

Ceratopogonidae (Diptera) from Algeria. II. New species,
new records and new synonymy in the genus *Forcipomyia*
MEIG.

Ceratopogonidae (Diptera) Algerii. II. Nowe gatunki, nowe stanowiska
i nowe synonimy w rodzaju *Forcipomyia* MEIG.

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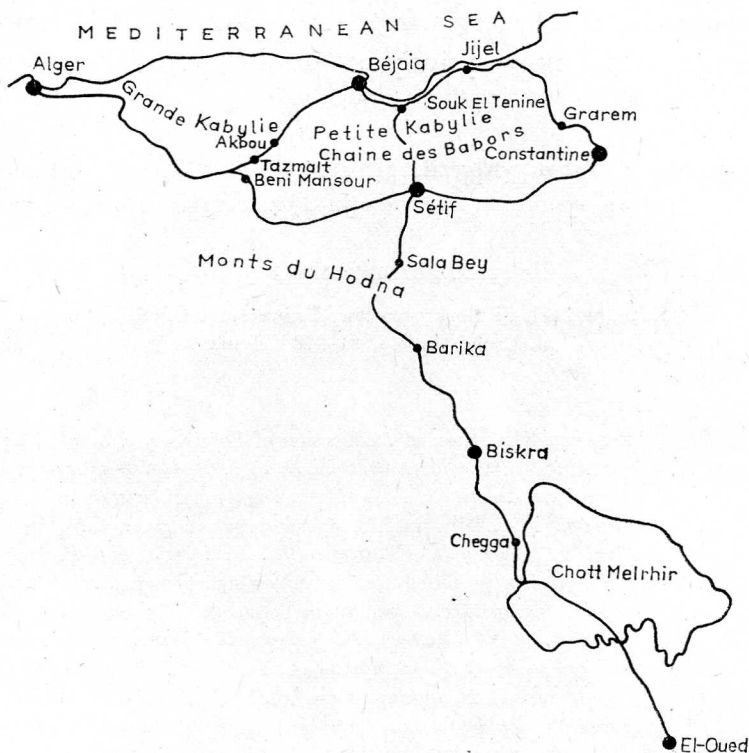
ABSTRACT. The study of a collection of *Forcipomyia* made in northern Algeria resulted in the identification of 25 species of 8 subgenera. Three new species are described: *F. waldemari* sp. n., *F. wirthiana* sp. n., and *F. margaritae* sp. n. New morphological data are given for *F. crassipes*, *F. rustica*, *F. sahariensis*, *F. striaticornis*, *F. suberis*, and *F. knockensis*. New synonymy is proposed for the following species: *F. rustica* (= *cataneii*), *F. sahariensis* (= *armaticrus*, *onusta*), *F. suberis* (= *flavirustica*), *F. psilonota* (= *hathor*), *F. biskraensis* (= *sergenti*, *imeretica*), *F. frutetorum* (= *seneveti*), *F. litoraurea* (= *minutissima*), *F. murina* (= *sulfurea*, *hirtipalpis*, *sate*), *F. knockensis* (= *bequaerti*), *F. acidicola* (= *colemani*), *F. formosae* (= *lepidota*). For some species described by KIEFFER from North Africa neotypes are designated. These are: *F. striaticornis* (KIEFF., 1918) nec DESSART, 1963; *F. sahariensis* KIEFF., 1923; *F. biskraensis* KIEFF., 1923. *Forcipomyia*, unlike any other genus of *Ceratopogonidae*, has a large number of widespread species.

INTRODUCTION

Biting midges were collected by the author in northern-east Algeria from 10 April to 16 May 1981 by means of sweeping, mainly on *Umbelliferae* flowers; trees, especially coniferous; bushes, especially tamarisks. Additionally attacking and swarming midges were obtained. A small

collection of *Ceratopogonidae* made in Oran vicinity (northern-west Algeria, April 1981) by Dr. W. KRZEMIŃSKI was used in this study. Specimens were preserved in alcohol in the field. For detail examination, after segregation of the material, some specimens were mounted on slides in Canada balsam according to WIRTH and MARSTON (1968) method.

Collection of *Ceratopogonidae* was made by the author in the following localities of northern-east Algeria (fig. 1):



1. Northern-east Algeria — collecting route

Petite Kabylie: coast of the Mediterranean Sea: Béjaia, Tichi near Béjaia, Aokas near Souk El Tenine, Souk El Tenine, Ziama Mansouria near Jijel, Les Falaises near Jijel; montains and highlands: Kherrata, 1600 m a. s. l., Akbou, Tazmalt, Beni Mansour, Grarem near Constantine, Sétif, 1150 m a. s. l.;

Monts du Hodna: Ras Isly near Sala Bey;

Sahara: Barika, 30 km north of Biskra, Biskra, Oumache near Biskra, Chegga near Biskra, Sowalah near El-Oued.

685 specimens (608 males and 77 females) of the genus *Forcipomyia* were used in the present study. The material is in the author's collection. The holotypes of the new species are deposited in the Institute of Zoology of Polish Academy of Sciences, Warsaw; the paratypes in the author's collection. The neotypes of the Kieffer's species are deposited in Museum National d'Histoire Naturelle, Paris, since Kieffer worked in France.

I am much indebted to Dr. W. Krzemiński (Department of Systematic Zoology, Polish Acad. Sci., Cracow) for some specimens of *Forcipomyia* from Oran vicinity; to Dr. J. Clastrier (Museum National d'Histoire Naturelle, Paris), to Dr. H. Remm (University of Tartu, Estonia) and to Dr. W. W. Wirth (Systematic Entomology Laboratory, USDA, c/o U. S. National Museum, Washington) for much valuable information and suggestions on *Forcipomyia* species.

REVIEW OF THE SPECIES RECORDED

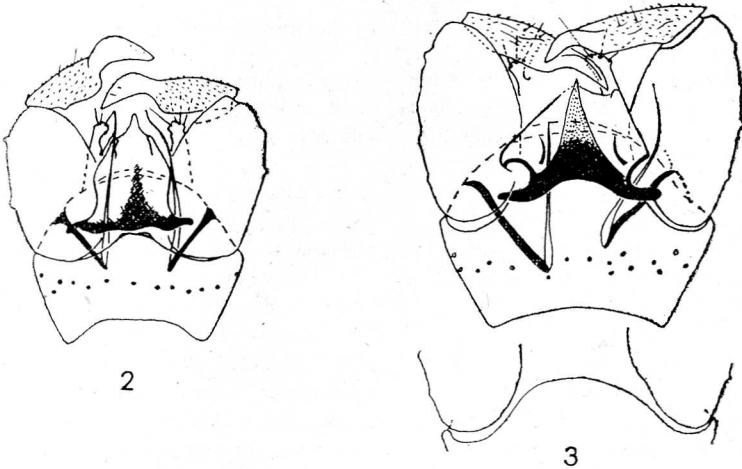
1. *F. (F.) bipunctata* (L., 1767)

Béjaia, Tichi near Béjaia, Aokas near Souk El Tenine, Les Falaises near Jijel, Tazmalt, Grarem near Constantine, Chegga near Biskra, Oran vicinity, 8 ♂, 6 ♀.

Common Holarctic species. From North Africa and Algeria recorded for the first time.

