

Scuttle flies (Diptera, Phoridae) from the canopies of oak trees (Fagaceae) in Norway, including 13 new species

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73 species of Phoridae were recorded in the canopies of oak trees (*Quercus robur*) in Norway. These included the following 13 new species of *Megaselia* Rondani, 1856, *M. aliusmyia* n. sp., *M. alphamyia* n. sp., *M. chimyia* n. sp., *M. deltamyia* n. sp., *M. etamyia* n. sp., *M. geiri* n. sp., *M. karli* n. sp., *M. lambdamyia* n. sp., *M. numyia* n. sp., *M. omicronmyia* n. sp., *M. rhomyia* n. sp., *M. solii* n. sp., and *M. thunesi* n. sp. The specimens of *M. ignobilis* (Schmitz, 1919) extended the range of variation recorded in this species and embraced *M. sororpusilla* Disney, 2012, which is therefore synonymised with *M. ignobilis*. The hitherto unknown females of *M. differens* Schmitz, 1948, *M. malhamensis* Disney, 1986, *M. pectorella* Schmitz, 1929 and *M. robertsoni* Disney, 2008 are described. A key to the females of a further 16 species is provided for species that cannot be named until associated with their males.

Key words: Diptera, Phoridae, new species, *Megaselia*, *M. aliusmyia*, *M. alphamyia*, *M. chimyia*, *M. deltamyia*, *M. etamyia*, *M. geiri*, *M. karli*, *M. lambdamyia*, *M. numyia*, *M. omicronmyia*, *M. rhomyia*, *M. solii*, *M. thunesi*, oak canopies, Norway.

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Introduction

In 2011 and 2012 the Norwegian Forest and Landscape Institute sponsored the sampling of the canopies of oak trees (*Quercus robur* L.) by team led by Karl H. Thunes and Geir Söli. An account of the project is given by Thunes (2012), who details and illustrates the fogging procedure employed. The scuttle flies (Diptera, Phoridae) were sent to the author for identification.

193 specimens of Phoridae were obtained, of which 153 (79.3%) belonged to the huge genus *Megaselia* Rondani, 1856.

Material and methods

The specimens were preserved in 70% ethanol and mounted on slides in Berlese Fluid (Disney

2001). Many specimens had been variably damaged during the sorting of the samples into families. Indeed, in a few samples most specimens were badly damaged. This is reflected in the descriptions of new species with respect to what is illustrated with figures and what in words only. The illustration of the male hypopygia has sometimes required a number of photos at different focal planes. The Extended Depth of Focus system used combines several focal planes into a single image but not as many as are needed to cover the whole of these complex three-dimensional structures.

The specimens including all the type specimens are deposited in the University of Cambridge Museum of Zoology (UCMZ). The codes on the slide labels (e.g. 39–68) refer to notebook 39 page 68.

Results

The species obtained are listed below. Females of *Megaselia* (Rondani, 1856) given code numbers remain unidentified. This is because they are either new species that need to be linked to their males or they are the hitherto undescribed, or poorly described, females of known species. Previously known species that appear to be new records for Norway are marked with an asterisk (*). The brief notes on known larval habits are documented elsewhere (Disney 1994).

The parts illustrated are partly of significant features and partly, in the case of damaged specimens, other features that may help with recognition.

* *Borophaga agilis* (Meigen, 1830)

Material: 1♀, Telemark, Drangedal, Steinknapp, UTM 32 E5127595, N6545995, 2.VII.2011, canopy of oak tree 11 (UCZM, 39–68).

* *Megaselia albiclava* (Schmitz, 1926)

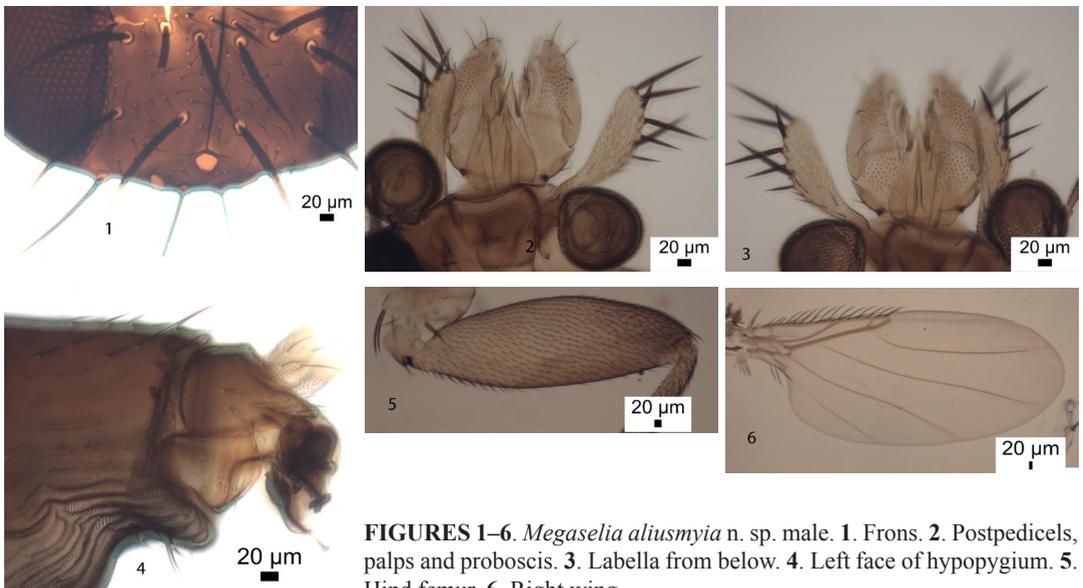
Material: 1♂, Telemark, Drangedal, Steinknapp, UTM32 E501835, N6548612, 2.VII.2011, canopy of oak tree 10 (UCZM, 39–71); 1♂, Drangedal, Henseide, Djupedal, UTM 32

E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–71).

Megaselia aliusmyia sp. n. (Figures 1–6)

In the key to the *Megaselia* males of the British Isles (Disney 1989) this species runs to couplets 218 and 219. The vestigial hypandrial lobes rule out 3 of the options. *M. abernethae* Disney, 1988 differs in having SPS vesicles (subcutaneous pit sensillae) in the postpedicels, lacking a hair at base of vein 3 and in having brown hind femora. The hypopygium of *M. sylvatica* (Wood, 1910) is clearly different. Several Palaearctic species not recorded from the British Isles will run to these couplets. The presence of hypandrial lobes and/or SPS vesicles and/or brown hind femora exclude the new species.

Male. Frons as Figure 1 with dense but very fine microtrichia. Cheek with 2 bristles and jowl with two that are longer and more robust. Postpedicels as Figure 2 and without subcutaneous pit sensilla (SPS) vesicles. Palps and proboscis as Figure 2. Labella with numerous short spinules below (Figure 3). Thorax brown. Two notopleural bristles and no cleft in front of these. Mesopleuron bare. Scutellum with an anterior pair of small hairs and a posterior pair of bristles. Abdominal tergites brown with hairs longest at rear of T6 (Figure 4).



FIGURES 1–6. *Megaselia aliusmyia* n. sp. male. 1. Frons. 2. Postpedicels, palps and proboscis. 3. Labella from below. 4. Left face of hypopygium. 5. Hind femur. 6. Right wing.

Venter brown, and with hairs on segments 3-6, being longest at rear of 6 (Figure 4). Hypopygium as Figure 4, the right side of the hypandrium being shorter than that of the left. Apart from brown coxae and tip of hind femora, legs dusky yellow to yellow. Fore tarsus with posterodorsal hair palisade on segments 1-4 and 5 slightly longer than 4. Dorsal hair palisade of mid tibia extends about 0.7 times its length. Hairs below basal half of hind femur (Figure 5) longer than those of anteroventral row of outer half. Hind tibia with 11 differentiated posterodorsal hairs, but first 3-4 fine, and spinules of apical combs simple. Wings (Figure 6) 1.8-1.9 mm long. Costal index 0.45. Costal ratios 4.9-5.0 : 2.8 : 1. Costal cilia (of section 3) 0.12-0.13 mm long. Hair at base of vein 3 small. With 3 axillary bristles, the outer being 0.13 mm long. Sc not reaching R1. Haltere knob yellow.

Material examined. Holotype male, Norway, Telemark, Drangedal, Steinknapp, UTM32 E501835, N6548612, 29.VI.2011, canopy of oak tree 9 (UCZM, 39-75).

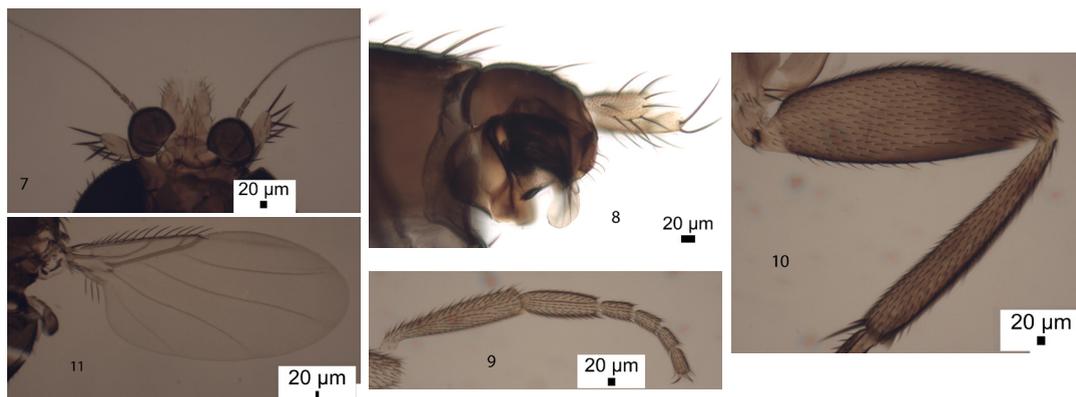
Etymology. The name is from the Latin for another and the Greek for a fly.

***Megaselia alphamyia* sp. n.** (Figures 7-17)

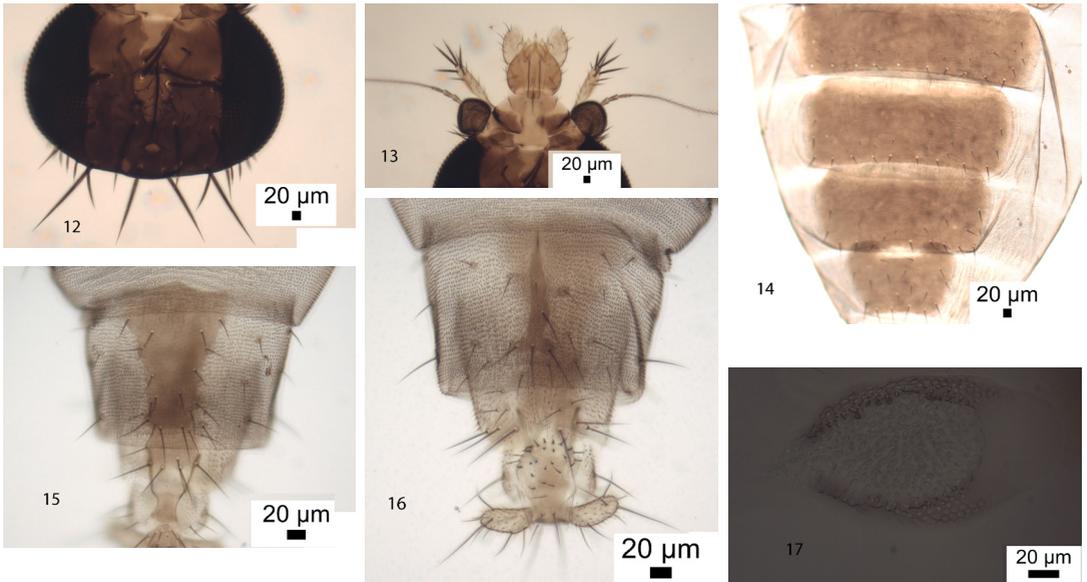
In the key to the *Megaselia* males of the British Isles (Disney 1989) this species runs to couplet 126, but differs from the two species of this couplet in lacking hairs on segments 3 and 4 of the abdominal venter and the details of the hypopygium, in particular the extended pale tip to the right paraphysis. In the key of Schmitz &

Beyer (1965) for Abteilung IV Zweite Reihe, the male runs to the couplets 46, 47 and 53 on page 523. The details of the hypopygium and lack of hairs on segments 3 and 4 of the venter exclude the species of these couplets. Likewise with specimens with the costal index less than 0.44 that run down in the key to Abteilung V (Schmitz & Delage 1974) to couplet 19, but its hypopygium is clearly different from the two species of this couplet.

Male. Frons similar to Figure 12, with dense but very fine microtrichia. Cheek with 4 bristles and jowl with two that are longer and more robust. Postpedicels, which lack SPS vesicles, palps and proboscis as Figure 7. Labella with only a few short spinules below. Thorax brown. Three notopleural bristles and no cleft in front of these. Mesopleuron with 13-16 hairs. Scutellum with an anterior pair of small hairs and a posterior pair of bristles. Abdominal tergites brown with hairs longest at rear of T6 (Figure 8). Venter grayish brown, and with hairs restricted to segments 5 and 6. Hypopygium as Figure 8, the hypandrial lobes being vestigial. Legs with brown mid coxae, lighter brown mid and hind femora and the rest to yellowish brown to yellow. Fore tarsus with posterodorsal hair palisade on segments 1-5 and as Figure 9. Dorsal hair palisade of mid tibia extends about two thirds of its length. Hairs below basal half of hind femur just shorter than longest hairs of anteroventral row of outer half (Figure 10). Hind tibia with dozen differentiated posterodorsal hairs and spinules of apical combs



FIGURES 7-11. *Megaselia alphamyia* n. sp. male. 7. postpedicels, palps and proboscis. 8. Left face of hypopygium; 9. Front tarsus. 10. Hind femur and tibia. 11. Right wing and haltere.



FIGURES 12–17. *Megaselia alphamyia* female. **12.** Frons. **13.** Postpedicels, palps and proboscis. **14.** Abdominal tergites 4–6. **15.** Tergite 7. **16.** Sternite 7 to tip of abdomen. **17.** Dufour's crop mechanism (anterior end to left).

simple. Wings (Figure 11) 1.7 mm long. Costal index 0.46–0.47. Costal ratios 3.8–3.9 : 2.2 : 1. Costal cilia (of section 3) 0.12 mm long. Hair at base of vein 3 small. With 3 axillary bristles, the outer being 0.14 mm long. Sc not reaching R1. Haltere as Figure 11.

Female. Frons as Figure 12. Postpedicels, palps and proboscis as Figure 13. Thorax as male, but 8–12 hairs on mesopleuron. Abdominal tergites 4–6 as Figure 14. T7 as Figure 15. Venter gray, and with hairs below segments 3–6. Sternite 7 and beyond as Figure 16. Furca not evident. Dufour's crop mechanism as Figure 17. Legs similar to male. Wing as male except 1.4–1.6 mm long. Costal index 0.40–0.46. Costal ratios 3.0–3.1 : 1.2–1.5 : 1. Costal cilia 0.11–0.13 mm long. Outermost axillary bristle 0.11–0.12 mm long. Otherwise it and haltere as male.

Material examined. Holotype male, Norway, Telemark, Drangedal, Henseide, Djupedal, UTM32 E512759, N6545995, 2.VII.2011, canopy of oak tree 11 (UCZM, 39–68). Paratypes: 2 females as holotype (39–69); 1 female, Drangedal, Steinknapp, UTM32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–71).

Etymology. Named from alpha plus the Greek

for fly.

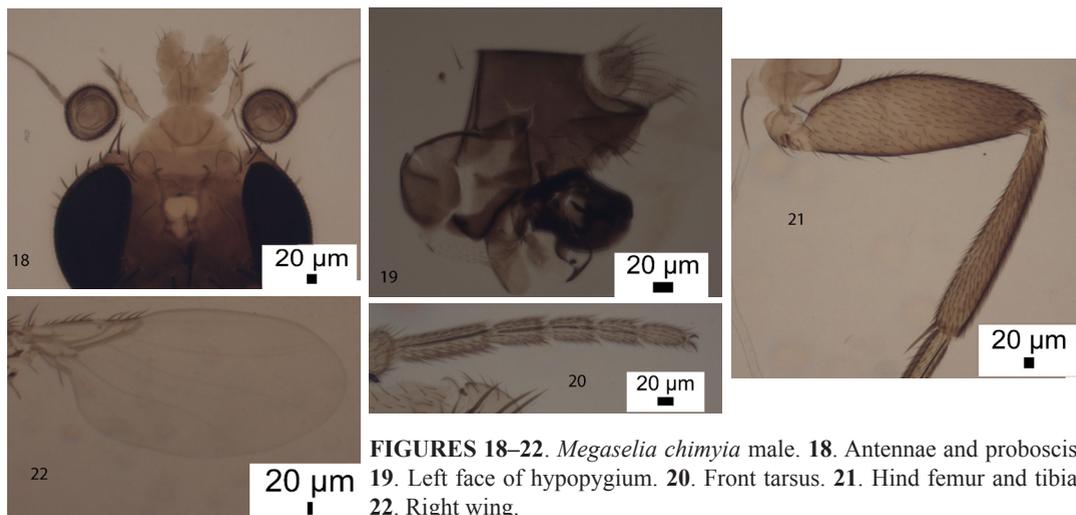
*** *Megaselia basispinata* (Lundbeck, 1920)**

Material: 1♂, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–71); 1♀, Hordaland, Kvam, Skeianeset, UTM 32, N6689699 E343529, 21.VI.2011, tree 01 (UCZM, 39–76).

