

Proposed changes in systematics and status of some genera of
Tachydromiini (Diptera: Hybotidae: Tachydromiinae), with
description of a new species of *Tachypeza* Meigen
from Canada and USA

Изменения в систематике и статусе некоторых родов
Tachydromiini (Diptera: Hybotidae: Tachydromiinae), с описанием
нового вида *Tachypeza* Meigen из Канады и США

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KEYWORDS. Diptera, Hybotidae, *Tachydromia*, *Tachypeza*, *Ariasella*, *Pieltaenia*, synonyms, new species.

КЛЮЧЕВЫЕ СЛОВА. Diptera, Hybotidae, *Tachydromia*, *Tachypeza*, *Ariasella*, *Pieltaenia*, synonyms, new species.

ABSTRACT. A more precise definition of the genus *Tachypeza* Meigen, 1830 (Diptera: Hybotidae: Tachydromiinae) is discussed. It is suggested to transfer to *Tachypeza* the following 13 species assigned earlier to the genus *Tachydromia* Meigen, 1803: *Tachypeza annamensis* (Grootaert et Shamshev, 2009), **comb.n.**; *T. australiensis* (Grootaert et Shamshev, 2011), **comb.n.**; *T. bickeli* (Grootaert et Shamshev, 2011), **comb.n.**; *T. corticola* (Grootaert et Shamshev, 2011), **comb.n.**; *T. luang* (Shamshev et Grootaert, 2005), **comb.n.**; *T. malaysiensis* (Shamshev et Grootaert, 2009), **comb.n.**; *T. nowendociensis* (Grootaert et Shamshev, 2011), **comb.n.**; *T. ocellata* (Shamshev et Grootaert, 2008), **comb.n.**; *T. pahangensis* (Shamshev et Grootaert, 2009), **comb.n.**; *T. phanensis* (Shamshev et Grootaert, 2008), **comb.n.**; *T. phu* (Shamshev et Grootaert, 2008), **comb.n.**; *T. sachem* (Melandar, 1928), **comb.n.**; *T. stuckenbergi* (Shamshev et Grootaert, 2010), **comb.n.**; *T. tigeri* (Shamshev et Grootaert, 2008), **comb.n.** A new species of *Tachypeza*, *T. cummingi* **sp. n.**, is described from Canada and the USA. Currently, *Tachypeza* includes 45 species and the genus is formally recorded for the first time from Australasian (5 species), Afrotropical (1 species) and Neotropical (1 species) Realms. Main phylogenetic lineages within *Tachypeza* are provisionally discussed. A check-list of *Tachypeza* of the world is provided. Genera *Ariasella* Gil, 1923, **syn. n.**, and *Piel-*

tainia Arias, 1919, **syn. n.**, are placed in synonymy to *Tachydromia*, with the following new combinations: *Tachydromia iberica* (Arias, 1919), **comb.n.**; *T. lusitanica* (Grootaert, Shamshev et Andrade, 2009), **comb.n.**; *T. pandellei* (Séguy, 1941), **comb.n.**; *T. pieltaini* (Gil, 1936), **comb.n.**; *T. semiaptera* (Gil, 1923), **comb.n.** Currently, the genus *Tachydromia* includes 108 species. Main phylogenetic lineages within *Tachydromia* are provisionally discussed, with two newly recognised groups of species.

РЕЗЮМЕ. Обсуждается более точная дефиниция рода *Tachypeza* Meigen, 1830 (Diptera: Hybotidae: Tachydromiinae). Предлагается перенести в *Tachypeza* следующие 13 видов, помещённые ранее в род *Tachydromia* Meigen, 1803: *Tachypeza annamensis* (Grootaert et Shamshev, 2009), **comb.n.**; *T. australiensis* (Grootaert et Shamshev, 2011), **comb.n.**; *T. bickeli* (Grootaert et Shamshev, 2011), **comb.n.**; *T. corticola* (Grootaert et Shamshev, 2011), **comb.n.**; *T. luang* (Shamshev et Grootaert, 2005), **comb.n.**; *T. malaysiensis* (Shamshev et Grootaert, 2009), **comb.n.**; *T. nowendociensis* (Grootaert et Shamshev, 2011), **comb.n.**; *T. ocellata* (Shamshev et Grootaert, 2008), **comb.n.**; *T. pahangensis* (Shamshev et Grootaert, 2009), **comb.n.**; *T. phanensis* (Shamshev et Grootaert, 2008), **comb.n.**; *T. phu* (Shamshev et Grootaert, 2008), **comb.n.**; *T. sachem*

(Melander, 1928), **comb.n.**; *T. stuckenbergi* (Shamshev et Grootaert, 2010), **comb.n.**; *T. tigeri* (Shamshev et Grootaert, 2008), **comb.n.** Новый вид *Tachypeza*, *T. cummingi* **sp. n.**, описывается из Канады и США. В настоящее время *Tachypeza* включает 45 видов и формально указывается впервые для Австралоазиатского (5 видов), Афротропического (1 вид) и Неотропического царств (1 вид). Предварительно обсуждаются основные филогенетические линии внутри *Tachypeza*. Представлен список видов *Tachypeza* мира. Роды *Ariasella* Gil, 1923, **syn. n.**, и *Pieltainia* Arias, 1919, **syn. n.**, рассматриваются в качестве синонимов рода *Tachydromia*, со следующими новыми комбинациями: *Tachydromia iberica* (Arias, 1919), **comb.n.**; *T. lusitanica* (Grootaert, Shamshev et Andrade, 2009), **comb.n.**; *T. pandellei* (Séguy, 1941), **comb.n.**; *T. pieltaini* (Gil, 1936), **comb.n.**; *T. semiaptera* (Gil, 1923), **comb.n.** В настоящее время *Tachydromia* включает 108 видов. Предварительно обсуждаются основные филогенетические линии внутри *Tachydromia*, выделены две новые группы видов.

Introduction

The Tachydromiinae is a very diverse subfamily in the family Hybotidae comprising quite small (1.0 to 5.0 mm) predatory flies that are generally seen running on leaves of vegetation but also occur under many other conditions including tree-trunks, stones, sandy biotopes, etc. The Tachydromiinae are worldwide in distribution and rich in species. Currently the subfamily includes about 1200 species [Grootaert, Shamshev, 2012]. The subfamily Tachydromiinae is clearly monophyletic and this group is generally characterized by the apomorphic loss of vein M_2 and cell dm (due to the loss of $dm-cu$ crossvein). Additionally, tachydromiines have no wing pterostigma and pseudotracheae as well as they possess some distinctive features of the male terminalia including simple apex of the phallus and the ejaculatory apodeme not fused to phallus base [Sinclair, Cumming, 2006]. Also, nucleotide data indicated robust support for the Tachydromiinae [Moulton, Wiegmann, 2007; Wahlberg, Johanson, 2018]. Chvála [1975a] presented a cladogram of the phylogenetic relationships within the subfamily Tachydromiinae and his pattern is generally accepted. The subfamily is divided into three tribes, namely Symballophthalmini Sinclair et Cumming 2006, Tachydromiini Meigen, 1822 and Drapetini Collin, 1961 [Sinclair, Cumming, 2006].