2. *F. (F.) crassipes* (Winn., 1852)

(Fig. 2)



2, 3. Male genitalia, 2 — *Forcipomyia crassipes*, 3 — *Forcipomyia striaticornis*

Souk El Tenine, Akbou, 6 ♂.

The species recorded from the whole Europe and Caucasus. This is the first record from North Africa and Algeria.

3. *F. (F.) nigra* (Winn., 1852)

Akbou, 1 ♂.

The species recorded from the whole Europe and Caucasus. This is the first record from North Africa and Algeria.

4. *F. (F.) rustica* (Kieff., 1919)

(Figs 4, 5)

Ceratopogon rusticus KIEFFER, 1919: 19 (♂, Hungary, Yugoslavia).

F. rustica: GOETGHEBUER, 1934: 16 (combination).

F. cataneii KIEFFER, 1923: 662 (♂, Algeria), n. syn.

Béjaia, Akbou, Tazmalt, Beni Mansour, Grarem near Constantine, Ras Isly near Sala Bey, Oran vicinity, 34 ♂, 8 ♀.

Mediterranean species recorded from Yugoslavia, Bulgaria, Hungary, Crimea and Caucasus. From Algeria recorded by KIEFFER (1923).

DISCUSSION

F. rustica is closely related to *F. suberis*: wing with pale spot at tip of costa, tarsal ratio of hind leg 0.7–0.8, lanceolate scales on female tibiae absent, submedian processes of parameres stout, basally fused. Differences are as follows (males):

F. rustica

Humeral part of mesonotum black, brown or sometimes pale.

Legs dark brown, apices of all tibiae yellow, tarsi more or less pale; usually fore and middle legs paler (brownish), sometimes fore coxa and basal portion of hind tibia paler.

Abdomen dark brown, tergum I always dark brown, narrow transverse yellow stripes well visible on hind margin of tergum II, on proximal and distal margins of tergites III–IV and on proximal margin of tergum V; two first sternites pale.

Abdominal segment IX dark brown, male genitalia dark brown, gonostyle sometimes more or less pale; outer margin of gonostyle rather straight (figs 4–5); sternum IX with well defined M-shaped distal margin.

F. suberis

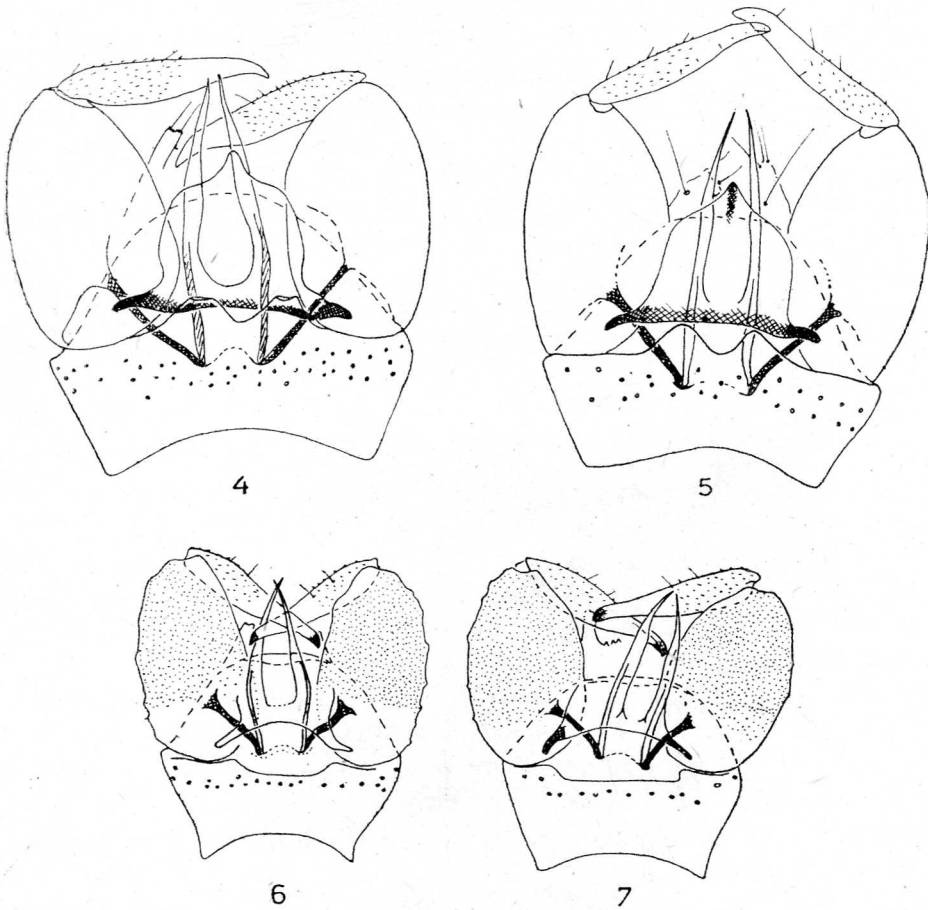
Humeral part of mesonotum yellow.

Legs yellow, distal half of hind femur and middle portion of hind tibia contrast dark brown.

First abdominal tergum yellow with two dark lateral patches, tergites II–IV yellow with wide dark transverse median stripe, V–VIII whole brown with only narrow yellow stripes on distal and lateral margins; two first sternites yellow.

Segment IX yellow, basal portion of gonocoxite yellow, gonostyle very pale with darkened tip; outer margin somewhat waved; sternum IX with wide and shallow weakly defined caudomedian cavity (figs 6–7).

Some characters of *F. cataneii* (legs yellow, distal half of hind femur dark brown, gonostyle yellow) are characteristic for *F. suberis* but general KIEFFER's statement, body black, is more characteristic for *F. rustica*, and thus *F. cataneii* should be rather synonymized with this species as suggested REMM (letter's information).



4-7. Male genitalia, 4, 5 — *Forcipomyia rustica*, 6, 7 — *Forcipomyia suberis*

5. *F. (F.) sahariensis* Kieff., 1923

(Figs 8-13)