***Megaselia chimyia* sp. n.** (Figures 18–22)

In the key to the *Megaselia* males of the British Isles (Disney 1989) this species runs to couplet 290, lead 1, but is immediately distinguished from *M. erecta* (Wood, 1910) by the hypopygium and the hind tibia lacking the differentiated posteroventral hairs of the hind tibia. The non British *M. miguelensis* Disney, 2007 runs to the same point, but it has long microtrichia on the left hypandrial lobe and the postpedicels have SPS vesicles.

Male. Frons brown, clearly broader than long, with 44–48 hairs and dense but very fine microtrichia. Pre-ocellars about as far apart as either is from a mediolateral bristle, which is very slightly higher on frons. Cheek with 3 bristles and jowl with two that are a little longer. Postpedicels as Figure 18 and without subcutaneous pit sensilla



FIGURES 18–22. *Megaselia chimyia* male. 18. Antennae and proboscis. 19. Left face of hypopygium. 20. Front tarsus. 21. Hind femur and tibia. 22. Right wing.

(SPS) vesicle. Palps as Figure 18. Proboscis as Figure 18, the labella with only a few short spinules below. Thorax brown. Three notopleural bristles and no cleft in front of these. Mesopleuron bare. Scutellum with an anterior pair of small hairs and a posterior pair of bristles. Abdominal tergites brown with small hairs. Venter gray, and with hairs on segments 3–6. Hypopygium as Figure 19, the right hypandrial lobe being vestigial. Apart from brown patch on mid coxa, legs brown to yellowish brown femora, paler tibiae and yellowish tarsi. Fore tarsus with posterodorsal hair palisade on segments 1–4 and as Figure 20. Dorsal hair palisade of mid tibia extends about half its length. Hind femur and tibia as Figure 21, the latter with 15–16 moderately differentiated posterodorsal hairs and spinules of apical combs simple. Wings (Figure 22) 1.1–1.2 mm long. Costal index 0.34–0.35. Costal ratios 4.1–4.2 : 1.1 : 1. Costal cilia (of section 3) 0.06–0.07 mm long. No hair at base of vein 3. Vein Sc not reaching vein R1. The single axillary bristle 0.07 mm long. Haltere knob brown.

Material examined. Holotype male, Norway, Telemark, Drangedal, Henseide, Djupedal, UTM 32 E512759, N66545995, 2.VII.2011, canopy of oak tree 11 (UCZM, 39–68).

Etymology. Named from chi plus the Greek for fly.

* *Megaselia ciliata* (Zetterstedt, 1848)

Material: 1♂, Hordaland, Kvam, Skeianeset, UTM 32 E353997, N6699501, 14.VII.2012, tree 05 UCZM, 39–65); 1♀, same locality, UTM 32 E6348, N60405, 14.VII.2012, tree 14 UCZM, 39–66); 1♀, Telemark, Drangedal, Steinknapp, UTM 32 E5127595, N6545995, 2.VII.2011, canopy of oak tree 11 (UCZM, 39–68).

The larvae prey on slug eggs.

Megaselia conformis (Wood, 1909)

Material: 1♂, Telemark, Porsgrunn Mule Varde, N59.100, E9.700, 10.VII.2012, tree 22 (UCZM, 39–69).

Megaselia cothurnata (Schmitz, 1919)

Material: 2♂♂, Hordaland, Kvam, Skeianeset, UTM 32 E353997, N6699501, 14.VII.2012, tree 05 UCZM, 39–65); 1♂1♀, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–71); 1♀, Telemark, Drangedal, Steinknapp, UTM 32 E501835, N6548612, 29.VI.2011, canopy of oak tree 9 (UCZM, 39–75).

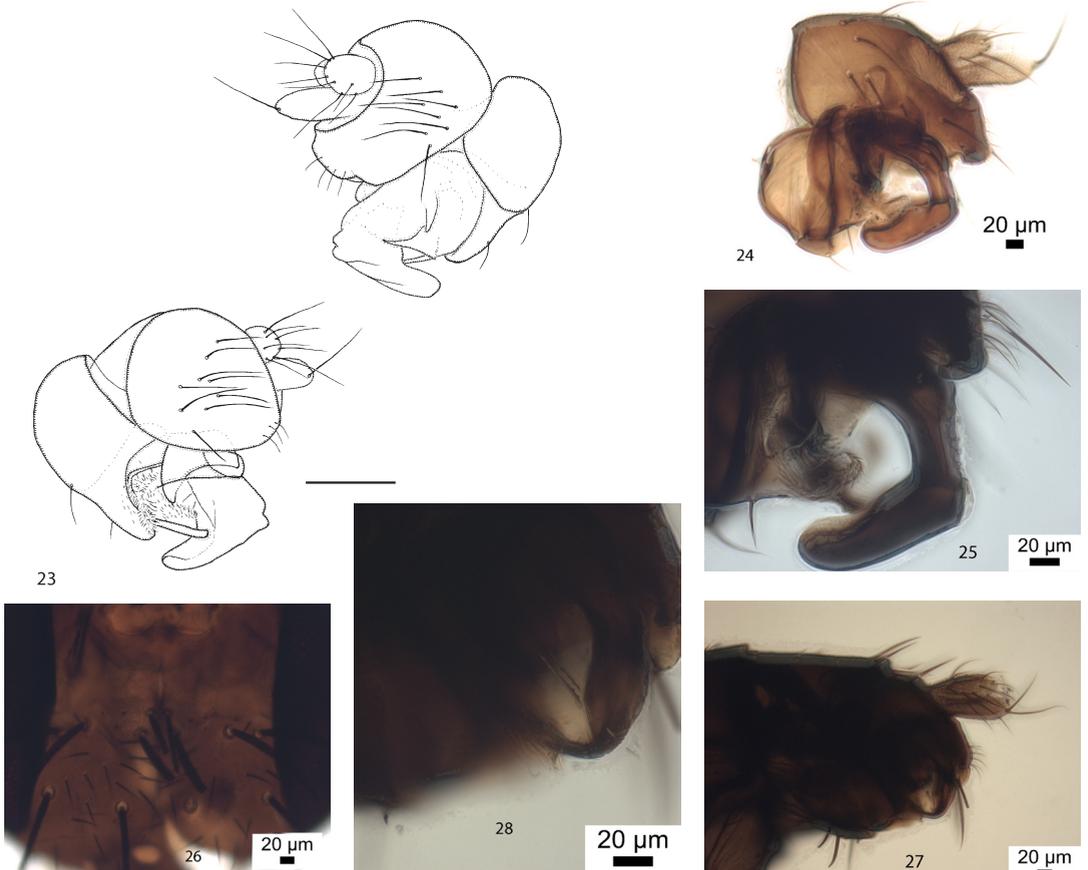
* *Megaselia crassipes* (Wood, 1909)

Material: 1♂, Norway, Telemark, Drangedal, Henseide, Djupedal, UTM 32 E512759, N6545995, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–70).

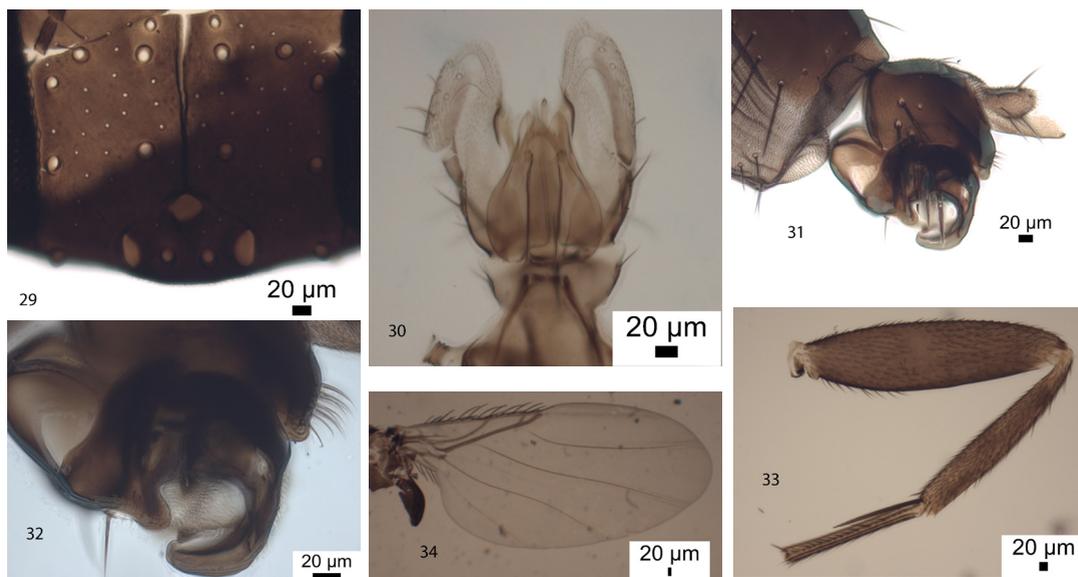
Megaselia deltamyia sp. n. (Figures 29–34)

The single specimen is badly damaged with the result that in the key to the *Megaselia* males of the British Isles (Disney 1989) at couplet 75 this species runs to couplet 76 or 87. The hypopygia of the species of these couplets immediately exclude the new species. At couplet 76 three species not recorded from the British Isles are excluded as one has a brown patch on the wing tip, one has hairs not bristles on its epandrium and the third, *M. nigripalpis* (Lundbeck, 1920), is very similar and is considered below. At couplet 87 there are 8 excluded species that will run to this point. Most have a clearly shorter costal index (<0.40), one has the wing at most 1mm long, and one has SPS vesicles in the postpedicel. Of the remaining two species *M. winqvisti* Disney, 2011 has a similar

hypopygium (Figure 23) except the bristles of the epandrium are not feathered. In addition its costal cilia are longer (0.18 mm) but the axillary bristles shorter (the outermost being only 0.13 mm long). The remaining species, *M. altezza* Brenner, 2004, along with *M. nigripalpis* (Lundbeck, 1920) most closely resemble the new species. Both differ in having the longest axillary bristle shorter than the costal cilia. The hypopygia of both resembles that of *M. deltamyia* (Figures 31 and 32). It and *M. altezza* have long hypandrial bristles. All three have a long J shaped right paraphysis, but that of *M. nigripalpis* has the curved tip narrower than that of the other two. It should be noted that Lundbeck (1922) incorrectly states that the antial bristles of *M. nigripalpis* are ‘somewhat below’



FIGURES 23–28. *Megaselia* males resembling *M. deltamyia*. **23.** *M. winqvisti* Disney, 2000 right and left faces of hypopygium (scale bar = 0.1 mm). **24.** *M. altezza* Brenner, 2004 left face of hypopygium. **25.** *M. altezza* left lobe of hypandrium and right paraphysis of penis complex. **26–28.** *M. nigripalpis* (Lundbeck, 1920) holotype; **26.** frons; **27.** left face of hypopygium; **28.** right paraphysis.



FIGURES 29–34. *Megaselia deltamyia* male. **29.** Frons. **30.** Proboscis. **31.** Left face of hypopygium. **32.** Left lobe of hypandrium and right paraphysis. **33.** Mid femur to basitarsus. **34.** right wing.

the anterolaterals. In the holotype they are as in Figure 26) in contrast to the new species (Figure 29).

In the keys of Schmitz (1958) for the species of Abteilung IV, Erste Reihe *M. deltamyia* runs to couplet 12, where one can go either way as the palps are missing. However, both routes end in species with clearly different hypopygia.

Male. Frons (Figure 29) with 50–52 hairs and dense but very fine microtrichia. Supra-antennal bristles (SAs) unequal. Cheek with 5–6 bristles and jowl with two that are longer. The subglobose postpedicels brown, without subcutaneous pit sensilla (SPS) vesicles. Palps missing. Proboscis as Figure 30, the labella with very few short spinules below. Thorax brown. Three notopleural bristles and no cleft in front of these. Mesopleuron with 12 hairs. Scutellum with an anterior pair of hairs and a posterior pair of bristles. Abdominal tergites brown with hairs that are longest on T6 (Figure 31). Venter brownish gray, and with hairs on segments 3–6. Hypopygium as Figure 31, with left lobe of hypandrium and right paraphysis as Figure 32. Legs brown with paler tarsi. The only surviving front leg with segment 5 missing, but basitarsus with rows of posteroventral hairs replaced by small spinules. Mid femur to basitarsus

as Figure 33. Hairs below basal half of hind femur only slightly longer than those of adjacent anterior face (those of anteroventral row of outer half are missing in only remaining hind leg). Hind tibia with 15–16 differentiated posterodorsal hairs and spinules of apical combs simple. Wings (Figure 34) 1.71–1.72 mm long. Costal index 0.47–0.48. Costal ratios 4.0–4.1 : 2.1–2.2 : 1. Costal cilia (of section 3) 0.10–0.11 mm long. No hair at base of vein 3. With 3–4 axillary bristles, the outer being 0.13 mm long and thus longer than costal cilia. Sc not reaching R1. Haltere brown.

Material examined. Holotype male, Norway, Telemark, Porsgrunn Mule Varde, N59.100, E9.701, 6.VII.2012, tree 20 (UCZM, 39–70).

Etymology. Named from delta plus the Greek for fly.

*** *Megaselia differens* Schmitz, 1948**

(Figures 35–44)

Two males and six females were obtained, the female being hitherto unknown. 1♂1♀, Hordaland, Kvam, Skeianeset, UTM 32, N60405, E6348, 28.VI.2012, tree 13 (UCZM, 39–65); 1F, Telemark, Porsgrunn Mule Varde, N59.100, E9.701, 6.VII.2012, tree 20 (UCZM, 39–70), 2♀♀, Drangedal, Steinknapp, UTM 32 E502184,

N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–71 & 72), 2♀♀, Telemark, Drangedal, Steinknapp, UTM 32 E501835, N6548612, 29.VI.2011, canopy of oak tree 9 (UCZM, 39–75–76); 1♂, Vestfold, Larvik Skjærersjø [N59.200, E9.922], 5.VII.2012, from canopy of oak tree 15 (UCMZ, 39–78). It is described below.

Female. Head as Figure 35, the postpedicels lacking SPS vesicles. Labella with small spinules below (Figure 36). Thorax as male. Abdominal tergite 6 as Figure 37. Tergite 7 to tip of abdomen as Figure 38. Venter gray, and with hairs below segments 3–6. Sternite 7 as Figure 39. Posterolateral lobes at rear of sternum 8 and beyond as Figure 40. A brown furca present but illdefined in shape (breadth about 20 microns).

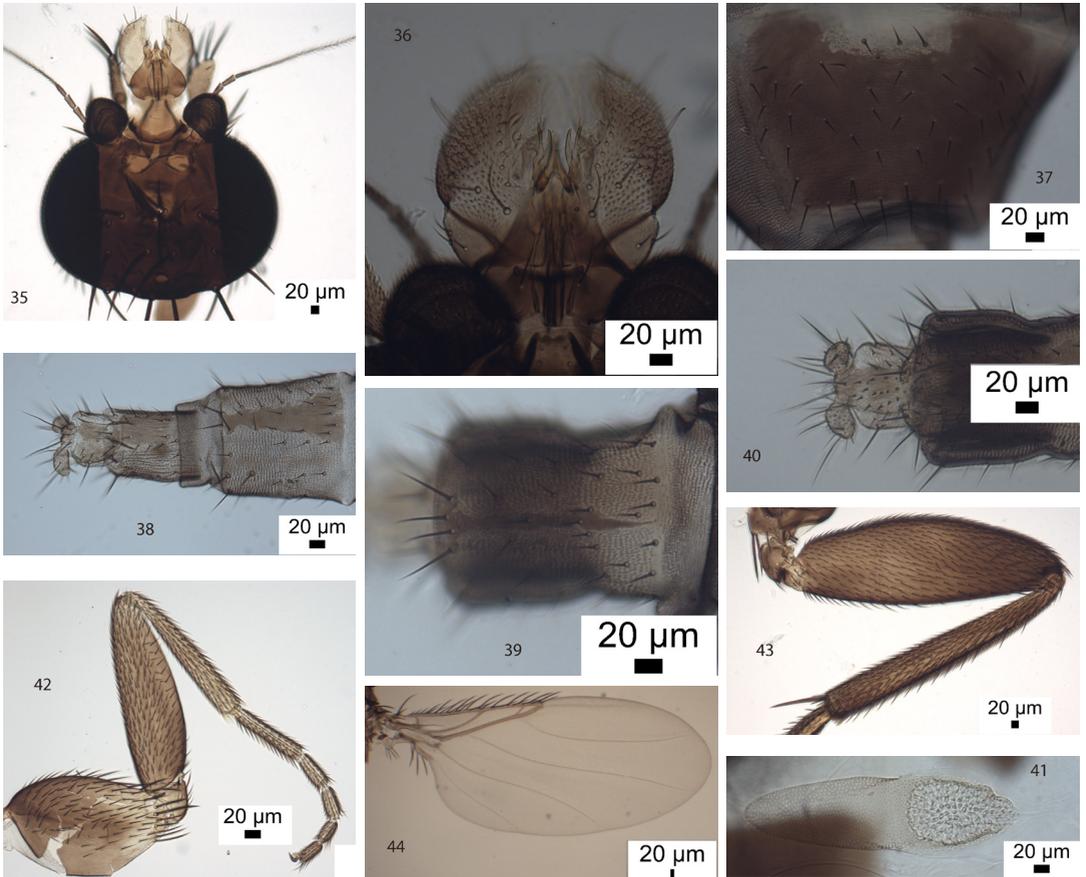
Dufour's crop mechanism as Figure 41. Legs similar to male with front leg as Figure 42 and hind femur and tibia as Figure 43. Wing as Figure 44. Haltere as male.

