

**Speaker:**

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Date: Monday, Nov. 22, 2021**Time:** 4:00 pm - 4:50 pm**Zoom:** 948 0131 1028**Passcode:** 347039**Title:**

“You had me at ‘emergence.” Identification of parasitoids associated with the *Euwallacea* cryptic species complex based on indirect emergence data and a more rigorous quantitative PCR approach

Abstract:

The polyphagous shot hole borer (PSHB) is an invasive ambrosia beetle that has caused significant damage in numerous native and ornamental trees as well as agricultural crops in southern California and other regions worldwide. This pest belongs to the *Euwallacea* cryptic species complex and is known for its symbiotic relationship with a *Fusarium* fungus. High-levels of PSHB infestation can cause critical injury to a host tree, leading to mortality as a result of accrued vascular tissue damage and *Fusarium* dieback. Biological control is being pursued as an option for managing invasive populations. The initial objective of this study was to find, identify, and rear natural enemies of the *Euwallacea* cryptic species complex in its native range. Multi-year collection of parasitoids emerging from PSHB-infested wood, imported under permit from Taiwan, lead to the identification of several potential natural enemies, of which, one commonly encountered species, and six less common species, belonged to the flat wasp family, bethylidae. Other common species belonged to the families Braconidae and Eulophidae. In the PSHB system, the acts of parasitism and parasitoid emergence are difficult to observe directly since they occur deep inside the beetle gallery. Thus, in an attempt to confirm the parasitic link between PSHB and each parasitoid, we designed a probe-based qPCR assay to detect remnants of PSHB DNA in the parasitoids. Detection limits of the assay were determined using 10-fold serial dilutions of PSHB DNA in that of *Tamarixia radiata*, a parasitoid of the Asian citrus psyllid. Since adult bethylids often partake in host-feeding behavior (e.g., *Cephalonomia* spp.), we expected one or more of those species to show evidence of having consumed PSHB, but instead, among the parasitoids that emerged from the native infested logs, the only two species that consistently showed evidence of having consumed PSHB, were the Braconids, *Eucosmophorus* sp. and *Cosmophorus* sp. These findings will be discussed.