

TERRESTRIAL ARTHROPOD MONITORING PROGRAM

METABARCODING REPORT – MASSEY FARM

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Results

A total of 3,239 different BINs (Barcode Index Numbers; a proxy for species) were encountered at the Massey Farm site. Over half the BINs captured were flies (Diptera), followed by bees, ants and wasps (Hymenoptera), moths and butterflies (Lepidoptera), and beetles (Coleoptera; Figure 1).

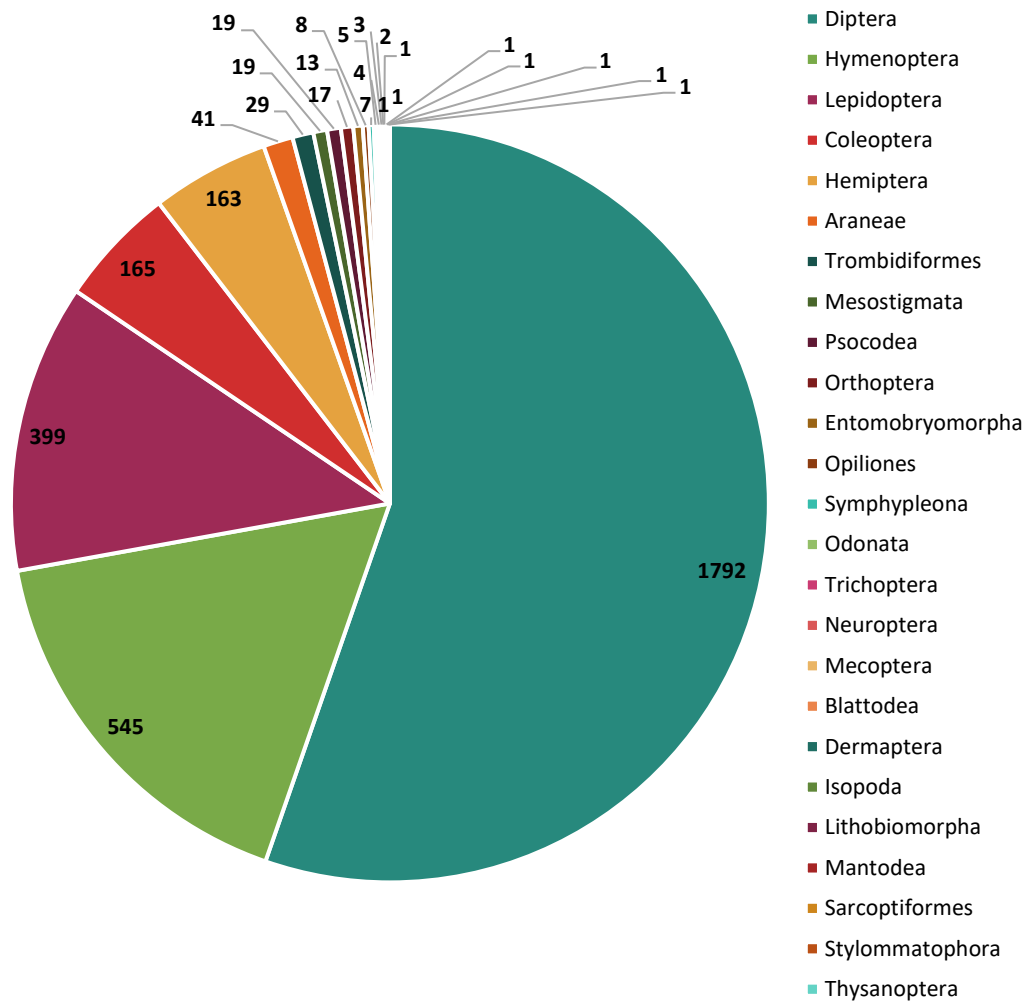


Figure 1. Taxonomic breakdown of BINs captured in the Malaise trap at Massey Farm.

Species diversity and insect abundance varied throughout the collecting period; the period that captured the most BINs was not the largest sample collected (Figure 2). The peak of species diversity was obtained in late June.