***Megaselia discreta* (Wood, 1909)**

Material: 2♂♂2♀♀. 1♀, Hordaland, Kvam, Skeianeset, UTM 32 E353997, N6699501, 14.VII.2012, tree 05 UCZM, 39–65); 2♂♂, Drangedal, Steinknapp, UTM32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–72 & 73); 1♀, same locality, N60405 E6348, 28.VI.2012.

Has been reared from fungus soporophores.

***Megaselia diversa* (Wood, 1909)**



FIGURES 35–44. *Megaselia differens* Schmitz, 1948 female. 35. Frontal view of head. 36. Ventral view of labella of proboscis. 37. Abdominal tergite 6. 38. Tergite 7 to tip of abdomen. 39. Sternite 7. 40. Sternite 8 to tip of abdomen. 41. Dufour's crop mechanism (anterior end to right). 42. Front leg. 43. Hind femur and tibia. 44. Right wing.

Material: 1♂, Telemark, Drangedal, Steinknapp, UTM 32 E5127595, N6545995, 2.VII.2011, canopy of oak tree 11 (UCZM, 39–68).

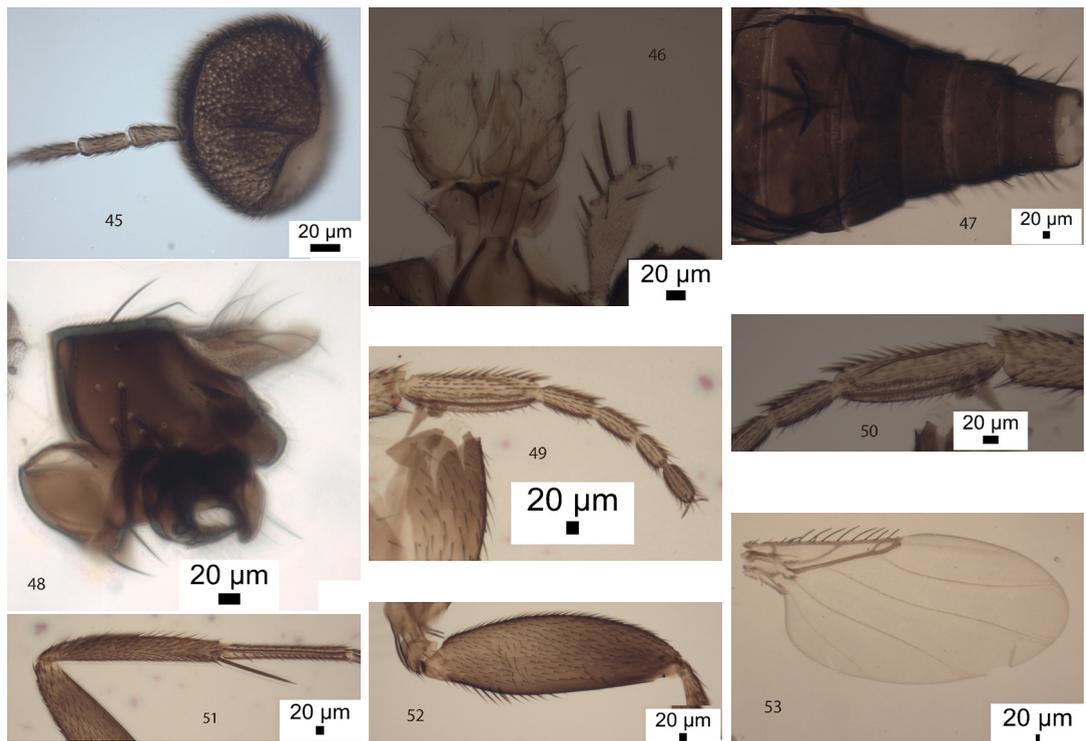
***Megaselia etamyia* sp. n.** (Figures 45–53)

In the key to the *Megaselia* males of the British Isles (Disney 1989) this species runs to couplet 48, where neither lead applies as its hypandrial lobes are vestigial. Several species not known from the British Isles will run to the same couplet along with subsequently added species. The vestigial hypandrial lobes exclude most of these. Two species with vestigial hypandrial lobes have the anal tube clearly longer than the epandrium. One species with a greatly reduced left lobe lacks the long hypandrial bristles of the new species and has only one bristle differentiated from the hairs on the left side of the epandrium.

In the key of Schmitz (1957) to Abteilung II it runs to couplets 33 and 34, but the vestigial

hypandrial lobes again excludes the new species.

Male. Frons brown, clearly broader than long, with 50–60 hairs and dense but very fine microtrichia. Supra-antennal bristles (SAs) very unequal, the lower pair being much smaller. Antials slightly lower on frons than anterolaterals and about level with upper SAs but clearly closer to ALs. Pre-ocellars about as far apart as either is from a mediolateral bristle, which is at about the same level on frons. Cheek with 7–8 bristles and jowl with two, that are longer. Postpedicels without subcutaneous pit sensilla (SPS) vesicles, and as Figure 45. Palps and proboscis as Figure 46. Labella with only a few short spinules below. Thorax brown. Three notopleural bristles and no cleft in front of these. Mesopleuron with 6 hairs and 1–2 bristles. Scutellum with an anterior pair of hairs and a posterior pair of bristles. Abdominal tergites and as Figure 47. Venter brownish gray, and with hairs on segments 3–6. Hypopygium as Figure 48. Legs mainly brown but front legs



FIGURES 45–53. *Megaselia etamyia* male. 45. Postpedicel of antenna. 46. Palp and proboscis. 47. Abdominal tergites. 48. Left face of hypopygium. 49. Front tarsus. 50. Hairs of front basitarsus modified to form small spinules. 51. Mid tibia to basitarsus. 52. Hind trochanter and femur. 53. Right wing.

with yellowish brown femora and the rest mainly yellow. Fore tarsus with posterodorsal hair palisade on segments 1–4, 5 longer than 4 (Figure 49) and basitarsus with some rows of hairs reduced to small spinules (Figure 50). Mid femur to basitarsus as Figure 51. Hairs below basal half of hind femur as Figure 52. Hind tibia with a dozen moderately differentiated posterodorsal hairs and spinules of apical combs simple. Wings (Figure 53) 1.6 mm long. Costal index 0.47–0.048. Costal ratios 3.0 : 1.8–1.9 : 1. Costal cilia (of section 3) 0.14–0.15 mm long. Hair at base of vein 3 minute (about 0.01 mm long). With 4 axillary bristles. Sc not reaching R1. Thick veins brownish gray, thin veins 4–6 pale gray and 7 very pale. Membrane pale gray (only just evident to naked eye when viewed against a white background). Haltere brown.

Material examined. Holotype male, Norway, Hordaland, Kvam, Skeianeset, UTM 32 E353997, N6699501, 14.VV.2012, tree 05 UCZM, 39–65).

Etymology. Named from eta plus the Greek for fly.

*** *Megaselia fuscovariana* Schmitz, 1933**

Material: 1♂2♀♀, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–71 & 72); 1♀, Telemark, Drangedal, Steinknapp, UTM 32 E501835, N6548612, 29.VI.2011, canopy of oak tree 9 (UCZM, 3975).

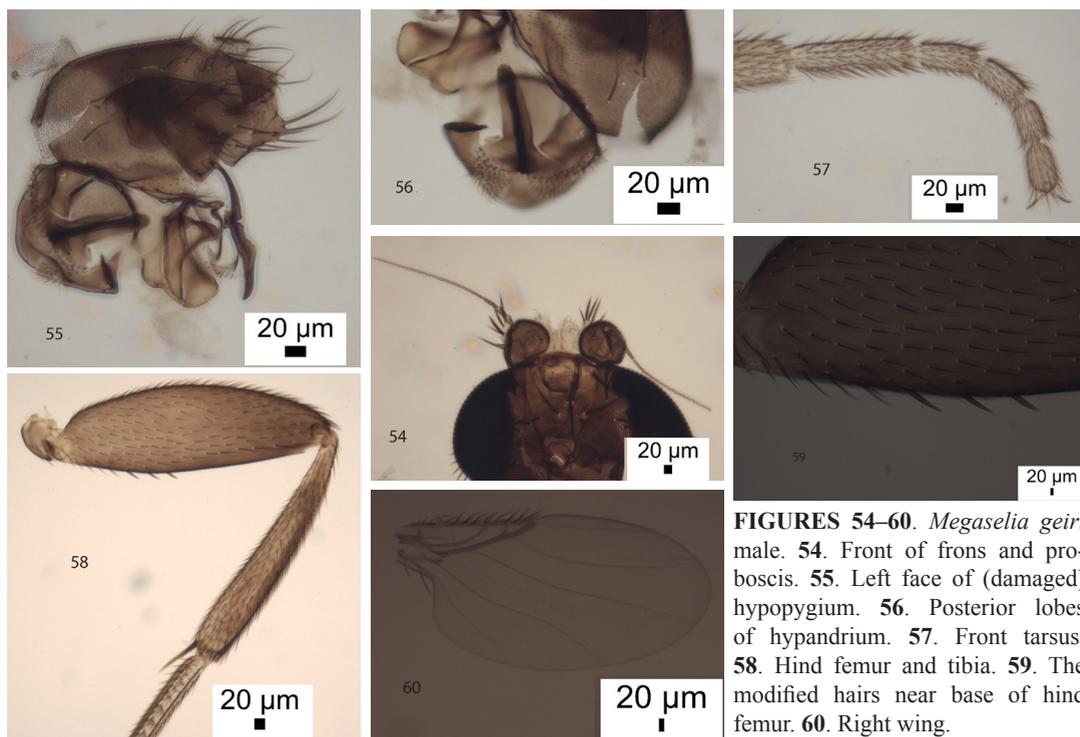
***Megaselia geiri* sp. n.** (Figures 54–60)

In the key to the *Megaselia* males of the British Isles (Disney 1989) this species runs to couplets 126 and 127 as its very short hypandrial lobes mean it could be taken either way at couplet 125. Not only does the hypopygium differ from the species of these couplets but the differentiated robust hairs below the basal half of the hind femur are distinctive. As there are only 3 hairs on the mesopleuron another specimen may have none. It would run to couplet 182 and then by a return loop to couplets 84 and 87 (covering species with few hairs mesopleuron that occasionally have none). At least 7 subsequently described Palaearctic species will run to the same couplet. Several differ in having at least the left hypandrial lobe well developed and/or having rows of hairs

on the front basitarsus reduced to small spinules. Others have the costal index less than 0.4, costal cilia more than 0.1 mm long and/or more than 2 axillary bristles on the wing. Otherwise the hairs of the hind femur differ from all these species.

In the key of Schmitz (1958) for Abteilung IV, Erste Reihe it runs to couplet 18 on page 505, but both species of this couplet are excluded by their differing hypopygia and hind femora. If, ignoring the short costal cilia, it is taken through Schmitz & Beyer's (1965) key to Abteilung IV, Zweite Reihe it runs to couplet 96 on page 525 to *M. differens* Schmitz, 1948 which has a similar but different hind femur (*loc. cit.* Textfigure 376). It, however, has a well developed left hypandrial lobe (Figure 357 in Disney 1989).

Male. Frons clearly broader than long, with 40–50 hairs and dense but very fine microtrichia. Supra-antennal bristles (SAs) almost equal (Figure 54). Pre-ocellars about as far apart than either is from a mediolateral bristle, which is at about same level on frons. Cheek with 3 bristles and jowl with 3 that are about as long. Postpedicels (Figure 54) without subcutaneous pit sensilla (SPS). Palps (Figure 54) and labrum pale yellow. Labella coloured as palps and with only a few short spinules below. Thorax brown. Three notopleural bristles and no cleft in front of these. Mesopleuron with 3 hairs. Scutellum with an anterior pair of small hairs and a posterior pair of bristles. Abdominal tergites brown with small hairs at hind margins, only a little longer on T6. Venter brownish gray, and with hairs on segments 3–6. The damaged hypopygium as Figure 55, with the reduced hypandrial lobes as Figure 56. Mid and hind legs with coxae to tibiae brown, but front coxae to femora more yellowish and the rest of all legs yellow. Fore tarsus with posterodorsal hair palisade on segments 1–4 (Figure 57). Dorsal hair palisade of mid tibia extends almost half its length. Hairs below basal half of hind femur shorter than those of anteroventral row of outer half (Figure 58), but the last 3 are distinctly more robust than the rest (Figure 59). Hind tibia with a dozen weakly differentiated posterodorsal hairs and spinules of apical combs simple. Wings (Figure 60) 1.1–1.2 mm long. Costal index 0.47. Costal ratios 2.8 : 0.9 : 1. Costal cilia (of section



FIGURES 54–60. *Megaselia geiri* male. **54.** Front of frons and proboscis. **55.** Left face of (damaged) hypopygium. **56.** Posterior lobes of hypandrium. **57.** Front tarsus. **58.** Hind femur and tibia. **59.** The modified hairs near base of hind femur. **60.** Right wing.

3) 0.07–0.08 mm long. No hair at base of vein 3. With 2 unequal axillary bristles, the outer being 0.10 mm long. Sc not reaching R1. Haltere brown.

Material examined. Holotype male, Norway, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–71).

Etymology. Named after Geir Söli.

***Megaselia giraudii* (Egger, 1862)**

Material: 1♀, Telemark, Porsgrunn Mule Varde, N59.100, E9.700, 6.VII.2012, tree 19 (UCZM, 39–67); 1♂1♀, Telemark, Porsgrunn Mule Varde, N59.100, E9.700, 10.VII.2012, tree 22 (UCZM, 39–69); 1♂1♀, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–71 & 72).

Larvae feed on a range of decaying organic materials.

*** *Megaselia gregaria* (Wood, 1910)**

Material: 2♂♂, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of

oak tree 10 (UCZM, 39–72 & 74).

*** *Megaselia hirticrus* (Schmitz, 1918)**

Material: 1♂, Telemark, Porsgrunn Mule Varde, N59.100, E9.700, 10.VII.2012, tree 22 (UCZM, 39–69); 1♂, same locality, N59.101, E9.701, 10.VII.2012, tree 21 (UCZM, 39–74); 1♂, same locality, N59.100, E9.701, 6.VII.2012, tree 20 (UCZM, 39–70); 1♂, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–72); 1♂, Vestfold, Larvik Skjaersjø [N59.200, E9.922], 5.VII.2012, from canopy of oak tree 15 (UCMZ, 39–78).

*** *Megaselia hortensis* (Wood, 1909)**

Material: 1♂, Telemark, Porsgrunn Mule Varde, N59.100, E9.700, 10.VII.2012, tree 22 (UCZM, 39–69).

*** *Megaselia ignobilis* (Schmitz, 1919)**

Material: 1♀, Hordaland, Kvam, Skeianeset, UTM 32 E6348, N60405, 14.VII.2012, tree 14 UCZM, 39–66); 1♂, same locality, UTM 32 E353982, N6699489, 14.VII.2012, tree 06

UCZM, 39–77); 1♀, Telemark, Porsgrunn Mule Varde, N59.100, E9.700, 6.VII.2012, tree 19 (UCZM, 39–67); 1♂1♀, Telemark, Drangedal, Steinknapp, UTM 32 E5127595, N6545995, 2.VII.2011, canopy of oak tree 11 (UCZM, 39–68); 6♂♂2♀♀, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–72 & 73); 6♂♂, Telemark, Drangedal, Steinknapp, UTM 32 E501835, N6548612, 29.VI.2011, canopy of oak tree 9 (UCZM, 39–75–76).

***Megaselia ignobilis* (Schmitz, 1919)**

(Figures 61–65)

Aphiochaeta ignobilis Schmitz ,1919: 143 (male). Disney, 2010: 260 (female).

