

Survey of Blattodea species from select habitats in Sorrento, Florida

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Introduction

Between March 10th, 2012, and March 11th, 2012, several habitats on the property of Mitchel Kalmanson were surveyed for representatives of the order Blattodea. This investigation will serve as a forerunner to future ecological studies in the area regarding Blattodea species density, ecology, and nutrient cycling.

Materials and Methods

Locations were chosen based on visual surveying and capture techniques were limited to manual means. At least seven species representing four families (Blattidae, Rhinotermitidae, Blaberidae, Blattellidae) were found.



Fig. 1. An adult male indigenous *Eurycotis floridana*.



Fig. 2. An adult female introduced *Panchlora nivea*.

Table 1. Blattodea species collected and environment surveyed. R means fewer than ten individuals were found; C means greater than ten individuals were found.

	Leaf Litter	Bark of Rotting Hardwood Logs	Bark of Rotting Softwood Logs	Rotting Hardwood Logs/Stumps	Rotting Softwood Logs/Stumps	Ankole-Watusi Dung	Beneath Rotting Hardwood Logs	Synanthropic Debris	Leaf Litter Accumulation in Hardwood Tree Fork
<i>Reticulitermes sp.</i> (possibly <i>flavipes</i>)					C	R	R		
<i>Panchlora nivea</i>			R	R					
<i>Pycnoscelus surinamensis</i>		R	R	R	C		C	R	
<i>Eurycotis floridana</i>		C		R	R				
<i>Periplaneta australasiae</i>		R	R		R		R		C
<i>Blattella asahinai</i>	C	R			R	R		C	
<i>Parcoblatta sp.</i> (Possibly <i>divisa</i> or <i>zebra</i>)		R							

Discussion

The diversity and size of Blattodea from the tropics and subtropics is well known (Guthrie and Tindall, 1968), but the role of cockroaches in the North American tropics and subtropics has barely been touched upon. It has been observed in some areas, such as rainforest canopies, that although the Blattodea (namely, all members classically included in the order minus the Termitoidae) may constitute less than 6% of the invertebrate species collected, they contribute an astonishing 24.3% to the invertebrate biomass (Basset, 2001). In one Malaysian mountain region, the classical Blattodea constitute as much as 40% of the macrofaunal biomass (Collins, 1980). This survey's intent was to shed light upon the diversity and extent of Blattodean in presence in a mid-Florida ecosystem in order to reveal their prevalence, highlight their potential importance, and to instigate further inquiry.

Observations of *Blattella asahinai* were fairly consistent with those of Brenner et al. (1988), with females and large nymphs being the most readily apparent. In synanthropic areas there were observably more males, few females, and no noticeable nymphs; adult males may be more photophilic at night, which would bring them closer to man-made structures producing light. In the leaf litter, *Blattella asahinai*'s success may be contributed to its reproductive strategy; the females carry their ootheca until shortly before birth. This prevents foraging ants from finding and eating the fragile ootheca before its contents can hatch and subsequently actively avoid predation. Of all the Blattodea observed, *Blattella asahinai* was by far the most prevalent, with entire regions of leaf litter coming to life with them when disturbed.

Oothecae of *Eurycotis floridana* and *Periplaneta australasiae* were found with the former hidden in sandy soil and the latter attached to a piece of rotting softwood in a termite-infested stump. Numerous young *Periplaneta australasiae* nymphs were found in a tree crook where leaf litter had accumulated. No ants were observed on the tree, though *Arilus cristatus* nymphs were present and sparsely distributed. This sort of microhabitat may serve as a nursery for *Periplaneta australasiae* oothecae and nymphs, providing them with a rich diet of fermenting leaves, protection from humidity fluctuations, and safety from predators. *Eurycotis floridana* were often found in close proximity to ants beneath bark; the ants apparently do not pester the roaches, though exposing both sets of insects to light did cause the ants to become aggressive towards roaches in their path.

Parcoblatta sp. was only found beneath the bark of a single fallen hardwood tree on the edge of a forest adjacent to a livestock pasture. It is possible the introduction of other roach species such as *Blattella asahinai* and *Periplaneta australasiae* has stressed the population in the area, as well as in others, but this will require further research.

Two adult *Panchlora nivea* females were collected from humid microhabitats with no males or nymphs being found. Interestingly, these individuals were twice the size of captive stock.

Pycnoscelus surinamensis, a parthenogenetic species, was taken from almost every habitat surveyed, though only two adults were found overall. It is interestingly adaptive for a unisexual taxon and may have a negative effect on the endemic Florida sand roach (*Arenivaga floridensis*.)

Several worker *Reticulitermes sp.* were found in a tiny cavity beneath a pile of Ankole-Watusi cattle dung. Since sub-alates were found at several sites, it is unlikely that these were the offspring of a new king and queen, as the presence of sub-alates indicates that the nuptial flights have not yet begun in that area. Rather, the colony may have been located nearby, with workers foraging in the unusual meal of predigested and nutritious dung.

References

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