The problem of old names as illustrated by *Brachyopa "conica* Panzer", with a synopsis of Palaearctic *Brachyopa* Meigen (Diptera: Syrphidae).

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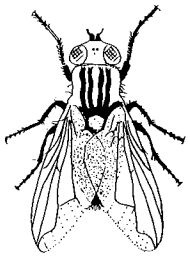

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Brachyopa conica Panzer is a name that appears commonly in works on European Syrphidae. The name is invalid and has been incorrectly applied to at least three different species. The valid name for this species is *panzeri* Goffe and applies to an as yet unrecognized species. The occurrence and solution of similar taxonomic and nomenclatural problems are discussed. A key to the Palaearctic species of *Brachyopa* is given. *Brachyopa maculipennis* Thompson, *nov. nomen*, is proposed for *arcuata* Panzer.

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Syrphidae is a group of mainly large and showy flies that have attracted the attention of both amateur and professional entomologists. The excellent work of such pionecrs as Zetterstedt, Schiner, Williston and Verrall has left the impression that these flies are easy to identify and are well known (Metcalf 1921: 169). This, however, is not the case. The intcnt of my article is to illustrate this point by asking and answering the apparently simple question, "What is *Brachyopa conica* (Panzer)?"

Brachyopa conica (Panzer) is the type species of its genus and a supposedly common species, being listed as such in standard works on Palaearctic flower flies (Stackelberg 1970; Séguy 1963; Sack 1929). The name, however, is invalid and has been used incorrectly for at least two quite different species. The species Panzer named has not been recognized since it was described.

Musca conica was the name Panzer applied (1798) to a *Brachyopa* species with a "bare" (at least to his unaided eye) arista. Fallén (1817) described a *Brachyopa* species with a plumose arista as *Rhingia testacea*. Bezzi & Stein (1907: 88; also Kertész 1910: 179) treated Fallén's name as a subsequent usage of *Musca testacea* of Panzer (1798: 14) which in itself was a subsequent usage of *Musca testacea* Fabricius (1781: 440; preoccupied, equals *Phaonia variegata* (Meigen) (Muscidae)). Meigen (1822) synonymized *testacea* Fallén under *conica* Panzer, but despite this action hc apparently considered *conica* to be a species with a pubescent arista, a generic character of his *Brachyopa*. Zetterstedt (1838), confused by Meigen, reinstated *testacea* Fallén as a valid species; noted that Panzer's *conica* had a "bare" arista; and described *dorsata*, a species with a pubescent arista, for what was perhaps *conica* of Meigen and maybe the true *conica* of Panzer. Later (1843), he described *vittata*, a second *Brachyopa* species with a plumose arista. Schiner (1857: 376) stated that *dorsata* Zetterstedt was undoubtedly the same as *conica* Panzer, but, as he had no specimens of *dorsata*, he hesitated to make the synonymy. In his *Fauna Austrica* (1861), Schiner treated both as distinct species, with *conica* as the species with a plumose arista and *dorsata* with a "bare" arista, but he gave no reason for the change in interpretation. Most subsequent authors have ignored Zetterstedt and Schiner (1857) and have instead followed Schiner (1861), recognizing only one *Brachyopa* species with a plumose arista and calling that species *conica* Panzer. Only Sack (1929) and

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Stackelberg (1970) have recognized two *Brachyopa* species with plumose aristae. Both used the name *conica*, but for different species. For the second plumose-arista species, Sack used the name *vittata* Zetterstedt, and Stackelberg used *testacea* Fallén. Panzer's *conica* is a species closely related to *dorsata* and previously not clearly differentiated from that species. *Conica* of Sack is *testacea* Fallén and *conica* of Stackelberg is *vittata* Zetterstedt. Of the European workers only Goffe (1945) recognized that Panzer's name was a junior primary homonym, and he, therefore, renamed *conica* as *panzeri*.