The Tachydromiini is defined by the following apomorphies: presence of a precoxal bridge and a weakened vein A_1 (anal vein or $CuA+CuP$ by authors) [Sinclair, Cumming 2006: 79]. The tribe Tachydromiini includes the following seven recent genera: *Ariasella* Gil, 1923, *Dysaletria* Loew, 1864, *Pieltainia* Arias, 1919, *Platypalpus* Macquart, 1827, *Tachydromia* Meigen, 1803, *Tachyempis* Melander, 1928 and *Tachypeza* Meigen, 1830 [Shamshev, Grootaert, 2012]. The genera *Platypalpus* and *Dysaletria* are quite well de-

finied [Chvála, 1975b; Grootaert, Chvála, 1992]. However, a definition of remaining genera are rough, especially, in the world context. In our paper we discuss more accurate distinguishing genera *Tachydromia* and *Tachypeza* as well as the taxonomic status of the genera *Ariasella* and *Pieltainia*. A new species of *Tachypeza* is described from Canada and the USA.

Materials and methods

Our study is actually based on Tachydromiinae materials obtained from many museums of the world, they have been listed in our previous papers (e.g., Grootaert, Shamshev, 2009, 2011; Shamshev, Grootaert, 2005, 2009, 2010, 2012). Specimens noted in this paper are deposited in Canadian National Collection of Insects and Arachnids, Ottawa, Canada (CNC), Muséum national d'Histoire naturelle, Paris, France (MNHN), the Royal Belgian Institute of Natural Sciences, Brussels, Belgium (RBINS) and the Zoological Institute of Russian Academy of Sciences, St. Petersburg, Russia (ZISP). The terminology and descriptive format used in the description of the new species follow Grootaert & Shamshev [2012]. To facilitate observations, the terminalia were macerated in cold 10% KOH and hot 85% lactic acid and immersed in glycerine. Drawings of morphological features were made with a camera lucida attached to a compound microscope. In descriptions, the right and left side of the male terminalia are based on the unrotated position viewed posteriorly, such that in the illustrations the right surstylus appears on the reader's left side and vice versa. Male terminalia are figured in their unrotated position. Photos were produced using a Nikon SMZ 1500 stereomicroscope equipped with Nikon D700 digital SLR camera and were aligned and stacked using the Helicon Focus 5.3.14 software. During the process of identification all species were numbered (e.g., NA-8). These MS references are cited in the paragraphs of the material examined.

Systematics

- Class Insecta Linnaeus, 1758
- Order Diptera Linnaeus, 1758
- Suborder Brachycera Macquart, 1834
- Superfamily Empidoidea Latreille, 1804
- Family Hybotidae Meigen, 1820
- Subfamily Tachydromiinae Meigen, 1822

Notes on systematics of *Tachydromia* and *Tachypeza*

The genus *Tachydromia* (type species *Musca cimicoides* Fabricius, 1779 [= *Tachydromia connexa* Meigen, 1822]) is worldwide in distribution and currently includes 121 species: Palearctic — 80, Nearctic — 15, Afrotropics — 4, Australasia — 6, Neotropical — 3 and Oriental — 18 [Grootaert, Shamshev, 2009; Shamshev, Grootaert, 2005, 2008, 2009; Stark, Doczkal, 2017].

The genus *Tachypeza* (type species *Tachydromia nervosa* Meigen, 1822 [= *Tachydromia nubila* Meigen, 1804]) includes 31 species known only from the Palearctic (11), Nearctic (16) and Oriental (4) Realms.

It is deeply rooted in keys that *Tachypeza* is distinguished from *Tachydromia* by the presence of the vein CuA_2 (or CuA by authors) [e.g., Chvála, 1975a: 36, or more recently Cumming, Sinclair, 2009: 655; Grootaert, Shamshev, 2012: 13]. However, this is not quite so. The vein CuA_2 is very unstable in *T. fuscipennis* (Fallén, 1815) and *T. tanaïsensis* Kovalev, 1975 [Collin, 1961; Shamshev, unpublished data], being often faintly indicated or completely absent. Collin [1961: 72] is, probably, the only who noted that the most important difference between *Tachydromia* and *Tachypeza* is the position of the ocellar triangle, which in *Tachydromia* is “nearer the upper hind corner of the eyes, and the vertex behind the ocellar triangle is wider than the frons just in front of the front ocellus, not narrower as in *Tachypeza*”. We would describe this feature in somewhat different terms (more neutral): eyes with upper margins extending far beyond ocellar tubercle, strongly approximated and parallel behind ocellar tubercle (distance between them usually slightly narrower than frons) (*Tachypeza* [e.g., Chvála, 1975a: 216, figs 519–521; fig. 2 in present paper]) versus eyes with upper margins on level of ocellar tubercle, more or less latero-clinate (*Tachydromia*) [e.g., Chvála, 1975a: 21, fig. 7]. It should be noted that the discussed character is absent in all recent and extant genera of Tachydromiini and, thus, is a synapomorphy of the genus *Tachypeza*.

Shamshev and Grootaert [2005, 2008] distinguished the *Tachydromia luang* group to include five species described by them from Thailand. Later, we added to this group two new species collected in Malaysia [Shamshev, Grootaert, 2009], one new species from Vietnam [Grootaert, Shamshev, 2009], four new species from Australia [Grootaert, Shamshev, 2011] and one new species from the Afrotropics [Shamshev, Grootaert, 2010; Grootaert *et al.*, 2015] (totally 13). The group was distinguished from other species groups of *Tachydromia* by the following two characters: palpus with a subapical, very long (usually much longer than palpus), strong, black seta and right epandrial lamella of the male terminalia with a ventral, lobe-like projection (absent in Australian species). We placed all these species in *Tachydromia* following the traditional definition of the genus that has been discussed above (i.e., vein CuA_2 absent). However, a critical re-examination of them showed, that species of the *Tachydromia luang* group are actually closer to *Tachypeza* primarily sharing an apomorphic structure of the head. This conclusion was supported by molecular analysis of the COI gene [Nagy *et al.*, 2013] and confirmed by combining COI, 18S fragments and PGD [J. Mortelmans, unpublished data].

Consequently, we transfer to the genus *Tachypeza* all the following 12 species assigned earlier to the *Tachydromia luang* group: *T. annamensis* (Grootaert et Shamshev, 2009), **comb.n.**; *T. australiensis* (Grootaert et Shamshev, 2011), **comb.n.**; *T. bickeli* (Grootaert et Shamshev, 2011), **comb.n.**; *T. corticola* (Grootaert et Shamshev, 2011), **comb.n.**; *T. luang* (Shamshev et Grootaert, 2005), **comb.n.**; *T. malaysiensis* (Shamshev et Grootaert, 2009), **comb.n.**; *T. nowendociensis* (Grootaert et Shamshev, 2011), **comb.n.**; *T. ocellata* (Shamshev et Grootaert, 2008), **comb.n.**; *T. pahangiensis* (Shamshev et Grootaert, 2009), **comb.n.**; *T. phanensis* (Shamshev et Grootaert, 2008), **comb.n.**; *T. phu* (Shamshev et Grootaert, 2008), **comb.n.**; *T. stuckenbergi* (Shamshev et Grootaert, 2010), **comb.n.**; *T. tigeri* (Shamshev et Grootaert, 2008), **comb.n.** Additionally, we place in *Tachypeza* one species of *Tachydromia* described by Melander [1928] from Costa Rica, *T. sachel* (Melander, 1928), **comb.n.** (see below for discussion) and describe below a new species of *Tachypeza* from Canada and the USA.

