



New synonyms and several nomenclatural clarifications on family-group names in the Aphididae (Hemiptera Sternorrhyncha)

JUAN M. NIETO NAFRÍA*, NICOLÁS PÉREZ HIDALGO, M. PILAR MIER DURANTE

Departamento de Biodiversidad y Gestión Ambiental, Universidad de León, 24071 León, Spain.

*Corresponding author; e-mail: jmmien@unileon.es

Abstract

In the context of the preparation of *Part of the List of Available Names of the family group taxa of the superfamily Aphidoidea* for submission to the International Commission on Zoological Nomenclature new synonyms have been detected and several nomenclatural problems have been clarified. Three new objective synonymies are established: Drepanosiphoninae Börner, 1944 **syn. nov.** of Drepanosiphinae Herrich-Schaeffer, 1857, Macrosiphonini Börner, 1952 **syn. nov.** of Macrosiphini Wilson, 1910 and Trichosiphonini Börner & Heinze, 1957 **syn. nov.** of Trichosiphini Wilson, 1910. A subjective synonymy is established: Asiphonaphidina Börner, 1952 **syn. nov.** of Rhopalosiphina Mordvilko, 1914. Dasiina van der Goot, 1918 is an objective invalid name, and it must be replaced, if is necessary by Baizongiina Börner, 1944(1914). Nomenclatural status affecting the names Tetraneuriden, Tycheinae, Pteroclorini and Macrosiphini are clarified: Tetraneuriden is an available name, it is a valid name in some classifications but a junior subjective synonym in others; Tycheinae is an available name but it is a nomen dubium; Pteroclorini is an available but objective invalid name; and Macrosiphini Wilson, 1910(1887) takes the date of Nectarophorini Oestlund, 1887. Also the authorship and date of nomenclatural acts in the chapter on Aphids in the *Handbuch der Pflanzenkrankheiten*, 1932, are clarified.

Key words: Aphids, Aphididae, family-group names, new synonyms

Introduction

Nieto Nafría *et al.* (1998a) published the first catalogue of aphid (Hemiptera Aphididae) family-group names. Later, Nieto Nafría *et al.* (1998b, 2003, 2006) published corrections and additions.

Some time ago we undertook the preparation of *Part of the List of Available Names of the family group taxa of the superfamily Aphidoidea*, under the rules of the Art. 79 of the International Code of Zoological Nomenclature (International Commission on Zoological Nomenclature 1999). This *Part* was approved by the aphidologist present at the *Seventh International Symposium on Aphids* (Fremantle, Western Australia, Australia, October 2005). Later (December, 2005), the *Part* was formally presented to the International Commission on Zoological Nomenclature. The *Part* has been received by the Commission for discussion (Art. 79.2.1), the first step for notification, consultation and voting by the Commission (Art. 72.2.2).

During the project to prepare this *Part*, we have detected several names that are not included in the list by Nieto Nafría *et al.* (1998a), and the successive additions, and we have revisited some nomenclatural problems.

New synonymies

Three names are new objective synonyms [I.C.Z.N articles 61.3.2. and 61.3.3.]: Drepanosiphoninae Börner, 1944 [page 214] is **syn. nov.** of Drepanosiphinae Herrich-Schaeffer, 1857 [page VII], Macrosiphonini Börner, 1952 [page 157] is **syn. nov.** of Macrosiphini Wilson, 1910 [page 317], and Trichosiphonini Börner & Heinze,

1957 [page 71] is **syn. nov.** of Trichosiphini Wilson, 1910 [page 316]. The name of the type genus of each one, respectively are (1) *Drepanosiphon* Börner, 1931 (genitive drepanosiphonis, root drepanosiphon) and an unjustified emendation of *Drepanosiphum* Koch, 1855 (genitive drepanosiphum, root drepanosiph); (2) *Macrosiphon* Börner, 1931 (genitive macrosiphonis, root macrosiphon) and an unjustified emendation of *Macrosiphum* Passerini, 1860 (genitive macrosiphum, root macrosiph); and (3) *Trichosiphon* Börner & Heinze, 1957 (genitive trichosiphonis, root trichosiphon) and an unjustified emendation of *Trichosiphum* Pergande, 1906 (genitive trichosiphum, root trichosiph) (Koch 1855; Herrich-Schaeffer 1857; Wilson 1910; Börner 1944, 1952; Börner & Schilder 1931; Börner & Heinze 1957).