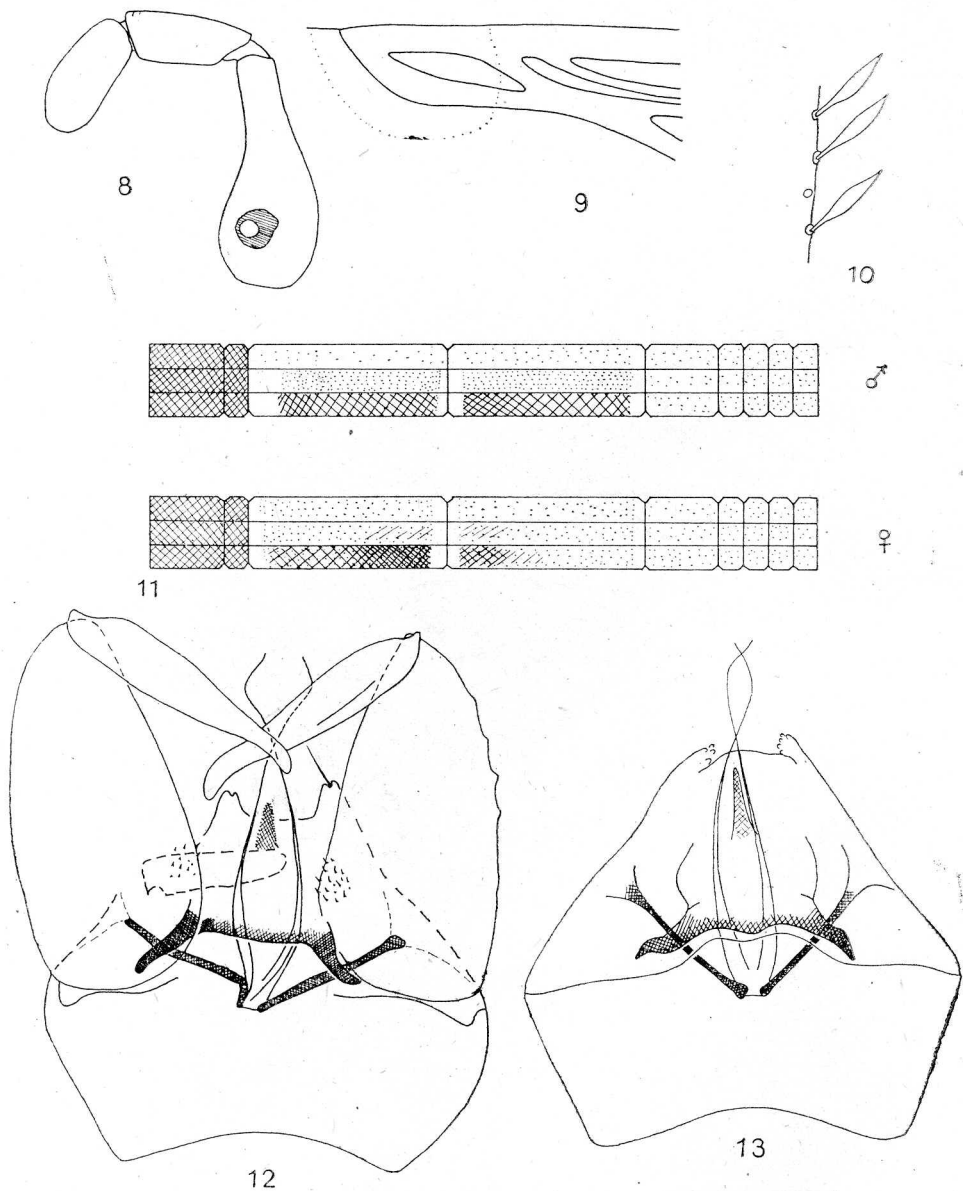
F. sahariensis KIEFFER, 1923: 663 (♂, Biskra, Algeria).

F. armaticrus KIEFFER, 1923: 661 (♀, Biskra, Algeria), n. syn.

F. onusta REMM, 1980: 122 (♀, ♂, Caucasus, Middle Asia, Sakhalin), n. syn.

Grarem near Constantine, 1 ♀; Barika near Biskra, 2 ♂ on flowers olive-tree.

The species is known from Algeria, Caucasus, Middle Asia and Sakhalin.



8-13. *Forcipomyia sahariensis*, 8 — palpus of female, 9 — part of female wing, 10 — lanceolate scales of female tibia, 11 — colouration pattern of legs, 12-13 — male genitalia

DIAGNOSIS

Female. Head brown, antenna brownish, AR 0.76; palpus (fig. 8) with small sensory pit; thorax dark brown, scutellum and front of mesonotum somewhat paler, pleura with yellow patches; wing length 1.47 mm, first radial cell absent, tip of costa with pale spot (fig. 9); legs rather pale brown (fig. 11), with all coxae and trochanteres darkened, hind femora and hind tibiae darker than others, knees and apical portions of tibiae yellow; TR of hind leg 0.91; all tibiae with dark lanceolate scales (fig. 10); halteres pale; abdomen dark brown, cerci yellow, two spermathecae: 84×52 and 88×54 μm .

Male. Similar to female with the usual sexual differences. Lengths of five last flagellomeres as follows (in μm): 40-212-120-86-108; AR 1.15; wing length 1.33-1.46 mm; legs colouration similar to female (fig. 11), TR of hind leg 0.86-0.92; genitalia (figs. 12-13) with pale gonostyle, parameres slender, basally fused, gonocoxite ventrally with group of small spines.

DISCUSSION

The female described as *F. armaticrus* and the male described as *F. sahariensis* should be regarded as the same species. Specimens now collected in Algeria agree with KIEFFER's descriptions, although, according to the original description, male genitalia of *F. sahariensis* have unusually long parameres. *F. onusta* (REMM, 1980) should be synonymized with *F. sahariensis* despite the fact that the small spines on ventral side of gonocoxite were not indicated. Such spines were found in *F. tuzeti* HUTTEL et HUTTEL, 1952; *F. acanthophora* REMM in HAVELKA, 1976, *F. ashanti* INGRAM et MACFIE, 1942, and in *F. abdominalis* TOKUNAGA, 1940.

Because the type material of *F. sahariensis* does not exist I designate neotype: ♂, Barika near Biskra, 26 April 1981, R. Szadziewski leg. The neotype is deposited in Museum National d'Histoire Naturelle, Paris.

6. *F. (F.) striaticornis* (Kieff., 1918)

(Fig. 3)

Ceratopogon striaticornis KIEFFER, 1918: 36 (♂, ♀, Tunisia), nec *F. striaticornis*: DESSART, 1963.

F. striaticornis: GOETCHEBUER, 1934: 16 (combination).

Akbou, 3 ♂.

The species known from Tunisia (7 localities). From Algeria recorded for the first time.

DISCUSSION

According to the original description (KIEFFER, 1918) *F. striaticornis* has a pale patch beyond tip of costa and strongly concave distal inner margin of gonostyle. For this reason the synonymy of DESSART (1963) is erroneous. *F. nigerrima* GOETGH., 1933 (= *F. iphias* DE MEILLON, 1936; = *F. striaticornis* s. DESSART, 1963) is an Afrotropical species more closely related to the Palaearctic *F. rustica* (KIEFF., 1919).

Type material of *F. striaticornis* does not exist and because of this reason neotype is designated: ♂, Akbou, Petite Kabylie, 12 May 1981, R. Szadziewski leg. The neotype is deposited in Museum National d'Histoire Naturelle, Paris.

F. striaticornis is closely related to *F. crassipes*. Males of these two species can be readily distinguished basing on the following characters:

<i>F. striaticornis</i>	<i>F. crassipes</i>
Wing length 1.55–1.63 mm, small pale patch beyond costa tip rather well visible.	Wing length 1.12–1.42 mm, pale patch beyond costa tip rather invisible.
Tarsal ratio of hind leg 0.9.	Tarsal ratio of hind leg 1.1–1.2.
Gonostyle with concave distal inner portion outer margin rather straight, aedeagus as long as wide (fig.3).	Distal portion of gonostyle strongly hooked, aedeagus much longer than wide (fig. 2).

7. *F. (F.) suberis* Clastrier, 1956

(Figs 6, 7)

F. suberis CLASTRIER, 1956: 496 (♂, ♀, Algeria).

F. flavirustica REMM in REMM and ŽOGOLEV, 1968: 827 (♂, ♀, Crimea), n. syn.

Tazmalt, 2 ♂.

Mediterranean species known from Algeria, Crimea and Romania.

The synonymy is established by a comparison of the Algerian material with the original descriptions. Discussion at *F. rustica*.