Proposed changes in systematic position of these species amplify strongly the pattern of the world distribution of

Tachypeza. Currently, the genus includes 45 species. *Tachypeza* is formally recorded for the first time from Australasian, Afrotropical and Neotropical Realms. In the Australasian Realm *Tachypeza* is represented by four species [Grootaert, Shamshev, 2011], in the Afrotropical and Neotropical Realms by one species each — *T. stuckenbergi* and *T. sachel*, respectively [Shamshev, Grootaert, 2010]. The Oriental Realm includes 12 species. To summarize, *Tachypeza* is known almost exclusively from the northern hemisphere, only four species occur in Australia.

The genus *Tachypeza* has never been divided into species groups. Provisionally, the following groups of species (phylogenetic lineages) could be outlined. The *T. luang* group includes all species transferred from *Tachydromia* (see above), *T. fuscipennis* (Fallén, 1815), *T. tanaïsensis* Kovalev, 1975 (both Palaearctic) and *T. vriesi* Grootaert et Shamshev, 2009 (Vietnam). This group is primarily supported by the presence of very long subapical seta on the palpus (e.g., Grootaert, Shamshev, 2012: 149, fig. 245). The group is most diverse in the Oriental Realm, with 9 described species. Oriental, single Afrotropical and two Palaearctic species of the *T. luang* group belong to a separate complex supported by the presence of a subglobular ventral lobe on the right epandrial lamella of the male terminalia (e.g., Shamshev, Grootaert, 2005: 116, fig. 14). A complex of four species known from Australia share an apomorphic fusion of the left surstylus with the epandrium (e.g., Grootaert, Shamshev, 2011: 105, fig. 1d). *Tachypeza nubila* and, probably, *T. hispanica* Chvála, 1981 constitute another lineage within *Tachypeza*, which is closely related to the *T. luang* group. All remaining Palaearctic species of *Tachypeza* belong to a separate group that, probably, also includes some North American species. A new species described below reveals quite clear relationships between *Tachypeza* of Nearctic and Oriental Realms. Final decisions on the monophyly and relationships of these groups must wait until the North American species are fully analysed.

After changes proposed here the genus *Tachydromia* includes 108 species (Palaearctic — 80, Nearctic — 15, Afrotropics — 3, Australasia — 2, Neotropical — 2 and Oriental — 10).

Chvála [1970, 1975a] divided *Tachydromia* into eight groups of species (*terricola*, *ornatipes*, *arrogans*, *interrupta*, *connexa*, *calcaenea*, *annulimana*, *punctifera* groups), Shamshev & Grootaert [2005, 2008] distinguished the *T. luang* group (see above), and Stark & Doczkal [2017] very recently added the *T. acklandi* group. Provisionally, we would outline the following groups of species (phylogenetic lineages) of *Tachydromia*.

The *T. papuana* lineage is a newly recognised group of *Tachydromia* uniting six species known only from the Oriental (*T. achterbergi* Grootaert et Shamshev, 2009; *T. doi* Shamshev et Grootaert, 2008; *T. mengyangensis* Grootaert, Yang et Shamshev, 2008; *T. monocercus* Shamshev et Grootaert, 2008) and Australasian (*T. carnarvonensis* Grootaert et Shamshev, 2011; *T. papuana* Grootaert, 1987) Realms. The group is primarily supported by a remarkably long presutural dorsocentral seta and apomorphic reduction of left cercus.

The *T. arrogans* lineage (*arrogans* + *calcaenea* + *interrupta* + *punctifera* groups sensu Chvála, 1975a) is the largest group of *Tachydromia* in number of species, it has a worldwide distribution. Within this lineage, species of the *T. punctifera* group may constitute a separate unit primarily sharing bicoloured palpus of the male. The group includes at least four species and has a Holarctic distribution.

The *T. fuscinervis* lineage is a newly recognised group of *Tachydromia* uniting at least six Palaearctic (mostly in Asiatic part) and four Nearctic species. The group is primarily supported

by the presence of a tuft of flattened setae on the ventral face of the right epandrial lamella of the male terminalia (e.g., Chvála, 1970: 436, fig. 15; Shamshev, 1994a: 34, fig. 1). Chvála [1970] placed some species of this lineage in his *T. terricola* group.

The *T. connexa* group is a distinct lineage of *Tachydromia* primarily supported by the presence of modified pregenital segments of the male. Also, this lineage includes species of the *T. acklandi* group sensu Stark & Doczkal [2017], which constitutes a separate unit sharing modified setation of the palpus.

The *T. terricola* lineage includes here only two of several species placed by Chvála [1970] in this group (*T. terricola* Zetterstedt, 1819 and *T. sabulosa* Meigen, 1830). In total, the lineage unites four species known from the Palaearctic and three species from the Oriental Realms (*T. guangdongensis* Yang et Grootaert, 2006; *T. longyuwanensis* Saigusa et Yang, 2003; *T. terricoloides* Shamshev et Grootaert, 2005).

The *T. annulimana* lineage (sensu Chvála, 1970) is a distinct group of *Tachydromia* including 6 species known only from the Palaearctic.

Notes on the status of *Ariasella* and *Pieltaenia*

Arias [1919] erected the new genus *Pieltaenia* to include the single species *P. iberica* collected from Spain (Huelva Province). He distinguished *Pieltaenia* from *Tachydromia* and *Tachypeza* by the complete reduction of wings and halteres. The genus remains monotypic until now.

Gil [1923] erected the new genus *Ariasella* to include the single species *A. semiaptera* collected from Spain (Avila Province). As main distinguishing feature of *Ariasella* he noted reduced wings, which in *A. semiaptera* are stalk-like in the male and squamiform in the female. Later Gil [1936] described a second species of this genus (*A. pieltaini*, known after female only) again taken from Spain. Séguy [1941] found one more *Ariasella* species (*A. pandellei*) from Hautes-Pyrénées (France). Finally, quite recently Grootaert *et al.* [2009] described a new species (*A. lusitanica*) from Portugal. Additionally, Andrade [2011] published detailed observations on different aspects of the life history of this species.

Grootaert and Shamshev [2008] summarized cases of brachyptery (or even aptery) in Hybotidae, where it is especially common in the subfamily Tachydromiinae. Additionally, this phenomenon is known in some species of *Baeodromia* Cumming, 2007 and found recently in *Platypalpus apterus* Freitas-Silva et Ale-Rocha, 2013 described from Brazil [Cumming, 2007; Freitas-Silva, Ale-Rocha, 2013]. Within the genus *Tachydromia* intermediate species between those with reduced and non-reduced wings are present [Shamshev, 1994b; Stark, 1996; Plant, Deeming, 2006; Stark, Doczkal, 2017]. It is clear that this feature has no phylogenetic value and was likely to develop as an adaptation to concrete ecological conditions and behaviour, when the stalks (reduced wings) are used for signalling to the female. To summarize, there is no morphological hiatus between *Ariasella*, *Pieltaenia* and *Tachydromia*. This conclusion was supported by molecular analysis of the COI gene [Nagy *et al.*, 2013] and confirmed by combining COI, 18S fragments and PGD [J. Mortelmans, unpublished data].