Keys to European *Brachyopa* species are given by Sack (1929), Seguy (1961), and Stackelberg (1970). Sack covers only 5 species (his *conica* and *vittata* refer to *testacea*), Seguy 6 species, and Stackelberg 9 species out of 11 known European species. As all these keys are obsolete, a new key is included here. Couplets 5, 8–10 are modofied from Collin (1939). The five species treated and figurcd by Collin are not discussed here, but the other 7 Palaearctic species are reviewed.

Key to Palaearctic species of Brachyopa *Meigen*

1. Arista plumose, with hairs many times longer than aristal width (Figs. 2, 3); mesonotum extensively pale, reddish brown to orange ..... 2.
– Arista bare or pubescent, with hairs not more than twice as long as aristal width (Figs. 1, 4–6) ..... 3.
2. Sternopleuron bare; smaller, 6–7 mm; head length equal to or slightly less than its height; mesopleuron with dorsoposterior pile hairlike, usually pale; aristal hairs shorter (Fig. 2) .... 6. *testacea* (Fallén)
– Sternopleuron pilose dorsally; larger, 8–9 mm; head length distinctly greater than its height; mesopleuron with black bristles or bristlelike pile dorsoposteriorly; aristal hairs longer (Fig. 3) ..... 7. *vittata* Zetterstedt
3. Mesonotum entirely dark, bluish gray to black, except postalar callus usually paler ..... 5.
– Mesonotum extensively pale, reddish brown to orange, laterally and anterior to scutellum .... 4.
4. Antennal segment 3 with large sensory pit, with sensory pit closer to ventral margin than its diametcr (Fig. 4); male genitalia with lingular arm slender, longer than ventrolateral arm of superior lobe (Figs. 8, 11) ... 5. *panzeri* Goffe
– Antennal scgment 3 with smaller sensory pit, with sensory pit further removed from ventral margin, separated by a distance greater than its diameter (Fig. 6); male genitalia with lingular arm broad, equal to ventrolateral arm (Figs. 9, 10) ..... 2. *dorsata* Zetterstedt
5. Arista bare or virtually so, with hairs less than aristal width (Figs. 1,5) ..... 6.
– Arista pubescent, with some hairs as long as basal aristal width (Figs. 4, 6) ..... 9.
6. Thorax except scutellum entirely dark, from bluish gray to black; wing hyaline, without dark maculae; male eye contiguity short, only about as long as ocellar triangle; female front entirely pale pilose ..... 7.
– Thorax dark only on pectus (Pectus is the term for the ventral surface of the thorax between the legs and, as such, includes the ventral 2/3 of sternopleuron and hypopleuron and all of metasternum) and mesonotum; humerus, mesopleuron, dorsal sternopleuron, pteropleuron, barrctte (dorsal raised edge of hypopleuron), pleurotergum all pale reddish brown to orange; wing with distinct black maculae on anterior crossvein (r–m) and end of spurious vein; male eye contiguity long, longer than ocellar triangle; female front with a few black hairs; antennal segment 3 with medium-sized sensory pit (Fig. 1) .... 3. *maculipennis* Thompson
7. Abdomen, middle and hind coaxe pale, reddish brown to orange; male eyes holoptic or approximate, separated by less than aristal width; propleuron (proepimeron) bare ..... 8.
– Abdomen, middle and hind coxae dark, brownish black to black; male eyes distinctly dichoptic, separated by much more than aristal width; propleuron pilose; antennal segment 3 without a distinct sensory pit ..... 11.
8. Antennal segment 3 without a sensory pit; notopleuron extensively pale pilose .... *insensilis* Collin
– Antennal segment 3 with a small sensory pit; notopleuron black pilose ..... *bicolor* (Fallén)
9. Antennal segment 3 with a large, kidney-shaped sensory pit (see Collin 1939, Fig. 3) .. .. *scutellaris* (Robineau-Desvoidy)
– Antennal segment 3 with a smaller, more rounded sensory pit (see Collin 1939, Figs. 4, 5) ..... 10.
10. Antennal segment 3 with larger sensory pit, with sensory pit closer to ventral margin than its diameter (see Collin 1939, Fig. 4); 2nd tergum black pilose posteriolaterally .... *plena* Collin
– Antennal segment 3 with smaller sensory pit, with sensory pit further removed from ventral margin, separatcd by its diameter (see Collin 1939, Fig. 5); 2nd tergum entirely pale pilose ..... *pilosa* Collin
11. Abdominal terga with apical margins pollinose and pale, yellow to white; scutellum black on basal 2/3, orange apically, entircly long erect palc yellow pilose ... 4. *ornamentosa* Violovitsh
– Abdominal tcrga shiny, uniformly dark; scutellum orange, short appressed black pilosc ..... 1. *cinerea* Wahlberg