Asiphonaphidina Börner, 1952 [page 244] **syn. nov.**, is a subjective synonym of Rhopalosiphina Mordvilko, 1914, because *Asiphonaphis* Wilson & Davis, 1919 is currently included in the same subtribe as *Rhopalosiphum* Koch, 1854, the type genus of Rhopalosiphina (Mordvilko 1914; Börner 1952; Remaudière & Remaudière 1997).

Dasiina is an objective invalid name, because *Dasia* van der Goot is junior homonym of *Dasia* Gray, 1839 (Reptilia) [I.C.Z.N. article 39]. In addition, Dasiina van der Goot, 1918 [in Das, page 152] is a subjective **syn. nov.** of Baizongiina Börner 1944(1914), because *Dasia* van der Goot, 1918 is a synonym of *Baizongia* Rondani, 1848 (Das 1918; Börner 1944).

What is the priority date of Macrosiphini?

Siphonophorini Thomas, 1879, Nectarophorini Oestlund 1887 and Macrosiphini Wilson, 1910, are objective synonyms because *Siphonophora* Koch, 1855, *Nectarophora* Oestlund, 1887 and *Macrosiphum* Passerini, 1860 are objective synonyms [I.C.Z.N. article 61.3.2], as the type-species of all of these three genera is *Aphis rosae* Linnaeus, 1758 [I.C.Z.N. article 61.3.3], with *Macrosiphum* as a replacement name of the other two genus-names. Moreover, Siphonophorini is intrinsically an invalid name, because *Siphonophora* is a junior homonym of *Siphonophora* Fischer, 1823 (Cnidaria) and *Siphonophora* Brandt, 1837 (Diplopoda). According the I.C.Z.N. [article 40.2] Macrosiphini is the valid name for this taxon, and it take priority from its oldest synonym, 1887 (from Nectarophorini), not 1879, from Siphonophorini (Nieto Nafría *et al.* 1998a).

Tetraneuriden or Tetranevriden?

Herrich-Schaeffer (1854) wrote “Tetranevriden”, with “*Tetranevra* Hart.” as name-bearing genus. However, the name *Tetranevra* is an unjustified emendation by Agassiz (1846), though Herrich-Schaeffer attributed it to Hartig. Some authors, for example Börner (1952) and Heie (1980), wrote the name of the taxon with “u”, whilst Nieto Nafría *et al.* (2003) wrote it with “v”. The name should be written with “u” because «A family-group name is an incorrect original spelling and must be corrected if it is formed from an unjustified emendation of a generic name (unless the unjustified emendation has become a substitute name)» [I.C.Z.N. article 32.5.3.2], and «The correction of an incorrect original spelling in accordance with the article 32.5 is a “justified emendation”, and the name thus corrected retains the authorship and date of the original spelling» [I.C.Z.N. article 33.2.2].

Is Tycheinae an aphid taxon?

Koch (1857) described the genus *Tychea* and two species: *Tychea graminis* (pages 298-299, figures 365, 366a, 366b) and *Tychea amycli* (page 300, figure 367). The descriptions and illustrations are not detailed enough to clearly indicate which species the author was referring to. As the studied material was not kept (i.e. there is now no type material), we can only be sure of this by designating the neotype of each species. However, it is

evident that Koch had described and illustrated coccids (figures 365, 366a) and aphids in the genus *Geoica* Hart, 1894 (figure 366b), but using the name *T. graminis*. He described some aphids, possibly also in the genus *Geoica*, using the name *T. amycli*. We now know that several species of coccids, and aphids belonging to the tribe Fordini, other tribes of Eriosomatinae or Anoeciinae coexist in the nests of aphidophilous ants: however, Koch (1857) believed that all the specimens collected together belonged to the same species, which is an understandable error, given the level of knowledge of aphids at that time.

Three years later, Passerini (1860) described five species (also radicolous) of the genus *Tychea*: *T. setulosa* (currently *Geoica setulosa*), *T. phaseoli* (junior synonym of *Smynthuodes betae* Westwood, 1849), *T. trivialis* (junior synonym of *Forda marginata* Koch, 1857), *T. eragostidis* and *T. setariae* (both are in the group *utricularia* of the genus *Geoica* and possibly synonyms of some other species in this group (Remaudière & Remaudière 1997). Undoubtedly, Passerini (i) attributed the genus to Koch, (ii) did not mention either of the two species of Koch because his study dealt with Italian aphids and Koch's species were German, (iii) did not intend to describe a new genus (Passerini clearly indicated his own taxa, and article 65.1 of the I.C.Z.N. must be applied, (iv) established the species type of the genus in an invalid nomenclatural act because the type-species should have been one of the two species of Koch and not *Tychea phaseoli*.