In total, 927 species were named, representing 31% of the BINs. All but four BINs were assigned at least to family and 71% of the BINs were assigned to a genus. Specimens collected from this site represent 263 different families and 1054 genera.

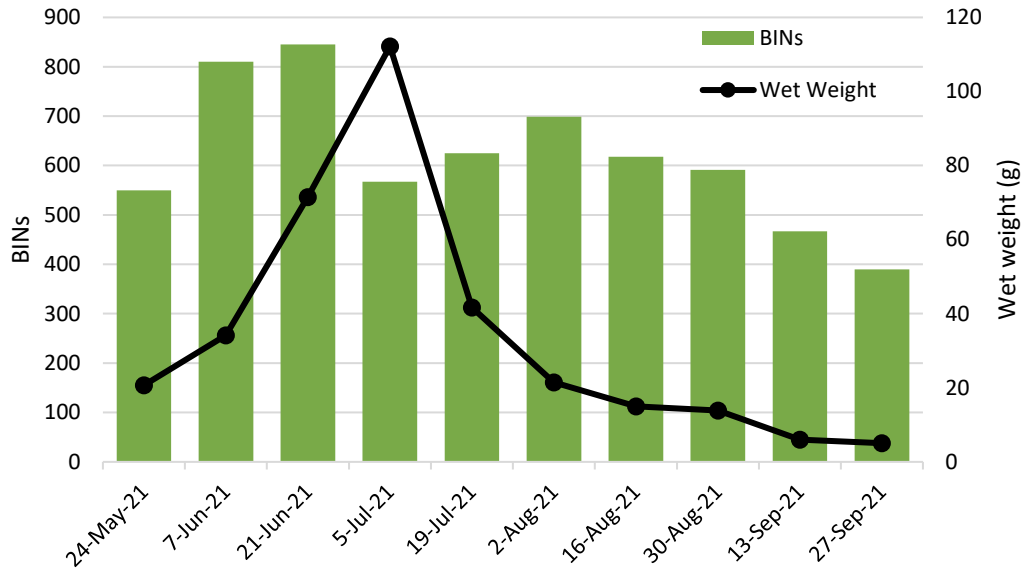


Figure 2. Species diversity (measured by BINs) and approximate insect abundance (measured by wet weight of sample) captured at the trap over the 2021 collecting period.

The Massey Farm site was also sampled in 2011 and again in 2020. There was a significant change in the overall wet weight of the captured Malaise trap samples between the decades. In 2011, the average wet weight per bi-weekly sample was only 13g while this increased to 30g in 2020 and 34g in 2021. Although, the average BIN count per sample increased more steadily from 458 in 2011, 572 in 2020, and 616 in 2021.