1. **Brachyopa cinerea** Wahlberg

Fig. 5.

Brachyopa cinera Wahlberg, 1844: 65. Type-locality: (Sweden, Norrbotten), Råbäcken & Storsand. Type material, Naturhist. Riksmus. Stockholm.

This is a northern species readily recognized by its shiny black abdomen. *Brachyopa cinerea* was described from a male and a female. The male is here designated as the lectotype and has been so labeled.

Brachyopa "conica"

"*Conica*" of Panzer is *panzeri* Goffe, of Meigen is *plena* Collin (2 females in Meigen Collection, MNHN, Paris), of Sack is *testacea* Fallén, of Stackelberg is *vittata* Zetterstedt, and of Schiner and other authors is *testacea* or a mixture of *testacea* and *vittata*.

2. **Brachyopa dorsata** Zetterstedt

Brachyopa dorsata Zetterstedt, 1837: 35. Type-locality: Sweden, Lycksele Lappmark, Lycksele & Torne Lappmark, Juckasjervi (restricted by Zetterstedt, 1838: 597). Type material, Zool. Mus., Lund.

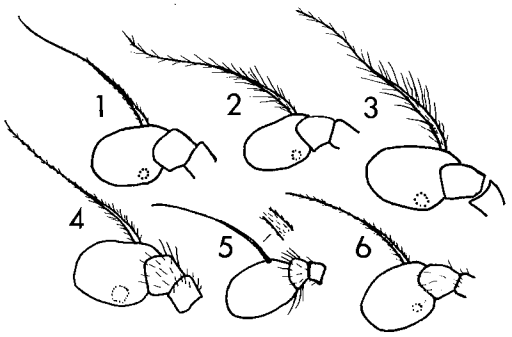
Brachyopa dorsata differs from *panzeri* as noted in the key and also by being slightly smaller and more slender (10.0–11.0 mm long, 2.6 mm across thorax at wings, and 8.4 mm wing length). The central European records of this species need to be confirmed; they may all refer to *panzeri*. I studied a short series of *dorsata* from Denmark and Finland. *Brachyopa dorsata* has been considered as having been validated in Zetterstedt (1838), but it was validated a year earlier. Zetterstedt (1837), in his Conspectus, divided the *Brachyopa* species into two groups on the basis of aristal pilosity. His second group (*Seta antennar. nuda s. brevissime pubescens*) included only *dorsata*. Thus the group diagnosis is also a species diagnosis (Andersson 1961).

3. **Brachyopa maculipennis** Thompson

Fig. 1.

Brachyopa maculipennis Thompson (new name for *arcuata* Panzer).

Musca arcuata Panzer, 1798: 15 (preocc. by Linnaeus, 1758). Type-locality: Austria. Type material Panzer Collection (presumably lost).



Figs. 1–6. *Brachyopa* antennae, lateral view. — 1. *maculipennis*. — 2. *testacea*. — 3. *vittata*. — 4. *panzeri*. — 5. *cinerea*. — 6. *dorsata*.

Musca arcuata Panzer is a primary junior homonym, as Linnaeus had previously used the name for a species now placed in the genus *Chrysotoxum*. I propose the name *maculipennis* for Panzer's species. While Panzer's types are presumably lost, *maculipennis* is readily recognized on the basis of the original description and figure. *Brachyopa maculipennis* is the only Palaearctic species with maculae on the wings. I studied a pair from the Kowarz Collection which undoubtedly were collected in Bohemia.

