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## World catalog of extant and fossil Chaoboridae (Diptera)

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### Abstract

A world catalog of extant and fossil Chaoboridae provides full type information, distribution of each species, references to keys, references to latest descriptions of each species, and summaries of bionomic information. There are 51 extant species in six genera and 41 fossil species (2 unplaced) in 19 genera, two of which are extant. *Chaoborus lanei* (Belkin, Heinemann & Page) is a **new synonym** of *C. braziliensis* (Theobald) and *C. annulatus* Cook is a **new synonym** of *C. festivus* Dyar & Shannon.

**Key words:** Phantom midges, *Chaoborus*, Zoogeography

### Introduction

Borkent (1993) provided the last world catalog of extant and fossil Chaoboridae and Evenhuis (1994) catalogued all fossil species (providing further detailed information). Since then there have been significant changes, particular regarding the fossil record of this group, warranting the new catalog published here.

Each species is provided with its full citation, type locality, subsequent descriptions, and all synonyms. When "Syntypes?" is given, it is because it is uncertain whether there was more than one specimen examined by the describing author. Type depositories are noted. A listing called "References" provides the most recent description of each life stage (male adult, female adult, pupa, larva, egg, abbreviated respectively as: ♂, ♀, P, L, E), and the distribution of each species is summarized, with Australian, Canadian, and U.S.A. distributions broken down to states/provinces. References are provided to the latest pertinent literature regarding the biology of each genus and keys to the included species. Table 1 gives the number of extant and extinct species for each genus. In short, this contribution provides an introduction to every aspect of the taxonomy and biology of each species and genus.

Borkent (1979, 1981) included distribution maps to all species of Chaoboridae in the Holarctic Region and Colless (1986) did the same for those in Australia. Lukashevich (2008) gave a detailed and valuable summary of the Mesozoic fossils of chaoborid larvae.

Saether (1977) published redescrptions of two Neotropical species of *Chaoborus* and subsequently circulated a type-written errata to colleagues. However, this errata sheet was never published (Cressa, editor, pers. comm. July 13, 1993). The errata included two conclusions based on my study of type specimens: that *Chaoborus lanei* is conspecific with *C. brasiliensis* (and hence a junior synonym) and that *C. festivus* was not a synonym of *C. braziliensis* (as reported by Saether, 1977) but a senior synonym of *C. annulatus*. *Chaoborus lanei* and *C. annulatus* are therefore both new synonyms and reported here for the first time.

Evenhuis (pers. comm.) has pointed out that the description of *Mochlonyx sepultus* by Loew (1844) is valid (because Loew noted that the palpus differed from the extant species *M. velutinus*). As such, the designation of the type species now differs from previous catalogs.

The genus *Rhaetomyia* (and therefore the family name upon which it is based) is here considered to be a Chaoboridae as suggested by Lukashevich (1996b). Ansorge (1996, 1999) disagreed and considered it a stem group of the Culicoidea or of just Corethrellidae + Chaoboridae + Culicidae. Amorim (1993) has *Rhaetomyia* forming a monophyletic group with Axymyiidae, Perissomatidae, and Pachyneuridae. Blagoderov *et al.* (1994)

**herrigi** Ansoerge, 1996:83. Type locality: Clay pit of Klein Lehmhagen near Grimmen (Western Pomerania), Germany. Holotype wing (ZMHB).

Reference: Ansoerge, 1996:83 (wing).

Age: Early Jurassic.

**necopinata** Rohdendorf, 1962:318. Type locality: north shore of the Issyk-Kul Lake, 3 km east of abandoned Tsentral'naya Mine, Kyrgyzstan. Holotype wing (PIAM).

Reference: Lukashevich, 1996b:51 (wing).

Age: Early Jurassic.

### Genus *Taimyborus* Lukashevich

**Taimyborus** Lukashevich, 1999:59. Type species: *Taimyborus aequiarticulatus* Lukashevich, 1999, by original designation.

Description: as for only included species.

**aequiarticulatus** Lukashevich, 1999:60. Type locality: Taimyr amber, Nizhnyay Agapa, Ust' Yeniseiskaya Depression, Taimyr Peninsula, Russia. Holotype ♀ (PIAM).

Reference: Lukashevich, 1999:60 [♀].

Age: Early Cretaceous.

### Unplaced fossil species

**argillaceus** Kalugina *in* Kalugina & Kovalev, 1985:81 ("Chaoborites"). Type locality: Kubekovo, Russia. Holotype wing (PIAM).

Reference: Kalugina *in* Kalugina & Kovalev, 1985:81 (wing).

Age: Middle Jurassic.

**exita** Scudder, 1877:744 (*Corethra*). Type locality: White River, Colorado, U.S.A. Holotype adult (sex unknown) (not in MCZ; location unknown).

Reference: Scudder 1890:583 [adult, sex unknown].

Age: Late Eocene—mid-Oligocene.

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