8. *F. (F.) tenuisquama* Kieff., 1924

Béjaia, Les Falaises near Jijel, 2 ♂.

The species recorded from whole Europe and Caucasus. From North Africa and Algeria recorded for the first time.

9. *F. (F.) waldemari* sp. n.

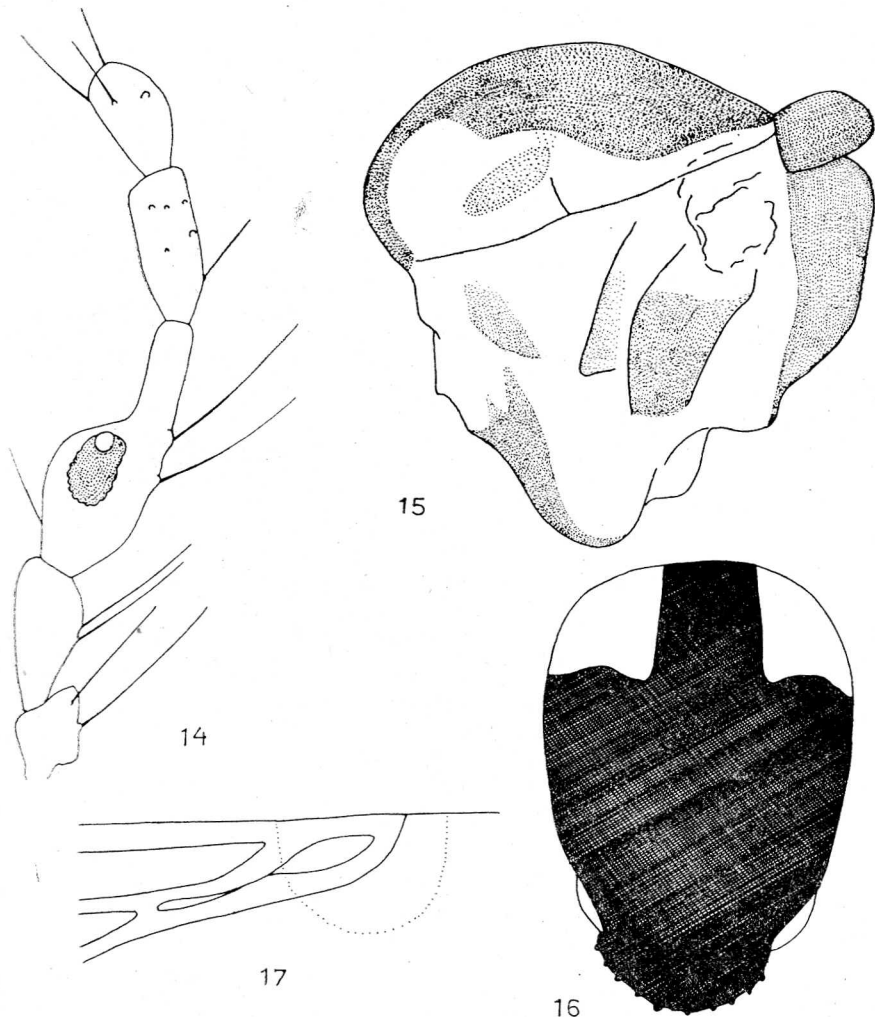
(Figs 14–20)

DIAGNOSIS

Female is similar to *F. suberis*, but spermathecae are very large.

DESCRIPTION

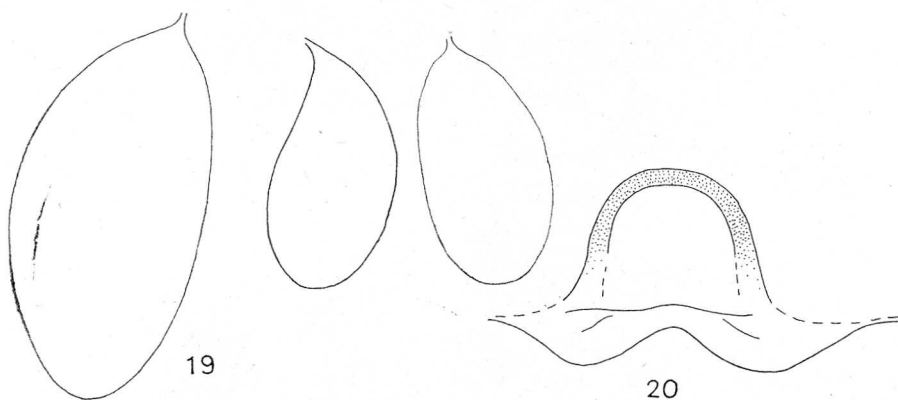
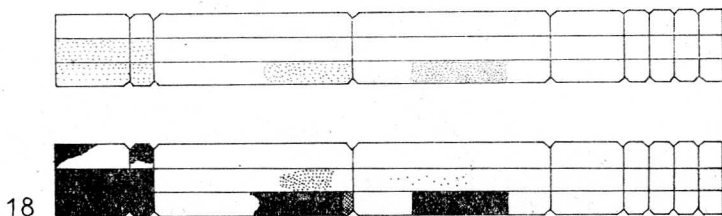
Female. Head brown, proximal flagellomeres with darkened distal portion, five last flagellomeres entirely brownish; mean lengths and ranges of flagellomeres as follows (in μm): 56.5 (50-62) — 44.5 (40-50) — 45.5 (42-50) — 47.0 (44-50) — 51.5 (48-56) — 47.5 (44-50) — 47.3 (44-50) — 50.0 (46-54) — 85.0 (80-90) — 86.5 (84-90) — 86.8 (82-92) — 89.0 (84-94) — 120.0 (112-130), $n = 4$; antennal ratio (AR) 1.15



14-17. *Forcipomyia waldemari* sp. n., female, 14 — palpus, 15, 16 — thorax, 17—part of wing

(1.12-1.18), $n = 4$; palpus (fig. 14) dark brown, third palp segment swollen at basal half, sensory pit very deep; eyes bare.

Thorax yellow (figs 15, 16), mesonotum dark brown, humeral surface widely yellow, pleura yellow with frontal part of preepisternum, epimeron II, posterior and anterior anepisternum II brown, scutellum and post-scutellum dark brown; halteres yellow; wing length 1.50 (1.36-1.63) mm breadth 0.61 (0.53-0.65) mm, $n = 5$; first radial cell present (fig. 17),



18-20. *Forcipomyia waldemari* sp. n., female, 18 — colouration pattern of legs, 19 — spermathecae, smaller spermatheca in lateral and dorsal position, 20 — genital sclerotization

spot at second radial cell yellow, in cell R_5 triangular darker patch; legs yellow, usually coxae and trochantères of middle and hind legs and distal half of hind femora and middle portion of hind tibiae brown or dark brown (fig. 18), tarsal ratio (TR) of hind leg 0.78 (0.68-0.87), $n = 7$; lanceolate scales on tibiae absent.

Abdomen dark brown, proximal sternites and pleurae yellow, cerci yellow; two very large spermathecae (fig. 19) with short necks: $324.4 (300-336) \times 159.2 (152-164)$ and $195.0 (176-216) \times 98.5 (96-102) \mu\text{m}$, $n = 5$; anterior process of genital sclerotization distinctively shaped (fig. 20).

Male unknown.