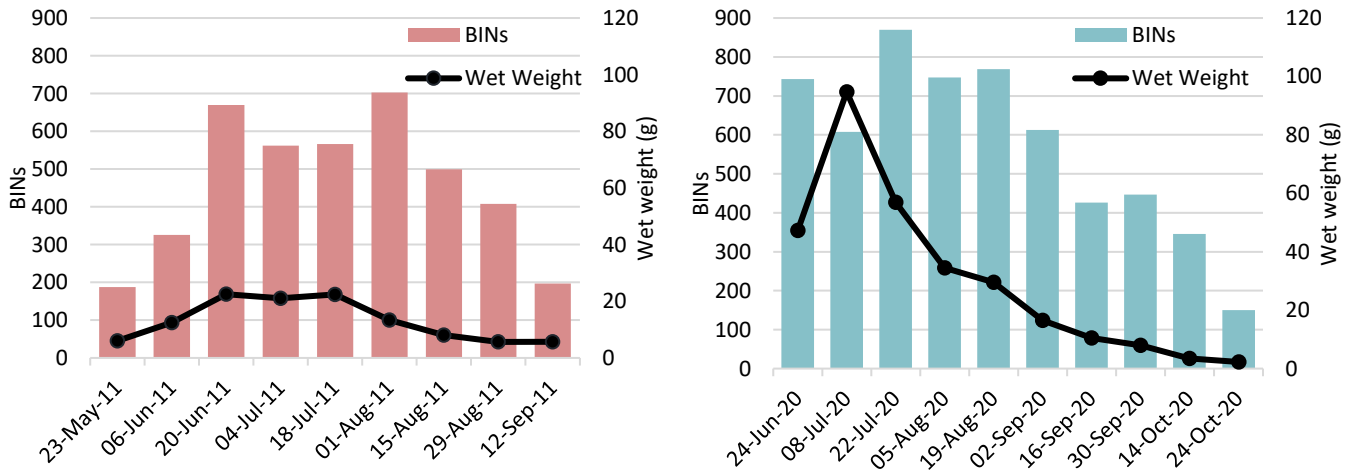


Figure 3. Species diversity (measured by BINs) and approximate insect abundance (measured by wet weight of sample) captured at Massey Farm over the 2011 and 2020 collecting periods.

Overall, three years of metabarcoding results recorded a grand total of 5,860 BINs captured at the Massey Farm. There was an overlap of 594 BINs between the three sampling years and the 2021 trap added 1,326 BINs to the total species pool (Figure 3). A complete species list is attached separately.

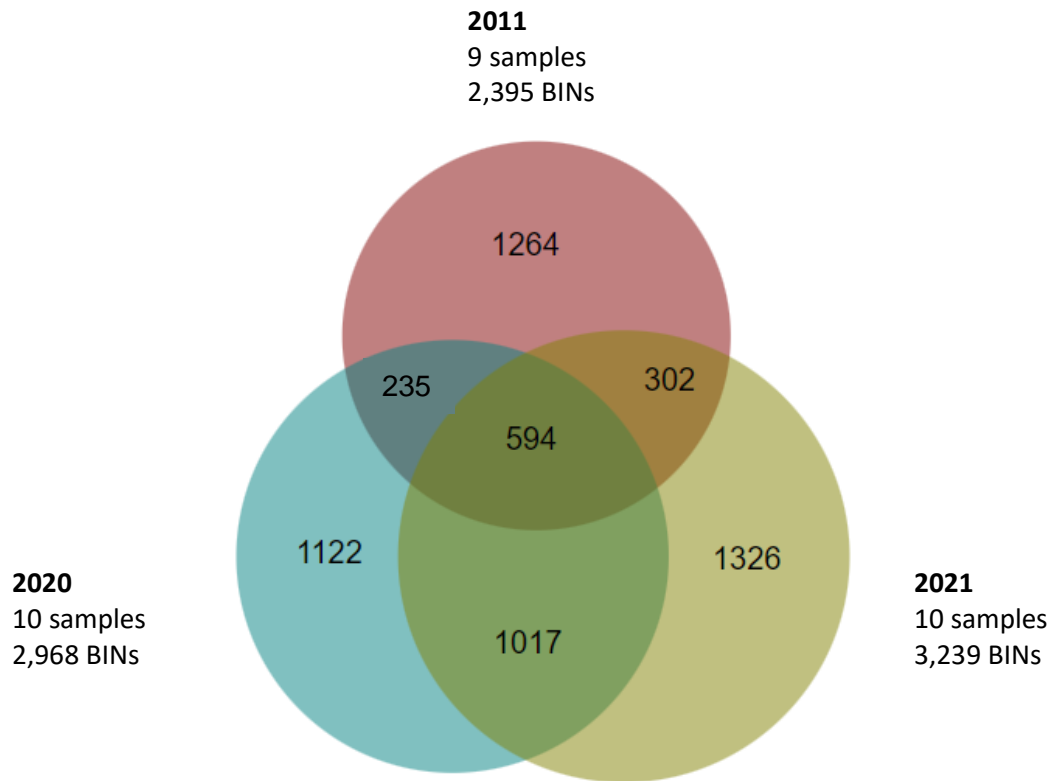


Figure 3. Venn diagram showing the species overlap between the 2011, 2020, and 2021 collections.