Passerini (1862) attributed again these five species to “*Tychea* Koch” and established the tribe Tycheinae exclusively for this genus.

Wilson (1910) validly designated *Tychea graminis* as the type-species, without adding any explanations or comments.

Börner (1930) corroborated the type-species established by Wilson, as have subsequent aphidologists, and established the synonymy between *Tychea phaseoli* Passerini, 1860 (now *Smynthuodes betae* Westwood) and *T. graminis* Koch, 1857. This has not been accepted by other authors as the viviparous apterous female (fig. 366b) in the description by Koch is not *Smynthuodes betae*. We agree with this last opinion, because Koch illustrated an aphid as green-coloured, with short antennae and without long conspicuous setae on the body and appendages, but *S. betae* is dirty yellowish white-coloured and wax-dusted in life, it has more large antennae and long and conspicuous setae.

Eastop & Hille Ris Lambers (1976) stated that (i) *Tychea* Koch, 1857 (Type-species *Tychea graminis* Koch, 1857) is a coccid but they forgot that Koch described and illustrated both aphids and coccids under this taxon name, (ii) *Tychea amycli* Koch, 1857 is nomen dubium, (iii) there is a genus *Tychea* Passerini (junior homonym of *Tychea* Koch, type-species *Tychea phaseoli* Passerini, 1859 (= *Smynthuodes betae* Westwood, 1849), and junior synonym of *Smynthuodes* Westwood, 1849). But as has been demonstrated there is no such genus of Passerini and neither can it be stated that *T. graminis* is a coccid or an aphid while its neotype is not designated. For the moment it is regarded as a coccid and, at the same time, an aphid, in other words, it is *nomen dubium*!

Remaudière & Remaudière (1997) (i) followed what was indicated by Eastop & Hille Ris Lambers (1976), (ii) placed *Tychea* Passerini amongst the synonyms of *Smynthuodes* Westwood, (iii) included *Tychea* Koch (Coccoidea) in the unavailable genera. This is not nomenclaturally correct, though, and in fact the name should not be used because its taxonomic significance is not clear.

Nieto Nafría *et al.* (1998b) also sustained the existence of *Tychea* Passerini as a junior homonym of *Tychea* Koch and thus [I.C.N.Z. article 39] consider Tycheinae Passerini as an unavailable name.

Nieto Nafría *et al.* (2003) maintained that Tycheinae Passerini was invalid, though they wrote «*Tychea* Koch, 1857 sensu Passerini, 1860 (mistaken identity)» in the list of synonyms of *Smynthuodes*. We cannot actually say whether Passerini was mistaken in his generic identification of the observed specimens or whether his taxonomic of *Tychea* concept was correct. In any case, this discrepancy does not affect the point in question because Passerini not established a new genus named *Tychea*.

In conclusion: (1) the type genus of Tycheinae Passerini is *Tychea* Koch and is not the “non-existent” *Tychea* Passerini, (2) *Tychea* Koch is *nomen dubium* and not necessarily only a coccid or only an aphid, and (3) Tycheinae Passerini is an available name, but also *nomen dubium* referring to either coccids or aphids.

Pteroclorini or Pterochlorini?

Mordvilko (1914) established the tribe name “Pterochlorini”, *Pterochlorus* Passerini being the name-bearing genus. However, *Pterochlorus* is an unjustified emendation of *Pteroclorus* Rondani, 1848 (Passerini 1860), as recognised by most aphidologists, for example, Börner (1952) and Eastop & Hille Ris Lambers (1976); and the fact that Nieto Nafría *et al.* (2003: 308) considered *Pterochlorus* as a mistake for *Pteroclorus*.

Baker (1920) used Pterochlorina as a valid subtribe name, and Nieto Nafría *et al.* (1998a) considered it a junior synonym of Lachninae, also writing it with “ch”. However, the correct spelling of the taxon is Pteroclorini, because «A family-group name is an incorrect original spelling and must be corrected if it is formed from an unjustified emendation of a generic name (unless the unjustified emendation has become a substitute name)» [I.C.Z.N. article 32.5.3.2], and «The correction of an incorrect original spelling in accordance with the article 32.5 is a "justified emendation", and the name thus corrected retains the authorship and date of the original spelling» [I.C.Z.N. article 33.2.2].

However, on the other hand Pteroclorini is an objective invalid name because it comes from the name of the genus which is an objective synonym of another genus, *Lachnus* Burmeister, 1835.