ETYMOLOGY

This species is named in honour of Dr. Waldemar Mikołajczyk from Institute of Zoology, Polish Acad. Sci., Warsaw.

MATERIAL EXAMINED

Holotype — ♀, Béjaia, sweeping in bushes at sea shore, 9 May 1981, R. Szadziewski leg. Paratypes — 7 ♀, the same data as the holotype. The holotype is deposited in the Institute of Zoology, Polish Acad. Sci., Warsaw.

DISCUSSION

The new species is very similar to *F. suberis* CLASTRIER, 1956, but spermathecae are very large; 324.4×159.2 and 195.0×98.5 μm . Such large spermathecae are found in Afrotropical *F. melanchroa* INGRAM et MACFIE, 1924 (DESSART, 1963): $200\text{--}300 \times 120\text{--}150$ μm .

10. *F. (Microhelea) fuliginosa* (Meig., 1818)

Tichi near Béjaia, 10 ♂, 7 ♀.

Cosmopolitan species. From Algeria recorded for the first time.

11. *F. (Euprojoannisia) alacris* (Winn., 1852)

Chegga near Biskra, 6 ♂, 1 ♀.

Species common in Europe and Caucasus. This is the first record from North Africa and Algeria.

12. *F. (E.) mesasiatica* Remm, 1930

Chegga near Biskra, 6 ♂, 1 ♀.

Known from deserts of Middle Asia. From North Africa and Algeria recorded for the first time. The species probably represents an arid Afro-Euroasian element, desert subelement.

13. *F. (E.) phlebotomoides* Bangerter, 1933

Béjaia, 1 ♂.

This species is recorded from Europe and Caucasus. From North Africa and Algeria it is recorded for the first time.

14. *F. (E.) psilonota* (Kieffer, 1911)

Ceratopogon psilonotus KIEFFER, 1911: 337 (♂, Seychelles).

F. psilonota: INGRAM and MACFIE, 1924: 546 (combination).

F. indecora KIEFFER, 1914: 269 (♂, South Africa).

F. egypti MACFIE, 1924: 61 (♀, Egypt).

F. hathor KIEFFER, 1925: 247 (♀, Egypt), **n. syn.**

Aokas near Souk El Tenine, Souk El Tenine, Ziama Mansouria near Jijel, Akbou, Ras Isly near Sala Bey, Chegga near Biskra, Oran vicinity, 16 ♂, 2 ♀.

Widespread Afrotropical species. From Algeria recorded by DESSERT (1963). The new synonym is established by comparison of the original description with the specimens now collected.

15. *F. (E.) wirthiana* sp. n.

(Figs 21-25)

DIAGNOSIS

The new species as no other member of the subgenus *Euprojoannisia* has long aedeagus with black hooks near the tip, and stout gonostyle with bent slender distal portion with concave tip.

DESCRIPTION

Female unknown.

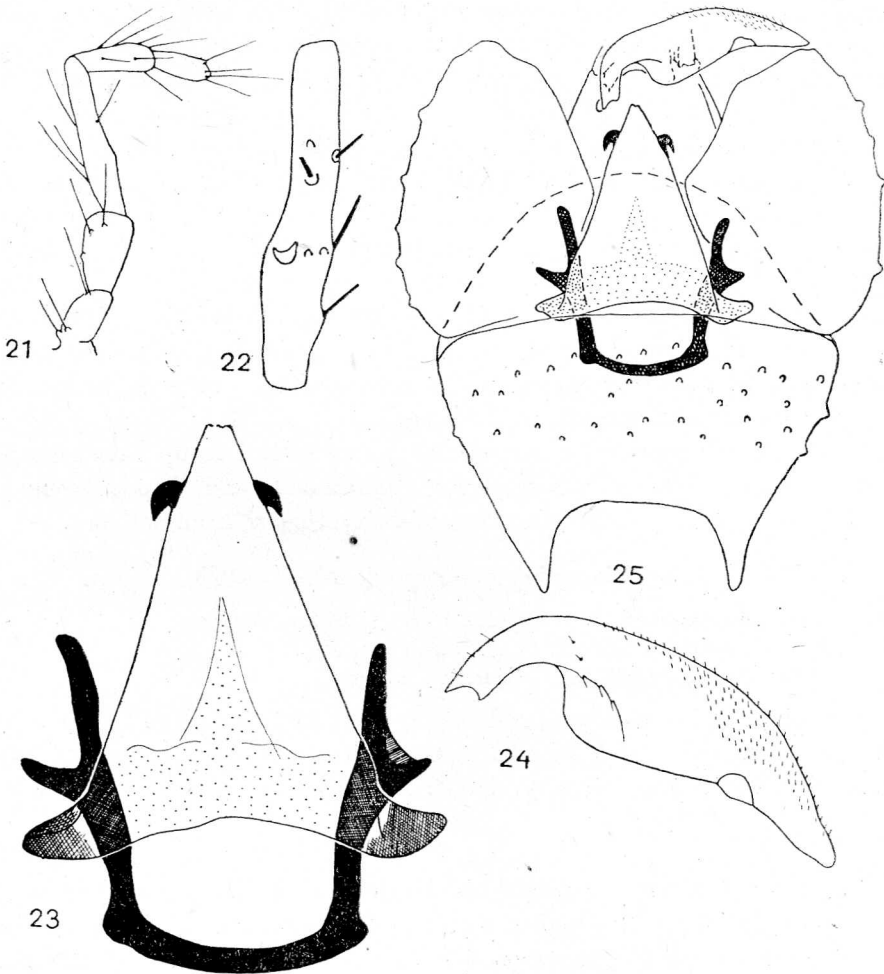
Male. Head pale brown, scape brown, flagellum pale brown, lengths of flagellomeres as follows (in μm): 44 — 36 — 36 — 37 — 37 — 38 — 38 — 40 — 40 — 128 — 82 — 54 — last flagellomere absent; palpus pale (fig. 21), third palp segment about 80 μm , fourth — 34 μm , fifth — 28 μm , sensory pit small (fig. 22); eyes bare.

Thorax pale brown, scutellum yellow, halteres darkened; wing pale, first radial cell absent; wing length 0.96 mm, breadth 0.31 mm; legs pale yellow, tarsal ratio (TR) of hind leg 1.19.

Abdomen uniformly dark brown, genitalia pale brown, large; gonostyle (figs 24, 25) long and stout, distal portion slender, bent, with concave tip; aedeagus (figs 23-25) triangular with distinctively sclerotized basal arch, at the tip two strongly sclerotized black hooks on both sides; parameres (fig. 23) U-shaped; distal margin of sternum IX straight.

ETYMOLOGY

This species is named in honour of Dr. W. W. Wirth from Department of Agriculture c/o U. S. National Museum, Washington, in recognition of his contributions to the study of the world *Ceratopogonidae*.



21-25. *Forcipomyia wirthiana* sp. n., male, 21, 22 — palpus, 23-25 — genitalia

MATERIAL EXAMINED

Holotype — ♂, Chegga near Biskra, 2 May 1981, mineral spring area. The holotype is deposited in the Institute of Zoology, Polish Acad. Sci., Warsaw.