So, we place *Pieltaenia*, **syn. n.**, and *Ariasella*, **syn. n.**, in synonymy to *Tachydromia*, with the following new combinations: *Tachydromia iberica* (Arias, 1919), **comb.n.**; *T. lusitanica* (Grootaert, Shamshev et Andrade, 2009), **comb.n.**; *T. pandellei* (Séguy, 1941), **comb.n.**; *T. pieltaini* (Gil, 1936), **comb.n.**; *T. semiaptera* (Gil, 1923), **comb.n.** Within *Tachydromia*, all these species could be associated with the *T. arrogans* group.

Description of new species and new records

Tachydromia semiaptera (Gil), **comb.n.**

Ariasella semiaptera Gil, 1923: 153. Type-locality: Valle de Iruelas, provincia de Avila (Spain).

MATERIAL EXAMINED. 3 ♂♂, 3 ♀♀, SPAIN: Jaén, Cazorla Nat. Park, 8.05.1988, L. Masner, ss.; *Ariasella semiaptera* Gil, det. J.M. Cumming (CNC).

REMARKS. The species remains known only from Spain, where it is probably quite widely distributed.

DISTRIBUTION. PALAEARCTIC: Spain.

Tachypeza cummingi Shamshev et Grootaert, **sp. n.**

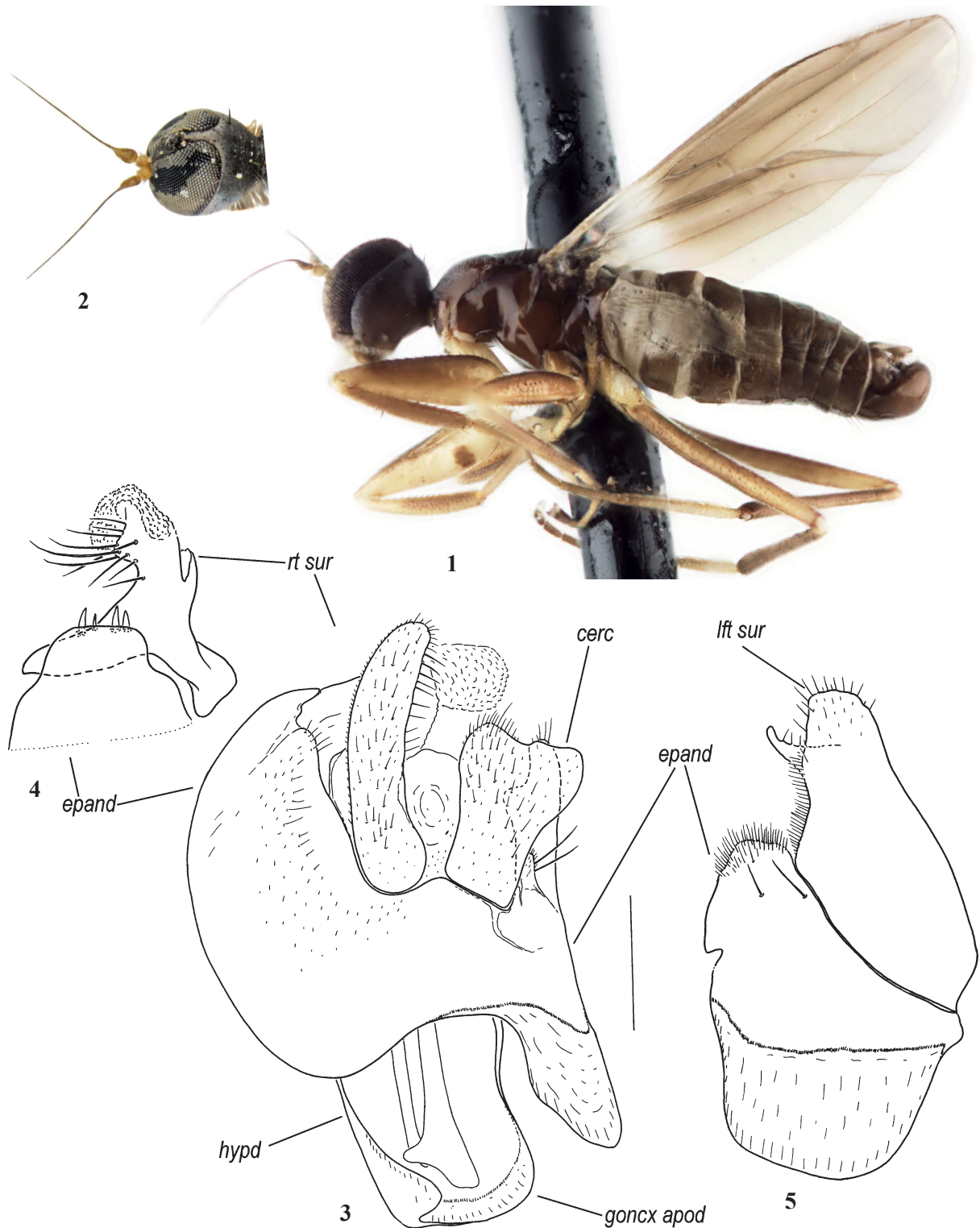
Figs 1–6.

TYPE MATERIAL. **Holotype** — ♂, labelled: CANADA: “Ont. [= Ontario]: Ottawa / 30.v.1992 / J.M. Cumming”; “Holotype [red label]; “*Tachypeza / cummingi* sp. nov. / Shamshev et Grootaert” (CNC) [NA–8].

Paratypes: CANADA: **Alberta:** 3 ♂♂, 1 ♀, Valleyview, 6.vi.1961, A.R. Brooks (CNC); 1 male, Grande Prairie, 11.vi.1961, A.R. Brooks (CNC); 4 ♀♀, Kananaskis, For. Exp. Stn. Seebe, 25.vi.1962, W.R.M. Mason (CNC); 1 ♂, Jumping Pd. Cr., 20 mi. W Calgary, 28.vi.1962, W.R.M. Mason (CNC); 1 ♂, 40 km N of Colemann, 27.05–3.vi.1980, D. Williams (CNC); 1 ♂, Edmonton, U. of A. Ecol. Res., malaise, spruce/aspens, 29.05–5.vi.1986, B.V. Brown (CNC). **Manitoba:** 3 ♂♂, 1 ♀, Aweme, 29.v.1923, R.M. White (CNC); 20 ♂♂, 13 ♀♀, 2 mi. W. Stockton, on trunk of aspen, 26.v.1958, J.F. McAlpine (1 ♂, 1 ♀ in RBINS, 1 ♂ in ZISP, others in CNC). **Ontario:** 4 ♂♂, 6 Osgood, on trunk of aspen, 16.v.1951, J.F. McAlpine (CNC); 1 ♀, Port Severn, 3 mi. N Black spruce bog, 18.v.1959 (CNC); 6 ♂♂, 1 ♀, Bell’s Corners, 19.v.1965, K. Skattler (CNC); 3 ♀♀, Mer Bleu, 5 mi. E. Ottawa, Malaise trap, 7.vi.1966, D.D. Munroe (CNC); 1 ♀, same data, 9.vi.1966, D.D. Munroe (CNC); 1 ♀, same data, 13.vi.1966, D.D. Munroe (CNC); 1 ♀, same data, 15.vi.1966, D.D. Munroe (CNC); 1 ♀, same data, 27.vi.1966, D.D. Munroe (CNC); 1 ♂, 7 mi. E. Griffith, 5.vi.1988, B.E. Cooper (CNC); 1 ♀, Ottawa, 22.v.1992, J.M. Cumming (CNC). **Northwest Territories:** 1 ♂, 1 ♀, Rd. nr. Stock Lake, ex. malaise trap, 14.vi.1966, G.E. Shewell (1 ♂ in CNC, 1 ♀ in ZISP); 1 female, Wrigley, 14.vi.1969, G.E. Shewell (CNC). **Saskatchewan:** 1 ♂, Indian Head, 31.v.1931, K.E. Stewart (CNC); **Yukon:** 1 ♂, km 155 Dempster Hwy, 2.vii.1982, D.M. Wood (CNC). **USA:** **Michigan:** 1 ♀, Midland C., 21–31.v.1961, R.R. Dreisbach (CNC).