Börner & Schilder or Börner? 1931 or 1932?

The work by Börner & Schilder as a chapter in the well-known *Handbuch der Pflanzenkrankheiten*, 1932, often simply named “the Sorauer”, referring to the name of the renowned German entomologist, is attributed to this year. The descriptions of taxa in this book have sometimes been attributed to both authors (for example Nieto Nafría *et al.* 2006) or to the first only (for example Börner 1952; Remaudière & Remaudière 1997); but there are some discrepancies regarding the date. The most common one is 1932 but Börner (1952) gives two versions, he writes «*Aphis ruborum* CB. 1932», «*Belochilum* CB. 1932» and «*Belochilum inulae* [Pass. errore] CB. 1931/1932», and this work appears in the references «(1931) 1932». The same occurred with other nomenclatural acts such as new combinations.

G. Remaudière has a separate or offprint of the study with a dedication by Börner himself. The following can be read in seven lines on the first un-numbered page: «Sonderabdruck aus // Sorauers Handbuch der Pflanzenkrankheiten // Fünfter Band // Tierische Schädlinge an Nutzpflanzen. II. Teil // Vierte Auflage // Verlag von Paul Parey in Berlin // 1931».

Therefore, and applying article 21.8 of the I.C.Z.N., the nomenclatural valid date is 1931.

The seventh footnote of the first page of this study states: «Ersterer [Börner] bearbeitete Systematik, Biologie und Illustration, beide Bekämpfung und Literatur. Rektifizierte Schreibweise von Gattungs- un Artnamen bei Abweichung vom Original nach Börner (Zool. Anz. 1931)», and in the mentioned separate Börner wrote: «nicht publizie...». We have verified this to be correct, as the publications by Börner in “Zool. Anz” do not contain the information referred to, which in any case would only be a reiterated nomenclatural act.

In conclusion: (1) the publication by Börner and Schilder corresponds to 1931 and not 1932. To avoid confusion in this article and in future, we will refer to it as “Sorauer Handbuch der Pflanzenkrankheiten” and not “Handbuch der Pflanzenkrankheiten. Begründet von Paul Sorauer” indicating that it is a separate and (2) nomenclatural acts, including the descriptions of some taxa (*Aphis ruborum*, *Belochilum*, *Belochilum inulae*) should be exclusively attributed to Börner.

Acknowledgements

Many colleagues have asked us about these aphid taxon names and/or shown great interest in our work in this field, particularly those who attended the Seventh International Symposium on Aphids (Fremantle, West Aus-

tralia, Australia); our thanks to you all. We would particularly like to express our gratitude to G. Remaudière (Muséum national d'Historie naturelle, Paris, France) and M.A. Alonso Zarazaga (Museo Nacional de Ciencias Naturales (C.S.I.C.), Madrid, and the International Commission on Zoological Nomenclature) for their valuable advice. We also thank to Jon Martin for comments and suggestions. This study was granted by the Spanish government (grant number CGL2004-04680-C10-04).

