



Track analysis of the Neotropical genus *Sepedonea* Steyskal (Diptera: Sciomyzidae): a proposal based on the phylogenetic analysis of its species

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Abstract

The present study provides a track analysis of the species of *Sepedonea*, which are exclusively Neotropical and range from southern Mexico to northern Argentina. Individual and generalized tracks were obtained using the software Arc-View GIS 3.2 from a database of species occurrence records. The results provide support for eastern Brazil as an area of endemism, previously defined as the Parana subregion. There was congruence between this pattern and a phylogenetic analysis of the species. A total of 10 biogeographical nodes and 20 generalized tracks were located in southeastern Brazil, particularly in the region of the Serra do Mar and the Serra da Mantiqueira mountain ranges. The formation of these mountain ranges possibly influenced the evolutionary history of the taxa. The area identified as relevant for the diversification of *Sepedonea* corroborates the point of view of the Atlantic rainforest as a hotspot for conservation. The biogeographical pattern of the genus was shown to be similar to the previously presented classification of the Neotropical region.

Key words: area of endemism, priority areas, conservation, node

Species of *Sepedonea* Steyskal, 1973 have an exclusively Neotropical distribution, from southern Mexico to northern Argentina. Their larvae are generally predators of aquatic mollusks, according them special importance in the context of the biological control of vectors of diseases such as schistosomiasis and fasciolosis (Abercrombie 1970; Freidberg *et al.* 1991). A taxonomic revision and the phylogenetic relationships among its species have been established in previous studies (Freidberg *et al.* 1991; Marinoni & Mathis 2006). Currently there are 13 described species: *S. barbosai* Knutson & Brecht, 1976; *S. canabravana* Knutson & Brecht, 1976; *S. guatemalana* (Steyskal, 1951); *S. guianica* (Steyskal, 1951); *S. incipiens* Freidberg, Knutson & Abercrombie 1991; *S. isthmi* (Steyskal, 1951); *S. lagoa* (Steyskal, 1951); *S. lindneri* (Hendel, 1932) [type species of the genus]; *S. neffi* Freidberg, Knutson & Abercrombie 1991; *S. telson* (Steyskal, 1951); *S. trichotypa* Freidberg, Knutson & Abercrombie 1991; *S. veredae* Freidberg, Knutson & Abercrombie 1991 and *S. giovana* Marinoni & Mathis, 2006.

The phylogenetic analysis of congeners resulted in a cladogram based on 27 adult morphological characters (Marinoni & Mathis 2006). Even though the obtention of a single best cladogram indicates good resolution of the obtained relationships, those authors suggested that a biogeographical study focusing on the species of the genus could provide revealing information, as well as corroboration of the proposed relationships. This suggestion was based particularly on the fact that *S. neffi*, a species located in one of the most terminal clades on the phylogeny, has a disjunct geographical distribution. Although species of Sciomyzidae