Megaselia sororpusilla Disney, 2012: 139 (male). **Syn. nov.**

This species belongs to a complex of very similar species. Furthermore the procurement of many more specimens from England, France and in this study show that this species has proved to be the most variable member of this complex. Thus the hairs of the epandrium, especially those on the lower edge of the pale posteroventral lobe of the right side, vary in their robustness. With some specimens they are only as fine as the hairs of the proctiger while with others they are clearly more robust. Furthermore the size of the lobe varies and the shape of its convex tip (Figures

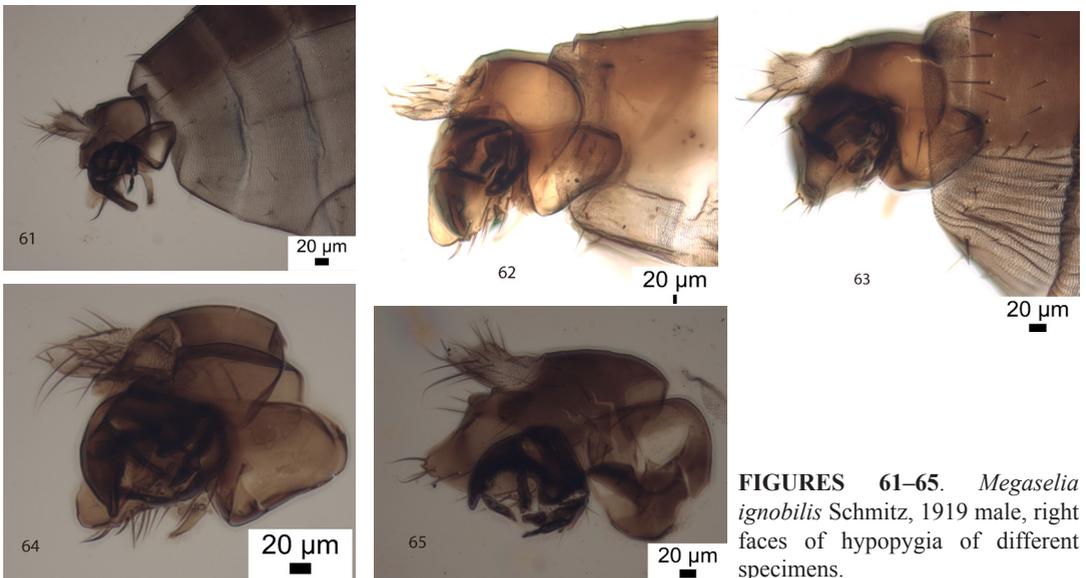
61–65). This variation is probably due to the lobe being essentially unsclerotised. The number of hairs on the mesopleuron of males varies from 0 to 10 (mean 4.5, mode 4, n = 77), and with some specimens having one or more hairs on one side and none on the other. Likewise the thin veins of the wing vary from being readily observed at low magnifications to being pale with vein 7 being obscure. These variations have served to bridge the gap between typical *M. ignobilis* and *M. sororpusilla*. It is concluded that the latter is merely at one extreme of the range of variation and is therefore herewith synonymised with *M. ignobilis*.

*** *Megaselia immodensior* Disney, 2000**

Material: 1♂, Hordaland, Kvam, Skeianeset, UTM 32, N66689216, E343355, 23.VI.2011, tree 03 (UCZM, 39–66).

*** *Megaselia insons* (Lundbeck,1920)**

Material: Vestfold, Larvik Skjærsvjø [N59.200, E9.922], 3.VII.2012, from canopy of oak tree 16 (UCMZ, 39–64); 1♂, same locality, 5.VII.2012, from canopy of oak tree 15 (UCMZ, 39–78), 2♂♂, Telemark, Drangedal, Steinknapp, UTM 32 E501835, N6548612, 29.VI.2011, canopy of oak tree 9 (UCZM, 39–75–76).



FIGURES 61–65. *Megaselia ignobilis* Schmitz, 1919 male, right faces of hypopygia of different specimens.

*** *Megaselia intercostata* (Lundbeck, 1921)**

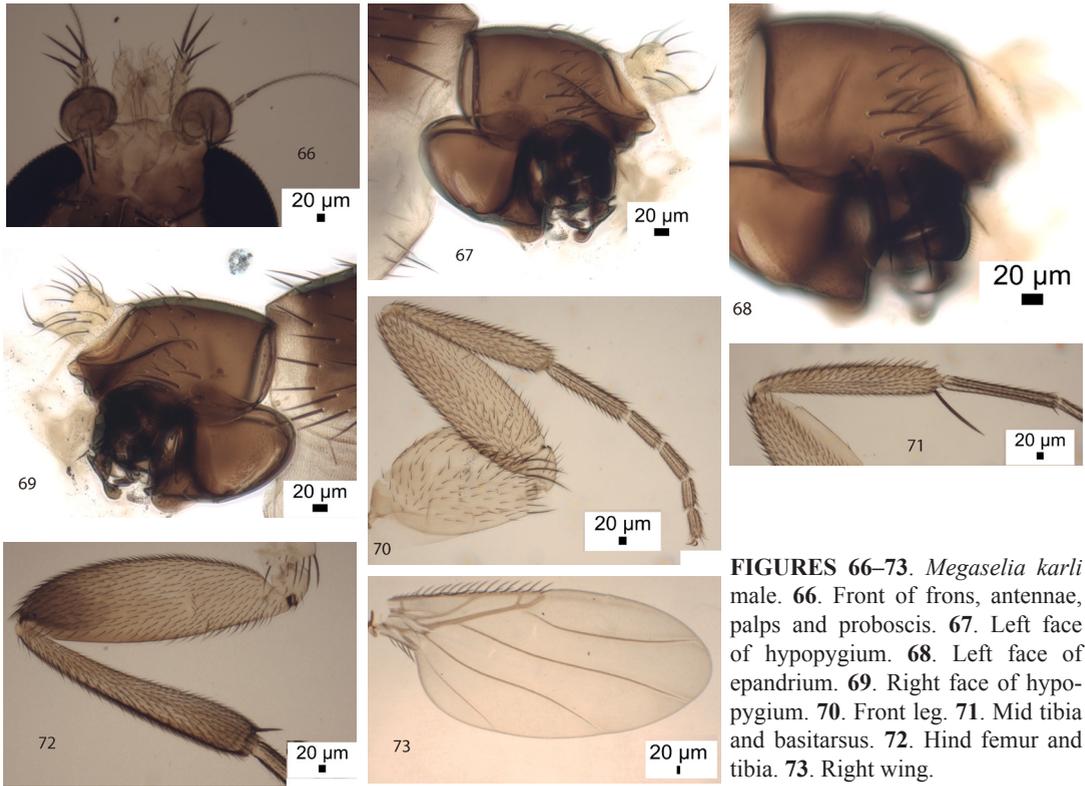
Material: 3♂♂, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–71 & 74); 1♂, Vestfold, Larvik Skjærstjø [N59.200, E9.922], 3.VII. 2012, tree 15 (UCMZ, 39–78).

***Megaselia karli* sp. n.** (Figures 66–73)

In the key to the *Megaselia* males of the British Isles (Disney 1989) this species runs to couplet 232 where one is returned to couplet 171, or via a footnote to couplet 254. The first option sends one back to couplet 232 by an alternative route. The hypopygium rules out both options of couplet 254. Of species not recorded from the British Isles or subsequently described, two have entirely brown hind femora, as opposed to yellow with a brown tip, and two have at most only one longer hair on the epandrium.

The female species 20 (see below) may be the female of this species.

Male. Frons clearly broader than long, with 50–52 hairs and dense but very fine microtrichia. Supra-antennal bristles (SAs) unequal (Figure 66). Pre-ocellars slightly further apart than either is from a mediolateral bristle, which is very slightly higher on frons. Cheek with 3 bristles and jowl with two that are longer. Postpedicels (Figure 66), without subcutaneous pit sensilla (SPS) vesicles. Palps and proboscis as Figure 66. Labella with only a few short spinules below. Thorax with 3 notopleural bristles and no cleft in front of these. Mesopleuron bare. Scutellum with an anterior pair of small hairs and a posterior pair of bristles. Abdominal tergites brown with well developed hairs (Figure 69). Venter brownish gray but not dark, and with fine hairs on segments 3–6. Hypopygium as Figures 67–69. Apart from brown patch on mid coxa and tip of hind femur, legs yellow. Fore tarsus with posterodorsal hair palisade on segments 1–5 (Figure 70). Dorsal hair palisade of mid tibia as Figure 71. Hind femur and tibia as Figure 72. Hind tibia with 18–20 only



FIGURES 66–73. *Megaselia karli* male. 66. Front of frons, antennae, palps and proboscis. 67. Left face of hypopygium. 68. Left face of epandrium. 69. Right face of hypopygium. 70. Front leg. 71. Mid tibia and basitarsus. 72. Hind femur and tibia. 73. Right wing.

moderately differentiated posterodorsal hairs and spinules of apical combs simple. Wings (Figure 73) 1.9 mm long. Costal index 0.51. Costal ratios 3.1–3.2 : 1.8–1.9 : 1. Costal cilia (of section 3) 0.11 mm long. Hair at base of vein 3 minute (0.01 mm long) on one wing and absent from the other. With 4 axillary bristles, the outer being 0.11–0.12 mm long. Sc just reaching R1. Haltere knob pale brown.

Material examined. Holotype male, Norway, Telemark, Drangedal, Henseide, Djupedal, UTM 32 E512759, N6545995, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–70).

Etymology. Named after Karl Thunes.

*** *Megaselia kozlovi* Disney, 2013**

Material: 1♂, Telemark, Drangedal, Steinknapp, UTM 32 E5127595, N6545995, 2.VII.2011, canopy of oak tree 11 (UCZM, 39–68); 1♀, Telemark, Porsgrunn Mule Varde,

N59.100, E9.700, 10.VII.2012, tree 22 (UCZM, 39–69).

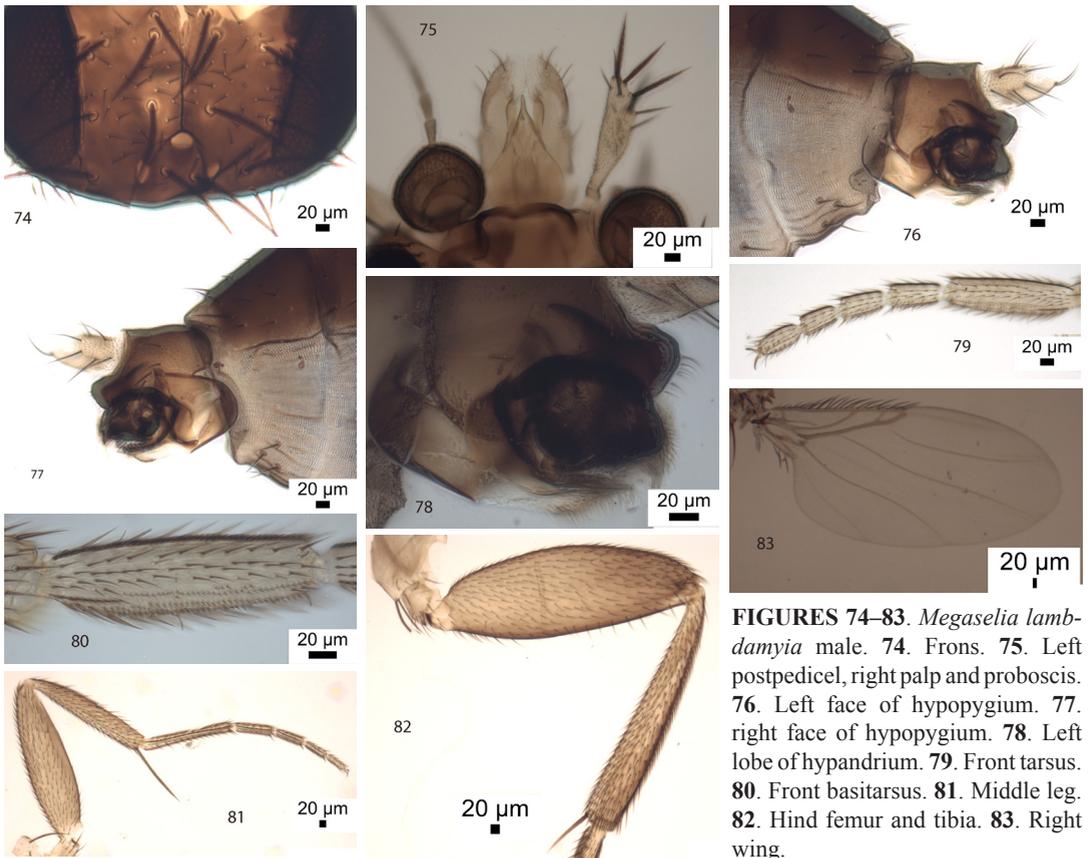
***Megaselia lata* (Wood, 1910)**

Material: 1♂, Hordaland, Kvam, Skeianeset, UTM 32 E353997, N6699501, 14.VV.2012, tree 05 UCZM, 39–65).

Has been reared from fungus sporophores.

***Megaselia lambdomyia* sp. n.** (Figures 74–83)

In the key to the *Megaselia* males of the British Isles (Disney 1989) this species runs to couplets 80 and 81, but its hypopygium rules out the species of these couplets. Three species not known from the British Isles and one only added subsequently run to the same couplets. One has yellow haltere knobs as opposed to brown. Two have the anal tube clearly longer than the dorsal midline length of the epandrium. The fourth has the hairs below the basal half of the hind femur



FIGURES 74–83. *Megaselia lambdomyia* male. 74. Frons. 75. Left postpedicel, right palp and proboscis. 76. Left face of hypopygium. 77. right face of hypopygium. 78. Left lobe of hypandrium. 79. Front tarsus. 80. Front basitarsus. 81. Middle leg. 82. Hind femur and tibia. 83. Right wing.

clearly shorter than those of the anteroventral row of the outer half and the hairs at the rear of abdominal tergite 6 clearly longer than those on the epandrium.

In the keys to Palaearctic species of Abteilung IV, Zwete Reihe (Schmitz & Beyer 1965) it runs to couplet 97. However, the species are either excluded as they are covered by the comments above or else, apart from their different hypopygia, they have longer costal cilia, costal indexes and/or longer, more crowded hairs below the basal half of the hind femur.

Male. Frons as Figure 74, with dense but very fine microtrichia. Cheek with 5 bristles and jowl with two that are longer. Postpedicels as Figure 75, without subcutaneous pit sensilla (SPS) vesicles. Palps as Figure 75. Labella as Figure 75, with very few short spinules below. Thorax with 3 notopleural bristles and no cleft in front of these. Mesopleuron with 7–11 hairs. Scutellum with an anterior pair of hairs and a posterior pair of bristles. Abdominal tergites brown with moderate hairs, longest at rear of T6 hairs (Figures 76 & 77). Venter gray (Figures 66 & 67), and with hairs on segments 3–6. Hypopygium as Figures 76 & 77, the left lobe of the hypandrium as Figure 78. Apart from brown patch on mid coxa, legs with light brown hind femora and tibiae and progressively paler mid femora to front femora more yellowish brown and the tibiae and tarsi mainly yellow. Fore tarsus with posterodorsal hair palisade on segments 1–5 and as Figure 79, the basitarsus having rows of posteroventral hairs reduced to small spinules (Figure 80). Middle legs as Figure 81. Hind femur and tibia as Figure 82. Hind tibia with a dozen moderately differentiated posterodorsal hairs and spinules of apical combs simple. Wings (Figure 83) and 1.4–1.6 mm long. Costal index 0.44–0.46. Costal ratios 3.3–4.7 : 1.4–2.2 : 1. Costal cilia (of section 3) 0.09–0.11 mm long. Hair at base of vein 3 minute. With 2–3 axillary bristles, the outer being 0.10–0.11 mm long. Sc almost reaching R1. Haltere brown.

Material examined. Holotype male, Norway, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–72). Paratype as holotype (39–71).

Etymology. Named from lambda plus the

Greek for fly.

***Megaselia longicostalis* (Wood, 1912)**

Material: 1♂, Vestfold, Larvik Skjærsgjø [N59.200, E9.922], 3.VII.2012, from canopy of oak tree 16 (UCMZ, 39–64).

Has been reared from a variety of decaying organisms.

*** *Megaselia longifurca* (Lundbeck, 1921)**

Material: 1♂, Hordaland, Kvam, Skeianeset, UTM 32 E6348, N60405, 14.VII.2012, tree 14 UCZM, 39–66).

Larvae are predators of spider eggs.

***Megaselia lutea* (Meigen, 1830)**

Material: 1♂, Telemark, Drangedal, Steinknapp, UTM 32 E501835, N6548612, 29.VI.2011, canopy of oak tree 9 (UCZM, 39–75).

Has been reared from fungus sporophores.

*** *Megaselia malhamensis* Disney, 1986**

(Figures 84–94)

Megaselia malhamensis Disney, 1986: 116 (male).

Megaselia sp. 2, Buck & Disney, 2001: 124 (female).

Material: 1♂, Hordaland, Kvam, Skeianeset, UTM 32 E6348, N60405, 14.VII.2012, tree 14 UCZM, 39–67); 4♂♂2♀♀, Drangedal, Steinknapp, UTM 32 E512725, N6546030, 29.VII.2011, canopy of oak tree 10 (UCZM, 39–71–73); 1♂, Drangedal, Henseide, Djupedal, UTM 32 E502184, N6548580, 2.VII.2011, canopy of oak tree 12 (UCZM, 39–77).

This species belongs to a complex of similar species revised by Buck & Disney (2001). The hitherto unknown female proves to be the *Megaselia* sp. 2 of their revision, but described from two females from Germany before the males of this species had been recorded from Germany. Figures 84–94 augment the description of the female.

*** *Megaselia mixta* (Schmitz, 1918)**

Material: 1♂, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–71).

Has been reared from fungus sporophores.

*** *Megaselia nigrescens* (Wood, 1910)**



FIGURES 84–94. *Megaselia malhamensis* Disney, 1986 female. **84.** Postpedicel, palps and proboscis. **85.** Postpedicel showing SPS vesicles. **86.** Labella ventral focus. **87.** Scutellum. **88.** Abdominal tergites 4–6. **89.** Tergite 7. **90.** Sternite 7. **91.** Furca. **92.** Front tarsus. **93.** Hind femur and tibia. **94.** Right wing.

