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**STUDY OF THE FAMILY NITIDULIDAE (INSECTA: COLEOPTERA) IN THE FORESTED SAVANNA**

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**ABSTRACT:** (STUDY OF THE FAMILY NITIDULIDAE (INSECTA: COLEOPTERA) IN THE FORESTED SAVANNA). The modification of forest habitats results in changes in the biological order, affecting different groups of insects, which may cause ecological changes, such as the dominance and diversity of coleopterans. The Nitidulidae family presents diversified ecological habits and plays a fundamental role in the environment. The objective of the work presented was to study the diversity of the Nitidulidae species, in a fragment of forested savanna, from January to December 2013, in Cuiabá, Mato Grosso. Twenty-one pitfall traps with different concentrations of attractants were set up in a completely randomized design. The attractant utilized was ethyl alcohol in different concentrations. A total of 8,120 individuals were collected, distributed in six species. A percentage of 59,94% of individuals were collected during the rainy season and 40,06% during the dry season. The concentrations of 20° and 40° INPM, together, were responsible for 44.81% of the total individuals collected. The species *Stelidota* sp. with 38,31%, *Lobiopa insularis* Laporte, 1848 with 33,03% and *Urophorus humeralis* Fabricius, 1798 with 26,01%, were the most represented in number of individuals collected in all concentrations analyzed. It is concluded that the Nitidulidae family proved to be resilient in the forest savanna fragment.

**Keywords:** Savanna, pitfall, sap beetle, *Lobiopa insularis*, *Urophorus humeralis*.

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## INTRODUCTION

The gathering and identification of insects in the ecosystems allows us to analyze the possible impacts in the different environments, so that they can be prevented or remedied. As the diversity is recovered and the environmental balance occurs, insects also react in their diversity and density, fulfilling their indicator function (WINK *et al.*, 2005).

The Nitidulidae family presents the ability to respond to the ecological changes between different environments evaluated. Which indicates that this group has the potential to be taken into account in bioindication research in the evaluation of ecologically disturbed ecosystems (GALDINO-DA-SILVA *et al.*, 2016).

The beetles of the Nitidulidae family predominate in areas with arboreal-shrub cover and are important organisms that recycle organic matter within the ecosystems, some of which present a saprophagous type of feeding habit (AUDINO *et al.*, 2007). Some species within this family may present themselves as pests, generally feeding on fruits and other parts of the plant that are maturing or decomposing. Its host variety may include trees and small fruits such as peaches, figs, strawberries, corn, stored corn products and dried fruits (MYERS, 2016).

In Brazil, Nitidulidae infest the crops between August and February and shelter in the native vegetation around, in the times without cultures (MOLITERNO *et al.*, 2017). Coleopterans belonging to the Nitidulidae families are the main pollinators of palm species (FAVA *et al.*, 2011).

In light of the foregoing, this work aimed to analyze the occurrence of the Nitidulidae family in a natural environment fragment of a forested savanna. As well as, to verify the richness of species and the seasonality of this family.

## MATERIALS AND METHODS

The traps were installed in a preserved area of a forest savanna fragment, in the Coxipó-da-Ponte neighborhood, in Cuiabá-MT, under coordinates 15°35'46''S and 56°05'48''W. Insect collections were held fortnightly, from January to December 2013, totaling 24 collections.

Twenty-one pitfall traps were set up, arranged in a completely randomized design. The treatments used were different concentrations of alcohol, balanced from the Ethyl Alcohol 92.8° INPM at concentrations of 20°, 40°, 60°, 80° and 92,8° INPM and fuel alcohol, as well as control traps with only water + salt + neutral detergent.

The specimens collected were stored in individual containers containing 70° INPM alcohol, duly tagged with trap and date of collection information. Were transported to the Forest Protection Laboratory of the Faculty of Forestry Engineering of the Federal University of Mato Grosso (LAPROFLOR / FENF / UFMT), for sorting the specimens, drying in a greenhouse at 60° C for 72 hours, and, posteriorly, stored in containers suitable for taxonomic identification.

## RESULTS AND DISCUSSION

A total of 8,120 coleopterans of the Nitidulidae family were collected and distributed in five genera and six species. The species *Stelidota* sp. presented a higher number of individuals collected, with 38.31%, followed by *Lobiopa insularis* with 33.03% (Table 1).