DISCUSSION

F. wirthiana sp. n. is related to Oriental species: *F. yapensis* TOKUNAGA et MURACHI, 1959; *F. fuscimana* (KIEFF., 1921) (TOKUNAGA and MURACHI, 1959); and *F. pennielongata* CHAN et LEROUX, 1971, which are char-

acterized by stout male genitalia with long shield-shaped aedeagus with appendices at the tip, and by two last segments of palpus not fused. According to WIRTH (letter's information) also *F. vernochei* (CLASTRIER, 1959) — only female described from Réunion island near Madagascar belongs to this group. *F. phlebotomoides* (Europe, Algeria) and very closely related to it *F. avocadonis* DE MEILLON et WIRTH, 1979 (South Africa), which are characterized by stout male genitalia with a rather short conical aedeagus armed with pair of long appendices arising from the base of the aedeagus should be included into this species group. Two last palp segments are fused (*F. avocadonis*) or not fused (*F. phlebotomoides*).

Known males of all the above species have simple, stout or slender, gonostyle, *F. wirthiana* sp. n., on the contrary, has gonostyle with bent slender distal portion with concave tip.

It is interesting to note that all the species of this group have sensory pit on third palp segment except for *F. fuscimana* and *F. pennielongata* which have sensory field composed of several sensilla ampullacea.

16. *F. (Thyridomyia) biskraensis* Kieff., 1923, n. stat.

F. seneveti var. *biskraensis* KIEFFER, 1923: 665 (♀, Biskra, Algeria).

F. sergenti CLASTRIER, 1956: 502 (♂, ♀, Algeria), n. syn.

F. imeretica REMM, 1967: 5 (♂, ♀, Caucasus), n. syn.

Béjaia, Tichi near Béjaia, Aokas near Souk El Tenine, Souk El Tenine, Les Falaises near Jijel, Kherrata, Grarem near Constantine, Ras Isly near Sala Bey, Oran vicinity, 413 ♂, 19 ♀.

DISCUSSION

F. seneveti KIEFF. distinguished by its S-shaped lateral sclerites of aedeagus, TR of hind leg higher than 2 and AR of female 0.8, should be synonymized with *F. frutetorum* but *F. seneveti* var. *biskraensis* KIEFF. characterized by having AR of female about 1.0 should be considered an older synonym of *F. sergenti* CLASTRIER and *F. imeretica* REMM.

Type material of *F. seneveti* var. *biskraensis* is lost. I designate neotype for this species: ♀, Béjaia, 10 May 1981, leg. R. Szadziewski. The neotype is deposited in Museum National d'Histoire Naturelle, Paris.

17. *F. (Th.) frutetorum* (Winn., 1852)

Ceratopogon fruterorum WINNERTZ, 1852: 29 (♂, ♀, Germany).

F. frutetorum: DOW and WIRTH, 1972: 180 (♂, ♀ North America, Europe).

F. seneveti KIEFFER, 1922: 50 (♂, ♀, Algeria), n. syn.

F. aethiopiae INGRAM et MACFIE, 1924: 582 (♂, ♀, Ghana).

Béjaia, Aokas near Souk El Tenine, Souk El Tenine, Ziama Mansouria near Jijel, Akbou, Tazmalt, Grarem near Constantine, Ras Isly near Sala Bey, 30 km north of Biskra, Biskra, 36 ♂, 7 ♀.

Widespread in Holarctic and Afrotropical Regions.

18. *F. (Th.) litoraurea* (Ingram et Macfie, 1924)

Lasiohelea litoraurea INGRAM et MACFIE, 1924: 389 (♀, Gambia).

F. litoraurea: DESSART, 1963: 84 (♂ ♀, Africa).

F. minutissima REMM, 1961: 192 (♂, ♀, Estonia), n. syn.

Chegga near Biskra, 9 ♂, 1 ♀.

Widespread Afrotropical species. In Palaearctic Region recorded from North Africa, Caucasus, Crimea and Estonia. From Algeria recorded for the first time. New synonym is established by comparison of the original description and figures with the specimens now collected.

19. *F. (Th.) monilicornis* (Coquillett, 1905)

Souk El Tenine, Tazmalt, Chegga near Biskra, 9 ♂, 1 ♀.

Widespread in Holarctic and Afrotropical Regions. From North Africa and Algeria recorded for the first time.

20. *F. (Th.) rugosa* Chan et LeRoux, 1970

Ziama Mansouria near Jijel, 1 ♂.

Widespread Holarctic species. From North Africa and Algeria recorded for the first time.

21. *F. (Synthyridomyia) margaritae* sp. n.

(Figs 26-31)

DIAGNOSIS

Male of the new species is defined by the following combination of characters: third palp segment with deep sensory pit, median lobe of aedeagus broad and short, with blunt or concave tip, posterior projections strongly sclerotized and stout, distally divergent; apex of parameres bent.

DESCRIPTION

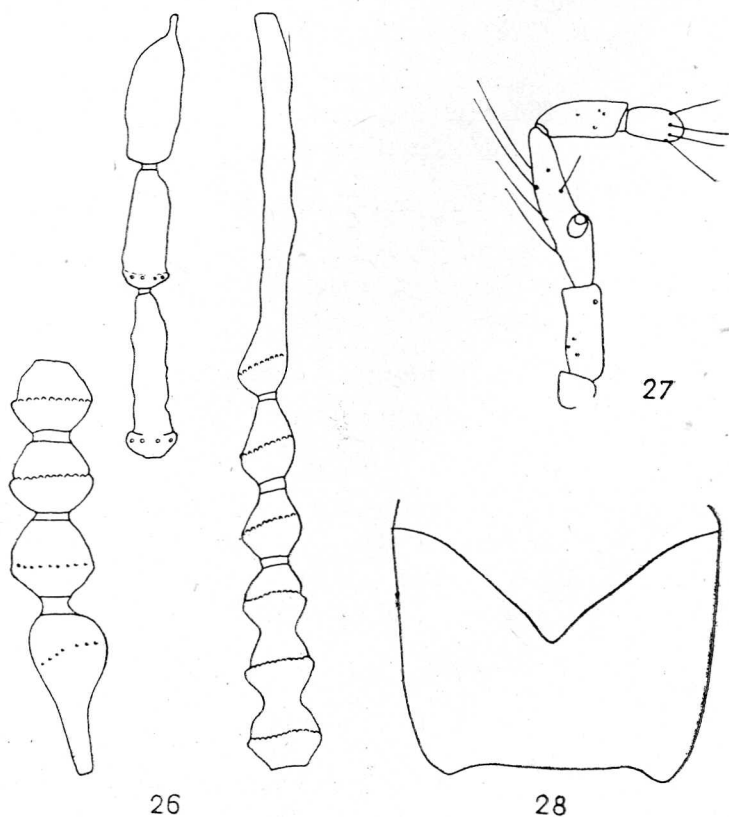
Female unknown.

Male. Uniformly dark brown, scutellum and legs somewhat paler, head and halteres grayish.

Flagellum (fig. 26) with flagellomeres II-IV globose, flagellomeres

V-VII globose and fused, flagellomeres VIII-IX vasiform, flagellomeres X-XII cylindrically elongate with basal swelling, flagellomere XIII bluntly subconical with apical rounded papilla; antennal ratio (AR) 1.06 (1.05-1.06), $n = 3$; lengths of flagellomeres as follows (in μm): 72.0 - 33.3 (33-34) - 32.3 (32-33) - 31.0 (30-32) - 90.0 (V-VII, 88-92) - 30.7 (30-32) - 34.3 (34-35) - 162.0 (150-170) - 74.0 (71-78) - 53.3 (50-56) - 68.7 (68-70), $n = 3$; palpus (fig. 27) with third segment somewhat enlarged on proximal half, slender distally, with deep round sensory pit; eyes bare.

