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Contribution to the Tachinids (Diptera: Tachinidae) of Vietnam

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Abstract: The tachinid fauna of Vietnam has not been studied. Totally, 37 species of the family Tachinidae beloning to 32 genera and 4 subfamilies have been recorded. Their distribution is analysed and an areographical characteristic of the species is presented. Five species are endemics. The tachinids belong to 25 zoogeographical categories. The species (27 species - 73.0%) distributed in the Oriental and Palaearctic Regions are predominant. The most widely distributed are 7 species (18.9%), represented in 3 zoogeographical areas.

Key words: Diptera, faunistic composition, zoogeography.

Introduction

The first data on the Vietnam tachinids were reported almost 100 years ago. However, the faunistic information is scarce. A number of monographs and catalogs not related to Vietnam include data from the country (Mesnil 1944-1975, 1980; Shima 1986; Herting & Dely-Draskovits 1993; Richter 2004; Shima & Tachi 2022). The known fauna of Vietnam includes Oriental, Palaearctic and Australian taxa, the percentage of which varies in the latitudinal direction. The lack of geographical barriers between the Palaearctic and Oriental Regions in the southern China allows mixing of the fauna (Müller 1980).

The aim of the work is to present the known Tachinidae fauna of Vietnam and view of the presence of the Palaearctic and Australian forms in the Oriental fauna.

Material and Methods

The taxa found in Vietnam and their distribution beyond it are presented. A number of monographs and catalogues on the tachinids have been used (Crosskey 1977; Mesnil & Shima 1979; Chao & Zhou 1987, 1993; Cantrell & Crosskey 2012; Herting & Dely-Draskovits 1993; Shima 1998, 2015; Richter 2004; Zhang *et. al.* 2004, 2015, 2018, 2019; Zhang & Shima 2006; O'Hara *et al.* 2009, 2020; Shima & Tachi 2016, 2022).

The areographical categorization of the taxa was made on the basis of the data about their distribution. The distribution of the species according to the zoogeographical categories is scrutinized. Areographical analysis for the taxa categorization was used. This method allows obtaining data information about species complexes with different zoogeographical character based on the published data regarding species distribution and results of the faunistic research. These complexes contain zoogeographical information about the taxonomic groups which, combined with the origin of the ranges, determines the zoogeographical character of the fauna.

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Results

Totally, 37 tachinid species that belong to 32 genera and 4 subfamilies are known from Vietnam so far. The most numerous is the subfamily Exoristinae – 18, followed by Tachininae – 9 species and Phasiinae and Dexiinae – with 5 species each. A typical feature of the family Tachinidae is that many genera contain comparatively low number of species. Of the taxa reported, 3 genera include more than one species (*Austrophorocera*, *Exorista* and *Linnaemya*). The tachinids of Vietnam have not been studied yet and the species reported are from accidentally collected materials. Widely distributed forms are mostly represented.

Exoristinae

Hygiella nigripes Mesnil, 1968 – Indian-Indo-Chinan; *Hygiella proclinata* Shima & Tachi, 2016 – Endemic; *Meigenia majuscula* (Rondani, 1859) – Transpalaearctic-Indo-Chinan; *Isosturmia picta* (Baranov, 1932) – Oriental-Manchurian; *Austrophorocera grandis* (Macquart, 1851) – Oriental-Manchurian-Australian; *Austrophorocera hirsuta* (Mesnil, 1946) – Northeast Oriental-Southeast Palaearctic; *Chetogena filipes* (Mesnil, 1939) – Endemic; *Exorista japonica* (Townsend, 1909) – Oriental-Southeast Palaearctic; *Exorista aureifrons* (Baranov, 1936) – Oriental-Southeast Palaearctic-Australian; *Exorista hyalipennis* (Baranov, 1932) – Northeast Oriental-Southeast Palaearctic; *Phorinia flava* Tachi & Shima, 2006 – Oriental-Manchurian; *Blepharella lateralis* Macquart, 1851 – Oriental-Southeast Palaearctic-Australian; *Dolichocolon vicinum* Mesnil, 1968 – Oriental-Japanese-Australian; *Gonia chinensis* Wiedemann, 1824 – Oriental-Central Asian-Manchurian; *Nealsomyia rufella* (Bezzi, 1925) – Oriental-South Palaearctic; *Scaphimyia castanea* Mesnil, 1955 – Oriental-Manchurian; *Simoma grahami* Aldrich, 1926 – Paleotropical(Oriental-Afrotropical)-South Palaearctic; *Sturmia oceanica* Baranov, 1938 – Indo-Chinan-Malesian-Australian.