**TABLE 1 - Species and the number of individuals collected in the forested savana in the city of Cuiabá, Mato Grosso. From January to December of 2013.**

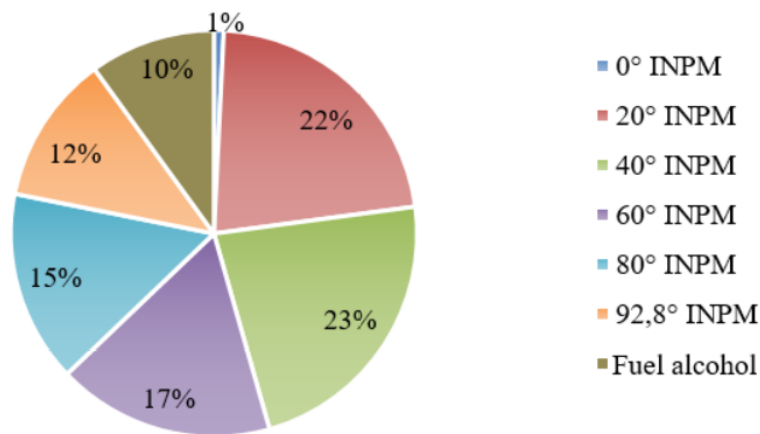
Species	Individuals	%	S/C
<i>Carpophilus mutilatus</i>	30	0.37	1.31
<i>Colopterus</i> sp.1	23	0.28	0.21
<i>Colopterus</i> sp.2	162	2.00	3.05
<i>Lobiopa insularis</i>	2,682	33.03	0.16
<i>Stelidota</i> sp.	3,111	38.31	0.43
<i>Urophorus humeralis</i>	2,112	26.01	2.51
Total	8,120	100	0.57

S/C = Relation between periods of drought and rain.

A significant richness of species was observed in the study conducted, showing that the forested savanna presents environmental conditions for the establishment of this coleopteran family. Galdino-da-Silva et al. (2016) noted that in fragments of a semideciduous seasonal forest the Nitidulidae also find ecological conditions for its survival and reproduction.

*Colopterus* sp.2 obtained the highest dry / rain ratio (3.05) and *Lobiopa insularis* the lowest ratio, with 0.16. The abundance of the species collected was affected by the climatic periods of the region. These periods influence the flowering and fruiting of the native vegetation that is part of the habitat of these insects.

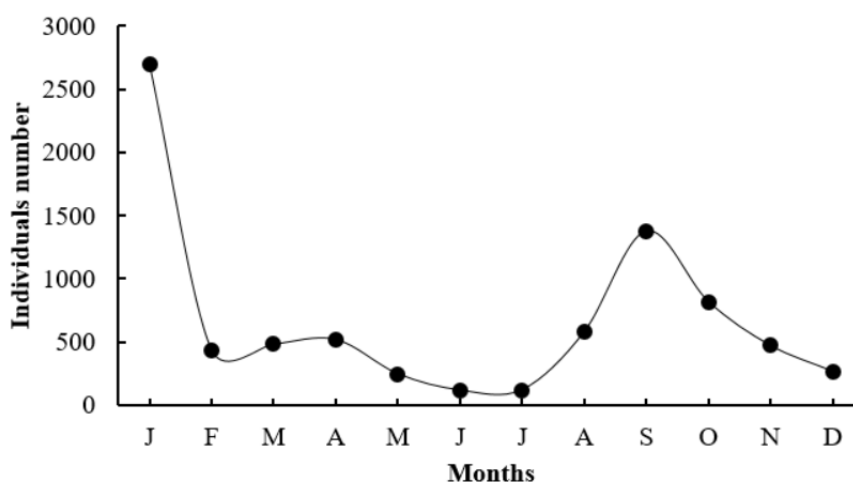
The lower concentration of alcohol presented as more efficient in the collection of individuals from the Nitidulidae family, with concentrations of 20° and 40° being the most expressive, accounting for 22 and 23% of the individuals collected, respectively (Figure 1).



**FIGURE 1 - Percentage of occurrences of individuals at different alcohol concentrations. Cuiabá, Mato Grosso. From January to December of 2013.**

In natural environments the beetles of the genus *Lobiopa*, which live in mature fruits, are attracted to the flowers of *Duguetia furfuracea* by the characteristic fruit odor, penetrating the floral chamber where they remain until the end of their male phase, being the main pollinator of the flowers of this forest species (FACHARDO et al., 2015).

Higher numbers of individuals of the Nitidulidae species occurred in the months of the rainy season (November to April), with 59.94%. While in the dry season (May to October) only 40.06% were collected. The month of January presented the highest population peak in this family (Figure 2). These results may be related to the fructification period of the native plant species of the forested savanna, because some Nitidulidae are saprophagous.



**FIGURE 2 - The seasonality of the Nitidulidae individuals, which were collected in the forested savanna. Cuiabá, Mato Grosso. From January to December of 2013.**

Supporting the results obtained in this work regarding the evaluation of the seasonality of the Nitidulidae family, in a semi-deciduous seasonal forest, Galdino-da-Silva et al. (2016) observed a higher frequency of individuals in the rainy season (October to March) when compared to the dry season (April to September), with the population peak occurring in January.

## CONCLUSIONS

The forest savanna fragment presents environmental and ecological conditions favorable to different groups of Nitidulidae.

The rainy and frutification season influence the richness of the Nitidulidae family in the forested savanna in Mato Grosso - Brazil.

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