle native to South East Asia. It has recently (ca. 2012) invaded South Africa, first being recognised in 2017. The beetle attacks living, healthy trees, vectoring a fungus (*Fusarium euwallaceae*) with which it is closely associated, into the wood. The combination of beetle mechanical damage, and fungus growth, causes fusarium die-back (FD) in more than a 100 susceptible tree species (often leading to tree death), with the list of viable hosts continuously expanding. Ornamental and native trees (*Quercus*, *Acer*, *Platanus* etc.), as well as several commercial trees (avocado, macadamia, pecan, pear, apple, plum) trees can be attacked, and show varying degrees of damage.
- It is estimated that *E. fornicatus* and *F. euwallaceae* can potentially cause multi billion USD damage in South Africa. To date, control strategies involve removal and sanitation of infected material, and chemical (pesticide and/or fungicide) injection into trees. Due to limitations posed by these control strategies, there is a need to develop biological control as part of the integrated pest management (IPM) framework for this pest. As the insect and fungus are hidden deep in galleries in tree stems, traditional control/application strategies will have limited efficacy at best. Fungus feeding mites associated with bark beetles can in theory be used to vector propagules of entomopathogenic/antagonistic fungi into beetle galleries.
- We therefore set out to collect and identify phoretic mites, that naturally associated with these beetles, develop protocols for laboratory culture and rearing, establish whether the mites can feed on *F. euwallaceae* and biocontrol fungi, and test whether they can vector these biocontrol fungi into beetle galleries. As a side objectives, the virulence of entomopathogenic fungi against *E. fornicatus*, and competition studies between *F. euwallaceae* and biocontrol fungi are being conducted in vitro.