References

- Agassiz, L. (1846) *Nomenclaturis Zoologici. Index Universalis*. Jent & Gussmann, VIII + 393.
- Baker, A.C. (1920) Generic classification of the Hemipterous family Aphididae. *United States Department of Agriculture Bulletin*, 826, 1–109.
- Börner, C. (1930) Beiträge zu einem neuen System der Blattläuse (1. Mitteilung). *Archiv für Klassifikatorische und Phylogenetisch Entomologie*, 1, 115–194.
- Börner, C. (1944) Aphidoidea, Blattläuse. In Brohmer, P. *Fauna von Deutschland - 5. Auflage*, 206–220.
- Börner, C. (1952) Europae Centralis Aphides - Die Blattläuse Mitteleuropas: Namen, Synonyme, Wirtspflanzen, Generationszyklen. *Schriften der Thüringischen Landesarbeitsgemeinschaft für Heilpflanzenkunde und Heilpflanzenbeschaffung in Weimar*, 4 (1), & *Mitteilungen der Thüringischen Botanischen Gesellschaft*, Beiheft 3 (1), 1–484.
- Börner, C. & Heinze, K. (1957) Aphidina – Aphidoidea. Blattläuse, plantlice (aphids), pucerons (aphides). In Blunck, H., *Hanbuch der Pflanzenkrankheiten*, 5. Auflage, 5, 5, 4 (2), 1–402. Paul Parey, Berlin & Hamburg.
- Börner, C. & Schilder F.A. (1931) Aphidoidea, Blattläuse [offprint]. In *Sorauer Handbuch der Pflanzenkrankheiten*. 4. Auflage, 5 (2) [1932], 551–715.
- Das, B. (1918). The Aphididae of Lahore. *Memoirs of the Indian Museum*, 6, 135–274.
- Eastop, V.F. & Hille Ris Lambers, D. (1976) *Survey of the World's Aphids*. Dr. W. Junk, The Hague, 573 pp.
- Heie, O.E. (1980) The Aphidoidea (Hemiptera) of Fennoscandia and Denmark. I General Part. The Families Mindaridae, Hormaphididae, Thelaxidae, Anoeciidae, and Pemphigidae. *Fauna Entomologica Scandinavica*, 9, 1–236.
- Herrich-Schaeffer, D. (1854) Uebersicht der Gattungen der Pflanzenläuse (Phytophtheira). In Koch, C.L., *Die Pflanzenläusen Aphiden, getreu nach dem Leben abgebildet und beschrieben*, (1), VII–VIII.
- Herrich-Schaeffer, D. (1857) Uebersicht der Gattungen der Pflanzenläuse (Phytophtheira). In Koch, C.L., *Die Pflanzenläusen Aphiden, getreu nach dem Leben abgebildet und beschrieben*, 2. Auflage, VII–VIII.
- International Commission on Zoological Nomenclature (1999) *International Code of Zoological Nomenclature - Fourth edition*. On line: <http://www.iczn.org/iczn/index.jsp>.
- Koch, C.L. (1855) *Die Pflanzenläusen Aphiden, getreu nach dem Leben abgebildet und beschrieben*, 7 Heft, 197–236.
- Koch, C.L. (1857) *Die Pflanzenläusen Aphiden, getreu nach dem Leben abgebildet und beschrieben*, 9 Heft, 275–336.
- Mordvilko, A. (1914) Insectes Hémiptères I. Aphidoidea 1. In Nasonov, N.V. (Ed.), *Faune de la Russie et des pays limitrophes*. Petrograd, CLXVI + 236 + 9 pp.
- Nieto Nafría, J.M., Mier Durante, M.P. & Remaudière, G. (1998a) Les noms des taxa du groupe-famille chez les Aphididae (Hemiptera). *Revue française d'Entomologie*, (N.S.), 19 [1997], 77–92.
- Nieto Nafría, J.M., Mier Durante, M.P., Alonso-Zarazaga, M.A. & Remaudière, G. (1998b) Apéndice 1 Nomenclatura: Lista de sinónimos y combinaciones. In Nieto Nafría, J.M. & Mier Durante, M.P., *Hemiptera, Aphididae I. Fauna Ibérica*. 11, 383–411. Museo Nacional de Ciencias Naturales, CSIC, Madrid.
- Nieto Nafría, J.M., Alonso-Zarazaga, M.A., Pérez Hidalgo, N., Mier Durante, M.P. & Binazzi, A. (2003) Apéndice 1 Nomenclatura: Lista de sinónimos y combinaciones. In Nieto Nafría, J.M., Mier Durante, M.P., Binazzi, A. & Pérez Hidalgo, N., *Hemiptera, Aphididae II. Fauna Ibérica*. 19 [2002], 297–328. Museo Nacional de Ciencias Naturales, CSIC, Madrid.
- Nieto Nafría, J.M., Alonso-Zarazaga, M.A., Remaudière, G. & Pérez Hidalgo, N. (2006) Apéndice 1 Nomenclatura: Lista de sinónimos y combinaciones. In Nieto Nafría, J.M., Mier Durante, M.P., García Prieto, F. & Pérez Hidalgo, N., *Hemiptera, Aphididae III. Fauna Ibérica*. 28, 281–320. Museo Nacional de Ciencias Naturales, CSIC, Madrid.
- Passerini, G. (1860) *Gli Afidi con un prospetto dei generi ed alcune specie nuove Italiane*, Parma, 40 pp.
- Passerini, G. (1862) Aphididae Italicae hucusque observatae. *Archivio per la Zoologia Anatomia e la Fisiologia (Modena)*, 2, 129–212.
- Remaudière, G. & Remaudière, M. (1997) *Catalogue des Aphididae du monde / Catalogue of the World's Aphididae. Homoptera Aphidoidea*. INRA Editions, Versailles, 478 pp.
- Wilson, H.F. (1910) A key to the genera of the subfamily Aphidinae and notes on synonymy. *Annals of the Entomological Society of America*, 3, 314–325.

