Proceedings of the Tenth International Conference on Urban Pests
Rubén Bueno-Marí, Tomas Montalvo, and Wm. H Robinson (editors) 2022
CDM Creador de Motius S.L., Mare de Deu de Montserrat 53-59,
08930 Sant Adrià de Besòs, Barcelona, Spain

FABRIC AND FUNGI: NOVEL FORMS OF BED BUG CONTROL

A. BEAVEN, C. MCNEILL, H. TOFILAU, S. MCNEILL
Union College, Lincoln, United States

Abstract Different types of various textured fabrics bed bugs (Cimex lectularius) prefer to use as harborages, and the effect of various species of the entomopathogenic fungi *Ophiocordyceps* on bed bugs. Three synthetic fabrics were used: red 100% polyester fleece, red 100% polyester knit fabric, and red 100% polyester slub fabric. Three novel types of fungi will be tested in this study: *Ophiocordyceps militaris*, *Ophiocordyceps nutans*, and its anamorph *Hymenostible nutans*. Two commercial products utilizing *Beauveria bassiana* will serve as controls: Aprehend, an oil-based solution, and Botaniguard, a water-based solution. A preliminary study tested 33 males, females, andnymphs with three fabric textures in a choice test. Preliminary trends indicated that after10 minutes, 100% (11/11) females, 55% of (5/11) males, and 44% (4/11) nymphs preferred the fleece fabric. All females avoided the knit and slub fabrics. It was hypothesized that the general preference for fleece fabric was due to its bulky nature,which allowed bed bugs to easily hide in it. The optimal harborage fabric will be used totest various fungal treatments. In the fungal studies, 30 females, 30 males, and 30 nymphs will be exposed to fabric harborages, which will be treated with a particular fungus. It is hypothesized that the bed bugs exposed to Aprehend will show the greatest mortality rate, as previous studies show it is more effective than Botaniguard. Of the Ophiocordyceps species, it is hypothesized that *O. nutans* will be most effective, as it is known to infect and kill other Hemiptera, and *O. militaris* will show the lowest mortality rate, as it primarily infects order Lepidoptera. This study should be able to indicate what type of textured fabric bed bugs prefer, and what type of novel fungal species can offer control for this problematic urban pest.

Key words Bed bugs, fabric, fungi, *Ophiocordyceps*