Material: 1♂, Telemark, Porsgrunn Mule Varde, N59.100, E9.700, 10.VII.2012, tree 22 (UCZM, 39–69).

Has been reared from fungus sporophores.

***Megaselia nigriceps* (Loew, 1866)**

Material: 1♀, Hordaland, Kvam, Skeianeset, UTM 32 E6348, N60405, 14.VII.2012, tree 14 UCZM, 39–66); 1♀, Vestfold, Larvik Skjærsjø [N59.200, E9.922], 3.VII.2012, from canopy of oak tree 16 (UCMZ, 39–64); 1♂, same locality, 3.VII. 2012, tree 15 (UCMZ, 39–78); 1♂, Telemark, Drangedal, Henseide, Djupedal, UTM

32 E512759, N6545995, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–70).

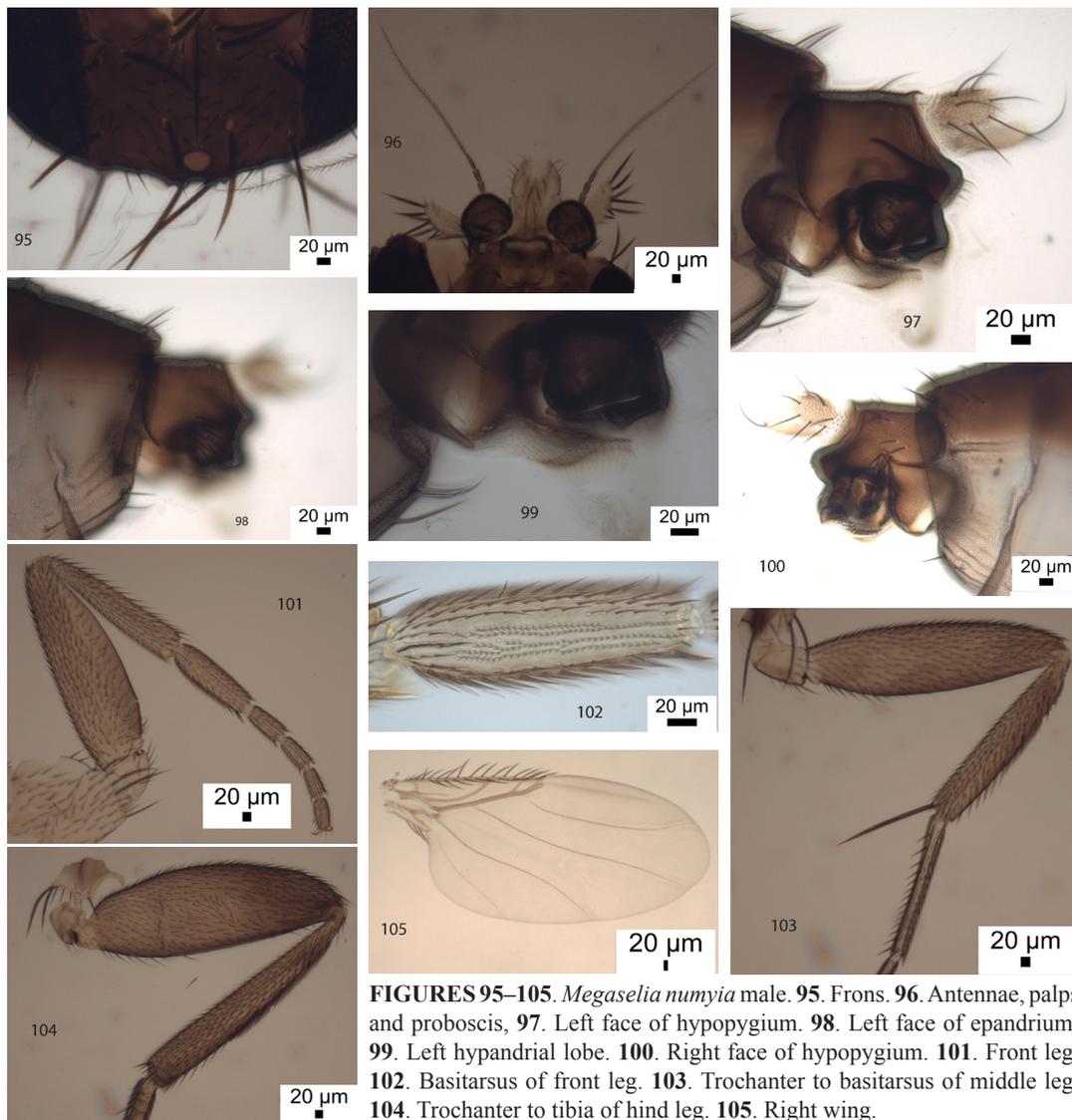
Has been reared from dead insects.

***Megaselia numyia* sp. n.** (Figures 95–105)

In the key to the *Megaselia* males of the British Isles (Disney 1989) this species runs to couplets 76, lead 2 and 81, lead 2. In both cases the hypopygia differ. Two species not covered by this key, run to these couplets (one of which was only subsequently recorded from the British isles). One is readily distinguished by a brown patch on

its wing and the other by its long anal tube with more than 10 hairs on each cercus.

Because the costal index is 0.41 in one specimen and 0.44 in the other this species needs running down in the keys to Abteilung IV, Zwete Reihe (Schmitz & Beyer 1965) and Abteilung V (Schmitz & Delage, 1974). In Zweite Reihe it runs to couplets 53 or 90. In the first option its hypopygium excludes the species of these couplets. In Abteilung V it readily keys to couplet 31 and then to couplets 32 or 36, but the hypopygium differs from the species of these



FIGURES 95–105. *Megaselia numyia* male. **95.** Frons. **96.** Antennae, palps and proboscis, **97.** Left face of hypopygium. **98.** Left face of epandrium; **99.** Left hypandrial lobe. **100.** Right face of hypopygium. **101.** Front leg. **102.** Basitarsus of front leg. **103.** Trochanter to basitarsus of middle leg. **104.** Trochanter to tibia of hind leg. **105.** Right wing.

options apart from differing in other details of the legs, etc.

Male. Frons as Figure 95, with dense but very fine microtrichia. Cheek with 3 bristles and jowl with 2 that are longer. Antennae as Figure 96, the postpedicels without subcutaneous pit sensilla (SPS) vesicles. Palps and proboscis as Figure 96. Labella with very few short spinules below. Thorax brown. Three notopleural bristles and no cleft in front of these. Mesopleuron with 9–14 hairs. Scutellum with an anterior pair of small hairs and a posterior pair of bristles. Abdominal tergites brown with small hairs, being longest at rear of T6 (Figure 90). Venter gray, and with hairs on segments 3–6. Hypopygium with a pale left hypandrial lobe but the right lobe is vestigial (Figures 97–100). Apart from brown patch on mid coxa, legs with brown femora and tibiae but increasingly yellowish from mid and front legs and tarsi yellow. Fore tarsus with posterodorsal hair palisade on segments 1–5 and as Figure 101, the basitarsus with some rows of hairs modified as small spinules (Figure 102). Trochanter to basitarsus of middle leg as Figure 103. Trochanter to tibia of hind leg as Figure 104. Hind tibia with 15–17 moderately differentiated posterodorsal hairs and spinules of apical combs simple. Wings (Figure 105) 1.5–1.6 mm long. Costal index 0.41–0.46. Costal ratios 3.6–5.7 : 1.5–2.7 : 1. Costal cilia (of section 3) 0.12–0.13 mm long. Hair at base of vein 3 minute. With 3 axillary bristles, the outer being 0.12–0.13 mm long. Haltere brown.

Material examined. Holotype male, Norway, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–75). Paratype male as holotype.

Etymology. Named from nu plus the Greek for fly.

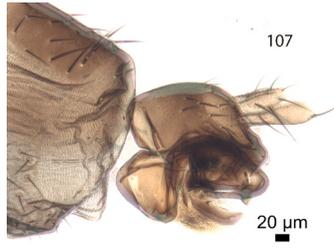
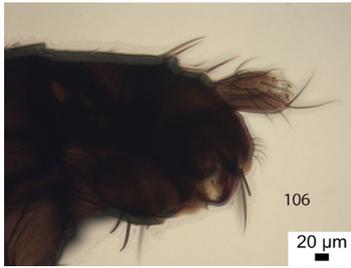
***Megaselia omicronmyia* sp. n.** (Figures 106–113)

In the key to the *Megaselia* males of the British Isles (Disney 1989) this species runs to couplet 76, but differs from *M. subcarpalis* (Lundbeck, 1920) in having a moderately developed left hypandrial lobe instead of both lobes being vestigial and the hairs of the epandrium being only about as strong as those on cerci instead of being clearly thicker. The lobe is larger in *M. intercostata* (Lundbeck, 1921)

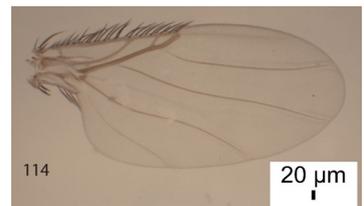
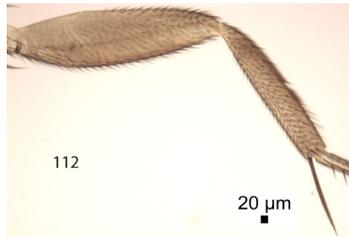
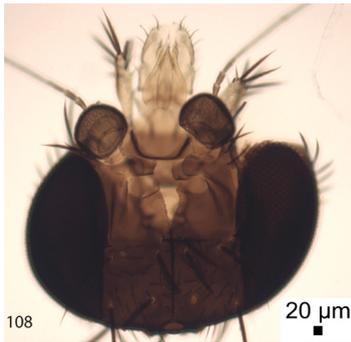
in which the anal tube is longer and the cerci have more numerous hairs (Figure 2 in Disney 1995). Of species not recorded from the British Isles but running to this couplet, *M. chorogi* Naumov, 1979 has a brown patch on the wing tip. *M. nigripalpis* (Lundbeck, 1920) has much stronger bristly hairs on the epandrium (Figure 106).

In the keys to Palaearctic species of Abteilung IV, Zwete Reihe (Schmitz & Beyer 1965) it runs to the triplet 53 or couplet 97. At triplet 53 *M. incontaminata* (Schmitz, 1926) clearly has a different hypopygium and *M. subcarpalis* is distinguished above; but the hypopygium of *M. unicolor* (Schmitz, 1919) is similar (Figure 320 in Disney 1989). However, the latter has the fifth segment of the front tarsus broader than segment 4, the hairs below the basal half of the hind femur shorter than those of the anteroventral row of the outer half and 5 (as opposed to 3) axillary bristles on the wing. At couplet 97 *M. unguicularis* (Wood, 1909) has vestigial hypandrial lobes (Figure 366 in Disney 1989) and *M. indifferens* (Lundbeck, 1920) has clearly dusky wings, the front tarsus has a posterodorsal hair palisade on all 5 segments (as opposed to on 1–4 only) and its hypopygium is as Figure 107. In the footnote to this final couplet of the species of Abteilung IV, Zwete Reihe there are two omitted species, *M. capillipes* Schmitz, 1929 and *M. prolongata* Schmitz, 1954. *M. capillipes* has the hairs of the epandrium clearly more robust than those on the cerci and the hairs below the basal half of the hind femur are much more crowded a little beyond the base. *M. prolongata* is only known in the female sex and its description omitted any reference to the legs. It has clearly dusky wings and 6 axillary bristles on the wing.

Male. Head as Figure 108, the frons with dense but very fine microtrichia. Postpedicels without subcutaneous pit sensilla (SPS) vesicles. Cheeks with 4 bristles and jowl with two that are longer. Labella with very few short spinules below. Thorax brown. Three notopleural bristles and no cleft in front of these. Mesopleuron with 9 hairs. Scutellum with an anterior pair of small hairs and a posterior pair of bristles. Abdominal tergites brown with small hairs, but a little larger on T6. Venter brownish gray, and with numerous hairs on segments 3–6. Hypopygium



Figures 106–107. *Megaselia* males resembling *M. omicronmyia*. **106.** *M. nigripalpis* (Lundbeck, 1920) left face of epandrium; **107.** *M. indifferens* (Lundbeck, 1920) left face of hypopygium.



FIGURES 108–114. *Megaselia omicronmyia*, male. **108.** Frontal view of head. **109.** Left face of hypopygium. **110.** Left face of left lobe of hypandrium and penis complex. **111.** Front leg. **112.** Mid femur and tibia. **113.** Hind tibia. **114.** Right wing.

as Figure 109, with the left lobe of hypandrium and penis complex as Figure 110. The right lobe of hypandrium vestigial. Femora and tibiae of mid and hind legs brown but those of front legs and tarsi yellowish brown to yellow. Front leg as Figure 111, the tarsus having posterodorsal hair palisade on segments 1–4 and basal spinule with some hairs reduced to small spinules. Mid femora and tibia as Figure 112. Hairs below basal half of hind femur longer than those of anteroventral row of outer half. Hind tibia with weakly differentiated posterodorsal hairs and spinules of apical combs simple (Figure 113). Wing (Figure 114) 1.6 mm long. Costal index 0.45–0.46. Costal ratios 3.4–3.5 : 1.4–1.5 : 1. Costal cilia (of section 3) 0.12

mm long. No hair at base of vein 3. With 3 axillary bristles, the outer being 0.12–0.13 mm long. Sc not reaching R1. Haltere brown.

Material examined. Holotype male, Norway, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–73).

Etymology. Named from omicron plus the Greek for fly.

Megaselia pectorella Schmitz, 1929

(Figures 115–122)

Megaselia pectorella Schmitz, 1929: 116 (male)

Material: 1♂, Norway, Telemark, Drangedal, Steinknapp, UTM 32 E5127595, N6545995,

2.VII.2011, canopy of oak tree 11 (UCZM, 39–68); 1♂1♀, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–73); 1♀, same locality, UTM 32 E5021845, N6548912, 28.VI.2011, canopy of oak tree 07 (UCZM, 39–76).

The hitherto unknown female is described below.

Female. Frons as Figure 115, with dense but fine microtrichia. Antennae, palps and proboscis as Figure 116, the postpedicels lacking SPS vesicles. Labella with very few hairs of ventral faces reduced to small spinules. Otherwise head similar to male. Thorax as male, with three bristles on notopleuron and with only two hairs as well as a bristle on the mesopleuron (Figure 117). Abdominal tergites 2–7 as Figure 118. Venter gray, and with hairs restricted to segments 5 and 6 and beyond. Sternite 7 and posterolateral lobes at rear of sternum 8 as Figure 119. Cerci as Figure 118. Furca not evident. Dufour's crop mechanism not observed. Legs similar to male, the front tarsus having posterodorsal hair palisades on segments

1–4 (Figure 120). Mid tibia as Figure 121 and hind femur as Figure 122. Wing as male except 1.3–1.5 mm long. Costal index 0.38–0.39. Costal ratios 3.4 : 1.2 : 1. Costal cilia (of section 3) 0.076–0.078 mm long. With two unequal axillary bristles, the outer being 0.08–0.90 mm long. Sc does not reach R1. No hair at base of vein 3. Otherwise it and haltere as male.

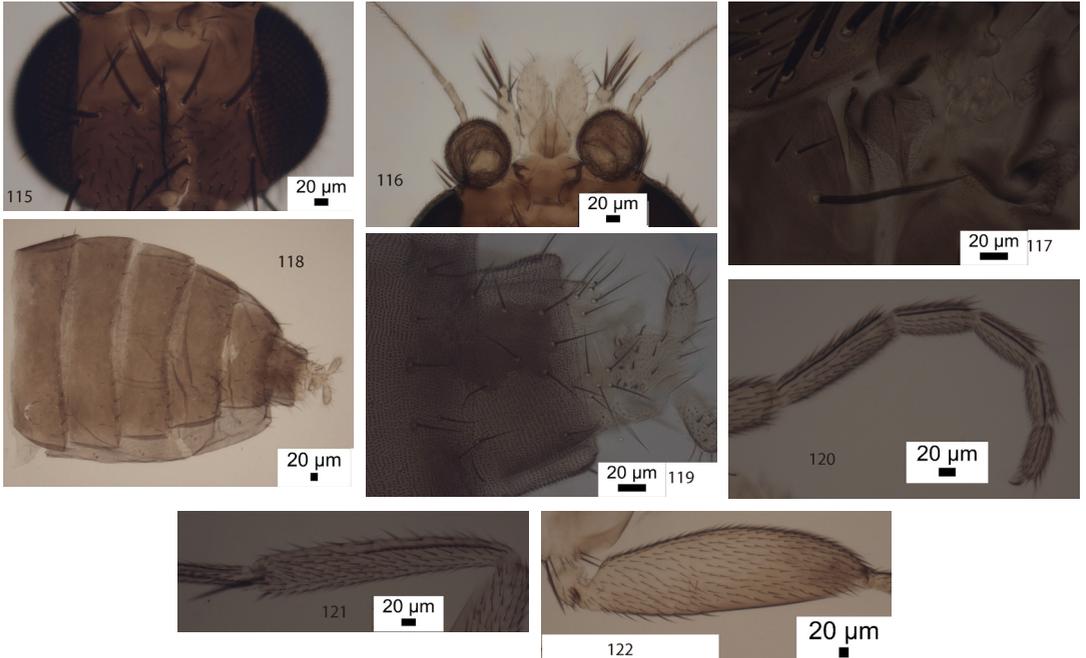
*** *Megaselia protarsalis* Schmitz, 1927**

Material: 1♂, Hordaland, Kvam, Skeianeset, UTM 32, N6689699, E343529, 21.VI.2011, tree 01 (UCZM, 39–76).