4. **Brachyopa ornamentosa** Violovitsh

Brachyopa ornamentosa Violovitsh, 1977: 81. Type-locality: U.S.S.R., Primorski Krai, Ussuriisk. Type material, holotype male, Zool. Inst., Leningrad.

Brachyopa ornamentosa is readily distinguished from all other *Brachyopa* species by its biocolored scutellum. The species was previously known only from its type series, a male and female. I studied a series of 6 males and 1 female from China, Kiangsu Province (= Chen-Chiang, 32°13′N, 119°26′E) and Zi-Ka-Wei (= Hsu-chia-hui, 31°11′N, 121°25′E) (USNM & MNHN, Paris).

5. **Brachyopa panzeri** Goffe

Figs. 4, 7, 11.

Brachyopa panzeri Goffe, 1945: 278 (new name for *conica* Panzer).

Musca conica Panzer, 1798: 20 (preocc. by Gmelin, 1790). Type-locality: Austria. Type material, Megerle or Panzer Collection (presumably lost).

Brachyopa dorsata of Schiner (1861: 327) and subsequent authors (in part).

Brachyopa panzeri is very similar to *dorsata* Zetterstedt, differing principally by the characters given in the key. *Brachyopa panzeri* is also slightly larger and more robust (12.0 mm long, 3.3 mm across thorax at wings, and 8.4 mm wing length) and the lower face is produced more, extending more than twice as far from the eye as the frontal prominence does. Althought the types of *panzeri* are presumably lost, the species is readily recognized on the basis of the original description and figure. A male from Bohemia (Waldegg; Kowarz Collection in the Verrall-Collin Collection, Oxford) agrees exactly with Panzer's figure.

6. **Brachyopa testacea** (Fallén)

Fig. 2.

Rhingia testacea Fallén, 1817: 34. Type-locality: "Vestrogothia & Smolandia". Type material, Naturhist. Riksmus., Stockholm.
Brachyopa conica of Schiner (1861: 327) (in part), Sack (1929: 130), Séguy (1961: 62) (in part), Pedersen (1973: 30).
Brachyopa vittata of Sack (1929: 131).

Brachyopa testacea is the species commonly referred to as "*conica* Panzer". I have seen many specimens so determined from Finland, Norway, Denmark, and Austria. The species is readily distinguished from all other European *Brachyopa* except *vittata* by its plumose arista. *Brachyopa testacea* and *vittata* are diagnosed in the key. Fallén described *testacea* from both sexes (Gyllenhal and Zetterstedt material). A male and female are in the Fallén Collection and a single male is in the Zetterstedt Diptera Scandinaviae Collection. The male in the Fallén Collection is here designated as lectotype and has been so labeled. The lectotype and paralectotype males are without locality data, but the paralectotype female is labeled with "Gyll." (= Vestrogothia). By elimination the unlabeled males could be assumed to be from Smolandia, the other locality cited, and the type-locality would be thereby restricted. I believe this reasoning dubious and leave the type-locality unrestricted.

7. **Brachyopa vittata** Zetterstedt

Fig. 3.

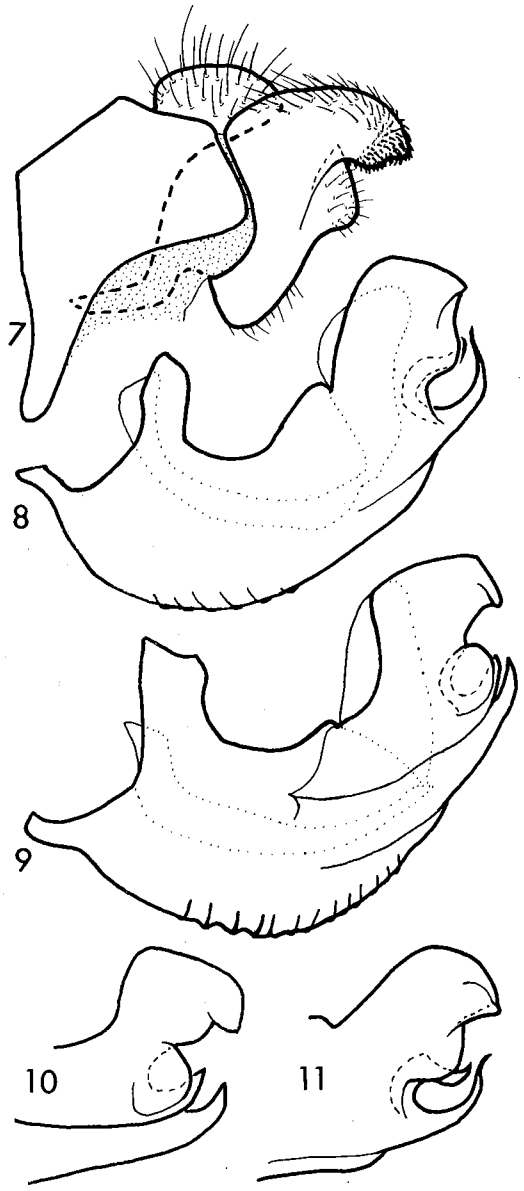
Brachyopa vittata Zetterstedt, 1843: 687. Type-locality: Sweden, Jämtland, "Mullfjellet" (here restricted). Type material, Zool. Mus., Lund.
Brachyopa conica of Schiner (1861: 327) (in part), Séguy (1961: 62) (in part), Stackelberg (1970: 39).

This is a rare species. Besides the types, I have studied material from only Austria, northern Italy and Japan. In the Zetterstedt collections there are 4 specimens under this name, three of which are labeled "*vittata*" in Zetterstedt's hand. The male labeled "B. vittata. ♂ Mullfj." is here designated lectotype. The paralectotype female is a specimen of *Hammerschmiditia ferruginea* (Fallén).

Discussion

Is the problem exemplified by "*conica*" an unusual or exceptional one? Unfortunately, I believe it is not. This problem illustrates two points: Many of the common and well-known European syrphid species are actually complexes of species and the names in current use for these species are not valid under strict application of the *International Code of Zoological Nomenclature* (Stoll & al. 1964) (By strict application I mean without the invocation of Article 23 a & b or the Commission's Plenary Powers). Recent scrutiny of some of the commonest species has revealed species complexes where previous workers saw only a single "species" (i.e., *Sphaerophoria menthastri* (Vockeroth 1963 & 1971; Goeldlin 1974), *Paragus tibialis* & *bicolor* (Goeldlin 1971 & 1976), *Metasyrphus luniger* (Dušek & Láska 1973 & 1976), *Pipizella* species (Goeldlin 1974; Lucas 1976) and *Lejops transfugus* & *lunulatus* (Claussen, *in litt.*).

While various workers are not eagerly investigating common "species" to discover new species, there has not been the same diligence in investgating the nomenclatural problems. Old names, especially where their types no longer exist, are left undisturbed in synonymy where they were placed by Schiner in the 1860s. Some names were not even treated by Schiner and have been completely forgotten. The potential instability to nomencalture is great. For example, some of most important economic pests in the Syraphidae have earlier names than those



Figs. 7–11. *Brachyopa* male genitalia, lateral view. — 7. *panzeri*, 9th tergum and associated structures. — 8. *panzeri*, 9th sternum and associated structures. — 9. *dorsata*, 9th sternum and associated structures. — 10. *dorsata*, apex of 9th sternum, with a slightly oblique medial bias. — 11. *panzeri*, apex of 9th sternum, with a slightly oblique medial bias.

currently being used. The narcissus bulb fly, currently called *Merodon equestris* (Fabricius, 1974), was first described in detail, including its life history and immature stages, by Reaumur (1738: 497–503, pl. 34). Although pre-Linnean, the work of Reamur was well known, and other workers were quick to give scientific names to his species. Geoffroy (in Fourcroy, 1785: 479) named Reamur's species as *Musca bombyliformis*. The lesser narcissus bulb flies (*Eumerus strigatus* (Fallén, 1817), *tuberculatus* Rondani, 1857, *narcissi* Smith, 1928) were named by Geoffroy (*Musca lineata* 1785: 485 in Fourcroy) and Rossi (*Syrphus acanthodes* 1794: 63).

(The names for narcissus bulb flies will be discussed in another paper. Sufficient to say here, I do not advocate the use of any scientific names for these species other than those currently in use as such action would cause confusion).

How should old names be handled? If their types exist, then they should be examined and the names affixed accordingly. If types no longer exist, then, depending on the situation, different procedures must be followed. If the description associated with the name conforms reasonably well to a species with an older name, then the name should be synonymized. If the description conforms reasonably well to a species which has a younger name, then the older name should be used for that species. If replacing a junior name by an unused senior synonym is considered to cause confusion, then an application should be made to the International Commission on Zoological Nomenclature to have the senior name suppressed. If the description conforms reasonably well to a group of species in which some have names and others no names, then the name should, I believe, be applied to a species without a name. If the description conforms reasonably well to a group of species, all of thich have junior names, then the name can be declared a *nomen dubium*. However, in cases where the names in use are confused, having been incorrectly applicd to different species, the best course may be to use the old name in place of a name with a confused history.

Most of the above is simply the application of the principles of zoological nomenclature, but the last two suggestions are not. My reasons for thcm are illustrated by the following examples. Claussen and Vockeroth (*in litt.*) have independently discovered that the species called *Lejops transfugus* (Linnaeus, 1758) and *lunulatus* (Meigen, 1822) represent species complexes. In the European literature there are no synonyms listed

for *lunulatus* Meigen and only one synonym for *transfugus* (*interpunctus* Harris, 1780). The description and figure of *interpunctus* clearly applies to any one of the three British *Lejops* species (*transfugus, lunulatus* or *lineatus* Fabricius, 1787), but seems to fit *lunulatus* best. The name *interpunctus* could be declared a *nomen dubium*, or it could be applied to one of the new species of European *Lejops*. The latter course has greater merit. To leave a name as a *nomen dubium* leaves the opportunity for someone someday to apply the name and thereby to upset or at least confuse the existing nomenclature. To use a name and fix its interpretation with neotype designation increases stability, as an old name already has many years of seniority. A new name has neither seniority nor protection under the Code (See, for example, under Article 23a–b). To name the presently unrecognized European *Lejops* species as new and declare *interpunctus* a *nomen dubium* does not prevent another worker from using *interpunctus* for one of the new species. This is what Goffe (1946: 73) did by using *Musca lyra* Harris, 1776 instead of *Eristalis abusivus* Collin, 1931. The Goffe–Collin–Coe controvery over the Harris names introduced instability and differing nomenclatural usage than continues to this day.

In the New World tropics there are two abundant and widespread flower flies, *Toxomerus floralis* (Fabricius, 1798) and *basilaris* (Wiedemann, 1830). Both species have been confused taxonomically. Characters previously given for these species did not distinguished them. While most records of *floralis* do refer to *floralis*, those of *basilaris* refer to a mixture of both species and frequently other species too. New characters, especially in the male and female genitalia, were found to distinguish these species. Also an old name, *Syrphus dispar* Fabricius, 1794, was discovered to apply to this complex (Thomson 1979). While a reasonable argument was made that the description of *dispar* applies better to *basilaris* than to *floralis*, the actual application of the name is in doubt, as the types are lost. Despite this fact the name *dispar* was used as the senior synonym of *basilaris* Wiedemann. *Basilaris* Wiedmann does have long and frequent nomenclatural usage in the literature, but, as noted previously, there is no biological significance to that usage. Previous confusion over species concepts makes all the data now associated with the name *basilaris* suspect. No confusion is associated with the name *dispar*.

Summary

Brachyopa "*conica*" represents a common problem in the taxonomy of European Syrphidae—the name is widely used, is invalid, and has been incorrectly applied to a complex of species. Solution of these problems requires a careful analysis to distinguish the species involved, followed by a similar analysis of the earlier literature and collections to find the appropriate names to be used for the species.

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