DIAGNOSIS. A species of *Tachypeza* lacking vein CuA₂; palpus pale, silvery white pubescent; prothoracic sclerites and mesonotum greyish pollinose, mesopleuron shiny; 1 pair of spine-like prescutellar dorsocentrals and 1 pair of similar wide apart scutellars; wing largely brownish infuscate, with hyaline band near base. Male: fore femur with brown rounded ventral spot near base; mid femur with small depression near base ventrally.

DESCRIPTION. **Male** (Fig. 1). Length: body 2.2–2.5 mm, wing 2.1–2.3 mm. Head black. Eyes (Fig. 2) with upper margins extending far beyond ocellar tubercle, strongly approximated behind ocellar tubercle leaving very narrow parallel-sided vertex (slightly narrower than frons). Occiput uniformly greyish pollinose; 2 minute black closely set verticals, 4 moderately long black strong setae on middle portion behind verticals, some short pale setae around neck, row of minute postoculars, numerous silvery white setae behind mouth-opening and laterally. Ocellar tubercle greyish pollinose; 2 minute ocellars. Frons uniformly greyish pollinose, almost parallel-sided, slightly broadened below ocellar tubercle, rather narrow, above antennae 2.0–2.5 times as broad as anterior ocellus. Antenna with scape and pedicel yellow, postpedicel and stylus brownish yellow; postpedicel conical, scarcely pubescent; stylus apical, nearly 7.0 times as long as postpedicel. Proboscis brown, somewhat elongate. Palpus unmodified, narrowed apically, nearly 1.5 times shorter than proboscis, pale, silvery



Figs 1–5. *Tachypeza cummingi* sp. n., ♂, paratype. 1 — habitus, lateral view; 2 — head, dorsal view; 3 — terminalia, dorsal view; 4 — apical part of right epandrial lamella and right surstylus, lateral view; 5 — left epandrial lamella and left surstylus, lateral view. Abbreviations: cerc — cercus; epand — epandrium; goncx apod — gonocoxal apodeme; hypd — hypandrium; lft sur — left surstylus; rt sur — right surstylus. Scale bar: 0.1 mm.

Рис. 1–5. *Tachypeza cummingi* sp. n., ♂, паратип. 1 — габитус, сбоку; 2 — голова, сверху; 3 — терминалии, сверху; 4 — верхинная часть правой лопасти эпандрия и правый сурстиль, сбоку; 5 — левая лопасть эпандрия и левый сурстиль, сбоку. Сокращения: cerc — церк; epand — эпандрий; goncx apod — гоноксальная аподема; hypd — гипандрий; lft sur — левый сурстиль; rt sur — правый сурстиль. Масштаб: 0.1 мм.

white pubescent, with scattered pale short setae and 1 longer subapical seta (considerably shorter than palpus).

Thorax black, prothoracic sclerites (including postpronotal lobe) and mesonotum greyish pollinose, entire mesopleuron shiny (small spot of tomentosity on lower part of katepisternum and meron). Postpronotal lobe large, elongate oval, lack-

ing prominent setae, with scattered minute setulae. Mesonotum with 1 black, moderately long, spine-like notopleural and 2 similar, wide apart scutellars; acrostichals minute, arranged in 1–2 rows, prominent on presutural area only; dorso-centrals uniserial, minute, 1 prescutellar pair moderately long, spine-like, nearly as long as scutellars.