Tachininae

Linnaemya linguicerca Chao & Shi, 1980 – Indo-Chinan-Malesian-Manchurian; *Linnaemya vulpinoides* (Baranov, 1932) – Oriental-South Palaearctic-Australian; *Thelairoleskia angustifrons* (Mesnil, 1953) – Endemic; *Trichoformosomyia sauteri* Baranov, 1934 – Indo-Chinan-Manchurian and Southern Far East; *Sumpigaster sumatrensis* Townsend, 1926 – Indo-Chinan-Malesian-Manchurian and Southern Far East; *Nemoraea rutilioides* (Townsend, 1933) – Endemic; *Therobia composita* (Séguy, 1925) – Indo-Chinan; *Mikia tepens* (Walker, 1849) – Transpalaearctic-Indian-Indo-Chinan; *Servillia lateromaculata* Chao, 1962 – Indo-Chinan-South Palaearctic.

Dexiinae

Billaea chinensis Zhang & Shima, 2015 – Indo-Chinan-Central Asian-Manchurian; *Dinera brevipalpis* Zhang & Shima, 2006 – Indo-Chinan; *Estheria magna* (Baranov, 1935) – Oriental-East Central Asian-Manchurian; *Torocca munda* (Walker, 1856) – Oriental-Manchurian; *Leptothelaira orientalis* Mesnil & Shima, 1979 – Indo-Chinan.

Phasiinae

Hermya beelzebul (Wiedemann, 1830) – Oriental-East Central Asian-Manchurian; *Calyptromyia barbata* Villeneuve, 1915 – Indo-Chinan-Southeast Palaearctic; *Parerigone brachyfurca* Chao & Zhou, 1990 – Indo-Chinan-Manchurian; *Phasia barbifrons* (Girschner, 1887) – Holopalaearctic-Indo-Chinan; *Melastrongygaster orbitalis* Shima, 2015 – Endemic.

Discussion

By comparison of Vietnam with the parts of southern Europe such as Italy (644 species) and the Balkan Peninsula (620 species), it is seen that the Vietnamese tachinid fauna is almost unknown. It is expected, in this vast area with a variety of natural conditions and rich fauna, the number of known species to be much more. Thus the tachinids are divided into 25 zoogeographical categories, combined into 3 complexes.

Species distributed in the Oriental Region and beyond it. This complex (28 species – 75.7%) includes 22 categories, of which 3 combine species of **northern type** (3

species – 8.1%), widely distributed in the Palaearctic and Oriental Region and 19 – species of **southern type** (25 species – 68.0%, distributed in the tropical areas and southern Palaearctic). Generally, the taxa of the northern type have vast areas and ecological flexibility. When comparing with the Balkan fauna there is a significant difference. In the Balkan Peninsula this complex is small (5.8%) and without determinant importance for the zoogeographical characteristic. In Korea, the complex includes a predominant percentage (58.9%) of the species. In Vietnam, this complex combines the main part of the taxa. The lack of geographical barriers in the southern parts of China allows mixing of the Palaearctic and Oriental fauna. This explains the high percentage of typical Palaearctic taxa in Vietnam. The conception of MÜLLER (1980) for a transitional zone (mixing of the Palaearctic and Oriental fauna) in the Manchurian subregion is confirmed. The species distributed in the Australian region are fewer (6 species – 16.2%), and 5 of them are represented in the Palaearctic as well. At the same time, the lack of systematic research and fragmentary data from accidentally collected materials increase the percentage of widespread tachinids. The most widespread are 7 species (18.9%), which are established in 3 zoogeographical areas. Of them, *Simoma grahami* Aldrich, 1926 is represented in the Afrotropical Region and is considered a Paleotropical-South Palaearctic species.

Species distributed only in the Oriental Region but in more than one subregion (**Oriental type**). Taxa, whose areas include more than one Oriental subregion belong to this group. Most often, they are well represented in Diptera and comprise about 20-25% of the species composition. The vast areas and wide vertical distribution of the taxa of this complex indicate the greater ecological flexibility of its species. At this stage, the complex is represented by only one Indian-Indo-Chinan species (*Hygiella nigripes* Mesnil, 1968).

Species distributed within one Oriental subregion. The ranges of these species are various and are divided into groups with different origin, distribution and ecological peculiarities. At the current stage, the complex includes 3 species (8.1%) with Indo-Chinan distribution. Endemics are also included in this complex. There are 5 species, two of which (*Hygiella proclinata* Shima & Tachi, 2016 and *Melastrongygaster orbitalis* Shima, 2015) had been described recently and is possible to be more widely distributed.

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