

TERRESTRIAL ARTHROPOD MONITORING PROGRAM

METABARCODING REPORT – Arkell Research Station

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Results

A total of 2,109 different BINs (Barcode Index Numbers; a proxy for species) were encountered at the Arkell Research Station. Over half the BINs captured were flies (Diptera), followed by bees, ants and wasps (Hymenoptera), moths and butterflies (Lepidoptera), and true bugs (Hemiptera; Figure 1).

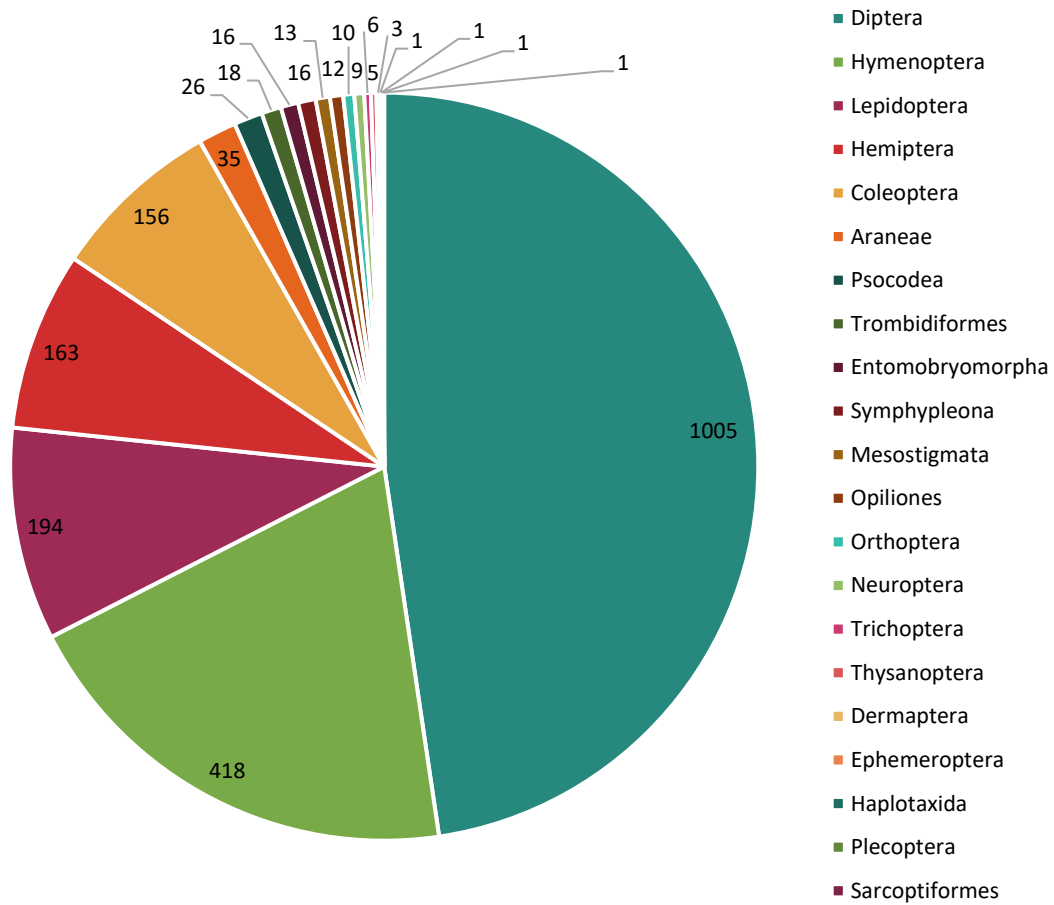


Figure 1. Taxonomic breakdown of BINs captured in the Malaise trap at Arkell Research Station.

Species diversity and insect abundance varied throughout the collecting period; the period that captured the most BINs was the second largest sample collected (Figure 2). The peak of species diversity was obtained towards the end of July.

In total, 705 species were named, representing 36% of the BINs. All but three BINs were assigned at least to family and 72% of the BINs were assigned to a genus. Specimens collected from this site represent 254 different families and 846 genera. A complete species list is attached separately.

