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Elaboration of cards to identify families of Coleoptera (Arthropoda, Insecta) of medical-criminal forensic importance from Brazil

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Abstract

Information about biology, ecology, geographic distribution and correct identification of insects within the forensic scope are necessary since it is from this knowledge that the post mortem interval can be estimated in cases of violent crimes. Thus, in the present study, informative-illustrative cards of the main families of Coleoptera with forensic medical-criminal relevance were elaborated. The information contained was selected from the literature (from articles and books), emphasizing data on the status of relevance for the forensic area, if there are and how many are the records of cases in Brazil using these beetles and, finally, the general diagnosis for the members of each family, including images of representative specimens for each family produced in the laboratory.

Key words:

Taxonomy, beetles, forensic entomology.

Introduction

The order Coleoptera is the largest and most diverse in the Insecta Class, with about 400,000 species worldwide[1]. Beetles are present in a wide range of environments, with the exception of poles and open seas[1,2], due to the great biological and ecological plasticity of many species. Some species are better known for the economic damage to agroindustry products or because they are used in the biological control of pests[2]

In the forensic field, beetles gain importance because they are commonly found associated with corpses due to the habit of necrophagy, predation or onivory[3]. In the more advanced stages of decomposition, the beetles are the main entomological evidence for the calculation of the postmortem interval[4]. The use of beetles as criminal evidence is only possible through the correct identification or diagnosis of the species, without which it can not access the data about its biology, ecology or geographical distribution. Unfortunately, the taxonomic keys available in the literature are scarce and complex for the non-taxonomist public.

Thus, in the present study, we developed informative-illustrative cards of the main families of Coleoptera with forensic medical-criminal relevance from Brazil, aiming to create an accessible tool for the identification of beetles by non-taxonomist professionals.

Results and Discussion

For the construction of the cards (Fig. 1) the following families were selected: Carabidae, Cleridae, Dermestidae, Histeridae, Nitidulidae, Silphidae, Staphylinidae, Scarabaeidae and Trogidae. As criteria for classification within the legal medical field was that at least one of the species should be necrophagous, predator or omnivorous. Biological, ecological and geographic distribution data included in the cards were extracted from the literature[3-5].

Photographic images of beetles were made using a common digital camera, subsequently processed in the PhotoShop™, where scale bars (in mm) were also included.

Figure 1. Model of a card of Staphylinidae (Coleoptera) of medical-legal forensic importance.

Conclusions

Cards can be a useful alternative tool for non-taxonomist professionals. Moreover, it can be an interesting mechanism to address the study of beetles among students and the general public who want to deepen their knowledge in the use of Coleoptera families in the medical-criminal forensic field.

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