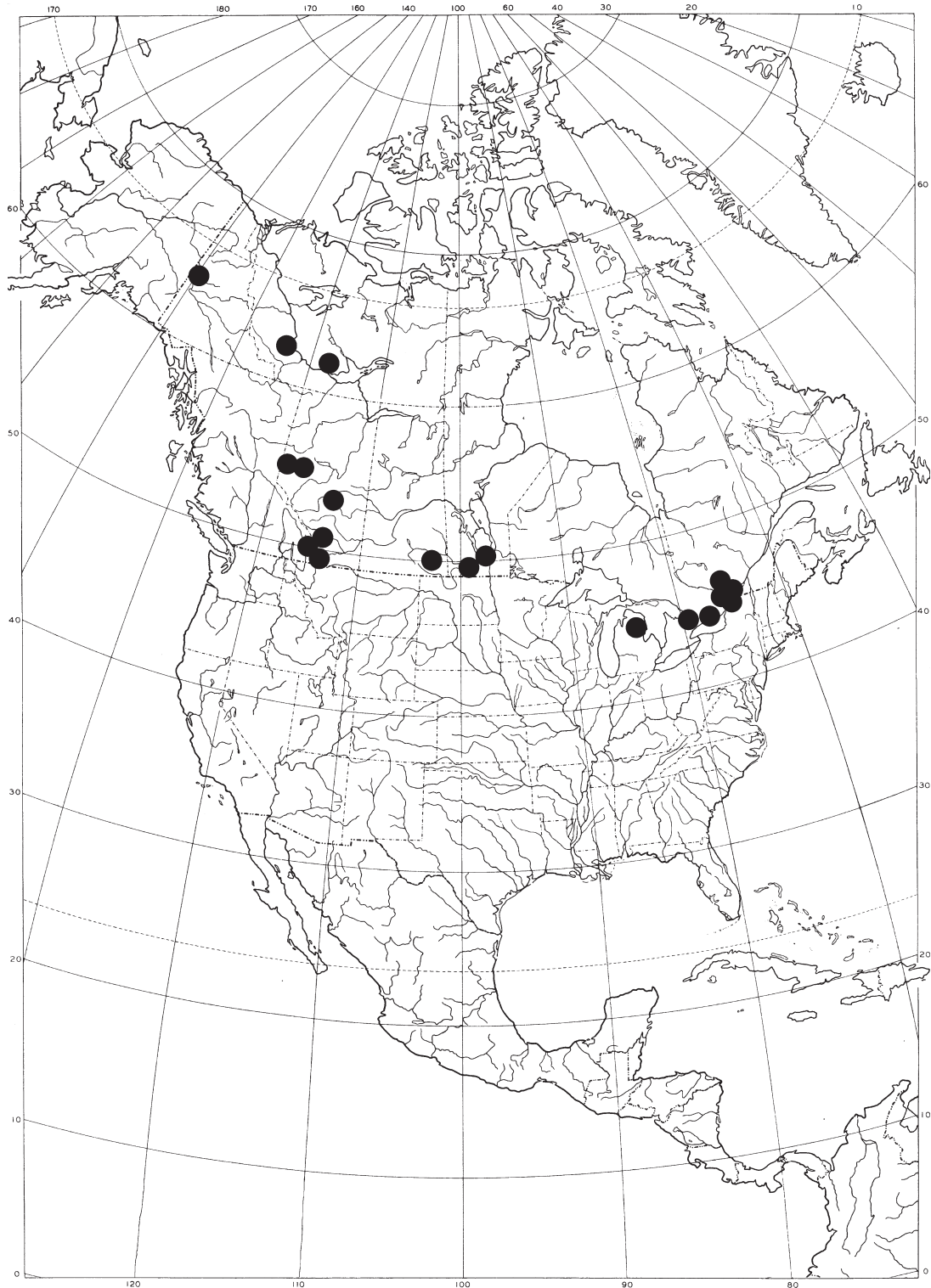


Fig. 6. Distribution of *Tachypeza cummingi* sp. n. in the Nearctic Realm.

Рис. 6. Распространение *Tachypeza cummingi* sp. n. в Неарктическом царстве.

Legs with fore coxa yellow, mid and hind coxae brownish (except yellowish apex); trochanters of all legs yellow; fore femur largely brownish yellow, paler ventrally, with brown rounded ventral spot near base, mid and hind femora brownish (somewhat paler closer to apex); tibiae brownish (except brownish yellow extreme base); fore and mid tarsomere 5 brown, otherwise fore and mid tarsi yellowish to brownish yellow, hind tarsus largely brownish, hind basitarsus yellow on basal 2/3. Coxae clothed in pale unmodified setae of different lengths; fore coxa whitish pollinose anteriorly. Trochanters with unmodified setation. Fore femur strongly thickened, with rows of minute anteroventral and posteroventral setulae becoming slightly longer toward base. Fore tibia somewhat spindle-shaped, with hardly prominent spinule-like setae ventrally. Fore basitarsus with spinule-like setulae ventrally. Mid femur slender, with small depression near base ventrally, bearing rows of anteroventral and posteroventral spinule-like dark setulae beyond depression, 4–5 strong moderately long setae before depression (near extreme base of femur) and some spinule-like setulae on subapical face posteriorly. Mid tibia with shallow elongate ventral subapical depression bordered with black spinules, hardly prominent ventral spinules before depression, lacking apical projection. Hind femur slender, lacking prominent setae. Hind tibia unmodified, lacking prominent setae. Tarsomeres of mid and hind legs unmodified.

Wing (Fig. 1) normally developed, rounded at apex, with unmodified venation; largely brownish infusate, with hyaline band near base. One minute costal seta present. Vein R_{2+3} straight. Veins R_{4+5} and M_{1+2} convergent near wing-apex. Anal vein and CuA_2 absent (subsequently anal cell absent). Cross-veins r-m and bm-cu broadly separated. Cell r1 somewhat narrower than cell r2+3. Calypter brown, with pale brown cilia. Halter with yellow knob and brownish yellow stem.

Abdomen black brown, with scattered short setulae (mostly on sternites), pregenital segments with longer posteromarginal setae; tergites viewed dorsally shiny along midline, faintly greyish pollinose laterally. Tergite 8 and sternite 8 entirely fused, segment 8 ring-like. Terminalia (Figs 3–5) moderately large, subglobular, blackish brown. Right cercus (Fig. 3) digitiform, rather long, rounded apically, covered with short setae; left cercus nearly 1.5 time shorter than right cercus, broadened on apical part, covered with short setae. Right epandrial lamella without ventral lobe, with 4 subapical spines on inner side; right surstylus (Fig. 4) separated from epandrial lamella, weakly sclerotised apically, with several setae of different lengths ventrally. Left epandrial lamella (Fig. 5) small, rather subtriangular (without apodeme), with broadly rounded apex, covered with setulae and with 2 moderately long setae on apical part; left surstylus separated from epandrial lamella, rather large, nearly as large as left epandrial lamella without apodeme, with short pointed internal projection, with short setae. Hypandrium humped, without setae.

FEMALE. Fore femur without brown rounded ventral spot near base. Mid femur lacking depression on basal part, bearing rows of anteroventral and posteroventral spinule-like setae becoming slightly longer toward base of femur and ending with 2 long brownish yellow to yellow setae, with unmodified setulae on subapical face posteriorly. Mid tibia without subapical depression. Cercus slender, brown, with minute setulae.

ETYMOLOGY. The new species is named in honour of the Canadian dipterist Jeffrey M. Cumming (Ottawa) in recognition of his contribution to the knowledge of the Diptera, especially empidoids.

REMARKS. Within the key to *Tachypeza* of North America [Melander, 1928] *T. cummingi* **sp.n.** would run to *T.*

binotata Melander, 1928 and *T. humeralis* Melander, 1928. However, in both these species the fore femur of the male has two black spots (vs. one in the new species). The relationships of *T. cummingi* **sp.n.** with other Nearctic species of *Tachypeza* are unclear. Outside the Nearctic, the new species is most closely related to *T. vietnamensis* Grootaert et Shamshev, 2009 known only from mountains of northwest Vietnam [Grootaert, Shamshev, 2009]. Both species share weakly sclerotised, somewhat sculptured apical part of the right surstylus of the male genitalia.

DISTRIBUTION. NEARCTIC: Canada (Alberta, Manitoba, Ontario, Northwest Territories, Saskatchewan, Yukon), USA (Michigan) (Fig. 6).

HABITAT AND SEASONAL OCCURRENCE. According to label data the new species occurs on trunks of *Populus*, from the middle of May till the beginning of July.

Tachypeza sachem (Melander), **comb.n.**

Tachydromia sachem Melander, 1928: 283. Type locality: Turrialba (Costa Rica).

MATERIAL EXAMINED. COSTA RICA: 1 ♀, Monteverde, 15.02–15.03.1986, A. Forsyth (CNC). 1 ♀, 2 km E Santa Elena, 1540 m, 11–13.06.2000, E. Fisher (Monty's station), CD 5086 (CNC) [SA–2].

DISTRIBUTION. NEOTROPICAL: Costa Rica.

REMARKS. Melander [1928] described *T. sachem* after a single female. We have not seen the holotype but the original description is quite detailed to be sure that this distinctive species is correctly recognised. The male of *T. sachem* remains unknown, however, provisionally, this species could be associated with the *T. luang* complex sharing with its scale-like silvery setae on lower part of the occiput and a curiously long black subapical seta on the palpus. It should be noted that *T. sachem* is unique among species of *Tachypeza* of the world in having partly yellow thorax (post-pronotal lobes yellow). Currently, *T. sachem* is the only species of *Tachypeza* known from the Neotropical Realm.

Check-list of *Tachypeza* of the world

Tachypeza Meigen, 1830

Tachypeza Meigen, 1830: 341. Type species: *Tachydromia nervosa* Meigen, 1822: 72 (designated by Rondani, 1856: 147) [= *Tachydromia nubila* Meigen, 1804].

= *Cormodromia*: Zetterstedt, 1838: 545, MS name.

annamensis (Grootaert et Shamshev, 2009): 36, figs. 4–6 (*Tachydromia*). Type locality: Dak Lak Province, Chuo Yang Sin NP c. 50 km S. Buon Mê Thuot, Krong K'Mar 590–840 m, rain forest near river (Vietnam). **ORIENTAL:** Vietnam. **Comb.n.**

annularis Melander, 1928: 274. Type localities: “Fieldbrook and Santa Cruz Mountains, California; Mount Constitution, Washington” (USA). **NEARCTIC:** USA (California, Washington).

australiensis (Grootaert et Shamshev, 2011): 104, fig. 1 (*Tachydromia*). Type locality: New South Wales, Wentworth Falls, Jamison Ck., cascades (Australia). **AUSTRALASIAN:** Australia (New South Wales). **Comb.n.**

bickeli (Grootaert et Shamshev, 2011): 105, fig. 2 (*Tachydromia*). Type locality: New South Wales, Fenwicks Ck, Doyles Riv. (Australia). **AUSTRALASIAN:** Australia (New South Wales). **Comb.n.**

binotata Melander, 1928: 275. Type localities: “Pullman, Washington; Sacramento, California” (USA). **NEARCTIC:** USA (California, Washington).

- brachialis* (Melander, 1902): 242 (in key), 243 (*Tachydromia*). Type locality: Boonton, N.J. (USA). NEARCTIC: Canada (Ontario); USA (New Hampshire, New Jersey, Virginia).
- clavipes* Loew, 1864: 86. Type locality: Illinois (USA). NEARCTIC: USA (Illinois, Maryland, New Jersey, Pennsylvania).
- corticalis* (Melander, 1902): 342 (in key), 343 (*Tachydromia*). Type locality: Clouderoft, New Mexico (USA). NEARCTIC: Canada (British Columbia); USA (California, Idaho, Montana, New Mexico, Washington, Wyoming).
- corticola* (Grootaert et Shamshev, 2011): 108, fig. 4a–d (*Tachydromia*). Type locality: Queensland, Ravensbourne NP, under bark *Eucalyptus saligna* (Australia). AUSTRALASIAN: Australia (New South Wales, Queensland). **Comb.n.**
- cummingi* Shamshev et Grootaert, 2018: 428–431, figs 1–5. Type locality: Ottawa, Ontario (Canada). NEARCTIC: Canada (Alberta, Manitoba, Ontario, Northwest Territories, Saskatchewan, Yukon); USA (Michigan). **Sp.n.**
- discifera* Melander, 1928: 273. Type localities: “Powell Co, Montana; Moscow, Idaho” (USA). NEARCTIC: Canada (Alberta, British Columbia), USA (Montana, Idaho).
- distans* Melander, 1928: 273. Type locality: Kamiac Butte, Washington (USA). NEARCTIC: USA (Washington).
- dolorosa* Melander, 1928: 275. Type locality: Clouderoft, New Mexico (USA). NEARCTIC: USA (New Mexico). =*rapax* Loew: Melander, 1902: 343.
- excisa* Melander, 1928: 274. Type locality: Ithaca, New York (USA). NEARCTIC: Canada (Quebec), USA (New York).
- fenestrata* (Say, 1823): 95 (*Sicus*). Type localities: “the middle states” (USA). NEARCTIC: Canada (New Brunswick), USA (Illinois, Maine, Missouri, Virginia, Wisconsin). =*similis* (Walker, 1849): 506 (*Tachydromia*). Type locality: St. Martin’s Falls, Albany River, Hudson’s Bay (Canada). [Smith, 1971: 366 (holotype data)] =*rapax* Loew, 1864: 85. Type locality: Illinois (USA).
- fennica* Tuomikoski, 1932, figs 3, 5. Type localities: “Ilomantsi, Jyväskylä” (Finland). PALAEARCTIC: Europe: Austria, Czech Republic, Estonia, Finland, Germany, Great Britain, Hungary, Latvia, Norway, Romania, Slovakia, Sweden, Switzerland, Ukraine; Russia (Murmanskaya Prov., Karelia, Leningradskaya, Moskovskaya, Sverdlovskaya Provinces); East Asia: Japan.
- fuscipennis* (Fallén, 1815): 14 (*Tachydromia*). Type locality: “Scania” [= Skåne] (Sweden). PALAEARCTIC: Europe: Austria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Hungary, Latvia, Norway, Slovakia, Sweden, Switzerland, Ukraine; Russia (European part: Leningradskaya, Moskovskaya, Ryazanskaya, Voronezhskaya Provinces, Krasnodarskiy Territory, Adygea, Kabardino-Balkaria; Eastern Siberia: Krasnoyarskiy Territory); West Asia: Azerbaijan; East Asia: Mongolia. =*fusipennis*: Schiner, 1860: 93, error.
- heeri* Zetterstedt, 1838: 547. Type locality: “Lapponia” (Finland or Sweden) (by lectotype designation). [Chvála, 1971: 9 (lectotype designation)]. PALAEARCTIC: Europe: Czech Republic, Estonia, Finland, Great Britain, Latvia, Norway, Slovakia, Sweden, Ukraine; Russia (European part: Murmanskaya Province, Karelia, Nenets, Leningradskaya, Moskovskaya, Voronezhskaya Provinces; Western Siberia: Yamalo-Nenets, Khanty-Mansi; Eastern Siberia: Irkutskaya Prov., Yakutia; Far East: Amurskaya Province, Primorskiy Territory); East Asia: Japan. =*punctipes* Zetterstedt, 1838: 547, nomen nudum. [Chvála, 1971: 9 (notes)].
- hispanica* Chvála, 1981: 168, fig. 26. Type locality: Almeria, Alhama, 5 km W, 200–500 m (Spain). PALAEARCTIC: Spain.
- humeralis* Melander, 1928: 276. Type locality: Washington, D.C. (USA). NEARCTIC: Canada (Ontario, Quebec), USA (D.C.).
- incisa* (Brunetti, 1913): 41 (*Platypalpus*). Type locality: Simla, W Himalayas (India). ORIENTAL: India.
- inusta* (Melander, 1902): 224 (in key), 226 (*Tachydromia*). Type localities: “Juliaetta, Moscow and Craig’s Mt., Idaho; Magdalena Mts., N. Mexico” (USA). NEARCTIC: USA (California, Colorado, Idaho, New Mexico, Oregon, Washington).
- luang* (Shamshev et Grootaert, 2005): 115, figs 12–15 (*Tachydromia*). Type locality: Loyang mangrove, tree trunk (Singapore). ORIENTAL: Singapore, Thailand. **Comb.n.**
- malaysiensis* (Shamshev et Grootaert, 2009): 251, figs 1–3 (*Tachydromia*). Type locality: Pahang, Tanah Rata, 1460 m (Malaysia). ORIENTAL: Malaysia. **Comb.n.**
- nigra* Yang et Yang, 1997: 1470, fig. 3 (female). Type locality: Hubei, Xingshan, 1300 m (China). ORIENTAL: China (Hubei).
- nowendociensis* (Grootaert et Shamshev, 2011): 109, fig. 5 (*Tachydromia*). Type locality: New South Wales, 10 km SE Nowendoc, 850 m, on tree trunk (Australia). AUSTRALASIAN: Australia (New South Wales). **Comb.n.**
- nubila* (Meigen, 1804): 239. Type locality: not given (?Europe). PALAEARCTIC: Europe: Austria, Belgium, Croatia, Czech Republic, Denmark, Estonia, Finland, France (including Corsica), Germany, Great Britain, Hungary, Ireland, Latvia, Lithuania, Norway, Poland, Romania, Slovakia, Spain, Sweden, Switzerland, the Netherlands, Turkey, Ukraine; Russia (European part: Karelia, Leningradskaya, Tverskaya, Moskovskaya, Ryazanskaya, Voronezhskaya, Belgorodskaya, Samarskaya Provinces, Permskiy Territory, Sverdlovskaya Province, Crimea, Krasnodarskiy Territory, Adygea, Kabardino-Balkaria; Western Siberia: Khanty-Mansi, Altayskiy Territory; Eastern Siberia: Krasnoyarskiy Territory); West Asia: Azerbaijan. =*nervosa* (Meigen, 1822): 72 (*Tachydromia*). Type locality: “Oesterreich” (?Austria). =*tibialis* (Macquart, 1823): 154 (*Tachydromia*). Type locality: not given (NW France). =*nova* Siebke, 1877: 25 (as var. of *nervosa* Meigen, nec Siebke, 1877). Type locality: “ad Ormem” (Norway). =*subnubila* Raffone, 2002: 40, fig. 4. Type locality: Parma, Riserva naturale Guadine-Pradaccio (Italy). [Barták, Kubik, 2018: 476].
- ocellata* (Shamshev et Grootaert, 2008): 29, figs 10–12, 27, 31 (*Tachydromia*). Type locality: Loei prov., Phu Ruea NP Subhnonghin 17°28.772’N 101°21.308’E 860 m (Thailand). ORIENTAL: Thailand. **Comb.n.**
- pahangiensis* (Shamshev et Grootaert, 2009): 253 (female, *Tachydromia*). Type locality: Pahang, Brinchang (Malaysia). ORIENTAL: Malaysia. **Comb.n.**
- phanensis* (Shamshev et Grootaert, 2008): 23, figs 1–3, 24 (*Tachydromia*). Type locality: Chaiyaphum prov., Pa Hin Ngam NP Tung Dok Grajeaw, 15°38.208’N 101°23.556’E, 720 m (Thailand). ORIENTAL: Thailand. **Comb.n.**
- phu* (Shamshev et Grootaert, 2008): 25, figs 4–6, 25 (*Tachydromia*). Type locality: Loei prov., Phu Ruea NP office, 17°28.805’N 101°21.242’E, 870 m (Thailand). ORIENTAL:

- TAL: Thailand. **Comb.n.**
- portaecola* (Walker, 1849): 506 (*Tachydromia*). Type locality: St. Martin's Falls, Albany River, Hudson's Bay (Canada). NEARCTIC: Canada (New Brunswick). [Smith, 1971: 365, text-fig. 15 (holotype data)].
- postica* (Walker, 1857): 149 (*Tachydromia*). Type locality: "United States" (USA). NEARCTIC: USA (D.C., Kansas, New Mexico). [Smith, 1971: 366, pl. 3, fig. 6 (holotype data)].
- pruinosa* Coquillett, 1903: 267. Type locality: Atherton, Missouri (USA). NEARCTIC: USA (Missouri).
- rostrata* Loew, 1864: 248. Type locality: New Hampshire (USA). NEARCTIC: USA (Maine, New Hampshire, Virginia).
- sachem* Melander, 1928: 283 (*Tachydromia*). Type locality: Turrialba (Costa Rica). NEOTROPICAL: Costa Rica. **Comb.n.**
- sericeipalpis* Frey in Lundström et Frey, 1913: 10. Type locality: "Mikulkin" [= cape Mikulkin (Kanin Peninsula), 67°48'N 46°41'E], Nenets Autonomous Okrug (Russia). PALAEARCTIC: Russia (European part: Murmanskaya Province, Nenets; Eastern Siberia: Yakutia; Far East: Chukotka).
= *dilatata* Frey, 1915: 3, 14 (as var. of *sericeipalpis* Frey). Type locality: "Lena-Mündung, Chara-Ullach-Gebirge, am Ketlach-See [= Kharaulakhskiy Ridge near mouth of the Lena River, ~71°44'N 128°16'E], Yakutia (Russia).
- stuckenbergi* (Shamshev et Grootaert, 2010): 213, figs 5–8, 12 (*Tachydromia*). Type locality: District Masindi, Budongo Forest, near Sonso, 1°45'N 31°35'W, *Tecleanobilis*, swamp forest (Uganda). [Grootaert et al., 2015: 167, fig. 1 (female)]. AFROTROPICAL: Uganda. **Comb.n.**
- tanaisense* Kovalev in Chvála, 1975: 61 (in key); Kovalev, 1976: 460. Type locality: mouth of Don River, village Nedvigovka [47°16'N 39°20'E], Rostovskaya Province (Russia). PALAEARCTIC: Czech Republic, Russia, Ukraine.
- tigeri* (Shamshev et Grootaert, 2008): 27, figs 7–9, 26 (*Tachydromia*). Type locality: Chiang Mai Province, Doi Inthanon NP summit marsh 18°35.361'N 98°29.157'E 2500 m (Thailand). ORIENTAL: Thailand. **Comb.n.**
- truncorum* (Fallén, 1815). Type locality: Scania [= Skåne] (Sweden). PALAEARCTIC: Europe: Austria, Czech Republic, Denmark, Estonia, Finland, Germany, Great Britain, Italy, Latvia, Lithuania, Norway, Romania, Slovakia, Slovenia, Sweden, Switzerland, Ukraine; Russia (European part: Arkhangelskaya Province, Karelia, Leningradskaya, Moskovskaya, Ryazanskaya, Smolenskaya, Sverdlovskaya Provinces; Western Siberia: Altayskiy Territory; Eastern Siberia: Irkutskaya Province); East Asia: Mongolia.
- vietnamensis* Grootaert et Shamshev, 2009: 39, figs 7–9. Type locality: Lao Cai Province, Sa Pa, Sin Chai, c. 1900 m (Vietnam). ORIENTAL: Vietnam.
- vriesi* Grootaert et Shamshev, 2009: 41, figs 10–12. Type locality: Lao Cai Province, Sa Pa, Sin Chai, c. 1900 m (Vietnam). ORIENTAL: Vietnam.
- winthemi* Zetterstedt, 1838: 548. Type locality: Lycksele (Sweden) (by lectotype designation). [Chvála, 1971: 25 (lectotype designation)]. PALAEARCTIC: Europe: Finland, Norway, Sweden; Russia (European part: Murmanskaya Province, Karelia, Nenets; Eastern Siberia: Yakutia; Far East: Kamchatskiy Territory). NEARCTIC: Canada (Alberta, British Columbia, Manitoba, Newfoundland and Labrador, Northwest Territories, Quebec); USA (Massachusetts, Montana, New Hampshire).
- yinyang* Papp et Földvári, 2002: 352, figs 6–10. Type locality: K-Mecsek Landscape Protected Area: Óbánya, Óbányai-völgy, over the brook (Hungary). PALAEARCTIC: Hungary, Russia (Adygea, Krasnodarskiy Territory).

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