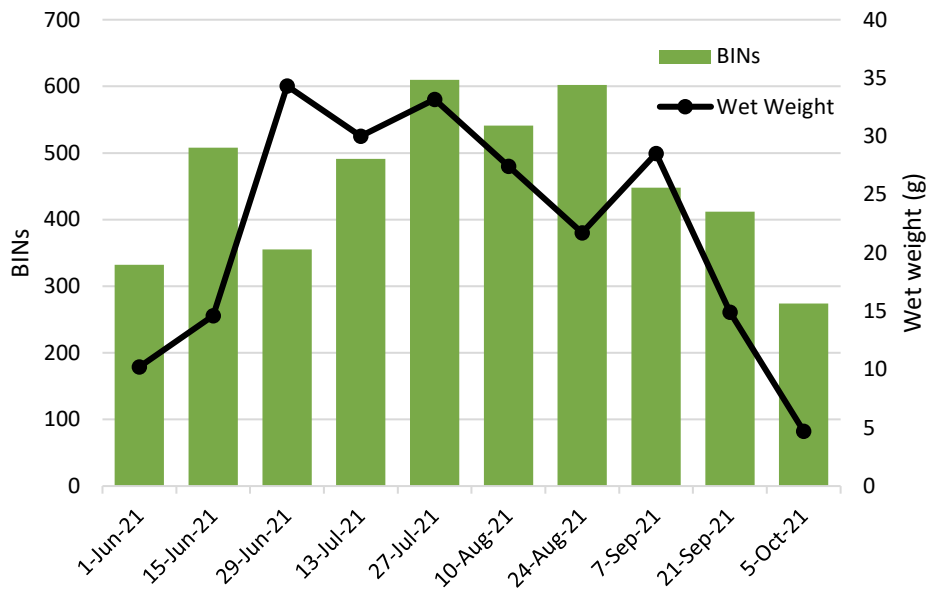


Figure 2. Species diversity (measured by BINs) and approximate insect abundance (measured by wet weight of sample) captured at the trap over the 2021 collecting period.

In combination with the metabarcoding results from 2018, 2019, and 2020, a grand total of 3,156 BINs have been captured from the Arkell Research Station (Figure 3). There was an overlap of 302 BINs between all sampling years and the 2021 trap added 1,090 BINs to the total species pool (Figure 4).

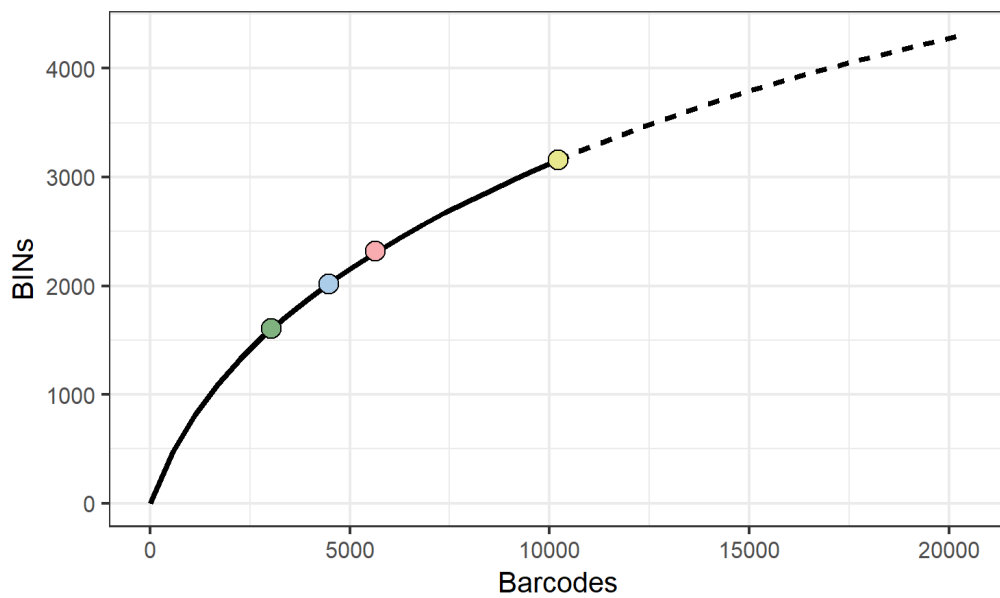


Figure 3. BIN accumulation curve over the four years of sampling at Arkell Research Station (green = 2018, blue = 2019, red = 2020, yellow = 2021)

