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**Insects found in birds' nests from the Neotropical Region
(except Argentina) and immigrant species of Neotropical origin
in the Nearctic Region**

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Abstract

Neotropical birds' nests have received a great deal of attention because sylvatic species of Triatominae (Hemiptera: Reduviidae) and parasitic flies of the genus *Philornis* (Diptera: Muscidae) were discovered inside them. Those insects known in birds' nests from Argentina, the chacoan region of Bolivia, and the southern portion of Brazil and Uruguay were extensively but not completely summarized by Turienzo & Di Iorio (2007). The present contribution summarizes all insects known to occur in birds' nests from the Neotropical Region (except for Argentina and the Antarctic Region of adjacent countries), updating Hicks' catalogues for this part of the world. Regarding birds, the list comprises 172 taxa identified to species (in 38 families), 8 to genus (in 6 families), 6 to family (in 4 families), and 27 birds' nests not identified. Regarding insects of the Neotropical region, 123 were identified to species (13 Blattaria; 5 Coleoptera; 26 Diptera; 34 Hemiptera; 15 Hymenoptera; 23 Psocoptera; 6 Siphonaptera; 1 Thysanura), 96 to genus (5 Blattaria; 8 Coleoptera; 48 Diptera; 4 Hemiptera; 6 Hymenoptera; 25 Psocoptera), 63 to superfamily, family or subfamily (1 Blattaria; 21 Coleoptera; 10 Diptera; 7 Hemiptera; 14 Hymenoptera; 1 Isoptera; 3 Orthoptera; 5 Psocoptera; 1 Thysanoptera), and 34 to order (6 Blattaria [including 1 Mantodea]; 6 Coleoptera; 3 Diptera; 3 Embioptera; 2 Hemiptera; 3 Hymenoptera; 1 Thysanoptera; 2 Isoptera; 4 Lepidoptera; 1 Orthoptera; 1 Phthiraptera; 2 Psocoptera). Associations of Neotropical insects with birds' nests were extracted from 392 references including original and posterior citations. Some North American species of insects that are neotropical immigrants are discussed, while a few other had been accidentally introduced in both directions. Synonymies, old combinations, misidentifications, original localities, amounts of insects, and repositories when they were stated, are provided.

Key words: Insects, birds' nests, Neotropical Region, immigrants, Nearctic Region

Introduction

Hicks (1959 1962 1971) summarized all insects known worldwide from birds' nests. Hicks' catalogues are organized according to insect and bird species, but countries and localities were not given. In several cases prior to Hicks (1959), the original insect-bird association was observed on a single occasion and repeated in successive works, some of them omitting the original locality or the bird name. These omissions resulted in a great confusion, particularly when Hicks (1959) compiled the same data from different publications; for example, the association of *Turdus* sp. with a Triatominae (Hemiptera: Reduviidae) in his nest was recorded five times in different ways according to the same number of authors. Thus this gives the impression that some associations of insects and birds' nests are more frequent when they are not. Furthermore, most of the insects mentioned by Hicks were not discriminated between those that are directly related to the birds (ectoparasites) or to their nests (commensals, saprophages, hibernants) and those insects that can be prey remains or items delivered by adults to their nestlings and not eaten (Di Iorio *et al.* 2008).

After the compilations of Hicks (1959 1962 1971) other insects in birds' nests from the Neotropical Region were found. Birds' nests have received a great deal of attention in this area because some sylvatic species of Triatominae (Hemiptera: Reduviidae) (Table 1) and parasitic flies of the genus *Philornis* (Diptera: Muscidae) were intensively prospected. Although birds are refractive to the infestation by *Trypanosoma cruzi* due to their higher body temperature, some Triatominae found in nests were found infested in nature due to inquilism of birds' nests by opossums, rodents, and bats (Barretto & Carvalheiro 1967, Barretto & Albuquerque 1969, Dias 1968, Barretto *et al.* 1984, Aldana *et al.* 1996).

Insects known to occur in birds' nests from Argentina, the chacoan region of Bolivia, and the southern portion of Brazil and Uruguay (Espinal Province) were extensively but not completely summarized by Turienzo & Di Iorio (2007). When the information about insects found in birds' nests from Argentina (Turienzo & Di Iorio 2008) was compared to the previous data known in the country (Turienzo & Di Iorio 2007), it was evident that this information needed to be compared also to data from other biogeographical provinces and countries from South America and the Neotropical Region in general. Thus a compilation that facilitates a view of the data dispersed in the literature is needed.

The present contribution intends to compile all insects known to occur in birds' nests from the Neotropical Region (except for Argentina and the Antarctic Region of adjacent countries) and to update Hicks'