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CHAPTER 13

Survey of insects with yellow adhesive traps in environments of the Federal University of Triângulo Mineiro

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ABSTRACT

To evaluate the entomological biodiversity of some sites at the Federal University of Triângulo Mineiro, in Uberaba-MG, a study was carried out with traps arranged in three environments. The objective of this study was to verify both the quantity and the biodiversity of insect species. After the analysis of the material, a high species richness was observed in a room lit with natural and artificial light, with open windows and daily movement of people in the environment. In a room lit with natural and artificial light, with closed windows and daily movement of people, only one specimen of Coleoptera was collected. In a room lit only with artificial light, with closed windows, no movement of people and strict sanitary control, no specimen was sampled. This is a place focused on the area of clinical analysis. It was found that the institution had partial success in the evaluated areas, especially about the cleanliness of the Laboratory.

Keywords: Entomological glue, Insect traps, Biodiversity.

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INTRODUCTION

The entomological collections aim to provide a database for the development of strategic research for ecology, biogeography and conservation. They provide fundamental information for various studies of insects, such as geographic distribution patterns, biodiversity, biological cycles, and pest control (Camargo et al, 2015; Da Costa et al, 2006).

In addition to being harmful pests for crops, several species of insects can also be vectors of the most varied diseases. However, most monitoring is done only on plantations to avoid pests, so monitoring for disease control in places with high circulation of people is most often neglected. In view of the epidemiological importance of the group, such monitoring should be routine (Bertelsmeier, 2021).

In order to have the expected result in the capture of insects, some factors must be taken into account, such as climatic conditions, time of year and correct choice of the type of trap (Camargo et al, 2015).

Depending on the project, collection methods can be active or passive. Active collection involves looking for insects in the environment, while passive collection involves the construction or installation of traps or baits (Gullan; Cranston, 2017).

Numerous studies have proven that yellow sticky traps are the most efficient type of trap for monitoring insects. This efficiency is due to the greater number captured and the greater diversity of species, since yellow is one of the most attractive colors (Teixeira et al. 2009).

Since we wanted to capture different species, we chose this method, as it proved to be the most attractive to most species and therefore the most efficient.

The identification of insects is the main part of almost every entomological study. The most efficient method for correct identification of insects is to find an expert (Gullan; Cranston, 2017).

The objective of this work was to survey the richness and abundance of insects, captured by sticky traps, positioned in different environments of the Federal University of Triângulo Mineiro (UFTM). UFTM's headquarters are located in Uberaba/MG.

MATERIALS AND METHODS

To capture the insects, yellow sticky traps measuring 9 x 3.5 cm were used. In each location, four sticky traps were exposed for a period of seven days, in December 2023. The monitored environments were: room illuminated with natural and artificial light, with closed windows and daily movement of people; room illuminated with natural and artificial light, with open windows and daily movement of people; room lit with artificial light, with closed windows, no movement of people and strict sanitary control in the Clinical Analysis Laboratory of the Federal University of Triângulo Mineiro, in the city of Uberaba, Minas Gerais.

After 7 days, the adhesive traps were removed to identify the captured insects. With the use of a stereoscopic microscope and the aid of a dichotomous taxonomic key, the captured insects were identified and subsequently tabulated.

The identification occurred as recommended by Almeida, et al., 1998; Borror, Delong, 1969; Gallo, 1988; Rafael et al, 2012.

RESULTS

In the experiment, 4 traps were collected for each type of environment. In room A (room lit with natural and artificial light, with closed windows and daily movement of people) only one representative of Coleoptera Linnaeus, 1758 was identified. In environment B (room lit with natural and artificial light, with open windows and daily movement of people) 3 specimens of Psocoptera Shipley, 1904, were collected; 23 of Homoptera Boisduval, 1829; 32 of Nematocera Latreille, 1825; a copy of Psychodidae Newman, 1834; 5 from Cyclorrhapha Sharp, 1894; 8 of Coleoptera Linnaeus, 1758; 7 of Staphylinidae Latreille, 1802 and 2 of Hymenoptera Linnaeus, 1758. In environment C (room lit with artificial light, with closed windows, no movement of people and strict sanitary control in the Clinical Analysis Laboratory of the Federal University of Triângulo Mineiro in Uberaba, MG) no specimens were collected during the period (Table 1).

Table 1. Ectognatha collected in sticky traps exposed for seven days, in December 2023; in three distinct environments: A) room illuminated with natural and artificial light, with closed windows and daily movement of people; B) room lit with natural and artificial light, with open windows and daily movement of people and C) room lit with artificial light, with closed windows, without movement of people; in Uberaba, MG.

	A	A	A	A	B	B	B	B	C	C	C	C
Psocoptera Shipley, 1904								3				
Humptera Vaisduval, 1829					5	8	4	6				
Nematocera Latreille, 1825					20	7	2	3				
Psychodidae Newman, 1834								1				
Cyclorrhapha Sharp, 1894					2	3						
Coleoptera Linnaeus, 1758	1				5			3				
Staphylinidae Latreille, 1802					3	2		2				
Hymenoptera Linnaeus, 1758					1		1					
Wealth	1				36	20	6	18				

DISCUSSION AND CONCLUSION

The Order of *Psocopterans* is composed of animals often found in humid environments, such as leaf litter and bird nests. Some feed on flour and cereals, being considered pests in food storage

places. (Casasola-González; García-Aldrete; Herrera-Fuentes, 2013). The *Psychodidae* family is composed of small insects, with nocturnal habits and unpredictable flight, with larvae that adapt to a wide range of habitats, from areas with stagnant water to semi-desert environments. Both prefer shady and humid places. However, they were found in small quantities and only in environment B, which has open windows and movement of people. A greater number of the Order Homoptera were also found in this place , which comprises terrestrial insects, of varying size, from large and medium to extremely small. One of the damages caused by homoptera can be damage to plant tissues (Merzouki *et al.*, 2014). The sub-order that was most captured by the experiment and still in environment B was *Nematocera,* which correspond to mosquitoes characterized by thin and segmented antennae and aquatic larvae. They are distinguished by their long and articulated antennas (Ribeiro; Mans; Arcà, 2010). In this order, the *Aedes aegypti* species is the most found in the urban environment and is also responsible for the vector of several pathogens, from the female to animals and humans. In this way, as the place has open windows and a vast movement of people during the day, the contact with this insect is great, and can thus transmit arboviruses into the *Campus*.

The suborder *Cyclorrhapha*, the family *Staphylinidae* and the order *Hymenoptera* were collected only in one environment, a room lit with natural and artificial light, with open windows and daily movement of people.

In relation to *Hymenoptera*, such as ants, bees and wasps, they are easy to disperse and infest, and have environments with easy access to food and circulation of people as their habitat (Marques, et al, 2010). *Cyclorrhapha* corresponds to flies, these are important mechanical vectors of several diseases. Faulde et al., 2001; Fotedar et al., 1992; Pelli et al., 2013; Kappel et al., 2013; Pelli et al., 2007; Pelli et al., 2012; Šrámová, 1992.

Unlike the others, the Order *Coleoptera*, which is the order of beetles, was collected in two environments, but in different quantities, the first went to the room lit with natural and artificial light, with open windows and daily movement of people, which had the largest amount of collection and the second was to the room lit with natural and artificial light, with closed windows and daily movement of people.

It is concluded that only one insect of the order Coleoptera was captured in environment A, with natural and artificial light, closed windows and daily movement of people , with natural and artificial light. Thus, the success of sanitary control in the clinical analysis laboratory of the Federal University of Triângulo Mineiro is evidenced and that the closed window, even in environments with movement of people, is partially effective in avoiding most urban insects.

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