***Megaselia pusilla* (Meigen, 1830)**

Material: 1♂, Telemark, Drangedal, Hens-eide, Djupedal, UTM 32 E512759, N6545995, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–70); 1♂, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–71).

*** *Megaselia quadriseta* (Schmitz, 1918)**



FIGURES 115–122. *Megaselia pectorella* Schmitz, 1929 female. **115.** Frontal view of head. **116.** Antennae, palps and proboscis. **117.** Left notopleuron and mesopleuron. **118.** Abdominal tergites 2–7 and beyond. **119.** Sternite 7 and lobes at rear of sternum 8. **120.** Front tarsus. **121.** Mid tibia. **122.** Hind femur.

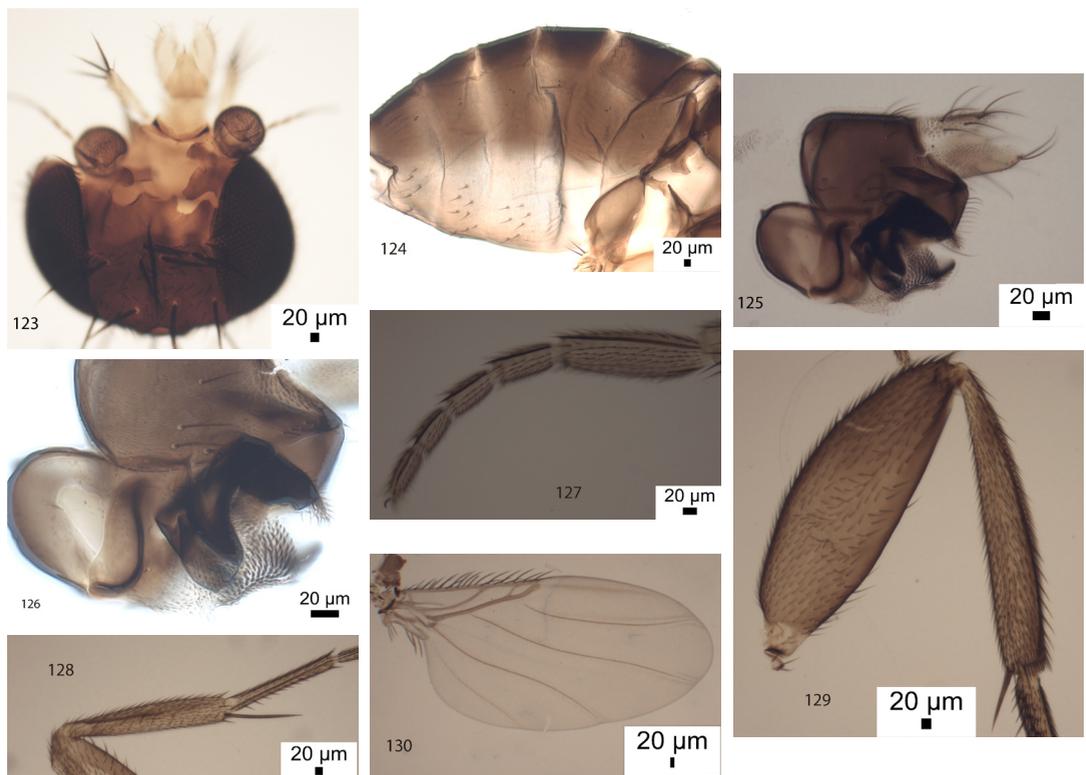
Material: 1♂, Norway, Telemark, Drangedal, Henseide, Djupedal, UTM 32 E512759, N6545995, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–70); 1♀, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–71).

***Megaselia rhomyia* sp. n.** (Figures 123–130)

In the key to the *Megaselia* males of the British Isles (Disney 1989) this species runs to couplet 136, lead 1, to *M. indifferens* (Lundbeck, 1920), whose hypopygium, Figure 107 is similar except its penis complex is far less elaborate. In addition the hairs of segments 3–6 of the venter of *M. indifferens* are clearly stronger and far more numerous (Figure 131).

As the length of the costal cilia embraces the arbitrary division that divides Abteilung IV into two blocks it is necessary to run it through both keys to the Palaearctic species. In Schmitz (1958)

for the species of Abteilung IV, Erste Reihe, *M. rhomyia* runs to couplet 18, where *M. affinis* (Wood, 1909) differs in having both lobes of the hypabndrium vestigial and the mid femur having 1 or 2 differentiated robust bristles below its basal half. *M. setulipalpis* Schmitz, 1938 differs in having the anterolateral bristles clearly higher on the frons than the antials and at least two hairs on the left face of the epandrium longer than those at the rear of tergite 6. In the keys to the species of Abteilung IV, Zwete Reihe (Schmitz & Beyer 1965) it runs to couplet 97, to *M. indifferens*, which is distinguished in the preceding paragraph. In the footnote to this couplet 97 there are two omitted species, *M. capillipes* Schmitz, 1929 and *M. prolongata* Schmitz, 1954. *M. capillipes* has the hairs of the epandrium clearly more robust than those on the cerci and the hairs below the basal half of the hind femur are much more crowded a little beyond the base. *M. prolongata* is



FIGURES 123–130. *Megaselia rhomyia* male. **123.** Frontal view of head. **124.** Right face of segments 1–6 of abdomen. **125.** Left face of hypopygium. **126.** Left hypandrial lobe and penis complex. **127.** Front tarsus. **128.** Mid tibia and basitarsus. **129.** Hind femur and tibia. **130.** Right wing.

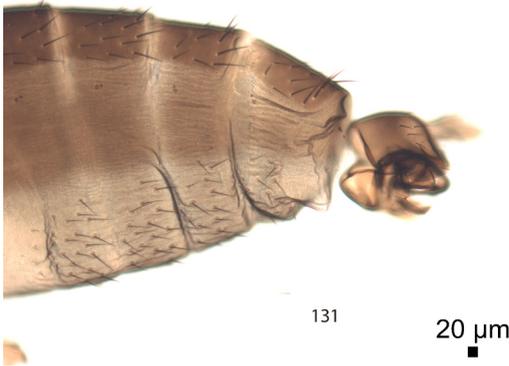


FIGURE 131. *Megaselia indifferens* (Lundbeck, 1920) male, left face of abdomen from tergite 3 onwards.

only known in the female sex and its description omitted any reference to the legs. It has clearly dusky wings and 6 axillary bristles on the wing.

Male. Head as Figure 123, and dense but very fine microtrichia. Cheek with 4 bristles and jowl with two that are longer. Postpedicels without subcutaneous pit sensilla (SPS) vesicles, and as Figure 123. Palps and proboscis as Figure 123. Labella with only a few short spinules below. Thorax brown. Three notopleural bristles and no cleft in front of these. Mesopleuron with 11 hairs. Scutellum with an anterior pair of small hairs and a posterior pair of bristles. Abdominal tergites and venter as Figure 124. Hypopygium as Figures 125 and 126. Apart from brown patch on mid coxa, legs with brown hind femora yellowish brown mid femora and mainly yellowish front femora; and all tarsi essentially yellow. Fore tarsus with posterodorsal hair palisade on segments 1–5 (Figure 127). Mid tibia and basitarsus as Figure 128. Hairs below basal half of hind femur shorter than those of anteroventral row of outer half and hind tibia with 14–15 differentiated posterodorsal hairs and spinules of apical combs simple (Figure 129). Wings (Figure 130) 1.5–1.6 mm long. Costal index 0.46. Costal ratios 3.0–3.1 : 1.4 : 1. Costal cilia (of section 3) 0.10–0.11 mm long. Hair at base of vein 3 small. With 3 axillary bristles, the outer being 0.10–0.11 mm long. Sc not reaching R1. Haltere brown.

Material examined. Holotype male, Norway, Telemark, Drangedal, Steinknapp, UTM 32

E501835, N6548612, 29.VI.2011, canopy of oak tree 9 (UCZM, 39–75).

Etymology. Named from rho plus the Greek for fly.

*** *Megaselia robertsoni* Disney, 2008**

(Figures 132–143)

Material: 3♂♂4♀♀, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–70–74); 3♂♂, Telemark, Drangedal, Steinknapp, UTM 32 E501835, N6548612, 29.VI.2011, canopy of oak tree 9 (UCZM, 39–75).

The hitherto unknown female is described below.

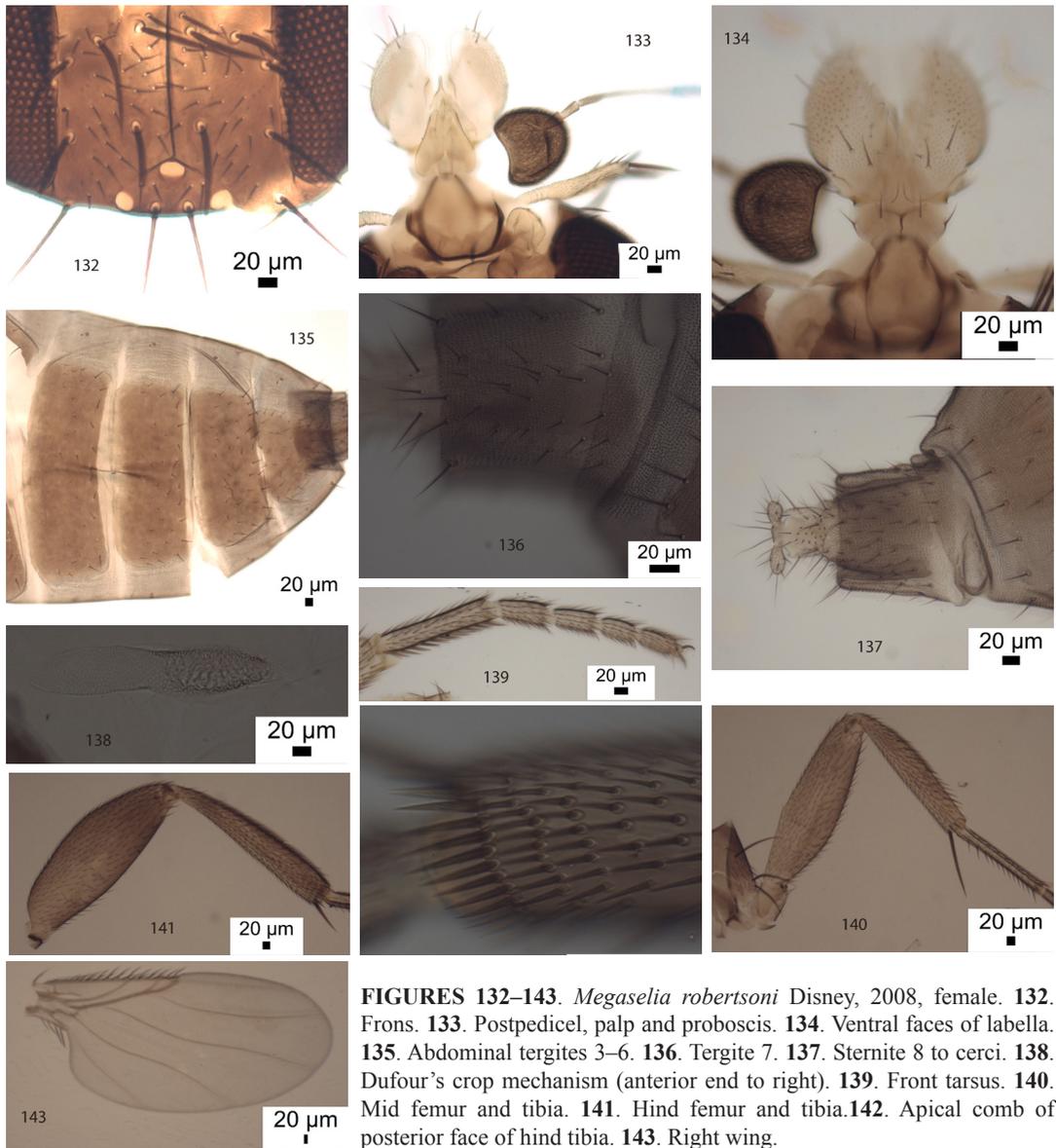
Female. Head as Figures 132–134, otherwise similar to male. Thorax as male. Abdominal tergites T3–T6 as Figure 135, T7 as Figure 136. Venter grey (Figure 135), and with hairs below segments 3–6. Sternite 7 represented by hairs only. Posterolateral lobes at rear of sternum 8 and cerci as Figure 137. Furca not evident. Dufour’s crop mechanism as Figure 138. Legs similar to male, with front tarsus as Figure 139, mid femur and tibia as Figure 140, hind femur and tibia as Figure 141 and apical comb of the posterior face of hind tibia with posteroventral spur not differentiated from the adjacent spines (Figure 142). Wing (Figure 143) as male except length 1.27–1.56 mm. Costal index 0.44–0.49. Costal ratios 4.2–6.1 : 1.9–2.5 : 1. Costal cilia 0.08–0.10 mm long. Outermost axillary bristle 0.08–0.14 mm long. Haltere as male.

***Megaselia ruficornis* (Meigen, 1830)**

Material: 1♀, Hordaland, Kvam, Skeianeset, UTM 32, N66689216 E343355, 23.VI.2011, tree 03 (UCZM, 39–66); 1♀, same locality, UTM 32 E353982, N6699489, 14.VII.2012, tree 06 UCZM, 39–77); 1♂, Telemark, Drangedal, Steinknapp, UTM 32 E501835, N6548612, 29.VI.2011, canopy of oak tree 9 (UCZM, 39–75).

Has been reared from a range of decaying organic materials.

***Megaselia solii* sp. n. (Figures 144–151)**

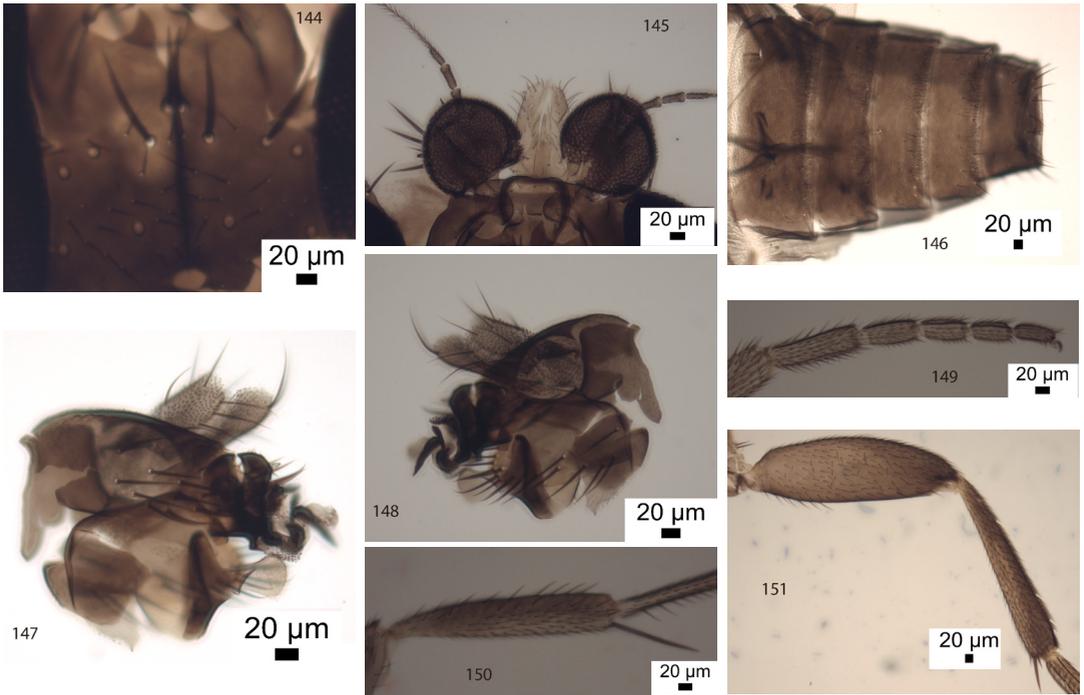


FIGURES 132–143. *Megaselia robertsoni* Disney, 2008, female. **132.** Frons. **133.** Postpedicel, palp and proboscis. **134.** Ventral faces of labella. **135.** Abdominal tergites 3–6. **136.** Tergite 7. **137.** Sternite 8 to cerci. **138.** Dufour's crop mechanism (anterior end to right). **139.** Front tarsus. **140.** Mid femur and tibia. **141.** Hind femur and tibia. **142.** Apical comb of posterior face of hind tibia. **143.** Right wing.

In the key to the *Megaselia* males of the British Isles (Disney 1989) this species runs to couplets 98, 120, 133 and 129 only by ignoring some characters. In every case the hypopygium rules out the species of these couplets. In particular the numerous bristle like hairs of the epandrium and the hypandrial lobes differ. With only 3 hairs on the mesopleuron it is possible that some specimens may have none. Such a specimen would run to couplet 182. With its 3 notopleural bristles it is

returned to couplets of species with hairs on the mesopleuron. Of the half dozen species, with a bare mesopleuron, not recorded from the British Isles that will run to couplet 182, 3 have only 2 bristles on the notopleuron, as opposed to the 3 of *M. solii*. Of those with 3 bristles the postpedicels of two have SPS vesicles, as opposed to none, and the third has 9–10 axillary bristles as opposed to two.

In the key to Abteilung V (Schmitz & Delage



FIGURES 144–151. *Megaselia solii* male. **144.** Frons. **145.** Postpedicels, palps and proboscis from below. **146.** Abdominal tergites 2–6. **147.** Left face of hypopygium. **148.** Right face of hypopygium. **149.** Front tarsus. **150.** Mid tibia. **151.** Hind femur and tibia.

1974) *M. solii* runs to couplet 6, where the details of the hypopygium rule it out.

Male. Frons as Figure 144, with 42–44 hairs and dense but very fine microtrichia. Cheek with 2 bristles and jowl with 2 that are longer. Postpedicels as Figure 145. Palps dusky yellow. Labrum (Figure 145) about half as wide as postpedice. Labella as Figure 145, with very few short spinules below. Three notopleural bristles and no cleft in front of these. Mesopleuron with only 3 hairs. Scutellum with an anterior pair of hairs and a posterior pair of bristles. Abdominal tergites as Figure 146. Venter gray. Hypopygium as Figures 147 & 148. Femora and tibiae on all legs brown but increasingly yellowish brown on mid and front legs, and with brown patch on mid coxa, tarsi dusky yellow to yellow. Fore tarsus as Figure 149. Mid tibia as Figure 150. Hind femur and tibia as Figure 151, the tibia having a dozen differentiated posterodorsal hairs and spinules of apical combs simple. Wings 1.1–1.2 mm long. Costal index 0.37. Costal ratios 6.4–6.5 : 2.5 : 1. Costal cilia (of section 3) 0.06–0.07 mm long.

Hair at base of vein 3. With 2 axillary bristles, the outer being 0.08–0.09 mm long. Sc not reaching R1. Thick veins brownish gray, thin veins 4–6 gray and 7 paler. Membrane only lightly tinged gray. Haltere brown.

Material examined. Holotype male, Norway, Telemark, Porsgrunn Mule Varde, N59.100, E9.700, 10.VII.2012, tree 22 (UCZM, 39–69).

Etymology. Named after Geir Söli.

*** *Megaselia speiseri* Schmitz, 1929**

Material: 1♂, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–72).

*** *Megaselia spinicincta* (Wood, 1910)**

Material: 1♂, Telemark, Drangedal, Steinknapp, UTM 32 E501835, N6548612, 29.VI.2011, canopy of oak tree 9 (UCZM, 39–75).

Has been reared from fungus sporophores.

*** *Megaselia surdifrons* (Wood, 1909)**

Material: 1♂, Hordaland, Kvam, Skeianeset, UTM 32 E6348, N60405, 14.VII.2012, tree 14 UCZM, 39–67).

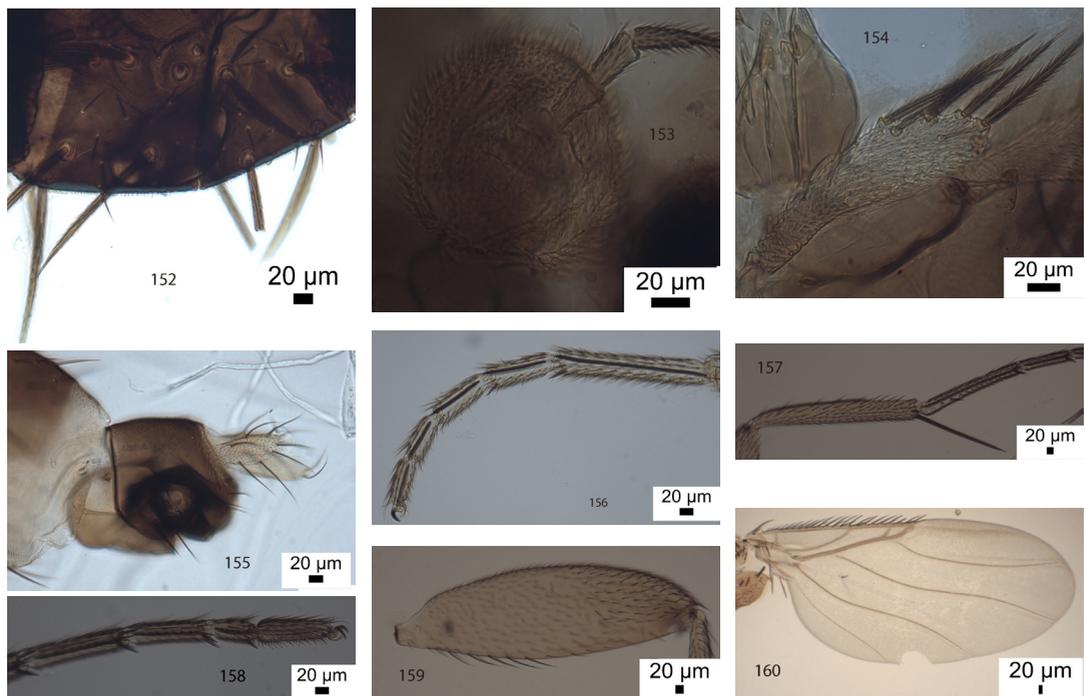
***Megaselia thunesi* sp. n.** (Figures 152–160)

In the key to the *Megaselia* males of the British Isles (Disney 1989) this species runs to couplet 12, lead 1, to *M. scutellaris* (Wood, 1909), which is immediately distinguished by its large left hypaandraial lobe. Of species not recorded from the British Isles two are excluded by having hairs on the mesopleuron and one by having a large right hypaandrial lobe.

Male. Frons as Figure 152, with dense but very fine microtrichia. Cheek with 4 bristles and jowl with two that are longer. Postpedicel as Figure 153, without subcutaneous pit sensilla (SPS) vesicles. Palp as Figure 154. Labrum light brown and not as wide as a postpedicel. Labella coloured as palps and with very few short spinules below. Thorax with 3 notopleural bristles and no cleft in front of these. Mesopleuron bare. Scutellum with an anterior pair of small hairs and a posterior

pair of bristles. Abdominal tergites brown with moderate hairs, the longest at rear of T6. Venter light gray, and with hairs on segments 3–6. Hypopygium as Figure 155, notably with vestigial hypaandrial lobes. Apart from brown patch on mid coxa, legs yellow. Fore tarsus with posterodorsal hair palisade on segments 1–5 (Figure 156). Mid tibia as Figure 157. Mid tarsus as Figs 157 and 158, notably with segment 5 clearly longer than 4. Hairs below basal half of hind femur (Figure 159) longer than those of anteroventral row of outer half. Hind tibia with a dozen differentiated posterodorsal hairs and spinules of apical combs simple. Wings (Figure 160) 1.62 mm long. Costal index 0.54. Costal ratios 3.1–3.2 : 1.6 : 1. Costal cilia (of section 3) 0.09–0.10 mm long. A small hair at base of vein 3. With 3 axillary bristles, the outer being 0.12–0.13 mm long. Sc reaching R1. Haltere with yellow knob.

Material examined. Holotype male, Norway, Vestfold, Larvik Skjærstjø [N59.200, E9.922], 5.VII.2012, from canopy of oak tree 15 (UCMZ, 39–78).



FIGURES 152–160. *Megaselia thunesi* male. 152. Frons. 153. Postpedicel. 154. Palp. 155. Left face of hypopygium. 156. Front tarsus. 157. Mid tibia and segments 1–2 of tarsus. 158. Segments 2–5 of mid tarsus. 159. Hind femur. 160. Right wing.

Etymology. Named after Karl Thunes.

*** *Megaselia wickenensis* Disney, 2000**

Material: 1♂, Norway, Telemark, Drangedal, Henseide, Djupedal, UTM 32 E512759, N6545995, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–70).

The following species are only represented by females which do not link to any of the above species of *Megaselia*. A key to these females is given in Table 1.

***Megaselia* sp. 2 (Figures 161–162)**

Material: 1♀, Hordaland, Kvam, Skeianeset, UTM 32 E6348, N60405, 14.VII.2012, tree 14 UCZM, 39–66).

***Megaselia* sp. 3 (Figures 163–165)**

Material: 1♀, Telemark, Porsgrunn Mule Varde, N59.100, E9.700, 6.VII.2012, tree 19 (UCZM, 39–67); 1♀, Telemark, same locality, N59.100, E9.701, 6.VII.2012, tree 20 (UCZM, 39–70); 1♀, Telemark, Drangedal, Steinknapp, UTM 32 E501835, N6548612, 29.VI.2011, canopy of oak tree 9 (UCZM, 39–75).

***Megaselia* sp. 4 (Figures 166–168)**

Material: 1♀, Telemark, Porsgrunn Mule Varde, N59.100, E9.700, 6.VII.2012, tree 19 (UCZM, 39–67).

***Megaselia* sp. 6 (Figures 169–171)**



FIGURES 161–168. *Megaselia* females of unknown identity. **161–162.** Species 2: **161.** Postpedicel; **162.** Abdominal tergites 6 and 7. **163–165.** Species 3: **163.** Abdominal tergites 2–4; **164.** Tergite 5 to tip of abdomen; **165.** Furca. **166–168.** Species 4: **166.** Labrum, postpedicels and left palp; **167.** Frons; **168.** Abdominal tergites 5 and 6.

TABLE 1. Key to females of *Megaselia* Rondani, 1856.

1.	Mesopleuron bare	2
-	Mesopleuron with hairs (some with differentiated bristles also)	6
2.	Notopleuron with 2 bristles	3
-	Notopleuron with 3 bristles	4
3.	Haltere knob yellow. Postpedicel without SPS vesicles. Vein Sc not reaching R1. Front tarsus with posterodorsal hair palisades on segments 1–5. Abdominal tergite 6 as Figure. 173	<i>Megaselia</i> sp. 7
-	Haltere knob brown. Postpedicel with SPS vesicles (Figure. 189). Vein Sc joins R1 (Figure. 191)	<i>Megaselia</i> sp. 12
4.	Hind femur yellow but the last quarter increasingly brown	5
-	Hind femur entirely brown. (T6 tapered. Furca as Figure 165)	<i>Megaselia</i> sp. 3
5.	Postpedicels yellow. Thorax yellow to dusky yellow. T6 as Figure 204. (Furca as Figure 205)	<i>Megaselia</i> sp. 17
-	Postpedicels brown. Thorax brown. T6 as Figure 216. (Vein Sc reaching R1)	<i>Megaselia</i> sp. 20
6.	Mesopleuron with one clearly differentiated bristle at rear of patch of hairs	7
-	Mesopleuron with hairs only	12
7.	Notopleuron with 2 bristles	8
-	Notopleuron with 3 bristles	9
8.	Labrum much longer than broad (Figure 196). Hairs at rear of T6 long and cerci minute (Figures 198 & 199)	<i>Megaselia</i> sp. 15
-	Labrum not so (Figure 192). T6 and cerci as Figure 193	<i>Megaselia</i> sp. 14
9.	Labella with numerous small spinules below (Figures 210 & 219). Palps broaden towards tips (Figures 181, 211 & 218)	10
-	Labella with fewer than 10 small spinules below each. Palps narrow in distal half (Figure 169)	<i>Megaselia</i> sp. 6
10.	Abdominal tergite 6 only a little wider than long (e.g. Figure 182)	11
-	Abdominal tergite 6 very much wider than long (Figure 220). (Labrum as Figure 218. Lower faces of labella as Figure 219)	<i>Megaselia</i> sp. 21
11.	All segments of front tarsus yellow. Dorsal bands of labella with a single small hair (Figure 180). T6 as Figure 182	<i>Megaselia</i> sp. 9
-	Fifth segment of front tarsus brown in contrast to preceding segments. Dorsal bands of labella with 6 small hairs (Figure 209). T6 otherwise	<i>Megaselia</i> sp. 18
12.	Scutellum with an anterior pair of small hairs and a posterior pair of bristles. Haltere knob brown. Vein Sc does not reach R1	13
-	Scutellum with 4 robust bristles (Figure 177). Haltere knob yellow. Vein Sc joins R1 (Figure 179)	<i>Megaselia</i> sp. 8
13.	With only 2 (unequal) axillary bristles in wing	14
-	With at least 4 axillary bristles on wing. (Postpedicels with SPS vesicles - Figure 161)	<i>Megaselia</i> sp. 2
14.	Labrum not as wide as postpedicel (Figure 184). Fewer than 6 hairs below basal half of hind femur (Figure 186)	<i>Megaselia</i> sp. 11
-	Labrum wider than postpedicel (Figure 166). More than 8 hairs below basal half of hind femur	<i>Megaselia</i> sp. 4

Material: 1♀, Telemark, Drangedal, Steinknapp, UTM 32 E5127595, N6545995, 2.VII.2011, canopy of oak tree 11 (UCZM, 39–69); 1♀, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–73).

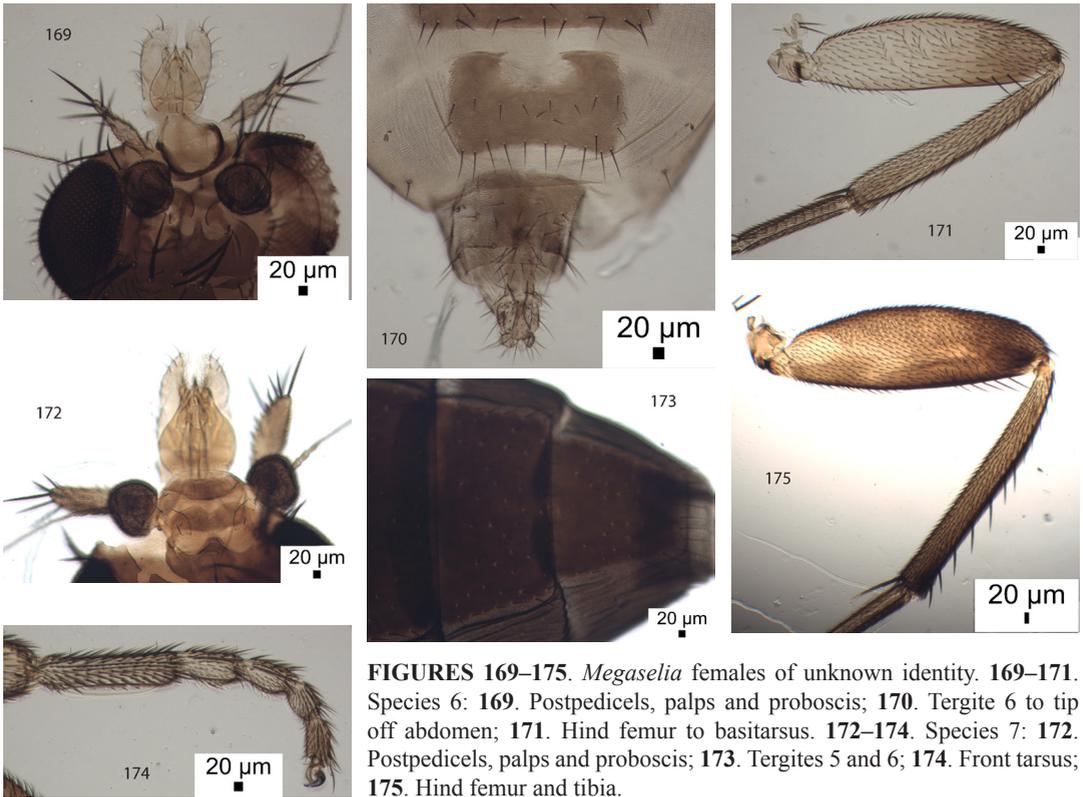
Megaselia sp. 7 (Figures 172–175)

Material: 1♀, Telemark, Drangedal, Steinknapp, UTM 32 E501835, N6548612, 29.VI.2011, canopy of oak tree 9 (UCZM, 39–75).

Megaselia sp. 8 (Figures 176–179)

Material: 1♀, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–71).

Megaselia sp. 9 (Figures 180–183)



FIGURES 169–175. *Megaselina* females of unknown identity. **169–171.** Species 6: **169.** Postpedicels, palps and proboscis; **170.** Tergite 6 to tip off abdomen; **171.** Hind femur to basitarsus. **172–174.** Species 7: **172.** Postpedicels, palps and proboscis; **173.** Tergites 5 and 6; **174.** Front tarsus; **175.** Hind femur and tibia.

Material: 1♀, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–73).

***Megaselina* sp. 11** (Figures 184–187)

Material: 1♀, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–72).

***Megaselina* sp. 12** (Figures 188–191)

Material: 1♀, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–72).

***Megaselina* sp. 14** (Figures 192–195)

Material: 1♀, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–73).

***Megaselina* sp. 15** (Figures 196–202)

Material: 1♀, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of

oak tree 10 (UCZM, 39–74).

