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# A review of the genus *Themira* Robineau-Desvoidy, 1830 (Diptera: Sepsidae) of the World, with a revision of the North American species

# Обзор двукрылых рода *Themira* Robineau-Desvoidy, 1830 (Diptera: Sepsidae) мировой фауны, с ревизией североамериканских видов

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КЛЮЧЕВЫЕ СЛОВА: Diptera, Sepsidae, *Themira*, Северная Америка.

ABSTRACT: The species of the genus *Themira* Robineau-Desvoidy, 1830 of the World are reviewed and the species of North America are revised. A key to subgenera and species, characters for the genus, subgenera and species, as well as the redescriptions with illustrations of each species are given. Two new subgenera *Annamira* subgen.n. and *Nadezhdamira* subgen.n., and one new species *Themira mexicana* sp.n. are described. One new synonym is established: *Themira athabasca* Mangan, 1976 is a new junior synonym of *Th. lucida* (Staeger, 1844). The distributions of each species is given. Information of the natural history are also provided.

РЕЗЮМЕ: Дан обзор видов рода *Themira* Robineau-Desvoidy, 1830 мировой фауны, включающий ревизию североамериканских видов этого рода. Приведены определительная таблица подродов и видов, характеристики рода, подродов и видов; сделаны переописания всех видов и рисунки к ним. Описаны два новых подрода — *Annamira* subgen.n. и *Nadezhdamira* subgen.n., а также один новый вид — *Themira mexicana* sp.n. Установлено, что *Themira athabasca* Mangan, 1976 есть новый младший синоним *Th. lucida* (Staeger, 1844). Приведены данные по распространению и образу жизни видов рода *Themira*.

## Introduction

At present there are more than 250 described species of Sepsidae, almost 30 of which are placed in the genus *Themira* Robineau-Desvoidy, 1830 [Steyskal, 1965; Zuska, Pont, 1984; Ozerov. 1985, 1986a, 1986b; Iwasa, 1981, 1984, 1995].

The distribution of the genus *Themira* is restricted to the Holarctic region. There are only four species, that have been found on the borders with other regions: *Th. bifida* Zuska, 1972, *Th. makiharai* Iwasa, 1984, and *Th. shimai* Iwasa, 1984 (between the Palaearctic and Oriental regions), and one new species from Mexico and Belize, the description of which is given below (between the Nearctic and Neotropical regions). *Enicopus fuscus* Bigot, 1886, described from Mexico does not belong to the genus *Themira*[1].

Adults are common in mesophytic habitats. They can be found in grasses alongside ditches, streams and rivers; or the margins of ponds, tarns and lakes; and in and around cattle pastures. They usually concentrate near various decaying substrates: such as the droppings of waterfows, cattle dung, human excrement, and rotting vegetation, but only rarely near animal carcases.

The known life-cycles of *Themira* species are very uniform. Larvae hatch from eggs after 20–26 hours. About a day later they reach the third instar. Pupation takes place 7–8 days after hatching, and adults appear 5–6 days later.

At present there are three different views on the classification of *Themira* species. The first proposes a division of *Themira* into subgenera, in particular recognising *Enicita* Westwood and *Enicomira* Duda [Steyskal, 1965; Mangan, 1976]. According to the second view, *Enicita* and *Enicomira* are treated as a separate genera [Steyskal, 1946, 1987]. However, the third view placed all the species, including *Enicita* and *Enicomira*, in one genus *Themira* without any subgeneric division [Pont, 1979; Zuska, Pont, 1984; Iwasa, 1981]. I follow the first point of view in this work, for it seems convenient. One more

[1] *Enicopus fuscus* Bigot [1886: 387] was described from a single specimen from Mexico and was listed as a female in the original description. The holotype is male, not female; without labels on pin; body mostly covered by a layer of mould, but the structure of foreleg and pleural sclerites clearly visible. The holotype of *E. fuscus* is in UMO. *E. fuscus* is a new synonym of *Archisepsis discolor* (Bigot, 1857), **syn.n.**

view was discussed by Meier [1996], based on the morphology of eggs and larvae. He believed *Themira* to be a paraphyletic group. Study of all the species together with some closely-related groups will show whether or not *Themira* is paraphyletic group.

*Themira* is the largest genus of Nearctic Sepsidae, one also includes the greatest number of endemic Nearctic Sepsidae. Alex Leonard Melander and his assistant Antony Spuler made the first study of *Themira* in North America [Melander, Spuler, 1917]. They recorded 12 species of *Themira* (including varieties] in their work "The Dipterous Families Sepsidae and Piophilidae", of which 5 species were described as a new. Nine years later Duda [1926], in his review of the world fauna of Sepsidae, discussed the same species. Shortly afterwords, Curran [1927, 1929] described two new species. In 1946, Steyskal gave a key to North American *Themira* and included *Th. nigricornis* Meigen, which he recorded from the Nearctic for the first time [Steyskal, 1946]. At the some time, he ommitted several species which he placed in *Enicita* and *Enicomira*. At the present time there are 13 species of *Themira* in the Nearctic [Steyskal, 1965; Mangan, 1976].

I have examined all the types of *Themira*, described from North America, except for *Enicita elegantipes* Ouellet, 1940.

The following abbreviations are used in the descriptions: AMNH — American Museum of Natural History, New York, USA; AVMUO — Obihiro University of Agricultural and Veterinary Medicine, Obihiro, Japan; CMNH — The Carnegie Museum of Natural History, Pittsburg, USA; DEI — Deutsches Entomologisches Institut, Eberswalde, Germany; NHML — The Natural History Museum, London, Great Britain; NYSMA — New York State Museum, Albany, USA; UAE — University of Alberta, Edmonton, Canada; UMO — University Museum, Oxford, Great Britain; USNM — United States National Museum, Washington, USA; ZIL — Zoological Institute, Lund, Sweden; ZMB — Museum für Naturkunde an der Humboldt-Universität, Berlin, Germany; ZMUM — Zoological Museum, Moscow State University, Moscow, Russia.

All measurements are given in mm.

## Genus *Themira* Robineau-Desvoidy, 1830

*Themira* Robineau-Desvoidy, 1830: 745. Type-species: *Themira pilosa* Robineau-Desvoidy, 1830: 746 [= *putris* (Linnaeus, 1758)] (design. Rondani, 1874: 170, 178).

*Enicopus* Walker, 1833: 253 (preocc. by *Enicopus* Stephens, 1830). Type-species: *Sepsis annulipes* Meigen, 1826: 292 (by monotypy).

*Cheligaster* Macquart, 1835: 479. Type-species: *Musca putris* Linnaeus, 1758: 597 (design. Coquillett, 1910: 522).

*Halidaya* Rondani, 1856: 117. Type-species: "*Themira setosa*" Robineau-Desvoidy (error for *Themira pilosa* Robineau-Desvoidy, 1830: 746) [=*putris* (Linnaeus, 1758)] (by original designation).

*Cheligastrula* Strand, 1928: 73 ([unjustified] new name for *Cheligaster* Macquart, 1835). Type-species: *Musca putris* Linnaeus, 1758: 597 (automatic).

*Enicita* Westwood, 1840: see below as subgenus.

*Enicomira* Duda, 1926: see below as subgenus.

DESCRIPTION. Head roundish in lateral view, rectangular or slightly flattened dorsoventrally; eye roundish in lateral view. Frons bare. Lateral occipital sclerite with several short setae. Arista bare. Head with following paired setae: 1 *or* (normal or short, hair-like), 1 *oc*, 1 *poc*, and 1 *i vt*, *o vt* absent or short, hair-like. Gena with a row of setulae along lower margin. Scutum with the following paired setae: 0–1 *pprn*, 1–2 *npl*, 1 *pal*, 1 postsutural *dc*; sometimes with a row of thin and short setulae along each *ac*, *dc*, and *ial* line. Anepisternum bearing scattered hairs, without a seta near posterior margin. Katepisternum without setae. Scutellum without hairs dorsally, with pair of long apical setae (absent in *Themira simplicipes* Duda); basal setae absent or short, hair-like. Posteroventral area of thorax behind and above hind coxae between metepimera membraneous. Hind tibia of male with osmeterium. Wing normal or reduced (*Th. notmani* Curran). Cells *bm* and *br* separate or fused (*Th. notmani*). Alula entirely covered with microtrichia. Wing clear or tinged with brownish, without dark spot near apex. Margin of upper calypter with hairs, margin of lower calypter without hairs. Abdomen not constricted after tergite 1+2. Surstyli symmetrical or asymmetrical, fused or not fused to epandrium.

### Key to subgenera and species of the genus *Themira* Robineau-Desvoidy of the World

1. Pleural sclerites shining, only anatergite, katatergite and mediotergite completely greyish pruinose. Surstyli symmetrical, fused to epandrium (Figs. 25: 7, 8; 26: 7, 8; 27: 6, 7; 28: 2) ..... *Annamira* subgen.n. (2)
— Katepisternum completely, meron, metepisternum, and metepimeron partly or completely greyish pruinose. Surstyli fused or not fused to epandrium ... 5
2. *pprn* present. Male mid tibia with 1 *av* in apical third ..... 3
— *pprn* absent. Male mid tibia without *av* in apical third ..... 4
3. Wing normal or moderately to strongly reduced (Fig. 27: 8–10). Cells *bm* and *br* fused. Male: fore femur and tibia, sternites 4 and 5, epandrium and surstylus as in Fig. 27: 1–7 *Th. (Annamira) notmani* Curran
— Wing always normal. Cells *bm* and *br* separate. ♂: fore femur and tibia, sternites 4 and 5, epandrium and surstylus as in Figs. 25: 1–4, 6–8 ..... *Th. (Annamira) japonica* Zuska
4. Head roundish in lateral view (Fig. 26: 5). Male: fore femur and tibia, sternites 4 and 5, epandrium and surstyli as in Fig. 26: 1–4, 6–8 ..... *Th. (Annamira) leachi* Meigen
— Head flattened dorsoventrally in lateral view (Fig. 28: 1). Epandrium and surstylus as in Fig. 28: 2 ..... *Th. (Annamira) przewalskii* Ozerov (♀ unknown)
5. *pprn* absent ..... 6
— *pprn* present ..... 13
6. *or* thin, hair-like, sometimes absent. Surstyli long, stick-like or sabre-form (Figs. 17: 7, 8; 18: 7, 8; 19: 6, 7; 20: 7, 8) ..... subgen. *Enicita* Westwood (7)
— *or* approximately equal to *poc*, always clearly visible. Surstyli short, spatula-like (Figs. 21: 4, 5; 22: 6, 7; 23: 3; 24: 6, 7) ..... subgen. *Enicomira* Duda (10)
7. Anepimeron shining ..... 8

– Anepimeron greyish pruinose ..... 9
8. *o vt* present, but very short. *poc* approximately as long as *i vt*. Hairs on the margin of upper calypter longer than the width of alula. Female fore femur with one spinula anteroventrally. Male: basitarsus of foreleg with osmeterium anterodorsally; fore femur and tibia, sternites 4 and 5, epandrium and surstylus as in Fig. 19: 1–7 ..... *Th. (Enicita) mexicana* sp.n.
– *o vt* absent. *poc* 2 times shorter than *i vt*. Hairs on the margin of upper calypter shorter than the width of alula. Female fore femur without spunules. Male: basitarsus of foreleg without osmeterium; fore femur and tibia, sternites 4 and 5, epandrium and surstylus as in Fig. 17: 1–5, 7 *Th. (Enicita) annulipes* Meigen
9. Scutellum with a pair of long apical setae. Female fore femur usually with 2 anteroventral spinules (Fig. 18: 5). Male: second tarsomere of foreleg longer than third tarsomere; tarsomeres of midleg laterally compressed in apical part (Fig. 18: 6); fore femur and tibia, sternites 4 and 5, epandrium and surstylus as in Fig. 18: 1–4, 7–9 ..... *Th. (Enicita) bispinosa* Melander et Spuler
– Scutellum bare, without setae. Female fore femur usually without anteroventral spinules. Male: second tarsomere of foreleg no longer than third tarsomere; tarsomeres of midleg normal; fore femur and tibia, sternites 4 and 5, epandrium and surstyli as in Fig. 20: 1–4, 6–8 ..... *Th. (Enicita) simplicipes* Duda
10. Fourth tarsomere of midleg 2 times shorter than third tarsomere. Male: fore femur and tibia, sternites 4 and 5, epandrium and surstyli as in Fig. 22:1–7 ..... ..... *Th. (Enicomira) minor* Haliday
– Fourth tarsomere of midleg no more than 1.5 times shorter than third tarsomere ..... 11
11. Male: hind femur with 2 *ad* in apical third; fore femur and tibia, sternites 4 and 5, epandrium and surstyli as in Fig. 24: 1–7; surstylus with long hairs on apex . ..... *Th. (Enicomira) sabulicola* Ozerov
– Male: hind femur without *ad* in apical third; surstylus without long hairs on apex ..... 12
12. Male: fore femur and tibia, sternites 4 and 5, epandrium and surstylus as in Fig. 23: 1–3 ..... ..... *Th. (Enicomira) paludosa* Elberg
– Male: fore femur and tibia, sternites 4 and 5, epandrium and surstyli as in Fig. 21: 1, 3–5 ..... ..... *Th. (Enicomira) kanoi* Iwasa
13. Fore coxa without *d* in apical quarter. Fore femur of male strongly curved (Fig. 31: 5) ..... ..... *Nadezhdamira* subgen.n. (14)
– Fore coxa with a clearly visible *d* in apical quarter (Fig. 12: 6). Male fore femur almost straight ..... ..... subgen. *Themira* Robineau-Desvoidy (18)
14. Katepisternum with big shining spot. Male hind tibia straight ..... 15
– Katepisternum completely greish pruinose. Male hind tibia bent near middle (Fig. 32: 6) ..... 17
15. Male: hind femur with fine curved setae on apical half of posteroventral surface; fore femur and tibia, sternites 4 and 5, epandrium and surstylus as in Fig. 33: 1–7 ..... *Th. (Nadezhdamira) superba* Haliday
– Male: hind femur without setae ..... 16
16. Male: tarsomeres 1–4 of midleg white at base (Fig. 30: 3); hind tibia without apical spinule; epandrium and surstylus as in Fig. 30: 1, 2 ..... ..... *Th. (Nadezhdamira) maculitarsis* Curran
– Male: tarsomeres of midleg completely black; hind tibia with curved apical spinule (Fig. 31: 6); fore femur and tibia, sternites 4 and 5, epandrium and surstyli as in Fig. 31: 1–5, 8–10 ..... *Th. (Nadezhdamira) malformans* Melander et Spuler
17. Male: tarsomeres 3–5 of midleg strongly dorsoventrally compressed (Fig. 29: 5); fore femur and tibia, sternites 4 and 5, epandrium and surstylus as in Fig. 29: 1–4, 6–8 ..... *Th. (Nadezhdamira) latitarsata* Melander et Spuler
– Male: tarsomeres 3–5 of midleg normal (Fig. 32: 5); fore femur and tibia, sternites 4 and 5, epandrium and surstyli as in Fig. 32: 1–4, 7–9 ..... ..... *Th. (Nadezhdamira) pusilla* (Zetterstedt)
18. Katepisternum entirely greyish pruinose ..... 19
– Katepisternum with small shining spot, almost or entirely shining ..... 26
19. Mid tibia with 1 *av* in apical third or quarter ... 20
– Mid tibia without *av* ..... 25
20. Meron with shining spot ..... 21
– Meron entirely greyish pruinose. Male: fore femur and tibia, sternites 4 and 5, epandrium and surstyli as in Fig. 12: 1–5, 7–9 .. *Th. (Themira) nigricornis* Ztt.
21. Anepimeron entirely greyish pruinose. Male: fore femur and tibia, sternites 4 and 5, epandrium and surstyli as in Fig. 16: 1–8 ..... *Th. (Themira) shimai* Iwasa
– Anepimeron shining on anterior half ..... 22
22. Fore coxa black. Scutum usually with a pair of short presutural *ac*. Male fore femur basally with thin, often hair-like *av*, thinner and shorter than apical scutellar setae ..... 23
– Fore coxa yellow at least inside. Scutum without presutural *ac*. Male fore femur basally with strong *av*, equal to apical scutellar setae ..... 24
23. Head (anteriorly) markedly wider than high (Fig. 3: 8). Male: fore femur and tibia, sternites 4 and 5, epandrium and surstyli as in Fig. 3: 1–7 ..... ..... *Th. (Themira) biloba* Andersson
– Head (anteriorly) as wide as high (Fig. 13: 6). Male: fore femur and tibia, sternites 4 and 5, epandrium and surstyli as in Fig. 13: 1–4, 7–9 ..... ..... *Th. (Themira) putris* (L.)
24. Frons entirely thinly brownish pruinose (not shining). Anterior *npl* equal to or only slightly shorter than posterior *npl*. Male: fore femur and tibia, sternites 4 and 5, epandrium and surstyli as in Fig. 9: 1, 2, 4, 5; surstyli asymmetrical ..... ..... *Th. (Themira) makiharai* Iwasa
– Frons shining, but with narrow stripe of greyish pollen in the middle and greyish pruinose along eye-margin. Anterior *npl* very short, hair-like. Male: fore femur and tibia, sternites 4 and 5, epandrium and surstylus as in Fig. 5: 1–7; surstyli symmetrical ..... ..... *Th. (Themira) germanica* Duda
25. Fore coxa and all trochanters yellow. Male: fore femur and tibia, sternites 4 and 5, epandrium and surstyli as in Fig. 4: 1–8; surstyli slightly asymmetrical .... *Th. (Themira) flavicoxa* Melander et Spuler
– Fore coxa and all trochanters dark brown or black. Male: fore femur and tibia, sternites 4 and 5, epandrium and surstylus as in Fig. 7: 1–7; surstyli symmetrical ..... *Th. (Themira) lucida* (Staeger)
26. Anepisternum greyish pruinose. Male: fore femur and tibia, sternites 4 and 5, epandrium and surstyli as in Fig. 10: 1–4; surstyli symmetrical ..... . *Th. (Themira) mesopleuralis* Iwasa (♀ unknown)
– Anepisternum almost completely shining ..... 27
27. Meron entirely greyish pruinose ..... 28

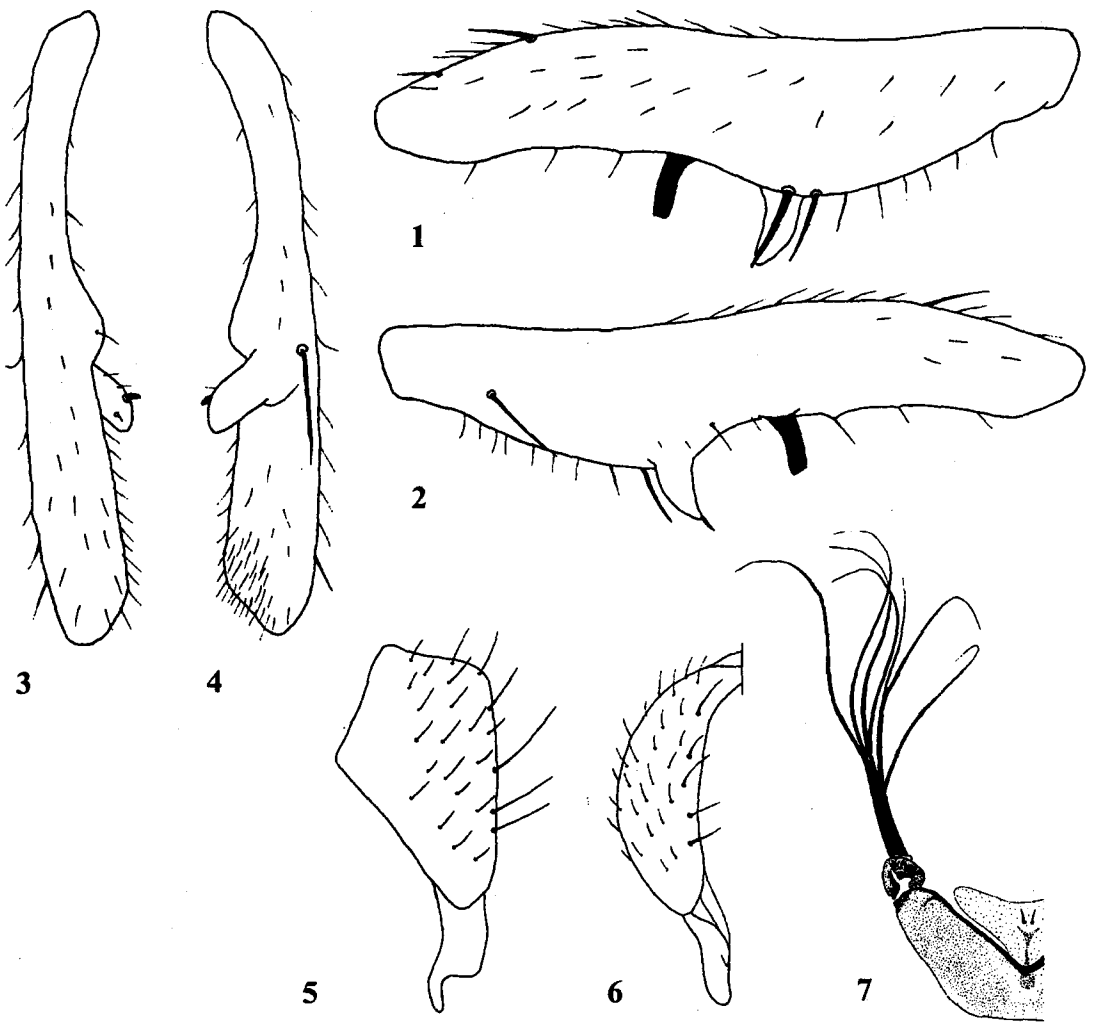



Fig. 1. *Themira (Themira) arctica* Becker: 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ abdominal sternites 4 and 5; 6 — epandrium and surstylus (left), lateral view; 7 — epandrium and surstylus (left), dorsal view.

Рис. 1. *Themira (Themira) arctica* Becker: 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — 4-й и 5-й стерниты брюшка ♂; 6 — эпандрий и сурстиль (левый), сбоку; 7 — эпандрий и сурстиль (левый), сверху.

— Meron with shining spot ..... 30

28. Katepisternum with small shining spot. Surstyli symmetrical ..... 29

— Katepisternum almost entirely shining, with stripe of greyish pollen along upper margin. Male: fore femur and tibia, sternites 4 and 5, epandrium and surstyli as in Fig. 6: 1–8; surstyli asymmetrical ..... ..... *Th. (Themira) gracilis* Zetterstedt

29. Mid tibia with 1 *av* in apical third or quarter. Male: fore femur and tibia, sternites 4 and 5, epandrium and surstylus as in Fig. 8: 1–7 ..... ..... *Th. (Themira) lutulenta* Ozerov

— Mid tibia without *av*. Male: fore femur and tibia, sternites 4 and 5, epandrium and surstyli as in Fig. 14: 1–4 ..... *Th. (Themira) saigusai* Iwasa

30. Katepisternum shining. Male: sternite 5 and surstyli as in Fig. 15: 1–3; surstyli asymmetrical ..... ..... *Th. (Themira) seticrus* Duda

— Katepisternum at least greyish pruinose along upper margin ..... 31

31. Frons entirely matt. Male: fore femur and tibia, sternites 4 and 5, epandrium and surstyli as in Fig. 2: 1–8; surstyli asymmetrical ..... *Th. (Themira) bifida* Zuska

— Frons subshining along eye-margin ..... 32

32. Procpisternum in upper half shining. Fore coxa yellow at least inside. Male: fore femur and tibia, sternites 4 and 5, epandrium and surstyli as in Fig. 11: 1–8; surstyli asymmetrical ..... *Th. (Themira) mongolica* Soys

— Procpisternum entirely greyish pruinose. Fore coxa black. Male: fore femur and tibia, sternites 4 and 5, epandrium and surstylus as in Fig. 1: 1–7; surstyli symmetrical ..... *Th. (Themira) arctica* Becker

## Subgenus *Themira* Robineau-Desvoidy, 1830

DESCRIPTION. Katepisternum, procpisternum, often meron, metepisternum and metepimeron partly or completely greyish pruinose. *pprn* present. Fore coxa with well developed *d* in apical quarter (Fig. 247: 8). Wing normal, longer than abdomen. Cells *bm* and *br*

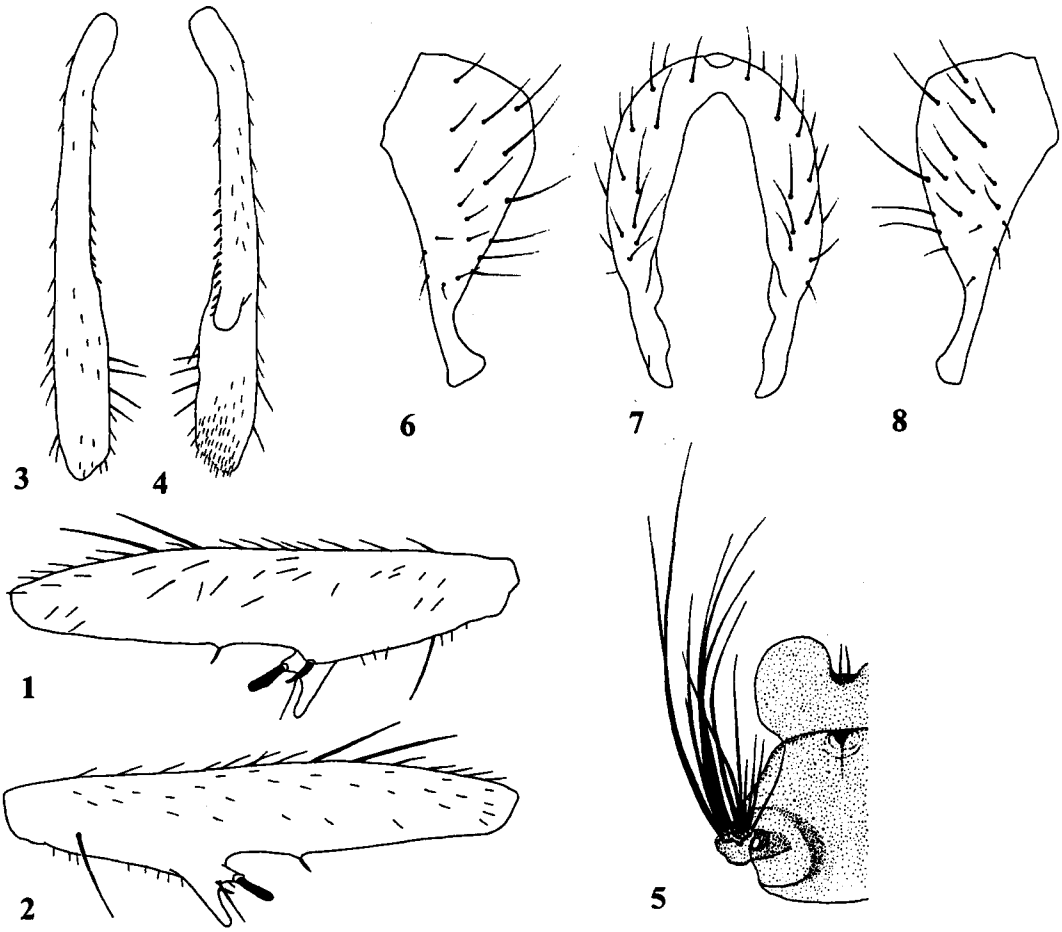



Fig. 2. *Themira (Themira) bifida* Zuska: 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ abdominal sternites 4 and 5; 6 — epandrium and surstylus (left), lateral view; 7 — epandrium and surstyli, dorsal view; 8 — epandrium and surstylus (right), lateral view.

Рис. 2. *Themira (Themira) bifida* Zuska: 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — 4-й и 5-й стерниты брюшка ♂; 6 — эпандрий и сурстиль (левый), сбоку; 7 — эпандрий и сурстили, сверху; 8 — эпандрий и сурстиль (правый), сбоку.

separate. Surstyli symmetrical or asymmetrical, fused or not fused to epandrium.

COMPOSITION AND DISTRIBUTION. The subgenus includes 15 species, of which only 4 are known from in North America: *Th. arctica* (Becker, 1915), *Th. lucida* (Staeger, 1844), *Th. nigricornis* (Meigen, 1826), *Th. putris* (Linnaeus, 1758); all of these are Holarctic. The rest of the species are known only from the Palaearctic, the majority of them from the eastern part.

## *Themira (Themira) arctica* (Becker, 1915)
Fig. 1.

*Cheligaster arctica* Becker, 1915a: 67.
*Themira dampfi* Becker, 1915b: 128.

DESCRIPTION. Male, female. *Colour and integument structure.* Usually entirely black, but sometimes lower part of frons, gena and face dark brown. Wing tinged with brownish; veins dark brown. Calypters and their margins, also halter whitish or yellowish.

Frons shining, with greyish stripes of pollen along eyes and in the middle. Face, gena, and posteranium greyish pruinose. Scutum brownish pruinose. Procpisternum greyish pruinose. Procpimeron shining, but with a band of silvery pollen in lower part. Anepisternum shining, but greyish pruinose along upper margin. Katepisternum greyish pruinose, except on an oval median patch. Anepimeron shining anteriorly and greyish pruinose posteriorly; pleural wing process greyish pruinose. Meron greyish pruinose, except on an oval median patch. Katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head* roundish in lateral view. Vertical diameter of eye approximately 4 times as long as width of gena (with subgena) below eye. Clypeus strongly projecting beyond the mouth. Flagellum in profile roundish, slightly longer than wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* (*o vt* absent). 1 vibrissa.

*Thorax*. Scutum with the following paired setae: 1 *pprn*, 2 *npl*, 1 *pal*, 1 postsutural *dc*; with a row of thin and short setulae along each *ac*, *dc*, and *ial* line. Procpisternum with 1–2 hairs in lower part. Scutellum with long apical scutellar setae and basal scutellar setulae.

*Legs*. Mid femur with several short setae in apical half anteriorly. Mid tibia with 1–2 *av* in apical third and with

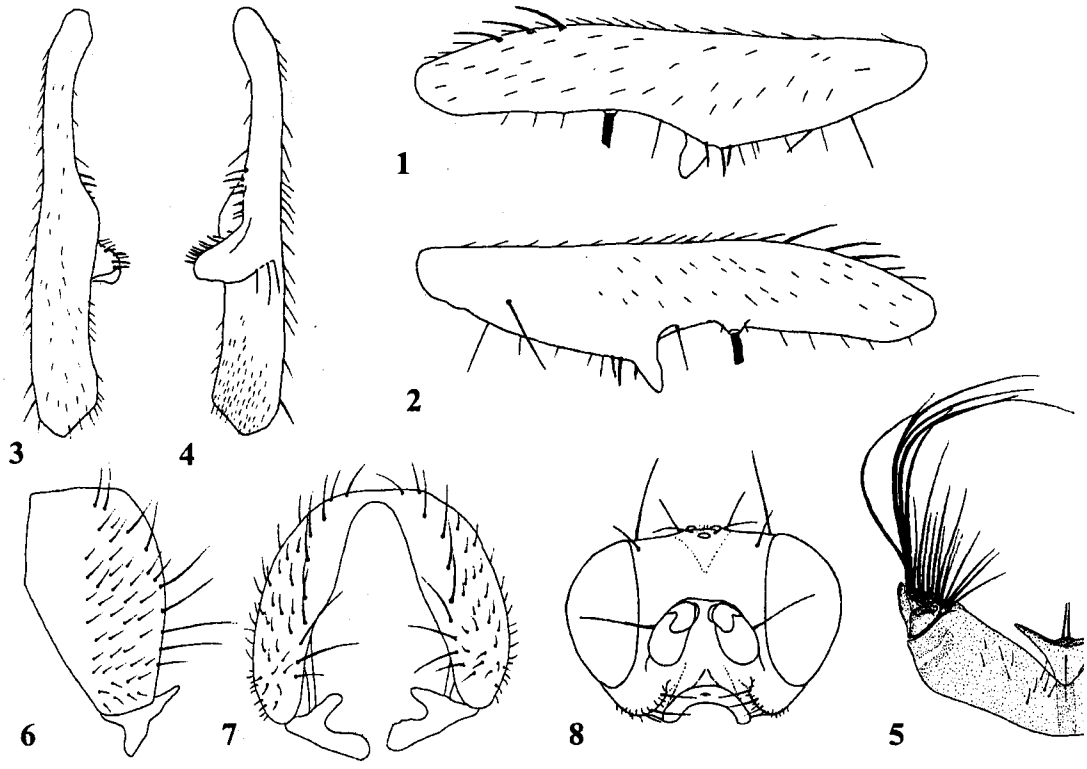



Fig. 3. *Themira (Themira) biloba* Andersson: 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ abdominal sternites 4 and 5; 6 — epandrium and surstylus (left), lateral view; 7 — epandrium and surstyli, dorsal view; 8 — head, anteriorly.

Рис. 3. *Themira (Themira) biloba* Andersson: 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — 4-й и 5-й стерниты брюшка ♂; 6 — эпандрий и сурстиль (левый), сбоку; 7 — эпандрий и сурстили, сверху; 8 — голова, спереди.

short apicals *av, ad* and *pv*. Hind femur with 1–2 *ad* in apical third. Male. Foreleg as in Fig. 1: 1–4. Hind tibia with osmeterium in basal half, with several straight hairs in apical quarter anterodorsally. Female. Fore femur with 4-5 anteroventral spines in apical half.

*Abdomen*. Syntergite 1+2 at sides with several hairs. Tergites 4 and 5 of male each with a row of marginal setae; in female without setae. Sternites 4 and 5 of male as in Fig. 1: 5. Epandrium and surstylus as in Fig. 1: 6, 7. Surstyli symmetrical, not fused to epandrium.

Length of body: 2.5–2.9. Length of wing: 2.3–3.4.

HABITATS OF ADULT AND LARVA. No data. Immature stages unknown.

DISTRIBUTION. PALAEARCTIC REGION. Russia (Polar Urals, Taymyr), Sweden. NEARCTIC REGION. Canada (Northwest Territories, Labrador), Greenland.

## *Themira (Themira) bifida* Zuska, 1974
Fig. 2. .

*Themira bifida* Zuska, 1974: 190.

DESCRIPTION. Male, female. *Colour and integument structure.* Black, but frons in lower quarter yellowish, face and gena yellow. Wing tinged with brownish; veins brown. Calypters and their margins, also halter yellowish.

Frons thinly brownish pruinose. Gena and face thinly whitish pruinose. Posteranium greyish pruinose. Scutum brownish pruinose, sometimes with shining spot behind postpronotal lobe. Proepisternum greyish pruinose. Proepimeron shining, but in lower quarter extensively grey pruinose. Anepisternum shining, but thinly greyish pruinose in upper posterior corner. Katepisternum extensively silvery-greyish pruinose, except on an oval median patch. Anepimeron greyish pruinose posteriorly and shining anteriorly; pleural wing process greyish pruinose. Meron greyish pruinose, except on an oval median patch. Katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head* roundish in lateral view. Vertical diameter of eye approximately 3.5 times as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, approximately 1.4 times as long as wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* (*o vt* absent). 1 vibrissa.

*Thorax*. Scutum with the following paired setae: 1 *pprn*, 2 *npl*, 1 *pal*, 1 postsutural *dc*. Proepisternum with 1–2 hairs in lower part. Scutellum with a pair of apical setae, basal setae absent.

*Legs*. Mid femur anteriorly in apical half with several short setae. Mid tibia with 1 *av* in apical third and with apicals *a, av* and *pv*. Male. Foreleg as in Fig. 2: 1–4. Hind femur in apical half with 1–2*ad*. Hind tibia with osmeterium near middle, with straight hairs anterodorsally below osmeterium. Female. Fore femur with 4–5 *av* in apical half.

*Abdomen*. Syntergite 1+2 of male at sides with several hairs. The other tergites without striking hairs or setae. Sternites 4 and 5 of male as in Fig. 2: 5. Epandrium and

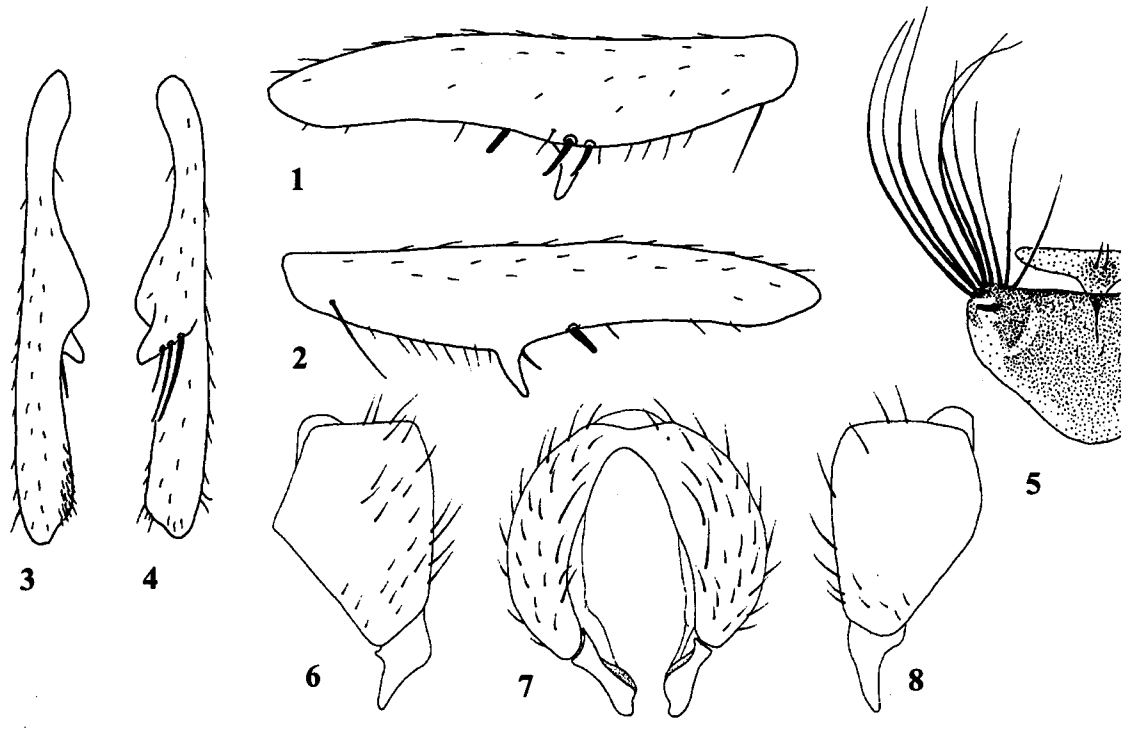



Fig. 4. *Themira (Themira) flavicoxa* Melander et Spuler: 1 —♂ fore femur (left), posterior view; 2 —♂ fore femur (left), anterior view; 3 —♂ fore tibia (left), posterior view; 4 —♂ fore tibia (left), anterior view; 5 —♂ abdominal sternites 4 and 5; 6 — epandrium and surstylus (left), lateral view; 7 — epandrium and surstyli, dorsal view; 8 — epandrium and surstylus (right), lateral view.

Рис. 4. *Themira (Themira) flavicoxa* Melander et Spuler: 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — 4-й и 5-й стерниты брюшка ♂; 6 — эпандрий и сурстиль (левый), сбоку; 7 — эпандрий и сурстили, сверху; 8 — эпандрий и сурстиль (правый), сбоку.

surstyli as in Fig. 2: 6–8. Surstyli asymmetrical, not fused to epandrium.

Length of body: 3.3–3.6. Length of wing: 3.0–3.7.

HABITATS OF ADULT AND LARVA. No data. Immature stages unknown.

DISTRIBUTION. PALAEARCTIC REGION. China (Gansu). ORIENTAL REGION. India (East Punjab), Nepal.

### *Themira (Themira) biloba* Andersson, 1975
Fig. 3.

*Themira biloba* Andersson, 1975: 57.

DESCRIPTION. Male, female. *Colour and integument structure.* Frons, face, and gena dark brown. Antennal grooves blackish. Subgena, postcranium, and antenna black. Thorax and legs black. Wing tinged with brownish; veins brown. Calypters and their margins, and halter white. Abdomen black.

Frons subshining. Face and gena thinly whitish pruinose. Postcranium greyish pruinose. Scutum greyish pruinose. Procpisternum with whitish pollen. Procpimeron shining, but extensively greyish pruinose in lower third. Anepisternum shining. Katepisternum silvery pruinose. Anepimeron shining, but in posterior third greyish pruinose; pleural wing process greyish pruinose. Meron greyish pruinose, except on an oval median patch. Katepimeron, metepisternum, metepimeron, katatergite, anatergite and mediotergite greyish pruinose. Scutellum greyish pruinose. Abdomen shining.

*Head* roundish in lateral view, anteriorly noticeably wider than high (Fig. 3: 8). Vertical diameter of eye approximately 4.5 times as long as width of gena (with subgena) below eye. Flagellum in profile oval, approximately 1.3 times as long as wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* (*o vt* absent). 1–2 vibrissae.

*Thorax.* Scutum with the following paired setae: 1 *pprn*, 2 *npl* (anterior shorter than the posterior), 1 *pal*, 1+3 *dc* (presutural and two anterior postsutural short, often hair-like). Procpisternum with 1–2 hairs in lower part. Scutellum with a pair of apical setae, basal setae hair-like.

*Legs.* Mid femur anteriorly in apical third with several short setae. Mid tibia with 1 *av* in apical third and with apicals *av*, *ad* and *pv*. Hind femur with 2 thin *ad* in apical half. Hind tibia near tip with comb of short thick golden hairs posteriorly. Male. Foreleg as in Fig. 3: 1–4. Hind tibia with a well-developed field-like osmeterium in basal half, with several long straight hairs in apical quarter anterodorsally. Female. Fore femur with 4–5 *av* in apical half.

*Abdomen.* Syntergite 1+2 at sides with several thin setulae. The other tergites without striking setae. Sternites 4 and 5 of male as in Fig. 3: 5. Epandrium and surstyli as in Fig. 3: 6, 7. Surstyli slightly asymmetrical, not fused to epandrium.

Length of body: 3.9–4.0. Length of wing: 3.4–3.5.

HABITATS OF ADULT AND LARVA. No data. Immature stages unknown.

DISTRIBUTION. PALAEARCTIC REGION. Czech Republic, Great Britain, Netherlands, Sweden.

### *Themira (Themira) flavicoxa* Melander et Spuler, 1917
Fig. 4.

*Themira flavicoxa* Melander et Spuler, 1917: 46.

DESCRIPTION. Male, female. *Colour and integument structure.* Frons black, often in lower third yellow-

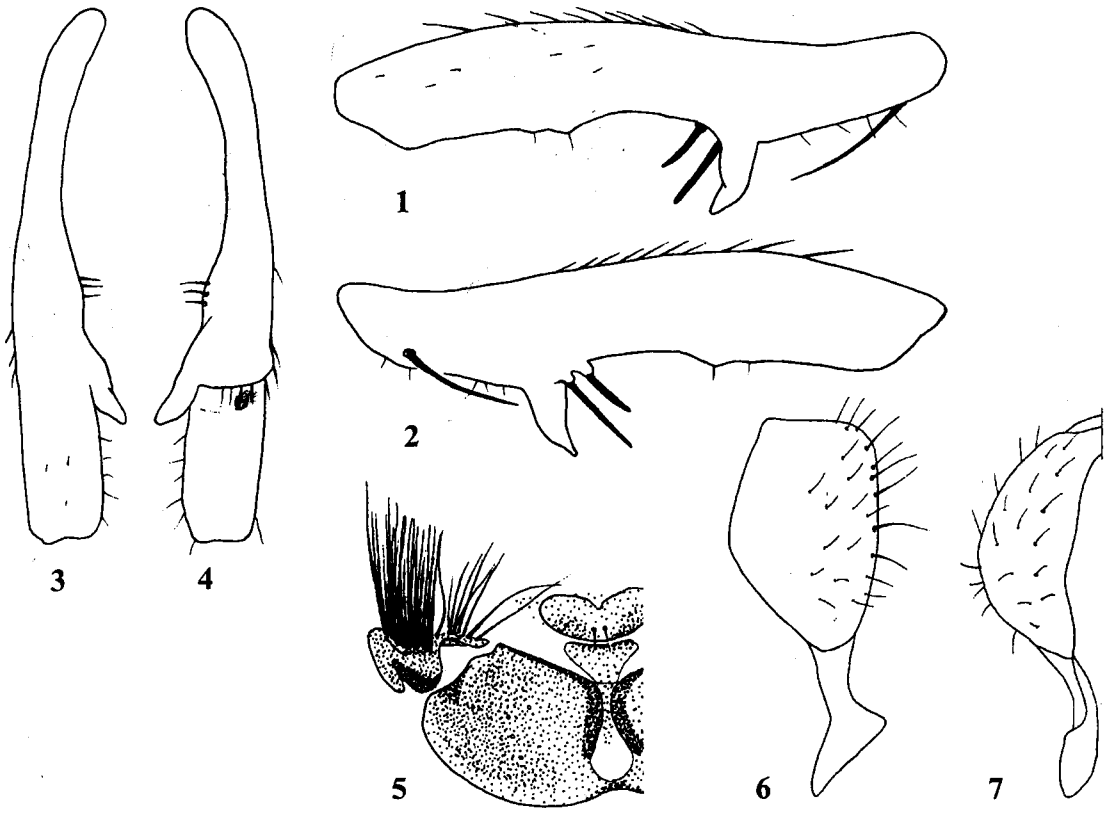



Fig. 5. *Themira (Themira) germanica* Duda: 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ abdominal sternites 4 and 5; 6 — epandrium and surstylus (left), lateral view; 7 — epandrium and surstylus (left), dorsal view.

Рис. 5. *Themira (Themira) germanica* Duda: 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — 4-й и 5-й стерниты брюшка ♂; 6 — эпандрий и сурстиль (левый), сбоку; 7 — эпандрий и сурстиль (левый), сверху.

ish. Face and gena yellowish. Antennal grooves and antenna blackish. Postcranium black. Thorax and abdomen black. Legs black, but all coxae and all trochanters, also all femora basally yellow. Wing clear; veins brown. Calypters and their margins, also halter white.

Frons shining. Face, gena, and postcranium greyish pruinose. Scutum and proepisternum greyish pruinose. Proepimeron shining, but in lower part greyish pruinose. Anepisternum shining. Katepisternum extensively greyish pruinose. Anepimeron shining, but greyish pruinose in posterior third; pleural wing process greyish pruinose. Meron greyish pruinose, except on an oval median patch. Katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head* roundish in lateral view. Vertical diameter of eye approximately 5 times as long as width of gena (with subgena) below eye. Flagellum in profile roundish, slightly longer than wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* (*o vt* absent). 1 vibrissa.

*Thorax*. Scutum with the following paired setae: 1 *ppm*, 2 *npl* (anterior short, often hair-like), 1 *pal*, 1 postsutural *dc*; with a row of thin and short setulae along each *ac*, *dc*, and *ial* line. Proepisternum with 1–2 hairs in lower part or bare. Scutellum with a pair of apical setae, basal setae absent.

*Legs*. Mid femur anteriorly in apical half with several short setae. Mid tibia with apicals *av*, *ad* and *pv*. Hind femur without striking setae. Male. Foreleg as in Fig. 4: 1–4. Hind tibia with osmeterium near middle, in apical quarter with several straight hairs anterodorsally. Female. Fore femur with 4–5 *av* in apical half.

*Abdomen*. Syntergite 1+2 at sides with several hairs. The other tergites without striking setae. Sternites 4 and 5 of male as in Fig. 4: 5. Epandrium and surstyli as in Fig. 4: 6–8. Surstyli slightly asymmetrical, not fused to epandrium.

Length of body: 2.3–3.0. Length of wing: 1.9–2.4.

HABITATS OF ADULT AND LARVA. According to Meier [1996] this species is common in New York State in early spring. Meier collected adults on compost and on rodent carcasses; the larvae breeds in cow dung.

The larvae was described by Meier [1996].

DISTRIBUTION. NEARCTIC REGION. USA (Delaware, Maryland, New York, Ohio).

## *Themira (Themira) germanica* Duda, 1926
Fig. 5.

*Themira (Themira) germanica* Duda, 1926: 83.

DESCRIPTION. Male. *Colour and integument structure*. Black, but frons near apex yellowish, face and gena brown, fore coxa at least inside yellowish. Wing tinged with brownish; veins brown. Calypters and their margins, also halter yellowish.

Frons shining, with greyish stripes of pollen along eyes and in the middle. Gena and face thinly greyish pruinose. Postcranium greyish pruinose. Scutum brownish pruinose. Proepisternum greyish pruinose. Proepimeron shining, but

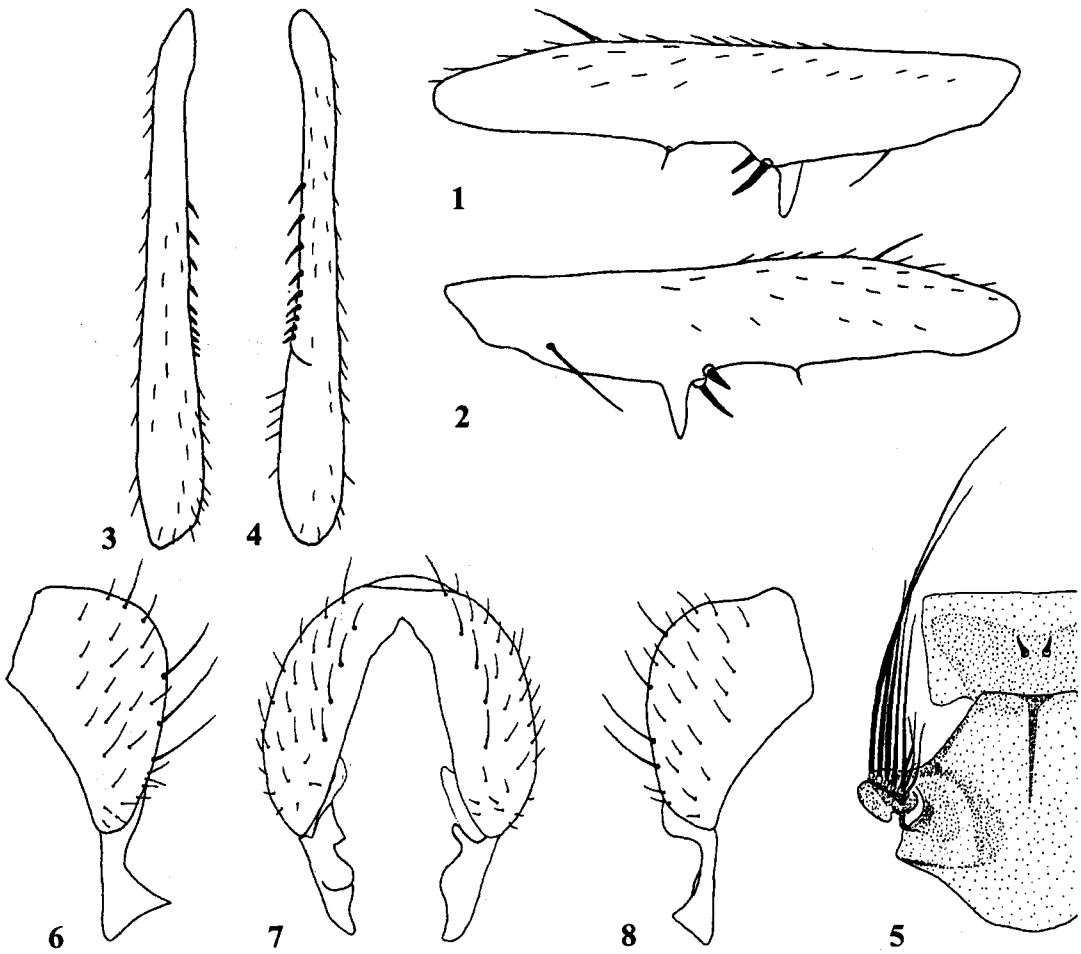



Fig. 6. *Themira (Themira) gracilis* (Zetterstedt): 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ abdominal sternites 4 and 5; 6 — epandrium and surstylus (left), lateral view; 7 — epandrium and surstyli, dorsal view; 8 — epandrium and surstylus (right), lateral view.

Рис. 6. *Themira (Themira) gracilis* (Zetterstedt): 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — 4-й и 5-й стерниты брюшка ♂; 6 — эпандрий и сурстиль (левый), сбоку; 7 — эпандрий и сурстили, сверху; 8 — эпандрий и сурстиль (правый), сбоку.

along lower margin grey pruinose. Anepisternum shining. Katepisternum extensively silvery-greyish pruinose. Anepimeron shining, but with narrow greyish stripe along posterior margin; pleural wing process greyish pruinose, but shining below greater ampulla. Meron greyish pruinose, except on an oval median patch. Katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head* roundish in lateral view. Vertical diameter of eye approximately 6 times as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, approximately 1.5 times as long as wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* (*o vt* absent). 1 vibrissa.

*Thorax*. Scutum with the following paired setae: 1 *pprn*, 1–2 *npl* (anterior vestigial), 1 *pal*, 1 postsutural *dc*; with a row of short setulae along each *ac*, *dc*, and *ial* line. Proepisternum with 1–2 hairs in lower part. Scutellum with a pair of apical setae, basal setae absent.

*Legs*. Foreleg as in Fig. 5: 1–4. Mid femur with several short *a* in apical quarter. Mid tibia with 1 *av* in apical third and apicals *ad*, *av* and *pv*. Hind femur without striking setae. Hind tibia with osmeterium in basal half, with several straight hairs in apical quarter anterodorsally.

*Abdomen*. Syntergite 1+2 at sides with several thin setulae. The other tergites without striking setae. Sternites 4 and 5 as in Fig. 5: 5. Epandrium and surstyli as in Fig. 5: 6, 7. Surstyli symmetrical, not fused to epandrium.

Length of body: 2.4. Length of wing: 2.2.

HABITATS OF ADULT AND LARVA. No data. Immature stages unknown.

DISTRIBUTION. PALAEARCTIC REGION. Germany, Great Britain, Netherlands, Russia (Krasnoyarsk Province), Sweden.

## *Themira (Themira) gracilis* (Zetterstedt, 1847) Fig. 6.

*Sepsis gracilis* Zetterstedt, 1847: 2300.

DESCRIPTION. Male, female. *Colour and integument structure.* Frons brown in lower half and black in upper half. Face and gena yellowish. Postcranium black. Antenna brown. Flagellum darkened. Thorax black. Legs yellow, but fore femur dorsally, mid and hind femora, except basal third, and basal half of mid and hind tibiae blackish. Wing tinged with brownish; veins brown. Calypters and their margins, also halter white or yellowish. Abdomen black.

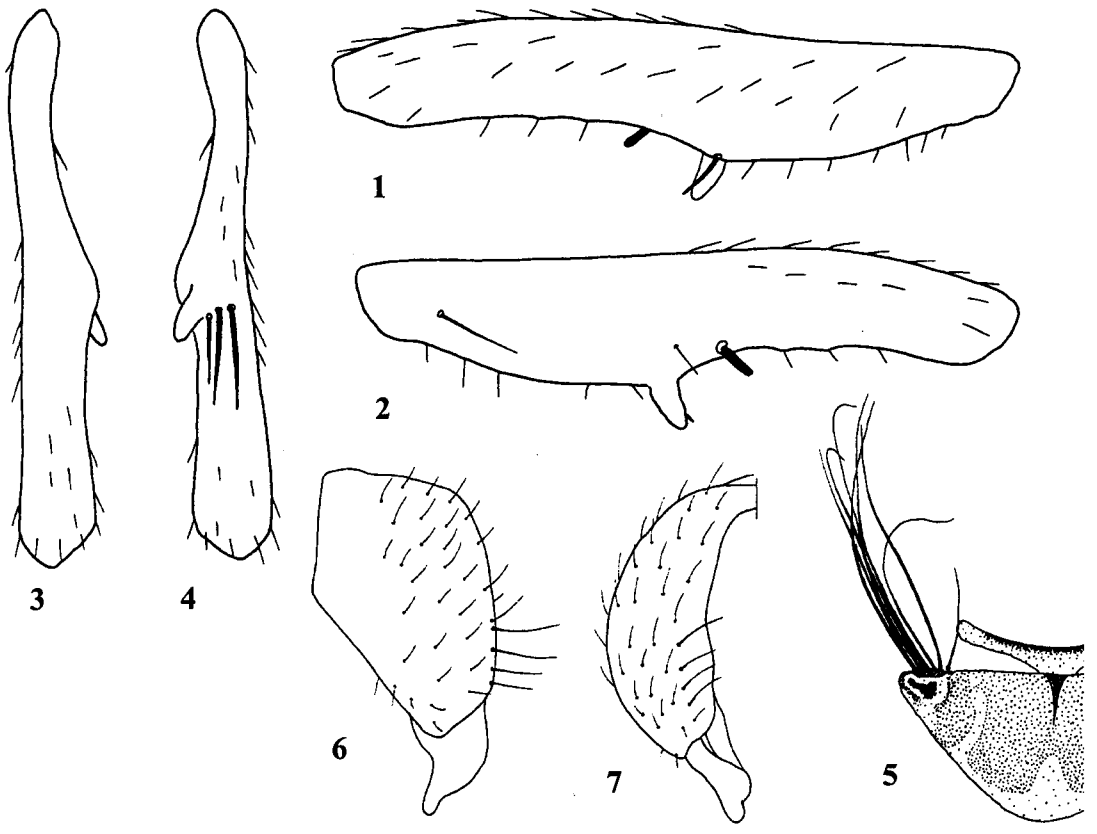



Fig. 7. *Themira (Themira) lucida* (Staeger): 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ abdominal sternites 4 and 5; 6 — epandrium and surstylus (left), lateral view; 7 — epandrium and surstylus (left), dorsal view.

Рис. 7. *Themira (Themira) lucida* (Staeger): 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — 4-й и 5-й стерниты брюшка ♂; 6 — эпандрий и сурстиль (левый), сбоку; 7 — эпандрий и сурстиль (левый), сверху.

Frons in upper half shining and thinly greyish pruinose in lower half. Face and gena with white reflection. Postcranium greyish pruinose. Scutum greyish pruinose, only postpronotal lobe with shining spot. Proepisternum greyish pruinose in anterior half and shining posterior half. Proepimeron shining, but extensively greyish pruinose along lower margin. Anepisternum shining, greyish pruinose near upper posterior corner. Katepisternum shining, with band of grey pollen along upper margin. Anepimeron greyish pruinose, but shining anteriorly; pleural wing process greyish pruinose, but shining below greater ampulla. Meron, katepimeron, metepisternum, metepimeron, katatergite, anatergite and mediotergite greyish pruinose. Scutellum greyish pruinose. Abdomen shining.

*Head* roundish in lateral view. Vertical diameter of eye approximately 6.5 times as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, approximately 1.5 times as long as wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* (*o vt* absent). 1–2 vibrissae.

*Thorax*. Scutum with the following paired setae: 1 *pprn*, 2 *npl* (anterior shorter than posterior), 1 *pal*, 1 postsutural *dc*. Proepisternum with 1–2 hairs in lower part or bare. Scutellum with a pair of apical setae, basal setae absent.

*Legs*. Mid and hind femora without striking setae. Mid tibia with apicals *av*, *ad* and *pv*. Hind tibia near apex with comb of short thick golden hairs posteriorly. Male. Foreleg as in Fig. 6: 1–4. Hind tibia with osmeterium near middle, with several long straight hairs anterodorsally below osmeterium. Female. Fore femur with 4–5 *av* in apical half.

*Abdomen*. Syntergite 1+2 at sides with several hairs. The other tergites without striking hairs and setae. Sternites 4 and 5 of male as in Fig. 6: 5. Epandrium and surstyli as in Fig. 6: 6–8. Surstyli asymmetrical, not fused to epandrium.

Length of body: 2.1–3.7. Length of wing: 1.8–3.0.

HABITATS OF ADULT AND LARVA. I have collected adults on the strongly decomposed carcase of a cow, and also in grasses near a cesspool.

Immature stages unknown.

DISTRIBUTION. PALAEARCTIC REGION. Austria, Czech Republic, Germany, Great Britain, Romania, Russia (European part: Karelia, Leningrad and Moscow areas, North Ossetia; Asian part: Amur Area, Primorie Province), Sweden, Ukraine; Asia: Mongolia.

## *Themira (Themira) lucida* (Staeger, 1844)
Fig. 7.

*Sepsis lucida* Staeger, 1844: 22.
*Themira athabasca* Mangan, 1976: 1024, **syn.n.**

DESCRIPTION. Male, female. *Colour and integument structure.* Frons black, often in lower third yellowish. Face and gena brown to black. Antennal grooves and antenna as a rule black. Postcranium black. Thorax, legs, and abdomen black. Wing tinged with brownish; veins brown. Calypters and their margins, also halter yellowish.

Frons shining, with narrow greyish stripe of pollen in the middle. Face, gena, and postcranium greyish pruinose.

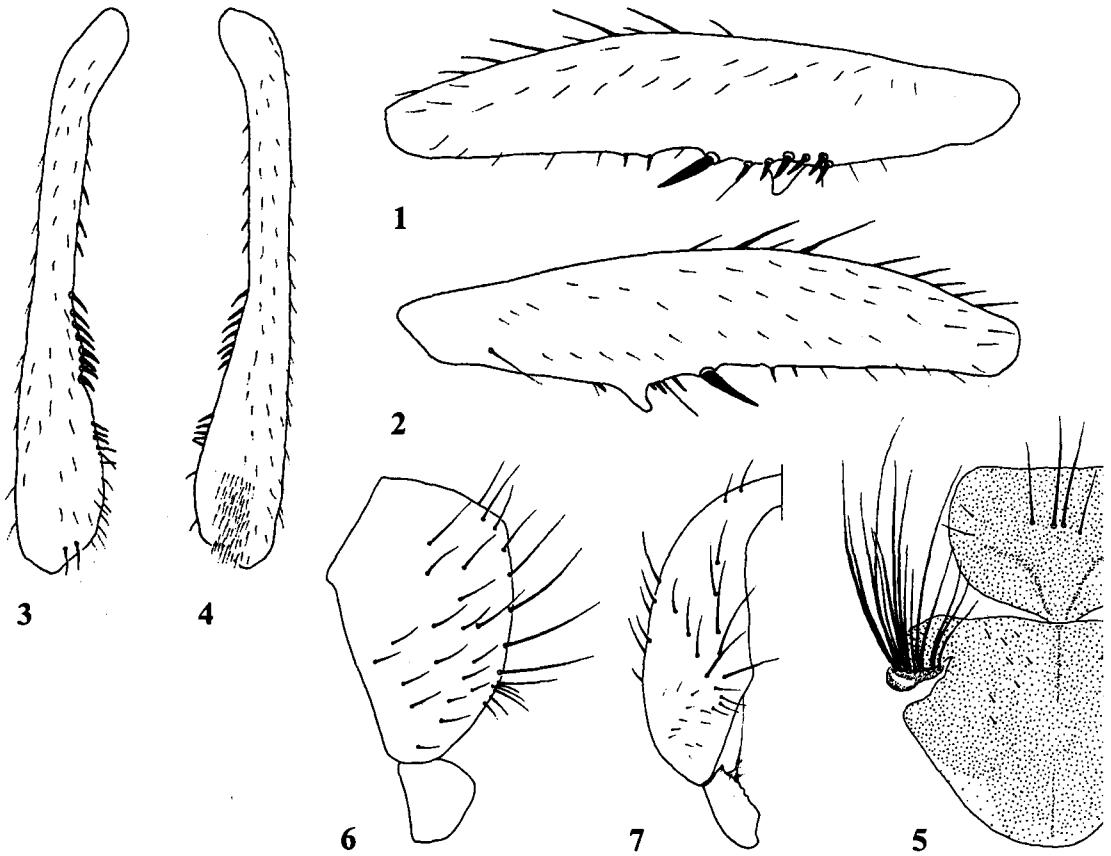



Fig. 8. *Themira (Themira) lutulenta* Ozerov: 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ abdominal sternites 4 and 5; 6 — epandrium and surstylus (left), lateral view; 7 — epandrium and surstylus (left), dorsal view.

Рис. 8. *Themira (Themira) lutulenta* Ozerov: 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — 4-й и 5-й стерниты брюшка ♂; 6 — эпандрий и сурстиль (левый), сбоку; 7 — эпандрий и сурстиль (левый), сверху.

Scutum and procpisternum greyish pruinose. Procpimeron shining, but greyish pruinose in lower part. Anepisternum shining. Katepisternum extensively greyish pruinose. Anepimeron shining, but greyish pruinose in posterior third; pleural wing process greyish pruinose. Meron greyish pruinose, except on an oval median patch. Katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head* roundish in lateral view. Vertical diameter of eye approximately 5 times as long as width of gena (with subgena) below eye. Flagellum in profile roundish, slightly longer than wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* (*o vt* absent). 1 vibrissa.

*Thorax*. Scutum with the following paired setae: 1 *pprn*, 2 *npl* (anterior short, hair-like), 1 *pal*, 1 postsutural *dc*; with a row of thin and short setulae along each *ac*, *dc*, and *ial* line. Procpisternum with 1–2 hairs in lower part. Scutellum with a pair of apical setae, basal setae absent.

*Legs*. Mid femur with several short setae in apical half anteriorly. Mid tibia with apicals *av*, *ad* and *pv*. All femora and hind tibia without striking setae. Male. Foreleg as in Fig. 7: 1–4. Hind tibia with osmeterium near middle, with several straight hairs in apical quarter anterodorsally. Female. Fore femur with 4–5 *av* in apical half.

*Abdomen*. Syntergite 1+2 at sides with several hairs. Sternites 4 and 5 of male as in Fig. 7: 5. Epandrium and surstylus as in Fig. 7: 6, 7. Surstyli symmetrical, not fused to epandrium.

Length of body: 2.0–3.4. Length of wing: 2.3–3.1.

HABITATS OF ADULT AND LARVA. Adults collected by Duda [1926] on pastures and around creeks; on bait where by fruits were favored over meat and fish Gregor [1966]; in grass near the boxes with rabbits feces [Minder, 1963]. I collected males and females near pond on goose and duck dung. Larvae breed in goose dung Meier [1996]; I have found larvae in duck dung.

The larva was described by Meier [1996].

DISTRIBUTION. PALAEARCTIC REGION. Whole Europe [Zuska, Pont, 1984]; Russia (European part: Leningrad Area, Moscow Area, Moscow Sity; Asian part: Amur Area, Chelaybinsk Area, Krasnoyarsk Province, Primorie Province); North Africa: Algeria. NEARCTIC REGION. USA (Alaska).

## *Themira (Themira) lutulenta* Ozerov, 1986
Fig. 8.

*Themira lutulenta* Ozerov, 1986b: 641.

DESCRIPTION. Male, female. *Colour and integument structure.* Frons, face, and gena reddish-brown. Antennal grooves blackish. Postcranium black, thorax and abdomen black. Legs black, but all trochanters, fore and mid tibiae, also hind tibia apically yellowish. Wing

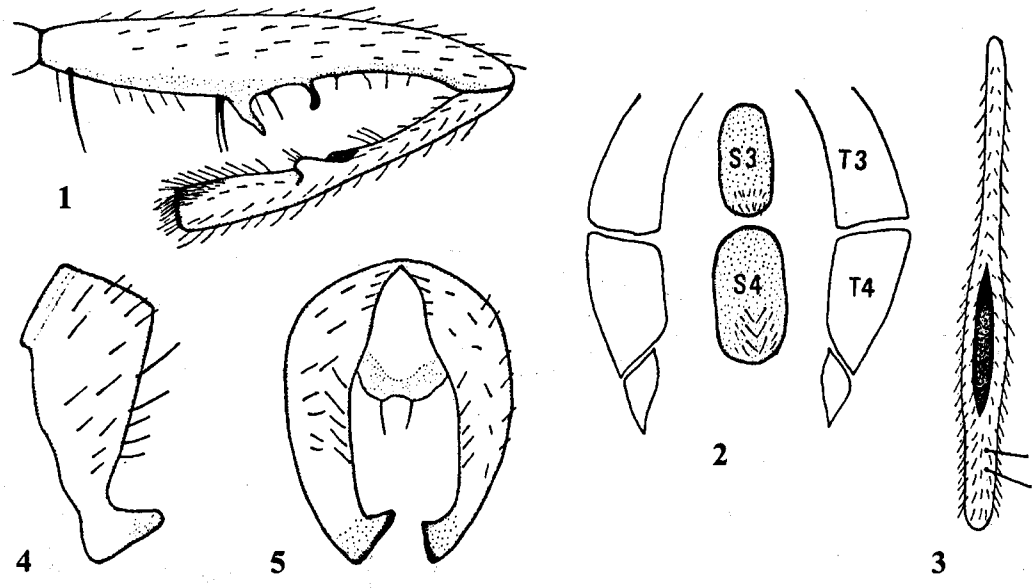



Fig. 9. *Themira (Themira) makiharai* Iwasa: 1 — ♂ fore femur and tibia (left), anterior view (after Iwasa, 1984); 2 — ♂ abdominal sternite 4 (after Iwasa, 1984); 3 — ♂ hind tibia (left), anterodorsal view (after Iwasa, 1984); 4 — epandrium and surstylus (left), lateral view (after Iwasa, 1984); 5 — epandrium and surstyli, dorsal view (after Iwasa, 1984).

Рис. 9. *Themira (Themira) makiharai* Iwasa: 1 — бедро и голень передней левой ноги ♂, спереди (по Iwasa, 1984); 2 — 4-й стернит брюшка ♂ (по Iwasa, 1984); 3 — голень задней левой ноги ♂, переднедорсально (по Iwasa, 1984); 4 — эпандрий и сурстиль (левый), сбоку (по Iwasa, 1984); 5 — эпандрий и сурстили, сверху (по Iwasa, 1984).

tinged with brownish; veins brown. Calypters and their margins, also halter white.

Frons, face, and gena thinly greyish pruinose. Postcranium greyish pruinose. Scutum and proepisternum greyish pruinose. Proepimeron shining, but extensively greyish pruinose in lower third. Anepisternum shining, but greyish pruinose along upper and posterior margins. Katepisternum silvery pruinose, but with small shining spot in upper posterior corner. Anepimeron greyish pruinose, but with shining spot near anterior margin; pleural wing process greyish pruinose. Meron, katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head* in profile rectangular. Vertical diameter of eye approximately 2 times as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, slightly narrowing apically, approximately 1.5 times as long as wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* ( *o vt* absent). 1–2 short vibrissae.

*Thorax*. Scutum with the following paired setae: 1 *pprn*, 2 *npl*, 1 *pal*, 1 postsutural *dc*. Proepisternum with 1–2 hairs in lower part. Scutellum with a pair of apical setae, basal setae absent.

*Legs*. Mid femur with several setae in apical third anteriorly. Mid tibia with 1 *av* in apical third and with apicals *av*, *ad* and *pv*. Hind femur with 1–2 thin *ad* in apical third. Hind tibia near tip with comb of short thick golden hairs posteriorly. Male. Foreleg as in Fig. 8: 1–4. Hind tibia with osmeterium in basal half. Female. Fore femur with 5–6 *av* in apical half.

*Abdomen*. Syntergite 1+2 at sides with several hairs. The other tergites without striking hairs or setae. Sternites 4 and 5 of male as in Fig. 8: 5. Epandrium and surstyli as in Fig. 8: 6, 7. Surstyli symmetrical, not fused to epandrium.

Length of body: 4.1–4.7. Length of wing: 3.0–3.8.

HABITATS OF ADULT AND LARVA. A spring species. All the specimens were collected before 10 June [Ozerov, 1986b; Iwasa, 1995]. I collected adults near a drying pond with many dead tadpoles. The adults were reared larvae in the decaying substrate (soil and dead tadpoles) collected there.

The larva was described by Meier [1996].

DISTRIBUTION. PALAEARCTIC REGION. Japan (Hokkaido and Honshu), Russia (Primorie Province).

## *Themira (Themira) makiharai* Iwasa, 1984
Fig. 9.

*Themira makiharai* Iwasa, 1984: 75.

DESCRIPTION. Male, female. *Colour and integument structure.* Frons black, in lower third yellowish. Face, gena, and antenna yellow. Antennal grooves darkened. Postcranium black. Antenna black, but flagellum tinged with reddish. Thorax black. Legs black, but fore coxa, all trochanters, also all femora basally yellow. Wing tinged with brownish; veins brown. Calypters and their margins, also halter yellowish. Abdomen black.

Frons subshining. Gena and face thinly whitish pruinose. Postcranium greyish pruinose. Scutum brownish pruinose. Proepisternum extensively greyish pruinose. Proepimeron shining, but extensively grey pruinose along lower margin. Anepisternum shining, but thinly greyish pruinose near posterior margin. Katepisternum extensively silvery-greyish pruinose. Anepimeron shining, but greyish pruinose near posterior margin; pleural wing process greyish pruinose, but shining below greater ampulla. Meron greyish pruinose, except on an oval median patch. Katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head* roundish in lateral view. Vertical diameter of eye approximately 5 times as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, approximately 1.5 times as long as wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* (*o vt* absent). 1 thin vibrissa.

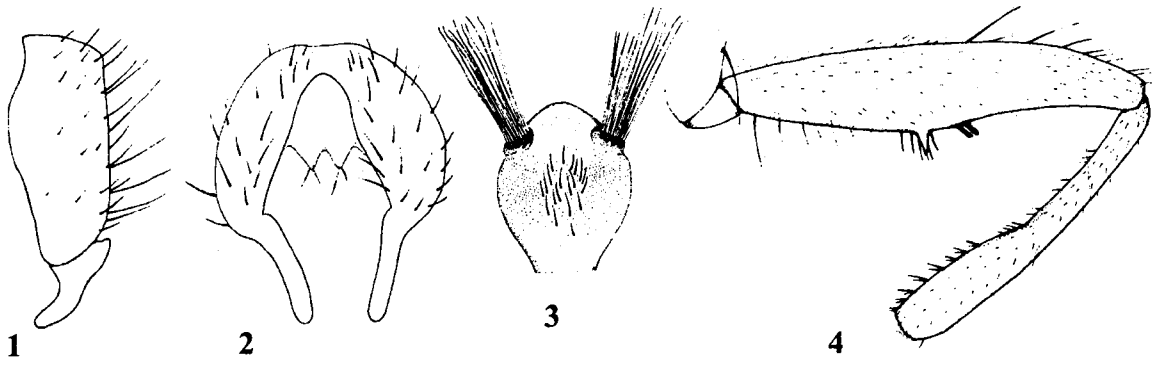



Fig. 10. *Themira (Themira) mesopleuralis* Iwasa (after Iwasa, 1981): 1 — epandrium and surstylus (left), lateral view; 2 — epandrium and surstyli, dorsal view; 3 — ♂ abdominal sternite 4; 4 — ♂ fore femur and tibia (left), anterior view.

Рис. 10. *Themira (Themira) mesopleuralis* Iwasa (по Iwasa, 1981): 1 — эпандрий и суростиль (левый), сбоку; 2 — эпандрий и суростили, сверху; 3 — 4-й стернит брюшка ♂; 4 — бедро и голень передней левой ноги ♂, спереди.

*Thorax*. Scutum with the following paired setae: 1 *pprn*, 2 *npl*, 1 *pal*, 1 postsutural *dc*. Procpisternum with 1–2 hairs in lower part or bare. Scutellum with a pair of apical setae, basal setae absent.

*Legs*. Mid femur with several setae in apical half anteriorly. Mid tibia with 1 *av* in apical third and with apicals *ad*, *av*, and *pv*. Hind femur with 1–2 *ad* in apical half. Male. Foreleg as in Fig. 9: 1. Hind tibia with osmeterium in lower half, with several straight hairs in apical third anterodorsally below osmeterium (Fig. 9: 3). Female. Fore femur with 2–3 *av* in apical half.

*Abdomen*. Syntergite 1+2 at sides with several hairs. The other tergites without striking hairs or setae. Sternite 4 of male as in Fig. 9: 2. Epandrium and surstyli as in Fig. 9: 4, 5. Surstyli asymmetrical, not fused to epandrium.

Length of body: 3.3–3.6. Length of wing: 3.2–3.9.

HABITATS OF ADULT AND LARVA. No data. Immature stages unknown.

DISTRIBUTION. ORIENTAL REGION. Nepal.

## *Themira mesopleuralis* Iwasa, 1981
Fig. 10.

*Themira mesopleuralis* Iwasa, 1981: 51.

DESCRIPTION. Male. *Colour and integument structure.* Frons in upper half black, in lower half dark brown. Face and gena dark brown. Antennal grooves blackish. Posteranium and clypeus black. Antenna black, but pedicel, also flagellum basally dark brown. Thorax and abdomen black. Legs black, but all trochanters reddish. Wing tinged with brownish; veins brown. Calypters and their margins, also halter white.

Frons subshining, with two shining spots laterad of ocellar triangle. Face, gena anteriorly and along lower margin, and posteranium extensively grey pruinose. Scutum grey pruinose, but with two small shining spots behind transverse suture and autwardly line *dc*. Procpisternum greyish pruinose, but shining in lower part. Procpimeron, anepisternum, anepimeron, pleural wing process, meron, katepimeron, metepisternum, metepimeron, katatergite, anatergite and mediotergite extensively grey pruinose. Katepisternum extensively grey pruinose, but with big shining spot abovecx. Scutellum extensively grey pruinose. Abdomen shining, but tergite 1+2 grey pruinose basally.

*Head* in profile rectangular. Vertical diameter of eye approximately 2 times as long as width of gena (with subgena) below eye. Flagellum in profile roundish, slightly longer than wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* (*o vt* absent). Vibrissa like the genal setae.

*Thorax*. Scutum with the following paired setae: 1 *pprn*, 2 *npl*, 1 *pal*, 1 postsutural *dc*; with a row of short setulae along each *ac*, *dc*, and *ial* line. Anepisternum in posterior half with short hairs, near posterior margin with clearly visible seta. Katepisternum ventrally with 3–4 long setae. Scutellum with a pair of apical setae, basal setae absent.

*Legs*. Fore leg as in Fig. 10: 4. Mid tibia with 1 *av* in apical third and with apicals *av*, *ad* and *pv*. Hind femur in apical third with 1–2 thin *ad*. Hind tibia with osmeterium near middle.

*Abdomen*. Syntergite 1+2 and tergite 3 at sides with thin setae. Tergites 3 and 4 with several lateral marginal setae. Tergite 5 with a row of marginal setae. Sternite 4 as in Fig. 10: 3. Epandrium and surstyli as in Fig. 10: 1, 2. Surstyli symmetrical, fused to epandrium.

Length of body: 3.0. Length of wing: 2.7.

Female unknown.

HABITATS OF ADULT AND LARVA. No data. Immature stages unknown.

DISTRIBUTION. PALAEARCTIC REGION. Japan (Honshu).

## *Themira (Themira) mongolica* Soós, 1972
Fig. 11.

*Themira mongolica* Soós, 1972: 358.

DESCRIPTION. Male, female. *Colour and integument structure.* Frons dark brown to black. Face, gena, and antenna brown. Posteranium black. Antenna black. Thorax and legs black. Wing clear; veins brown. Calypters and their margins, also halter white or yellowish. Abdomen black.

Frons shining, with greyish stripe of pollen in the middle. Gena (below eye) shining. Face thinly greyish pruinose. Posteranium greyish pruinose. Scutum greyish pruinose, but shining at sides. Postpronotal lobe shining. Procpisternum shining in upper half and greyish pruinose in lower half. Procpimeron shining, but extensively grey pruinose along lower margin. Anepisternum shining. Katepisternum shining, with band of grey pollen along upper margin. Anepimeron greyish pruinose, except on an oval patch anteriorly; pleural wing process greyish pruinose, but shining below greater ampulla. Meron greyish pruinose, except on an oval median patch. Katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near

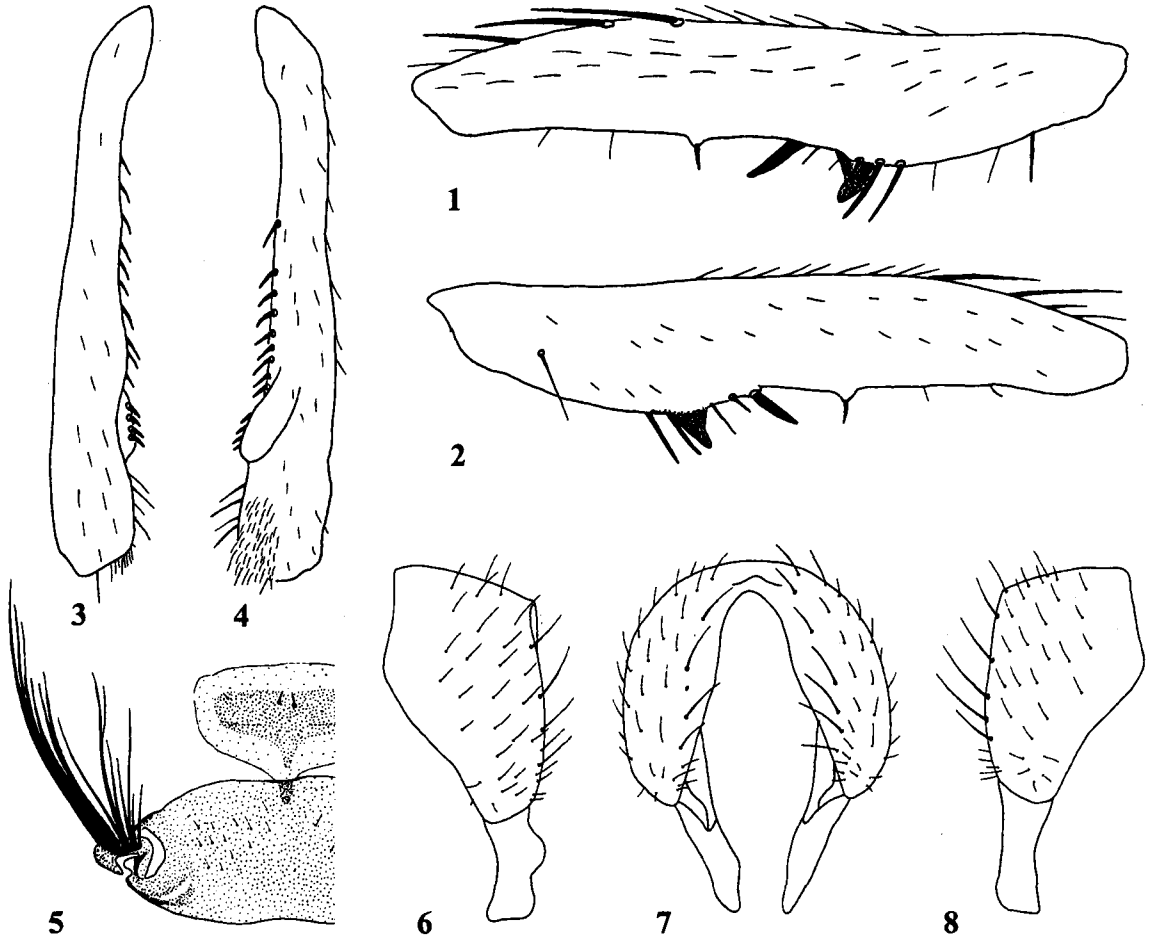



Fig. 11. *Themira (Themira) mongolica* Soós: 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ abdominal sternites 4 and 5; 6 — epandrium and surstylus (left), lateral view; 7 — epandrium and surstyli, dorsal view; 8 — epandrium and surstylus (right), lateral view.

Рис. 11. *Themira (Themira) mongolica* Soós: 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — 4-й и 5-й стерниты брюшка ♂; 6 — эпандрий и сурстиль (левый), сбоку; 7 — эпандрий и сурстили, сверху; 8 — эпандрий и сурстиль (правый), сбоку.

abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head* roundish in lateral view. Vertical diameter of eye approximately 3.5 times as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, approximately 1.4 times as long as wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* (*o vt* absent). 2–3 vibrissae.

*Thorax*. Scutum with the following paired setae: 1 *pprn*, 2 *npl*, 1 *pal*, 1+1 *dc* (presutural short). Procpisternum with 1–2 hairs in lower part. Scutellum with a pair of apical setae, basal setae absent.

*Legs*. Mid femur without striking setae. Mid tibia with 1 *av* in apical third and with apicals *ad*, *av*, and *pv*. Hind femur in apical half with 1–2 *ad*. Male. Foreleg as in Fig. 11: 1–4. Hind tibia with osmeterium in apical half, with 1 *pd* and several straight hairs below osmeterium anterodorsally. Female. Fore femur with 4–5 *av* in apical half.

*Abdomen*. Syntergite 1+2 at sides with several hairs. The other tergites without striking hairs or setae. Sternites 4 and 5 of male as in Fig. 11: 5. Epandrium and surstyli as in Fig. 11: 6–8. Surstyli asymmetrical, not fused to epandrium.

Length of body: 3.0–3.8. Length of wing: 2.7–3.1.

HABITATS OF ADULT AND LARVA. No data. Immature stages unknown.

DISTRIBUTION. PALAEARCTIC REGION. Kazakhstan, Mongolia.

## *Themira (Themira) nigricornis* (Meigen, 1826) Fig. 12.

*Sepsis nigricornis* Meigen, 1826: 291.
*Sepsis falleni* Staeger [in Schiødte], 1844: 32.

DESCRIPTION. Male, female. *Colour and integument structure.* Frons dark brown. Face and gena yellowish. Postcranium black. Antenna blackish, but pedicel entirely and flagellum basally reddish-yellow. Thorax black. Legs mainly black, but fore coxa, all trochanters, also all femora basally yellow. Wing tinged with brownish; veins brown. Calypters and their margins, also halter white or yellowish. Abdomen black.

Frons subshining. Gena shining. Face delicately golden pruinose. Postcranium greyish pruinose. Scutum brownish pruinose. Procpisternum greyish pruinose. Procpimeron shining, but greyish pruinose in lower half. Anepisternum shining, but thinly greyish pruinose along upper and posterior margins. Katepisternum extensively silvery-greyish pruinose. Anepimeron greyish pruinose, but with small

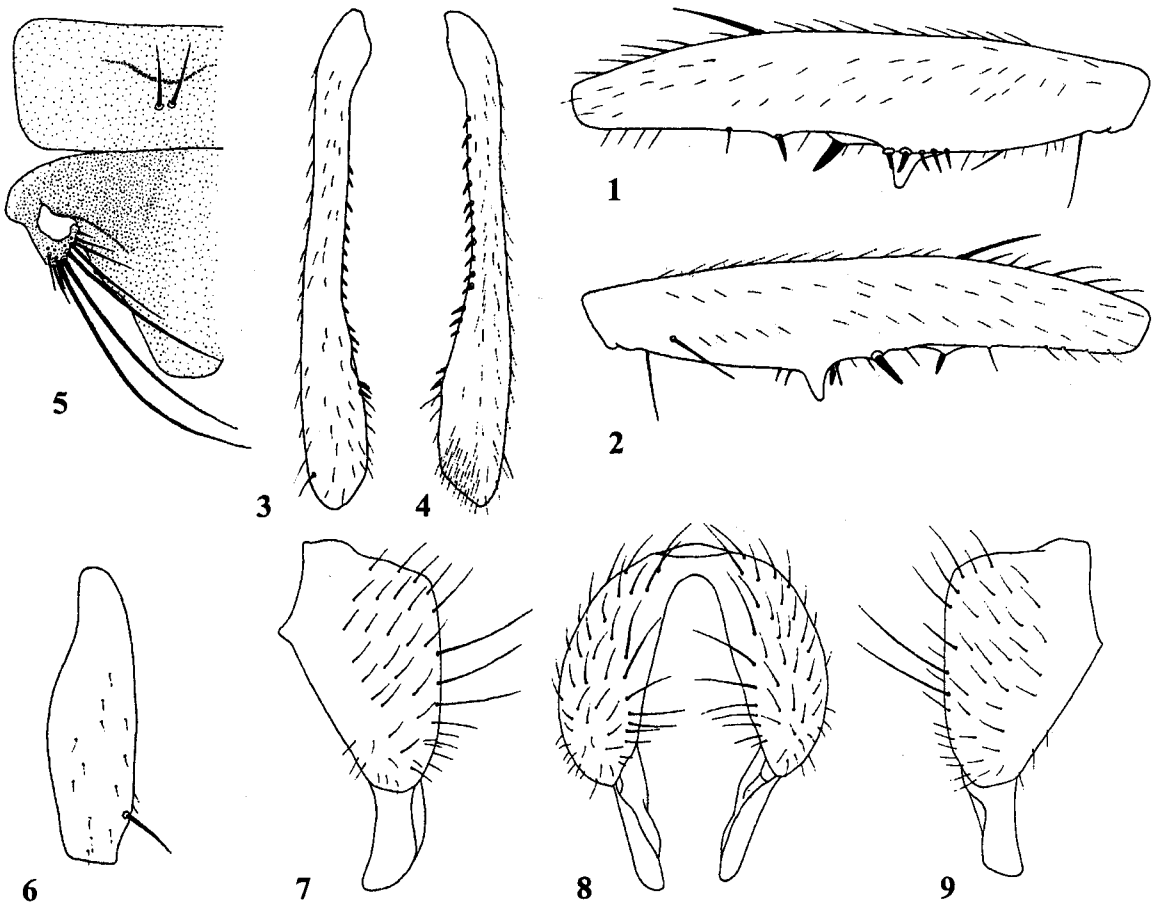



Fig. 12. *Themira (Themira) nigricornis* (Meigen): 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ abdominal sternites 4 and 5; 6 — ♂ fore coxa (left), anterior view; 7 — epandrium and surstylus (left), lateral view; 8 — epandrium and surstyli, dorsal view; 9 — epandrium and surstylus (right), lateral view.

Рис. 12. *Themira (Themira) nigricornis* (Meigen): 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — 4-й и 5-й стерниты брюшка ♂; 6 — тазик передней левой ноги ♂, спереди; 7 — эпандрий и сурстиль (левый), сбоку; 8 — эпандрий и сурстили, сверху; 9 — эпандрий и сурстиль (правый), сбоку.

shining spot near upper margin; pleural wing process greyish pruinose. Katepimeron, meron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head* roundish in lateral view. Vertical diameter of eye approximately 2.6 times as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, approximately 1.5 times as long as wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* (*o vt* absent). 1 thin vibrissa, like the genal setae.

*Thorax*. Scutum with the following paired setae: 1 *pprn*, 2 *npl*, 1 *pal*, 1 postsutural *dc*. Proepisternum with 1–2 hairs in lower part. Scutellum with a pair of apical setae, basal setae absent.

*Legs*. Mid femur without striking setae. Mid tibia with 1 *av* in apical third and apicals *ad*, *av* and *pv*. Hind femur in apical half with 2–3 *ad*. Male. Foreleg as in Fig. 12: 1–4. Hind tibia with osmeterium near middle. Female. Fore femur with 5–6 *v* in apical half.

*Abdomen*. Syntergite 1+2 of male at sides with several thin setulae. The other tergites in male and all tergites in female without striking setae. Sternites 4 and 5 of male as in Fig. 12: 5; tuft of setae on sternite 4 directed towards head. Epandrium and surstyli as in Fig. 12: 7–9. Surstyli slightly asymmetrical, not fused to epandrium.

Length of body: 3.0–4.8. Length of wing: 2.4–3.8.

HABITATS OF ADULT AND LARVA. A spring species like *Th. lutulenta*. The adults have been found at birch sap [Minder, 1963; Stakelberg, 1958], in sheep pastures [Duda, 1926], on cow dung with straw or rice stems [Iwasa, 1981], on horse droppings and pig dung [Coffey, 1966], on rotting meat and fungi [Gregor, 1966; Pont, 1979], and have been reared from garden soil and human excrement [Pont, 1979]. Larvae were found in cow dung. Pupae were found in heaps of hen dung and in soil around a cesspool [Lobanov, 1962].

The larva was described by Meier [1996].

DISTRIBUTION. PALAEARCTIC REGION. Throughout Europe [Zuska, Pont, 1984]; Russia (European part: Kaluga, Leningrad, Moscow areas, Moscow City; Asian part: Irkutsk, Tyumen areas). NEARCTIC REGION. USA (Alaska [Mangan, 1976], Massachusetts, New Hampshire [Steyskal, 1965], and see Appendix).

## *Themira (Themira) putris* (Linnaeus, 1758) Fig. 13.

*Musca putris* Linnaeus, 1758: 597.
*Musca fimeti* Linnaeus, 1761: 456.

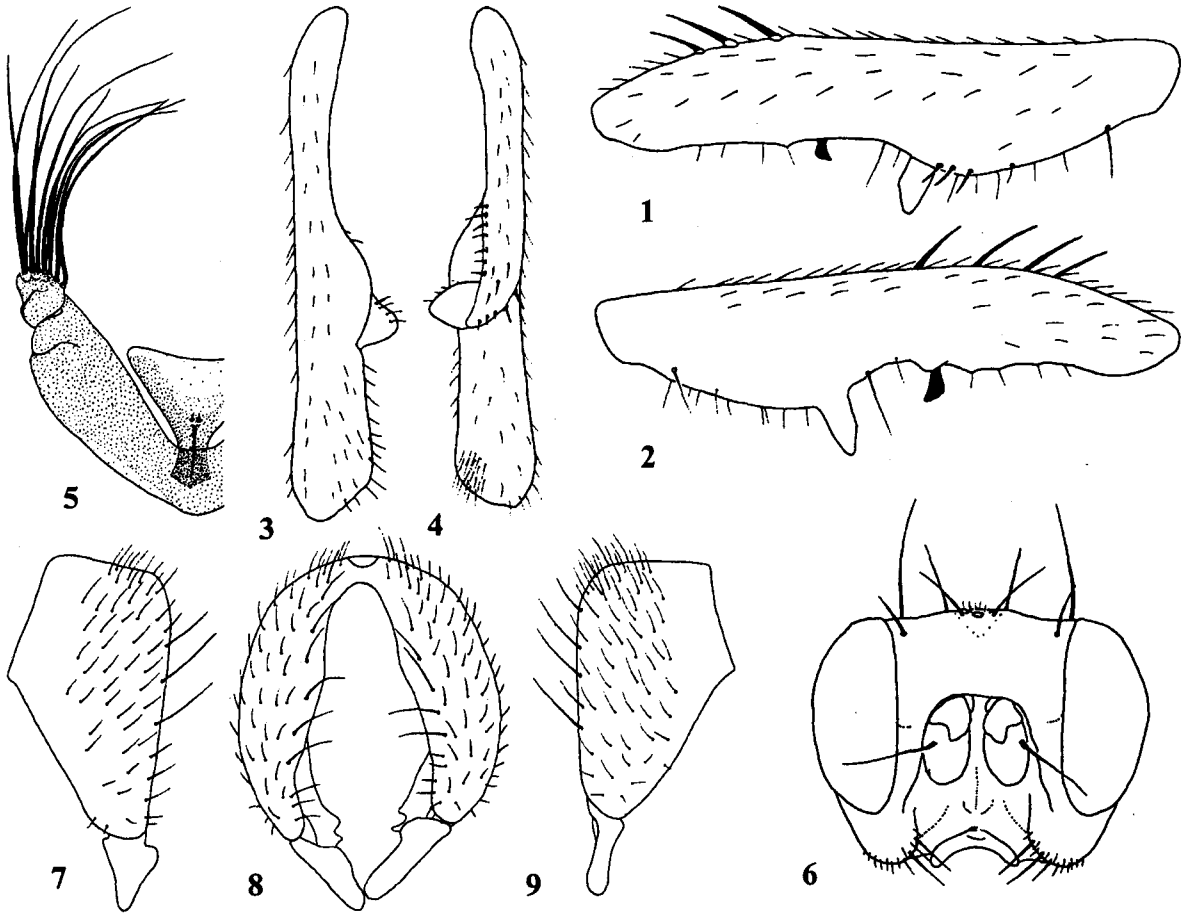



Fig. 13. *Themira (Themira) putris* (Linnaeus): 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ abdominal sternites 4 and 5; 6 — head, anteriorly. 7 — epandrium and surstylus (left), lateral view; 8 — epandrium and surstyli, dorsal view; 9 — epandrium and surstylus (right), lateral view.

Рис. 13. *Themira (Themira) putris* (Linnaeus): 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — 4-й и 5-й стерниты брюшка ♂; 6 — голова, спереди. 7 — эпандрий и сурстиль (левый), сбоку; 8 — эпандрий и сурстили, сверху; 9 — эпандрий и сурстиль (правый), сбоку.

*Musca conssencis* Harris, 1780: 123.
*Themira pilosa* Robineau-Desvoidy, 1830: 746.

DESCRIPTION. Male, female. *Colour and integument structure.* Frons dark brown. Face and gena yellowish. Antennal grooves blackish. Subgena, posteranium and antenna black. Thorax and legs black. Wing tinged with brownish; veins brown. Calypters and their margins, also halter white. Abdomen black. Epandrium of male black.

Frons thinly greyish pruinose. Face and gena with white reflection. Posteranium greyish pruinose. Scutum and procpisternum greyish pruinose. Procpimeron shining, but extensively greyish pruinose in lower third. Anepisternum shining. Katepisternum silvery pruinose. Anepimeron shining, but greyish pruinose in posterior third; pleural wing process greyish pruinose. Meron greyish pruinose, except on an oval median patch. Katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head* roundish in lateral view, anteriorly as wide as high (Fig. 13: 6). Vertical diameter of eye approximately 3 times as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, approximately 1.5 times as long as wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* (*o vt* absent). 1–2 vibrissae.

*Thorax.* Scutum with the following paired setae: 1 *pprn*, 2 *npl* (anterior usually shorter than posterior), 1 *pal*, (0–1)+1 *dc* (presutural, if present vestigial); with a row of short setulae along each *ac*, *dc*, and *ial* line. Procpisternum with 1–2 hairs in lower part. Scutellum with a pair of apical setae, basal setae absent.

*Legs.* Mid femur with several setae in apical third anteriorly. Mid tibia with 1 *v* in apical third and with apicals *av*, *ad* and *pv*. Hind femur with 3–5 thin *ad* in apical half. Hind tibia near tip with comb of short thick golden hairs posteriorly. Male. Foreleg as in Fig. 13: 1–4. Hind tibia in basal half with osmeterium, with straight hairs below osmeterium anterodorsally. Female. Fore femur with 4–5 *av* in apical half.

*Abdomen.* Syntergite 1+2 at sides with several thin setulae. The other tergites without striking setae. Sternites 4 and 5 of male as in Fig. 13: 5. Epandrium and surstyli as in Fig. 13: 7–9. Surstyli slightly asymmetrical, not fused to epandrium.

Length of body: 3.2–4.7. Length of wing: 2.8–3.8.

HABITATS OF ADULT AND LARVA. The larvae breed in rotting vegetation [Mangan, 1977; Andersson, 1975], human excrement [Pont, 1979], liquid manure [Minder, 1963; Andersson, 1975; Coffey, 1969; Hennig,

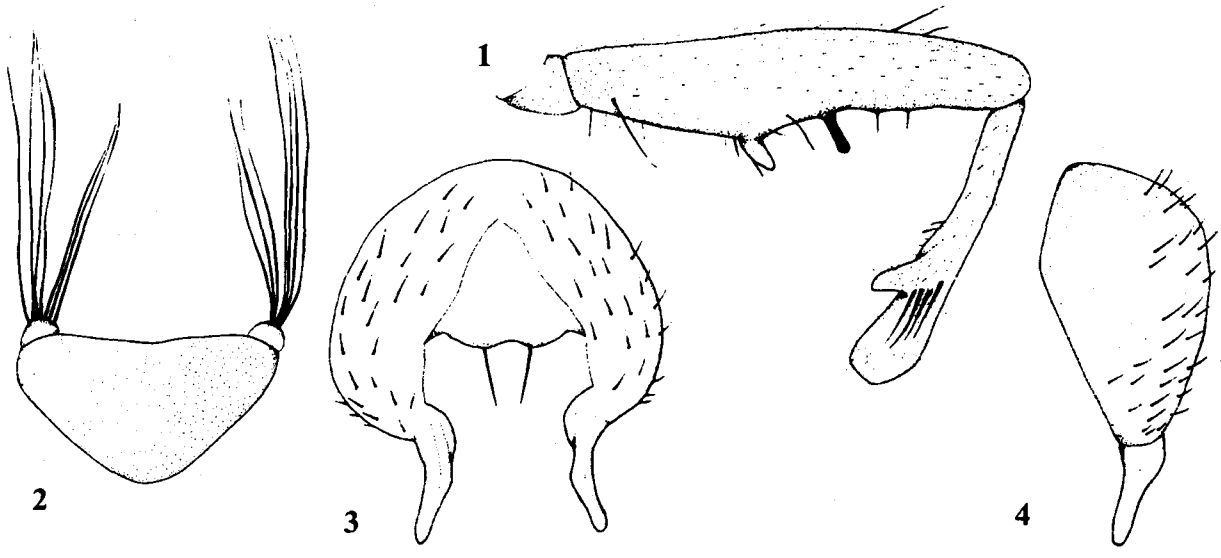



Fig. 14. *Themira (Themira) saigusai* Iwasa (after Iwasa, 1981): 1 — ♂ fore femur and tibia (left), anterior view; 2 — ♂ abdominal sternite 4; 3 — epandrium and surstyli, dorsal view; 4 — epandrium and surstylus (left), lateral view.

Рис. 14. *Themira (Themira) saigusai* Iwasa (по Iwasa, 1981): 1 — бедро и голень передней левой ноги ♂, спереди; 2 — 4-й стернит брюшка ♂; 3 — эпандрий и сурстили, сверху; 4 — эпандрий и сурстиль (левый), сбоку.

1949; Meier, 1996], pig dung [Papp, 1974]. Pupae were found in heaps of hen dung [Lobanov, 1962].

Adults are usually concentrated close to the larval substrate. They have also been caught on flowers [Bährmann, 1993; Goot, 1986].

The larva was described by Meier [1996].

DISTRIBUTION. PALAEARCTIC REGION. Throughout Europe [Zuska, Pont, 1984]; Russia (Leningrad Area to Sakhalin); Asia: China, Japan, Mongolia. NEARCTIC REGION. Canada, USA (see Appendix).

## *Themira (Themira) saigusai* Iwasa, 1981
Fig. 14.

*Themira saigusai* Iwasa, 1981: 49.

DESCRIPTION. Male. *Colour and integument structure.* Frons dark brown. Face and gena light brown. Antennal grooves darkened. Postcranium black. Antenna blackish, but flagellum reddish basally. Thorax black. Legs dark brown. Wing clear; veins brown. Calypters and their margins, also halter white or yellowish. Abdomen black.

Frons subshining. Gena (below eye) shining. Face thinly greyish pruinose. Postcranium greyish pruinose. Scutum shining, but postpronotal lobe, notopleuron, and surface before dorsocentral setae and around postpronotal lobe greyish pruinose. Procpisternum greyish pruinose. Procpimeron shining, but extensively grey pruinose in lower part. Anepisternum shining, but thinly greyish pruinose along upper and posterior margins. Katepisternum extensively silvery-greyish pruinose, with shining spot in upper posterior corner. Anepimeron greyish pruinose, but shining near anterior margin; pleural wing process greyish pruinose. Katepimeron, meron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head* roundish in lateral view. Vertical diameter of eye approximately 4.5 times as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, approximately 1.5 times as long as wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* (*o vt* absent). 1 vibrissa.

*Thorax*. Scutum with the following paired setae: 1*pprn*, 2 *npl* (anterior shorter than the posterior), 1 *pal*, 1 postsutural *dc*. Procpisternum with 1–2 hairs in lower part. Scutellum with a pair of apical setae, basal setae hair-like.

*Legs*. Foreleg as in Fig. 14: 1. Mid femur without striking setae. Mid tibia with apical *ad*. Hind femur with 1–2 *ad* in apical half. Hind tibia with straight hairs below osmeterium anterodorsally; with a weak and perceptible osmeterium near middle.

*Abdomen*. Syntergite 1+2 at sides with several hairs. The other tergites without striking hairs or setae. Sternite 4 as in Fig. 14: 2. Epandrium and surstyli as in Fig. 14: 3, 4. Surstyli symmetrical, not fused to epandrium.

Length of body: 3.2. Length of wing: 3.0.

HABITATS OF ADULT AND LARVA. No data. Immature stages unknown.

DISTRIBUTION. PALAEARCTIC REGION. Japan (Hokkaido and Honshu).

## *Themira (Themira) seticrus* Duda, 1926
Fig. 15.

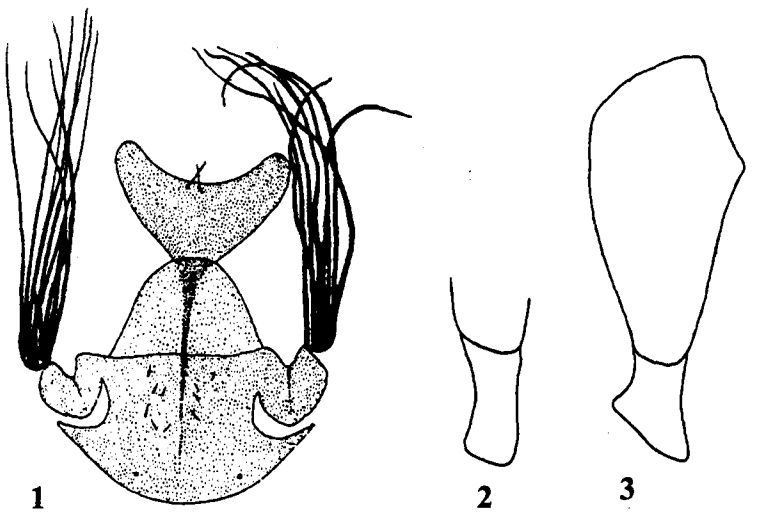
*Themira seticrus* Duda, 1926: 89.

DIAGNOSIS. *Th. seticrus* resembles *Th. mongolica*, but differs from it by the completely shining katepisternum. Katepisternum of *Th. mongolica* with a silvery-white upper margin.

NOTE. 2 type-specimens of *Th. seticrus* from China are known (both on a single pin, ♂ and ♀, kept in the ZMB), amd 1♀ from Mongolia (Soós, 1972). A very good description of type-specimens was made by Duda [1926], and later by Hennig [1949]. Hennig made also the pictures of sternite 4 and surstyli (Fig. 15: 1–3). Thougt I have seen both specimens, I have not made redescrittion, only notes the difference between *Th. seticrus* and *Th. mongolica* [Ozerov, 1997].

HABITATS OF ADULT AND LARVA. No data. Immature stages unknown.

DISTRIBUTION. PALAEARCTIC REGION. China (Qinghai), Mongolia.




*Themira (Themira) shimai* Iwasa, 1984

Fig. 16.

*Themira shimai* Iwasa, 1984: 73.

DESCRIPTION. Male, female. *Colour and integument structure.* Frons black, in lower third yellowish. Face and gena reddish-yellow. Antennal grooves darkened. Antenna black. Thorax, legs, and abdomen black. Wing tinged with brownish; veins brown. Calypters and their margins, also halter yellowish.

Frons thinly greyish pruinose. Face and gena with white reflection. Postcranium greyish pruinose. Scutum and procpisternum greyish pruinose. Procpimeron shining, but greyish pruinose in lower part.

Fig. 15. *Themira (Themira) seticrus* Duda: 1 — ♂ abdominal sternites 4 and 5 (after Hennig, 1949); 2 — surstylus (left), lateral view (after Hennig, 1949); 3 — epandrium and surstylus (right), lateral view (after Hennig, 1949).

Рис. 15. *Themira (Themira) seticrus* Duda: 1 — 4-й и 5-й стерниты брюшка ♂ (по Hennig, 1949); 2 — сурстиль (левый), сбоку (по Hennig, 1949); 3 — эпандрий и сурстиль (правый), сбоку (по Hennig, 1949).

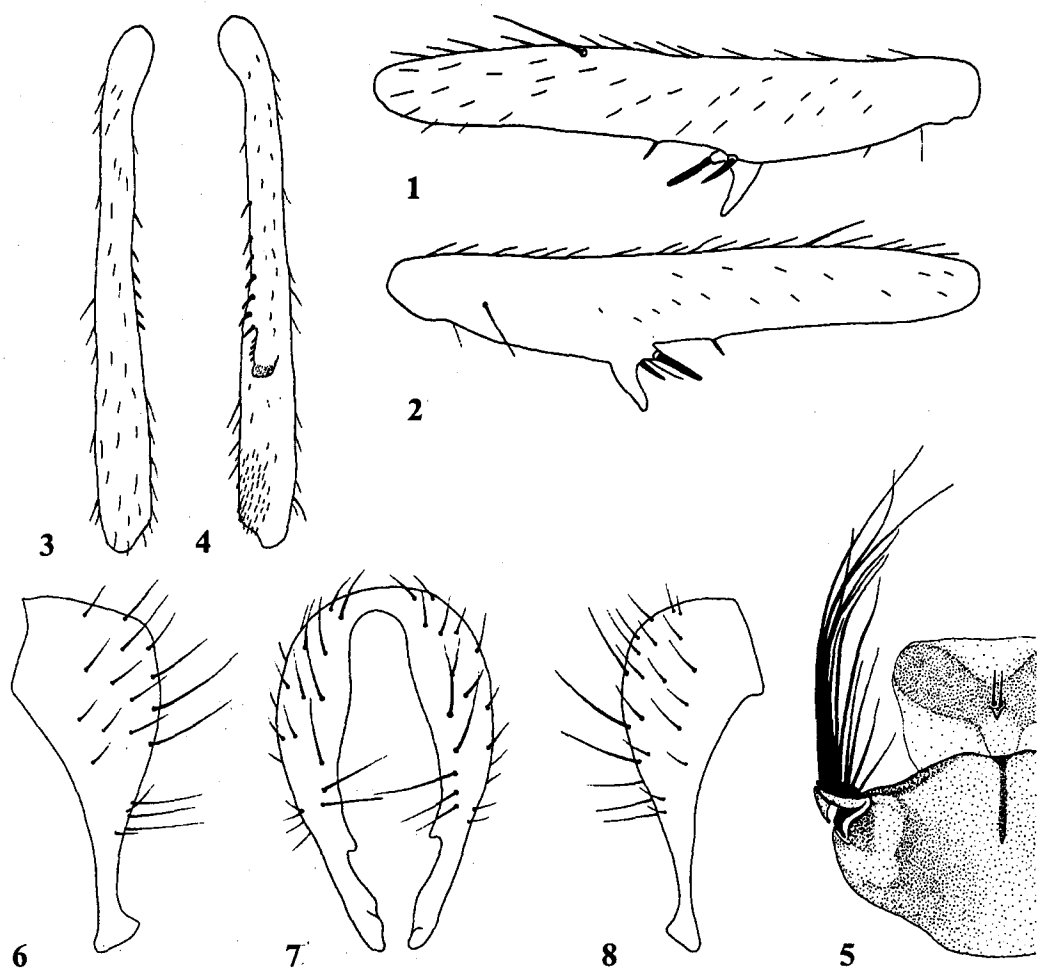



Fig. 16. *Themira (Themira) shimai* Iwasa: 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ abdominal sternites 4 and 5; 6 — epandrium and surstylus (left), lateral view; 7 — epandrium and surstyli, dorsal view; 8 — epandrium and surstylus (right), lateral view.

Рис. 16. *Themira (Themira) shimai* Iwasa: 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — 4-й и 5-й стерниты брюшка ♂; 6 — эпандрий и сурстиль (левый), сбоку; 7 — эпандрий и сурстили, сверху; 8 — эпандрий и сурстиль (правый), сбоку.

Anepisternum shining, but greyish pruinose along upper and posterior margins. Katepisternum extensively greyish pruinose. Anepimeron and pleural wing process greyish pruinose. Meron greyish pruinose, except on an oval median patch. Katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head* roundish in lateral view. Vertical diameter of eye approximately 3 times as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, 1.5 times as long as wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* (*o vt* absent). Vibrissae like the genal setae.

*Thorax*. Scutum with the following paired setae: 1 *pprn*, 2 *npl* (anterior shorter than the posterior), 1 *pal*, 1 postsutural dc. Proepisternum with 1 hair in lower part. Scutellum with a pair of apical setae, basal setae absent.

*Legs*. Mid femur with several thin short setae in apical half anteriorly. Mid tibia with 1 *av* in apical third and apicals *av, ad* and *pv*. Hind femur without striking setae. Male. Foreleg as in Fig. 420: 1–4. Hind tibia with osmeterium near middle, with 4–5 straight hairs below osmeterium anterodorsally. Female. Fore femur with 3 *av* in apical half.

*Wing* almost 2 times longer than abdomen.

*Abdomen*. Syntergite 1+2 at sides with several hairs. The other tergites without striking hairs or setae. Sternites 4 and 5 of male as in Fig. 16: 5. Epandrium and surstyli as in Fig. 16: 6–8. Surstyli slightly asymmetrical, not fused to epandrium.

Length of body: 3.0–3.8. Length of wing: 3.5–3.9.

HABITATS OF ADULT AND LARVA. No data. Immature stages unknown.

DISTRIBUTION. ORIENTAL REGION. Nepal.

## Subgenus *Enicita* Westwood, 1840

*Enicita* Westwood, 1840: 148 (new name for *Enicopus* Walker, 1833). Type-species: *Sepsis annulipes* Meigen, 1826: 292 (automatic).

DESCRIPTION. Head and eye roundish in lateral view. Katepisternum, proepisternum, often meron, metepisternum, and metepimeron partly or completely greyish pruinose. *or* vestigial or absent. *pprn* absent. Fore coxa with well developed *d* in apical quarter. Wing normal, longer than abdomen. Cells *bm* and *br* separate. Abdominal tergites without striking setae. Surstyli symmetrical, long, stick-like or sabre-like, fused to epandrium.

COMPOSITION AND DISTRIBUTION. The subgenus includes 4 species: 1 Holarctic (*E. annulipes* (Meigen, 1826)), 2 Nearctic (*E. bispinosa* (Melander et Spuler, 1917) and *E. mexicana* sp.n.) and 1 Palaearctic (*E. simplicipes* (Duda, 1926)).

### *Themira (Enicita) annulipes* (Meigen, 1826)
Fig. 17.

*Sepsis annulipes* Meigen, 1826: 292.

*Nemopoda varipes* Meigen, 1838: 351.

*Enicita crassiseta* Duda, 1926: 72 (as var. *Enicita annulipes* (Meigen, 1826)).

*Enicita elegantipes* Ouellet, 1940: 226.

DESCRIPTION. Male, female. *Colour and integument structure.* Frons black, but often yellowish in lower half or third. Face and gena yellowish. Antennal grooves often darkened. Subgena and postcranium black. Antenna black, but flagellum reddish-yellow basally at inside. Thorax and abdomen black. Legs black, but all coxae, all femora basally, and usually all tibiae apically yellowish. Fore and hind tarsi black. Male basitarsus of midleg mainly white or yellowish with a black tip; tarsomere 2 black with pale base, tarsomeres 3–5 black (Fig. 025: 8). Female mid tarsi black or dark brown, but often basitarsus light brown. Wing tinged with blackish; veins brown. Calypters and their margins blackish. Halter white or yellowish.

Frons shining, but subshining near ocellar triangle. Face, gena, and postcranium greyish pruinose. