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Taxonomic notes on the *Chamaemyia* species in the Collin's collection in Oxford, with description of a new species

(Insecta, Diptera: Chamaemyiidae)

With 6 Figures

VENELIN L. BESCHOVSKI & VITALIJ N. TANASSIJTCHUK
Sofia Leningrad

In the course of study of the collection of *Chamaemyia* species in the Institute of Zoology in Sofia it was found necessary to use some comparative material from the collection of the Zoological Institute in Leningrad and from the Collin's collection in Oxford (COLLIN, 1966). As a result of the comparative analysis, it was clarified the status of some *Chamaemyia* species as a whole, as well as of those from Collin's collection particularly, and a species new to the science is described.

Chamaemyia polystigma (MEIGEN, 1830)

Material studied: 17 specimens: Chippenham Fen; 1 ♂, 14. 6. 1943; 1 ♂, 20. 6. 1943; Worlington; 3 ♂, 1 ♀, 29. 5. 1944; 1 ♀, 25. 5. 1944; Barton Mills; 1 ♂, 29. 5. 1942; 1 ♂, 26. 5. 1949; Studland, 1 ♂, 21. 5. 1912; Dartford, Kent, 1 ♀, 9. 6. 1912. – *Chamaemyia juncorum* COLLIN, 1966, nec FALLÉN, 1823: Scotland, 1 ♂, 1 ♀, 14. 7. 1943; 2 ♀, 29. 7. 1943; 1 specimen without abdomen, 26. 7 1943; 2 ♀ "bred from Phaleria arundinacea by Pseudococceus – E. E. Green, V. 1923"

Chamaemyia sylvatica COLLIN, 1966

Material studied (and designation of type series): 15 specimens: lectotype 1 ♂, Wooddition Wood, 10. 5. 1930; paralectotypes 14 specimens: Chippenham Fen, 1 ♂, 18. 5. 1930, 1 ♂, 25. 6. 1932, 1 ♂, 1 ♀, 14. 5. 1943, 2 ♀, 19. 5. 1929, 1 ♀, 14. 5. 1930; Wooddition Wood, 2 ♂, 20. 5. 1930, 1 ♀, 10. 5. 1930, 1 ♀, 13. 5. 1943, 1 ♂, 14. 5. 1947, 1 ♂, preparation of genitalia, 1943, Barton Mills, 1 ♀, 26. 6. 1948.

Taxonomic notes This species is similar to *Ch. polystigma* but it differs from it in the following characters the yellow coloration of antennae is restricted only to the base of 3rd antennal joint, tibiae with a feebly developed dark band on the basal part and towards their apex, more easily perceptible on the 3rd pair of legs. Mesonotum in some cases with dark grey longitudinal stripes. Genitalia: the aedeagus of *Ch. sylvatica* (fig. 1–1,2) viewed in profile is thicker than of *Ch. polystigma* (fig. 1–6,7) and its base is much wider; viewed dorsoventrally, the aedeagus begins widering only as far as its distal half; praegonites feebly developed (fig. 1–4), the space enclosed by the praegonites and the postgonites is wide, L-shaped; in *Ch. polystigma* it is narrow and rounded (fig. 1–8,9). In male of *Ch. sylvatica* there are abdominal spots only on the dorsal part of 2–5 tergites, while in female they are on 4–5 segments of the dorsal and lateral part. In *Ch. polystigma* the spots are situated on 2–5 (6) segments dorsally and ventrally in both sexes.

Chamaemyia aridella (FALLÉN, 1823)

Material studied 6 specimens: Three Bridges, 1 ♂, 4. 8. 1904; Chippenham Fen, 2 ♂, 1 ♀, 14. 6. 1943, 1 ♀, 7. 6. 1943; Woodbridge, 1 ♀, 30. 8. 1902.

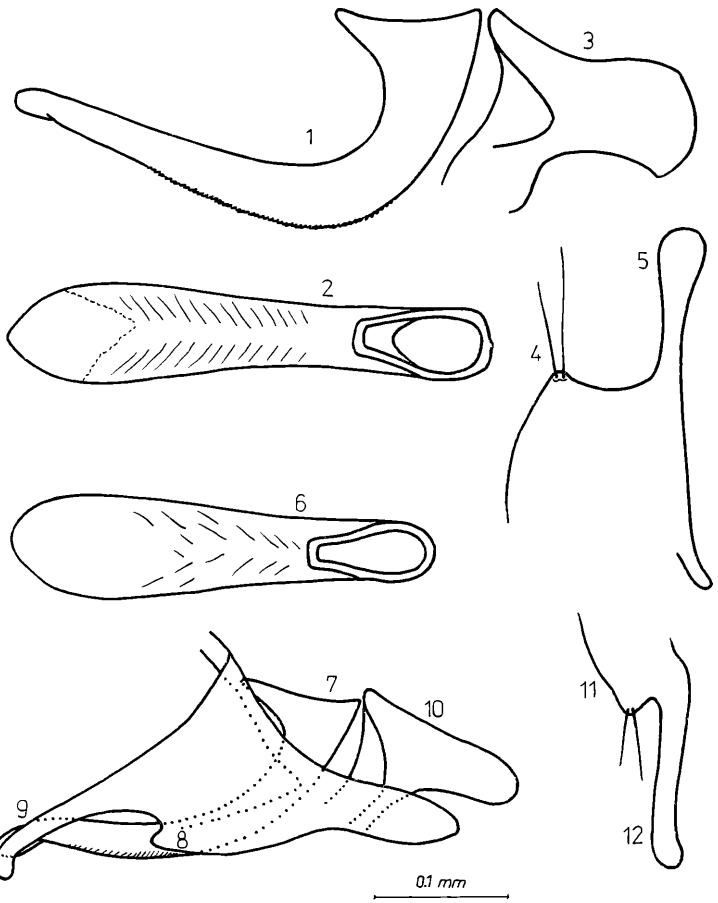

Fig. 1 1–5 – *Chamaemyia sylvatica* COLLIN: 1, 2 – aedeagus in lateral (1) and dorsal (2) view; 3 – aedeagal apodeme; 4–5 – left gonite from left: 4 – praegonite, 5 – postgonite. – 6–12 – *Chamaemyia polystigma* (MEIG.): 6, 7 – aedeagus in dorsal (6) and lateral (7) view; 8–9 – left gonite from left: 8 – praegonite, 9 – postgonite; 10 – aedeagal apodome: 11–12 – right gonite, dorsoventral view: 11 – praegonite, 12 – postgonite.

Taxonomic notes According to CZERNY (1936) *Ch. aridella* is a synonym of *Ch. juncorum*. His viewpoint was adopted later by TANASSIJTCHUK (1986). The specimens designated and described by COLLIN (1966) as *Ch. aridella*, are easily distinguished from *Ch. juncorum*, especially by its male genitalia which do not have an analogue among the remaining species of the genus. The exteriors of these specimens correspond to the description of *Ch. aridella* (FALLÉN). That is why we agree with ROHÁČEK (1986), that *Ch. aridella* (FALLÉN, 1823) sensu COLLIN (1966) is a valid species. Further on, supplementary taxonomic notes of this species are given on the base of the material of Collin's collection. Worth to note with regard to the taxonomic complex of *Ch. aridella* are the characters: pale yellow coloration of the base of the 3rd antennal segment, in certain specimens yellow or light brown palpi, goldish-yellow dusted mesonotum set with sparse setulae; tarsi and tibiae yellow, hind tibiae in some specimens with an indistinct dark band. Abdomen slightly goldish-yellow dusted, black spots absent. Aedeagus markedly long, relatively thin, gently curving and equally thick throughout its length in profile, the hind part

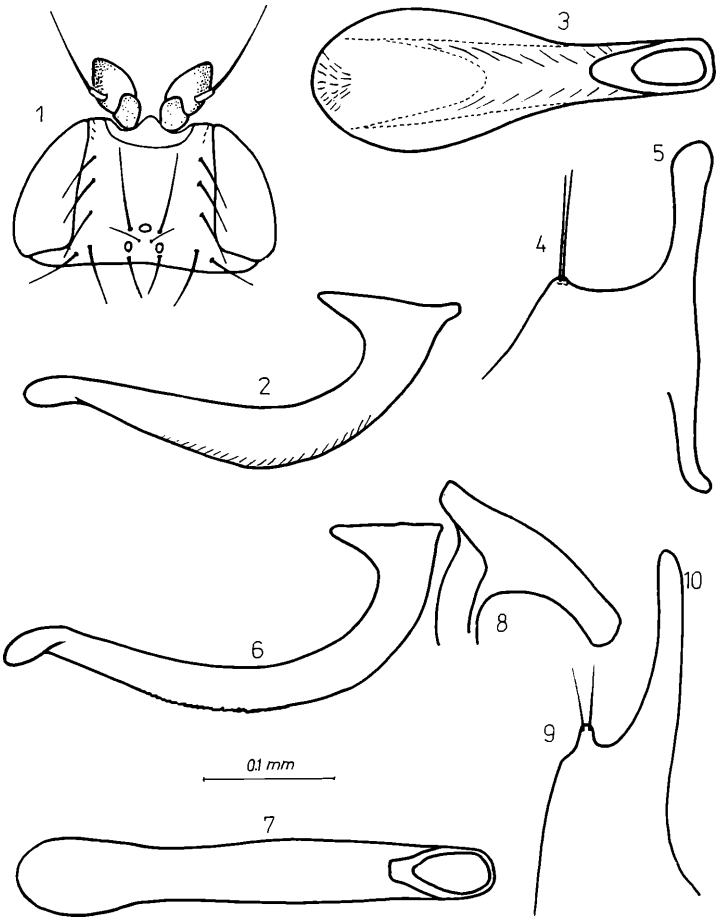

Fig. 2: 1–5 – *Chamaemyia triorbiseta* sp. n., ♂. 1 – head, dorsal view; 2, 3 – aedeagus in lateral (2) and dorsal (3) view; 4–5 – left gonite lateral view: 4 – praegonite, 5 – postgonite. – 6–10 – *Chamaemyia aridella* (FALL.): 6, 7 – aedeagus in lateral (6) and dorsal (7) view; 8 – aedeagal apodome; 9–10 – left gonite from left: 9 – praegonite, 10 – postgonite.

of its base pronouncedly moved on towards the apex (fig. 2–5–8); viewed dorsoventrally, it slightly grows narrow before the tip (fig. 2–6); aedeagal apodeme narrow (fig. 2–7).

Chamaemyia triorbiseta sp. n.

Chamaemyia juncorum COLLIN, 1966, nec FALLÉN, 1823.

Description Male Body grey, length 3.45 mm. Head: height 1.3 times greater than length; frons 1.9 times narrower than width of head; orbital lamellae with 3 well developed equally big orbital bristles each (fig. 2–1). Antennae: 2nd joint dark-brown, basal third inside and two-thirds outside of 3rd antennal segment yellow, its apical part dark brown; arista dark brown, almost black, its 3rd segment 7 times longer than the 2nd one. Height of genae 3.3 times less than height of eyes. Palpi yellow. Thorax: mesonotum heavily set with setulae. More than 2 rows of setulae between dc, especially in its frontal half. Legs: black femura with yellow tips; tibiae yellow, poorly distinguishable bands on the base of second and third pair, basal segments of tarsi yellow; the last ones darkened.

Wings: R 4+5 and M parallel, tp 1.5 times shorter than apical part of Cu. The abdomen with dark spots on the dorsal and lateral side of tergites of the 3–5 segments. Genitalia: the basal part of the aedeagus in lateral view wide, moved forward similar to the aedeagus of *Ch. polystigma;* viewed dorsally, it is considerably widened as a tennis-racket (fig. 2–2.3); praegonites slightly developed, the space enclosed by praegonites and postgonites broad and arch-shaped (fig. 2 – 4–5).

Material studied 1 ♂ holotype, 20. 7 1943, Scotland, Findhorn.

The species differs from all other species of *Chamaemyia* by 3 orbital bristles. Its male genitalia are specific too, having a widening of the distal part of aedeagus in dorsoventral view.

It is probably a very rare species, distributed in Scotland.

Chamaemyia elegans PANZER, 1809

Material studied 7 specimens: Chippenham Fen, 1 ♂, 25. 5. 1938, 2 ♂, 2 ♀, 5. 6. 1930, 1 ♀, 19. 5. 1929; Monks Wood, 1 ♀, 21. 6. 1963.

Chamaemyia fasciata (LOEW, 1858) sensu COLLIN (1966)

Material studied 6 specimens: Chippenham Fen, 1 ♂, 1. 7 1943; Hell Copse (Shablington Wood near Oxford), 1 ♂, 2. 7 1934; Cothill near Oxford, 1 ♂, 2 ♀, 23. 7 1938; Barton Mills, 1 ♀, 25. 6. 1930.

Problems of taxonomic state of *Ch. fasciata* (LOEW): There are two opinions concerning the problem of the existence of *Ch. fasciata* as a separate species: CZERNY (1936), COE (1942) and TANASSIJTCHUK (1986) consider it as a synonym for *Ch. elegans.* According to COLLIN (1966) *Ch. fasciata* is a separate species. However, the authors mentioned above have not examined the type specimens of these 2 species. CZERNY (1936) and later COE (1942) and TANASSIJTCHUK (1986) base their arguments on ZETTERSTEDT's inaccuracy in characteristing *Ch. elegans* as a species with black antennae. In their opinion this diagnosis has given LOEW (1830) (after COLLIN, 1966) the reason to distinguish the specimens with yellow antennae as a separate species – *Ch. fasciata.* But COLLIN (1966) refers to characterization of *Ch. elegans* given by MEIGEN (after COLLIN, 1966) according to which *Ch. elegans* is similar to *Ch. polystigma* in all aspects, the only exception being the spots on the abdomen. The 3rd antennal joint of *Ch. polystigma* is yellow in the base and dark in its distal half and is nearly the same as that of *Ch. elegans.* This is why according to COLLIN (1966), LOEW has reasonably defined the specimens with light 3rd antennal joint as belonging to a separate species. He personally justifies the existence of *Ch. fasciata* judging by the specimens of this species, included in this own collection, which are well distinguished from those belonging to the similar *Ch. elegans.* Here follow the differences between these two related species.

Differences between the species

Chamaemyia elegans (PANZER)	*Chamaemyia fasciata* (LOEW) sensu COLLIN (1966)
General coloration:	
grey with slightly goldish dusted	grey dusted
Third antennal joint:	
basal $^1/_3$ – $^2/_3$ yellow, apical part from dark brown to black	entirely yellow
Tibiae and tarsi:	
yellow, only the last joint of tarsi darkened	yellow