***Megaselina* sp. 17** (Figures 203–207)

Material: 1♀, Hordaland, Kvam, Skeianeset, UTM 32 E6348, N60405, 14.VII.2012, tree 14 UCZM, 39–66); 1♀, Telemark, Drangedal, Steinknapp, UTM 32 E502184, N6548912, 28.VI.2011, canopy of oak tree 07 (UCZM, 39–76); 1♀, Drangedal, Henseide, Djupedal, UTM 32 E502184, N6548580, 2.VII.2011, canopy of oak tree 12 (UCZM, 39–77).

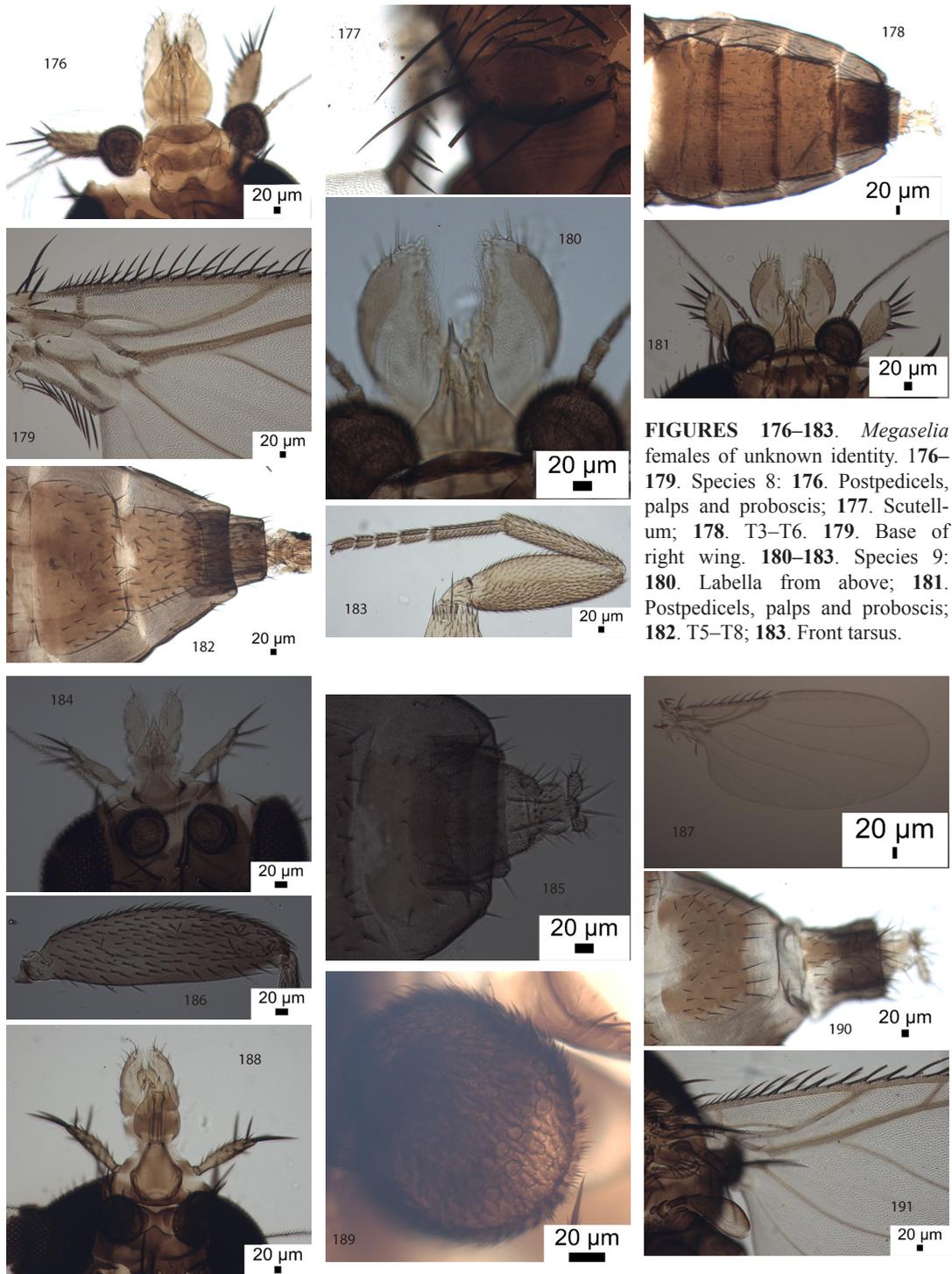
***Megaselina* sp. 18** (Figures 208–212)

Material: 1♀, Hordaland, Kvam, Skeianeset, UTM 32 E353997, N6699501, 14.VI.2012, tree 05 UCZM, 39–65).

***Megaselina* sp. 20** (Figures 213–217)

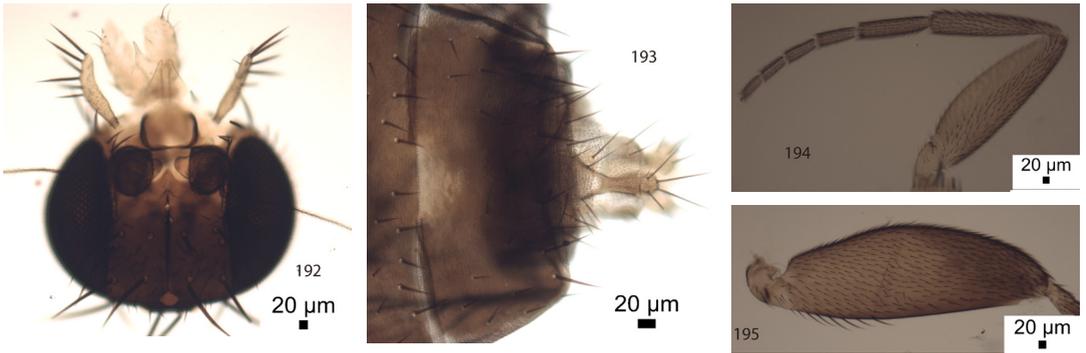
Material: 1♀, Hordaland, Kvam, Skeianeset, UTM 32 E6348, N60405, 14.VII.2012, tree 14 UCZM, 39–67).

***Megaselina* sp. 21** (Figures 218–223)

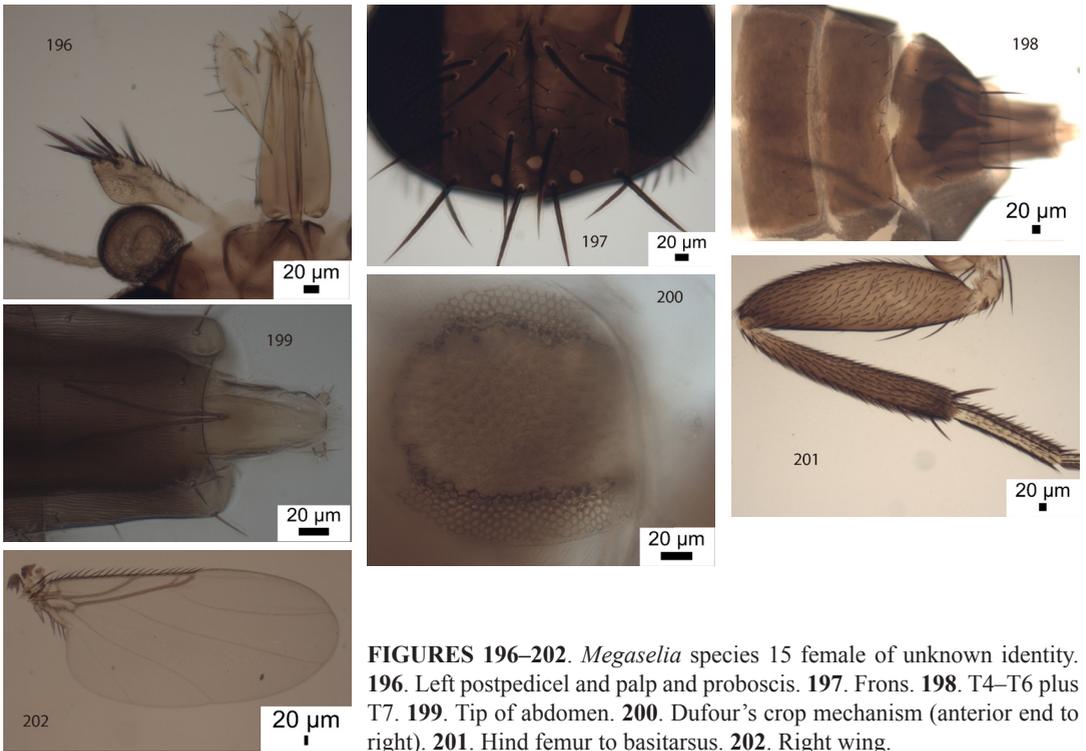


FIGURES 176–183. *Megaselia* females of unknown identity. 176–179. Species 8: 176. Postpedicels, palps and proboscis; 177. Scutellum; 178. T3–T6. 179. Base of right wing. 180–183. Species 9: 180. Labella from above; 181. Postpedicels, palps and proboscis; 182. T5–T8; 183. Front tarsus.

FIGURES 184–191. *Megaselia* females of unknown identity. 184–187. Species 11: 184. Postpedicels, palps and proboscis; 185. T6; 186. Hind femur; 187. Right wing. 188–191. Species 12: 188. Postpedicels, palps and proboscis; 189. Postpedicel with SPS vesicles; 190. T6 and T7; 191. Base of wing and haltere.



FIGURES 192–195. *Megaselia* females of unknown identity. 192–195. Species 14: 192. Head; 193. T6 to tip of abdomen; 194. Front tarsus; 195. Hind femur.



FIGURES 196–202. *Megaselia* species 15 female of unknown identity. 196. Left postpedicel and palp and proboscis. 197. Frons. 198. T4–T6 plus T7. 199. Tip of abdomen. 200. Dufour's crop mechanism (anterior end to right). 201. Hind femur to basitarsus. 202. Right wing.

Material: 1♀, Hordaland, Kvam, Skeianeset, UTM 32, N60405 E6348, 28.VI.2012, tree 13 (UCZM, 39–65).

* *Menozziola obscuripes* (Schmitz, 1927)

Material: 1♂, Telemark, Drangedal, Steinknapp, UTM 32 E502153, N6548908, 28.VI.2011, canopy of oak tree 08 (UCZM, 39–77).

Larvae are parasitoids of carpenter ants.

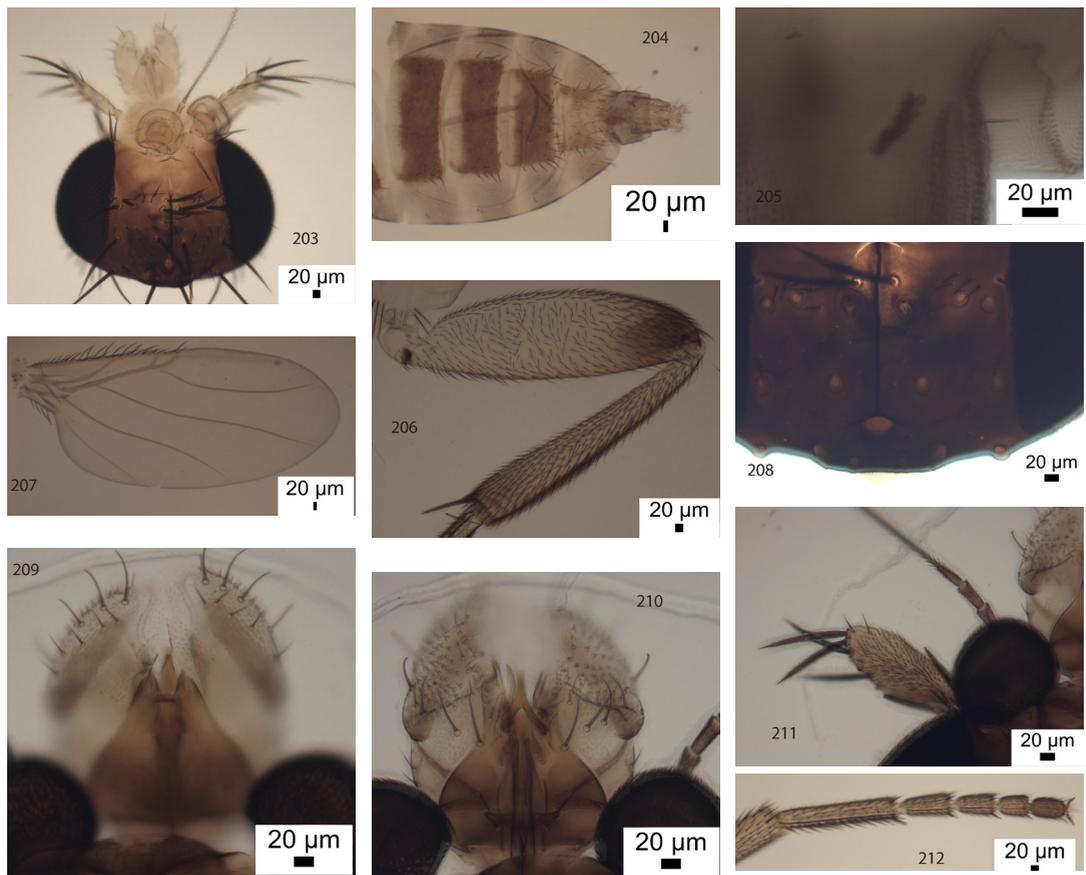
* *Phalacrotophora fasciata* (Fallén, 1823)

Material: 1♀, Hordaland, Kvam, Skeianeset, UTM 32 E353997, N6699501, 14.VII.2012, tree 05 UCZM, 39–65).

Larvae are parasitoids of the pupae of ladybird beetles (Coccinellidae).

* *Phora edentata* Schmitz, 1920

Material: 1♂1♀, Hordaland, Kvam, Skeianeset, UTM 32 E6348, N60405, 14.VII.2012, tree 14 UCZM, 39–66); 4♀♀, Telemark, Porsgrunn



FIGURES 203–212. *Megaselia* females of unknown identity. **203–207.** Species 17: **203.** Head; **204.** T3 to tip of abdomen; **205.** Furca; **206.** Hind femur and tibia; **207.** Right wing. **208–212.** Species 18: **208.** Frons; **209.** Labrum and labella from above; **210.** The same from below; **211.** Left postpedicel and palp; **212.** Front tarsus.

Mule Varde, N59.100, E9.700, 6.VII.2012, tree 19 (UCZM, 39–67); 1♀, same locality, 10.VII. tree 22 (UCZM, 39–69); 2♂♂4♀♀, same locality, N59.100, E9.701, 6.VII.2012, tree 20 (UCZM, 39–70); 1♀, same locality, N59.101, E9.701, 10.VII.2012, tree 21 (UCZM, 39–74); 7♂♂14♀♀, Telemark, Drangedal, Steinknapp, UTM 32 E5127595, N6545995, 2.VII.2011, canopy of oak tree 11 (UCZM, 39–68); 1♂1♀, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–72); 3♀♀, Telemark, Drangedal, Steinknapp, UTM 32 E502153, N6548908, 28.VI.2011, canopy of oak tree 08 (UCZM, 39–77).

***Phora holosericea* Schmitz, 1920**

Material: 1♂, Telemark, Porsgrunn Mule Varde, N59.100, E9.701, 6.VII.2012, tree 20 (UCZM, 39–70).

Larvae are predators of root aphids.

***Phora tincta* Schmitz, 1920**

Material: 1♂, Drangedal, Steinknapp, UTM 32 E502184, N6548580, 29.VI.2011, canopy of oak tree 10 (UCZM, 39–71).

*** *Pseudacteon formicarum* (Verrall, 1877)**

Material: 1♀, Hordaland, Kvam, Skeianeset, UTM 32, N6689699, E343529, 21.VI.2011, tree 01 (UCZM, 39–76).

Larvae are parasitoids of ants.

Discussion



FIGURES 213–223. *Megaselia* females of unknown identity. **213–217.** Species 20: **213.** Right palp and proboscis; **214.** Postpedicel; **215.** Frons; **216.** T5–T7; **217.** right wing. **218–223.** Species 21: **218.** Head; **219.** Labella from below; **220.** T2 to tip of abdomen; **221.** Dufour's crop mechanism (anterior end to right); **222.** Hind femur; **223.** Right wing.

The samples of Phoridae from the canopies of 17 oak trees produced a total of 193 scuttle flies but the numbers per tree ranged from 1 to 70 (mean 11.1). The number of species per tree ranged from 1 to 35 (mean 7.1). These large variations presumably reflect differences in locality, sampling dates and preceding weather conditions. These will be reflected in the results of the analyses for all the arthropods (Thunes *et al.* in prep).

Megaselia "is one of the largest, most biologically diverse and taxonomically difficult genera in the entire animal kingdom" (Marshall 2012). The majority of the species remain to be described and for many known species the females

are unknown or too inadequately described to allow their recognition. Of the 193 specimens obtained in the present study 153 belonged to *Megaselia*, of which 92 were males and 61 females. These represented 37 named species, including 4 species whose females were previously unknown, 13 new species, most represented by males only, and 16 species represented by females only. Of the latter some are probably new species, some may be the hitherto undescribed (or the inadequately described) females of species other than those listed above. Of the previously known species 30 (25 being *Megaselia*) are seemingly new records for Norway. This goes some way to redressing the balance between the records for Norway and

the currently much larger numbers recorded from Sweden.

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