Wing length 1.11 (1.09-1.12) mm, breadth 0.35 (0.34-0.36) mm, $n = 3$; costal ratio (CR) 0.47 (0.46-0.48), $n = 2$, tip bluntly rounded, costal and anal margins nearly parallel; tarsal ratio (TR) of hind leg 2.43 (2.37-2.50), $n = 3$; claws with bifid apices scarcely discernible.



26-28. *Forcipomyia margaritae* sp. n., male, 26 - flagellum, 27 - palpus, 28 - abdominal sternum IX

Genitalia (figs 28-31): gonocoxite elongate, subcylindrical; gonostyle elongate, slightly curved, tapering distally; sternum IX with broad, shallow U- or V-shaped caudomedian cavity; tergum IX broadly rounded distally; aedeagus with basal arms stout, basal arch low, median lobe broad and short, with blunt or concave tip; posterior projections strongly sclerotized and stout, distally divergent; parameres stout, base semitriangular, apex curved.

ETYMOLOGY

This species is named in honour of my wife Maria Małgorzata.

MATERIAL EXAMINED

Holotype — ♂, Béjaia, 9 May 1981, bushes at sea shore, R. Szadziwski leg. Paratypes — 2 ♂, Beni Mansour, 15 May 1981. The holotype is deposited in the Institute of Zoology, Polish Acad. Sci., Warsaw.

DISCUSSION

The new species is closely related to *F. knockensis* GOETCHEBUER, 1938, and *F. acidicola* (TOKUNAGA, 1937). Aedeagus of *F. knockensis* (= *F. bequaerti* GOETCHEBUER, 1942, n. syn., = *F. abludens* REMM in REMM and ŽOGOLEV, 1968; Europe, Caucasus) has a conical median lobe and slender, sinuate posterior projections (figs 32-34), parameres slender and straight. Male of *F. acidicola* (= *F. colemani* WIRTH, 1952, n. syn.; Japan, Europe, North America) has third palp segment cylindrically elongated, without sensory pit, basal arch of aedeagus rather high, aedeagal projections weakly sclerotized. The above new synonyms are established by comparison of the original descriptions and figures with the specimens from Poland.

22. *F. (S.) murina* (Winn., 1852)

Ceratopogon murinus WINNERTZ, 1852: 26 (♂, ♀, Germany).

F. murina: DOW and WIRTH, 1972: 197 (♂, ♀, North America, Europe).

F. sulfurea KIEFFER, 1923: 664 (♀, Biskra, Algeria), n. syn.

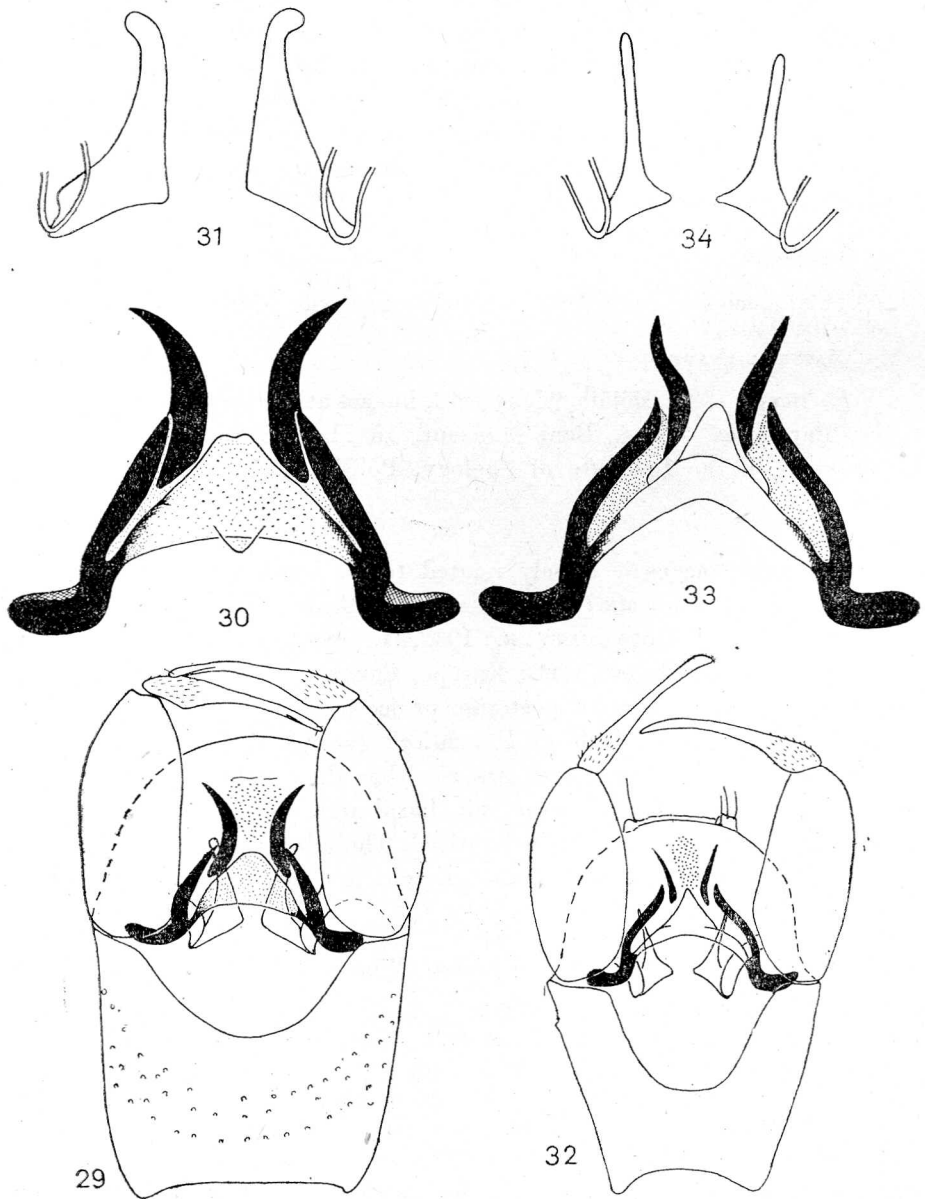
F. hirtipalpis KIEFFER, 1924: 392 (♂, France), n. syn.

F. sate KIEFFER, 1925: 245 (♂, ♀, Egypt), n. syn.

F. moascari MACFIE, 1943: 147 (♂, ♀, Egypt).

Béjaia, Tichi near Béjaia, Akbou, Barika near Biskra, 30 km north of Biskra, Biskra, oasis Sowalah near El-Oued, 22 ♂, 4 ♀.

The species is widespread in Holarctic and Afrotropical Regions. New synonymy is established by comparison of the original descriptions and figures with the specimens from Europe and Algeria.



29-34. Male genitalia, 29-31 — *Forcipomyia margaritae* sp. n., 32-34 — *Forcipomyia knockensis*

23. *F. (Lasiohelea) velox* (Winn., 1852)

Tichi near Béjaia, Aokas near Souk El Tenine, Souk El Tenine, Ziam Mansouria near Jijel, Akbou, Tazmalt, Grarem near Constantine, 16 ♂, 7 ♀.