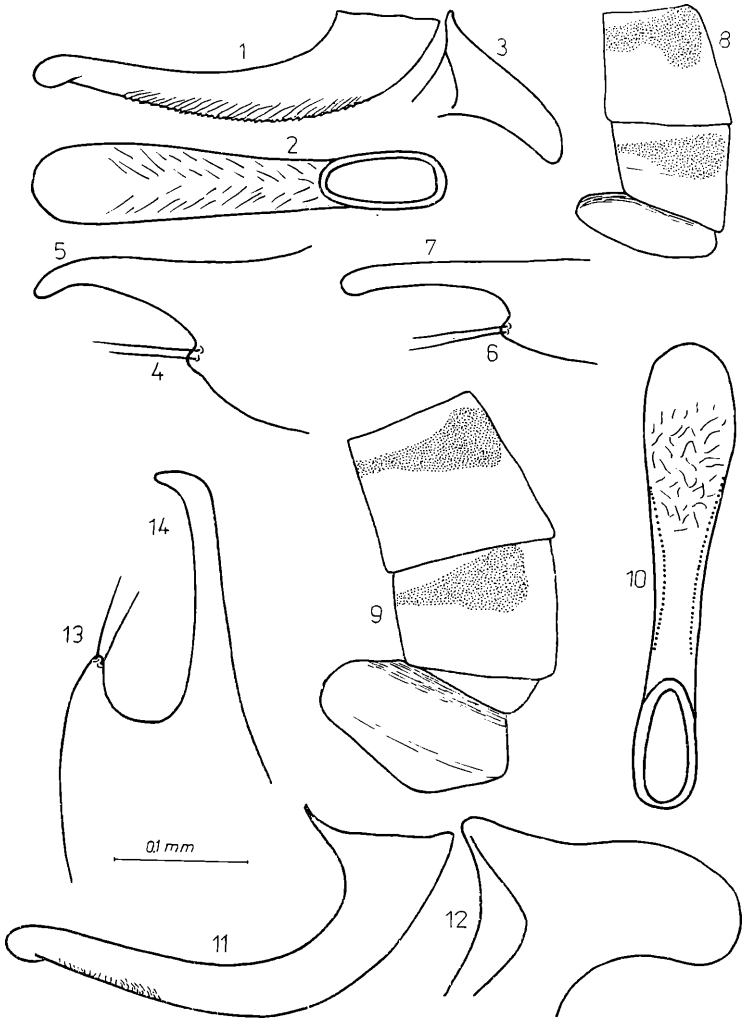

Fig. 3: 1–8 – *Chamaemyia elegans* (PANZER) 1, 2 – aedeagus in lateral (1) and dorsal (2) view; 3 – aedeagal apodome; 4–5 – left gonite from left side; 6–7 – left gonite in latero-ventral view: 4, 6 – praegonites, 5, 7 – postgonites; 8 – apical part of abdomen with hypopygium, lateral view. – 9–11 – *Chamaemyia fasciata* (LOEW) sensu COLLIN, 1966: 9 – apical part of abdomen with hypopygium, lateral view; 10–11 – aedeagus in dorsal (10) and lateral (11) view; 12 – aedeagal apodome; 13–14 – left gonite from left: 13 – praegonite, 14 – postgonite.

Hypopygium in profil:

relatively short, approximately equal to $^1/_2$ of the length of 5th tergite, entirely grey dusted (fig. 3–8)

significantly longer, its length almost equal to that of 5th tergite (or at least to $^3/_4$ of length of the latter) with a distending black band in its base (fig. 3–9)

Aedeagus viewed dorsoventrally:

considerably longer than the postgonites (fig. 3–2) and gradually widening towards the apex (fig. 3–10)

not exceeding the length of postgonites (fig. 3–10) and widening significantly only in its apical part

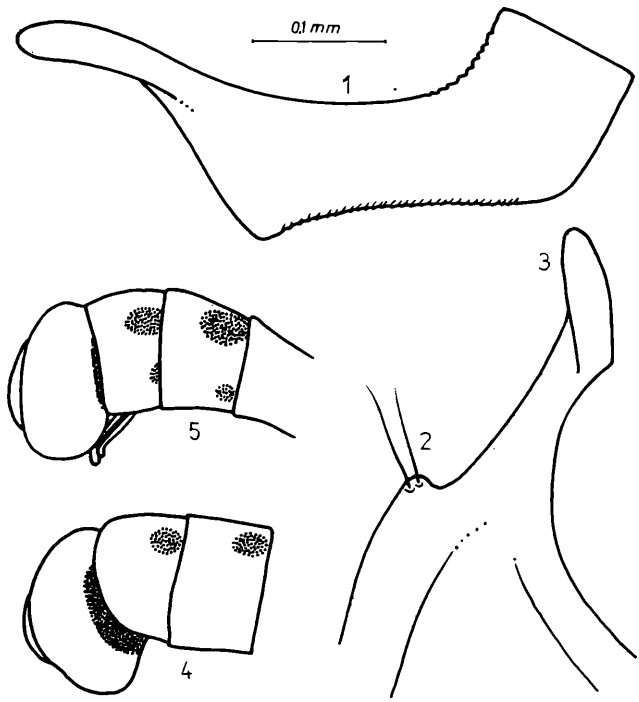

Fig. 4: 1–4 – *Chamaemyia paludosa* COLLIN: 1 – aedeagus, lateral view; 2–3 – left gonite from left side: 2 – praegonite, 3 – postgonite; 4 – apical part of the abdomen with hypopygium from right. – 5 – *Chamaemyia macrura* TANASSIJTCHUK, apical part of the abdomen with hypopygium, from right.

Aedeagus in profil:

slightly curved, having a wide base without an extension of the hind end toward the apex of aedeagus (fig. 3–1)

greatly curved, its base with a hind end markedly moved on towards the apex of aedeagus (fig. 3–11)

Gonites:

praegonites small, the space enclosed by the prae- and postgonites narrow (fig. 3 – 4–5, 6–7)

well developed praegonites, the space enclosed by the prae- and postgonites broad (fig. 3 – 13–14)

Aedeagal apodeme:

narrow (fig. 3–3)

wide (fig. 3–10)

Chamaemyia flavipalpis (HALIDAY, 1838) sensu COLLIN (1966)

Material studied 4 specimens: Blakney Point, Norfolk, 1 ♂, 20. 7 1920; Studland, 1 ♂, 25. 5. 1912, 1 ♂, 28. 5. 1912; Palling, 1 ♀, 14. 6. 1904.

Taxonomic notes The belonging of the above mentioned specimens to *Ch. flavipalpis* still remains a question at issue for us, since it has not been clear whether COLLIN (1966) has compared them with the type material of species. These specimens do not correspond to the known species of the genus, drawings of whose genitalia are presented too, including the study of this author (1966). That is why the taxonomic status of these specimens has to be established by means of comparative investigation with the type material.