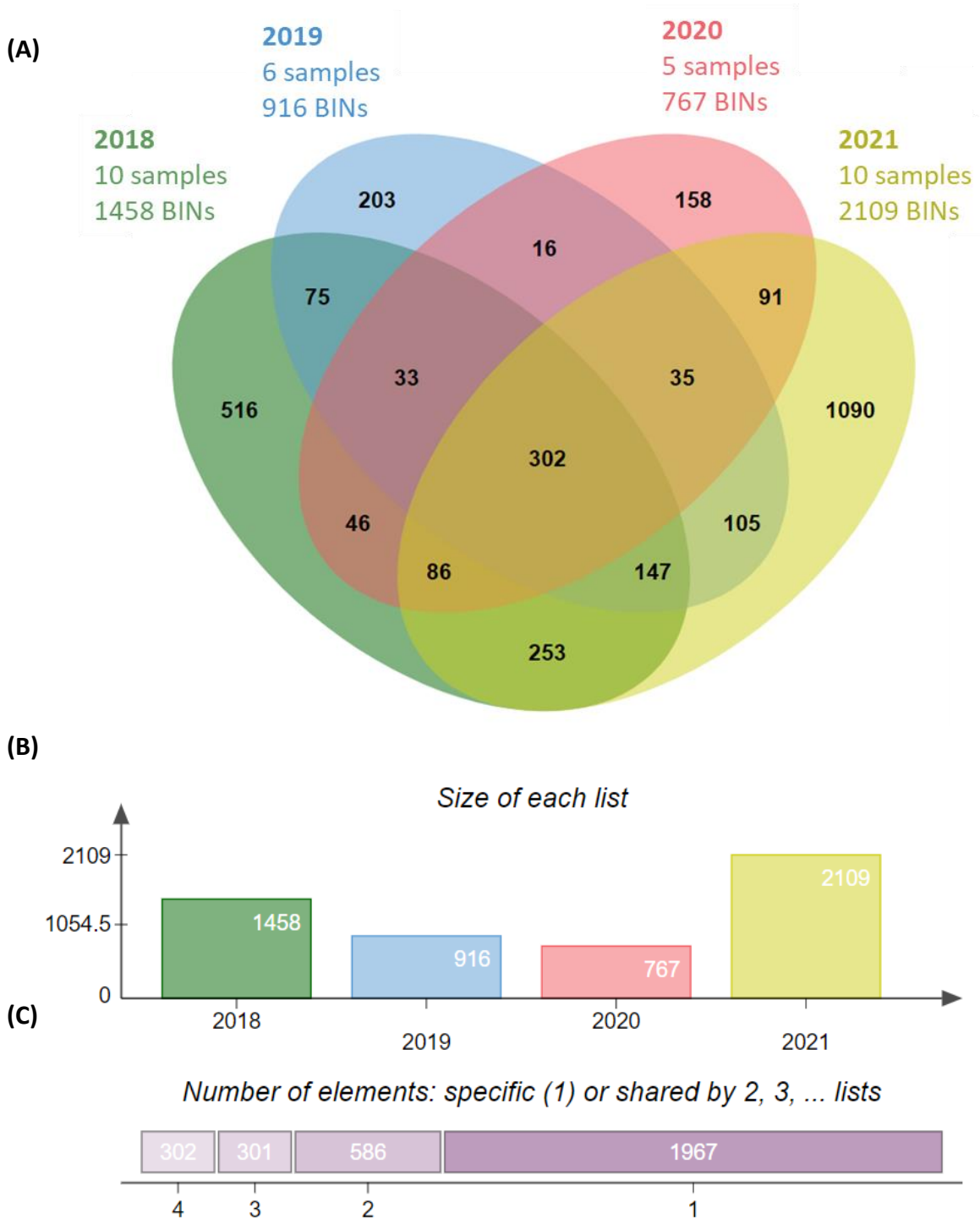


Figure 4. Diagram showing the species overlap (A), distinct BINs (B), and shared BINs (C) between the past four years of trapping. (Philippe Bardou, Jérôme Mariette, Frédéric Escudie, Christophe Djemiel and Christophe Klopp. jvenn: an interactive Venn diagram viewer. BMC Bioinformatics 2014, 15:293 doi:10.1186/1471-2105-15-293)