The species recorded from the whole Europe and Caucasus. From North Africa and Algeria recorded for the first time.

24. *F. (Lepidohelea) formosae* (Kieff., 1921)

Lepidohelea formosae KIEFFER, 1921: 153 (♂, Taiwan).

F. lepidota INGRAM et MACFIE, 1924: 556 (♂, ♀, Ghana), n. syn.

F. formosae: TOKUNAGA, 1940: 73 (♂, ♀, Japan).

F. lepidota: CLASTRIER, 1956: 506 (♂, ♀, Algeria).

F. formosae: REMM, 1967: 4 (♂, Caucasus).

Beni Mansour, 1 ♀.

The species recorded from Afrotropical Region, North Africa, Caucasus, Japan, Taiwan, Malaysia. Recorded from Algeria by CLASTRIER (1956). The descriptions of male of *F. formosae* (TOKUNAGA, 1940; REMM, 1967) correspond well to the descriptions of male of *F. lepidota* (INGRAM and MACFIE, 1924; CLASTRIER, 1956). *F. chrysolopha* (KIEFF.) is an Afrotropical species closely related, but not synonymous with *F. lepidota* (Dr. J. CLASTRIER, personal communication).

25. *F. (Panhelea) pontica* Remm in Remm and Žogolev, 1968

Béjaia, Ziam Mansouria near Jijel, 1 ♂, 3 ♀.

Mediterranean species recorded from Crimea and Caucasus. From North Africa and Algeria recorded for the first time.

RESULTS AND DISCUSSION

Nine species of the genus *Forcipomyia* were known from Algeria (KIEFFER, 1922, 1923; HARANT and GALAN, 1942; CLASTRIER, 1956; DESSART, 1963). In the present study 25 species are recorded from northern Algeria, belonging to the following subgenera: *Forcipomyia* s. str. (9 species) *Microhelea* KIEFF. (1), *Euprojoannisia* BRÈTHES (5), *Thyridomyia* SAUNDERS (5), *Synthyridomyia* SAUNDERS (2), *Lasiohelea* KIEFF. (1), *Lepidohelea* KIEFF. (1) and *Panhelea* REMM (1 species). In coastal localities 16 species, in mountains and highlands of Petite Kabylie 14 species and in Sahara 10 species are found.

Amongst the *Forcipomyia* species of Algerian fauna six zoogeographical elements can be distinguished: cosmopolitan, Holarctic, West Palearctic, South Palearctic, Mediterranean and Afrotropical.

F. fuliginosa is the only cosmopolitan species in the family *Ceratopogonidae*. The Holarctic element is represented by *F. frutetorum*, *F.*

Review of the *Forcipomyia* species recorded from North Africa and Algeria

North Africa	Algeria	
	Previous records	Present record
1. <i>F. (F.) biannulata</i> INGR. et MACFIE, 1924	—	—
2. <i>F. (F.) bipunctata</i> (L., 1767)	—	+
3. <i>F. (F.) crassipes</i> (WINN., 1852)	—	+
4. <i>F. (F.) nigra</i> (WINN., 1852)	—	+
5. <i>F. (F.) rufescens</i> (KIEFF., 1918)	—	—
6. <i>F. (F.) rustica</i> (KIEFF., 1919)	KIEFFER, 1923	+
7. <i>F. (F.) sahariensis</i> KIEFF., 1923	KIEFFER, 1923	+
8. <i>F. (F.) striaticornis</i> (KIEFF., 1918)	—	+
9. <i>F. (F.) suberis</i> CLASTRIER, 1956	CLASTRIER, 1956	+
10. <i>F. (F.) tenuisquama</i> KIEFF., 1924	—	+
11. <i>F. (F.) waldemari</i> sp. n.	—	+
12. <i>F. (Microhelea) fuliginosa</i> (MEIG., 1818)	—	+
13. <i>F. (Euprojoannisia) alacris</i> (WINN., 1852)	—	+
14. <i>F. (E.) mesasiatica</i> REMM, 1980	—	+
15. <i>F. (E.) phlebotomoides</i> BANGERTER, 1933	—	+
16. <i>F. (E.) psilonota</i> (KIEFF., 1911)	DESSART, 1963	+
17. <i>F. (E.) wirthiana</i> sp. n.	—	+
18. <i>F. (Thyridomyia) biskraensis</i> KIEFF., 1923	KIEFFER, 1923	+
19. <i>F. (Th.) frutetorum</i> (WINN., 1852)	KIEFFER, 1922	+
20. <i>F. (Th.) litoraurea</i> (INGR. et MACFIE, 1924)	—	+
21. <i>F. (Th.) monilicornis</i> (COQ., 1905)	—	+
22. <i>F. (Th.?) picheyrei</i> HARANT and GALAN, 1942	HARANT and GALAN, 1942	—
23. <i>F. (Th.) rugosa</i> CHAN et LEROUX, 1970	—	+
24. <i>F. (Th.?) urnigera</i> KIEFF., 1925	—	—
25. <i>F. (Synthyridomyia) margaritae</i> sp. n.	—	+
26. <i>F. (S.) murina</i> (WINN., 1852)	KIEFFER, 1923	+
27. <i>F. (Lasiohelea) lefanui</i> CARTER, 1916	—	—
28. <i>F. (L.) velox</i> (WINN., 1852)	—	+
29. <i>F. (Lepidohelea) formosae</i> (KIEFF., 1921)	CLASTRIER, 1956	+
30. <i>F. (Panhelea) pontica</i> REMM in REMM and ŽOGOLEV, 1968	—	+

monilicornis, *F. murina*, *F. bipunctata* and *F. rugosa*. The three first of the above species were also recorded from Afrotropical Region, up to South Africa.

West Palaearctic element in Algeria is represented by six species: *F. crassipes*, *F. tenuisquama*, *F. nigra*, *F. alacris*, *F. phlebotomoides* and *F. velox*. These species are distributed in Europe, Caucasus and in North Africa.

F. sahariensis (?) and *F. mesasiatica* represent South Palaearctic or arid Afro-Euroasian element. They are distributed mainly in deserts and semideserts of Palaearctics.

Mediterranean element is represented by: *F. rustica*, *F. striaticornis*, *F. suberis*, *F. biskraensis* and *F. pontica*. Species of this element are mainly distributed in South Europe, North Africa, Middle East, Asia Minor, Caucasus and in Middle Asia.

The Afrotropical element includes: *F. formosae*, *F. psilonota* and *F. litoraurea*. Only *F. psilonota* is limited to African Continent. *F. formosae* is known from Caucasus and from Oriental Region (Japan to Malaysia), and *F. litoraurea* widespread in whole Africa is found also in Caucasus, Crimea and Estonia.

Three newly described species and *F. picheyrei* are known till now from Algeria only.

Forcipomyia, unlike any other genus of *Ceratopogonidae*, has a large number of widespread species. In Algerian fauna one *Forcipomyia* species is cosmopolitan, three Holarctic species are found in Afrotropical Region, Afrotropical *F. formosae* is found in Caucasus and in Oriental Region, and Afrotropical *F. litoraurea* is recorded from Europe and Caucasus.

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