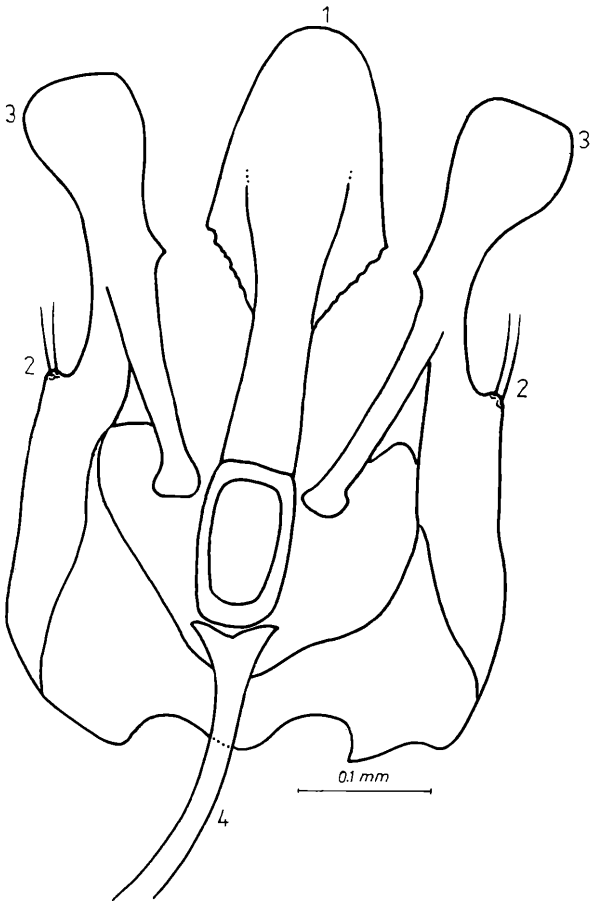

Fig. 5: *Chamaemyia paludosa* COLLIN, genitalia in dorsal view: 1 – aedeagus; 2–3 – gonites: 2 – praegonites, 3 – postgonites; 4 – aedeagal apodome.

Chamaemyia juncorum (FALLÉN, 1823)

Material studied 6 specimens: *Chamaemyia nigripalpis* COLLIN, 1966, **syn. nov.**, 1 ♂, 19. 7 1948, Chippenham Fen; *Ch. herbarum* COLLIN, 1966, nec DESVOIDY, 1830, 1 ♂, 2 ♀, 19. 6. 1907, Chippenham Fen; 1 ♂, 9. 6. 1943, Wortlington; 1 ♀, 10. 6. 1906, Barton Mills.

Chamaemyia geniculata (ZETTERSTEDT, 1823)

Material studied 7 specimens: Aberdeen, 2 ♂, 3. 6. 1906; Glen Moor, 1 ♀, 25. 6. 1963; *Chamaemyia nigripalpis* COLLIN, 1966, **syn. nov.**, Barton Mills, 1 ♂, 1 ♀, 13. 7 1947, 1 ♀, 7 8. 1947; Wortlington, 1 ♀, 22. 6. 1946.

Chamaemyia paludosa COLLIN, 1966

Material studied 6 specimens, designation of the type series: lectotype 1 ♂, Chippenham Fen, 14. 5. 1943; paralectotypes 5 specimens; Chippenham Fen, 1 ♂, 2 ♀, 14. 5. 1943; Wicken Fen, 2 ♀, 9. 6. 1932.

Taxonomic notes This species from Great Britain and Czechoslovakia (RHOHÁČEK, 1986) has a close relative in the Far East (KAMTCHATKA) – *Chamaemyia macrura* TANASSIJTCHUK, 1986. The two species differ in a small number of characters externally:

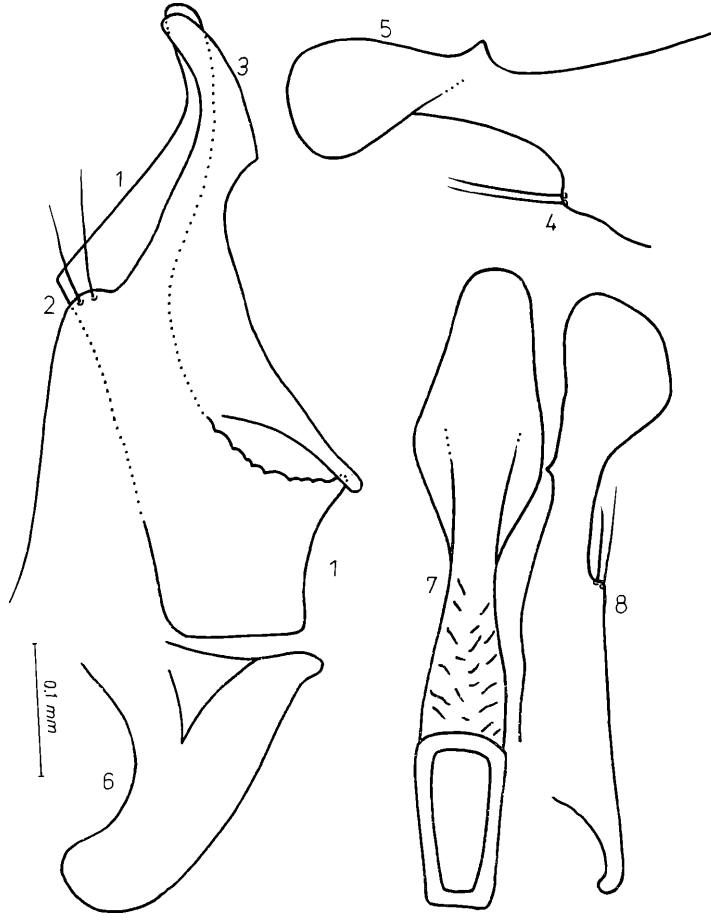

Fig. 6: *Chamaemyia macrura* TANASSIJTCHUK: 1 – aedeagus in lateral view; 2–3 – left gonites from left; 4–5 – left gonites in dorsolateral view: 2, 4 – praegonites, 3, 5 – postgonites; 6 – aedeagal apodeme; 7–8 – aedeagus (7) and right gonite (8) in dorsal view.

Ch. paludosa has a small yellow spot on the base of 3rd antennal segment, yellow palpi with a darkened tip, yellow tibiae, relatively small spots on abdomen; *Ch. macrura* has an entirely black 3rd antennal segment, yellow palpi and tibiae with black bands and big spots on abdomen. Genitalia are to a great extent similar too, however there are enough number of peculiarities found in their details characterizing them as 2 already separate species.

Differences between the genitalia of the two species

Ch. paludosa COLLIN	*Ch. macrura* TANASSIJTCHUK
Aedeagus in profil:	
curved in its basal part at on obtuse angle, upper free end of base right (fig. 4–1)	curvature at base at right angles, upper free end of base markedly oblique (fig. 6–1)
Aedeagus in dorsoventral view:	
very broad distal part, angular, spade-like (fig. 5–1)	narrower distal part with rounded outlines, oar-like (fig. 6–6)

	Postgonites:
an almost straight end (fig. 5–2, 4–3)	rounded end (fig. 6–5)
	Praegonites:
small but with well defined outlines, protruding forwards (fig. 4–2, 5–2)	poorly outlined, not protruding forwards (fig. 6–2,4)

The similarity between these two species and their isolation from the other species of the genus on the basic of the structure of their genitalia shows that they either have a common ancestor or that one of them has separated itself from the others comparatively recently in the climatic changes in the Palaearctic during Quaternary. This case is a very good example of species formation in this family as a result of a geographical isolation. The evolution of the visible external morphological differences is far behind the evolution of male genitalia, which is also reported for other species of the family (TANASSIJTCHUK, 1986).

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Summary

As a result of the revision of the species from Collin's collection in Oxford, a species new to science is described: *Chamaemyia triorbiseta* sp. n., and new synonymes are given: *Ch. nigripalpis* COLLIN, each a new synonym for *Ch. juncorum* (FALL.) and *Ch. geniculata* (ZETT.). Modern taxonomy has established and indicated some complementary peculiarities between the closely related species *Ch. polystigma* and *Ch. sylvatica*, *Ch. elegans* and *Ch. fasciata;* the existence of *Ch. aridella* is justified (sensu COLLIN, 1966) and the problem of clarifying the taxonomic state of *Ch. flavipalpis* is settled. There are elucidaled the relationship and differences between the two sister-species, formed as a result of geographical isolation: *Ch. macrura* from Kamtchatka and *Ch. paludosa* from Great Britain and Czechoslovakia.

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Author's address:
(V. L. Beschovski): Institute of Zoology, Bulgarian Academy of Sciences,
Bulev. Russki 1, 1000 Sofia (Bulgaria)
(V. N. Tanassijtchuk): Zoological Institute, Academy of Sciences of the USSR,
Univ. naber. 1, Leningrad V-034, USSR – 199 164

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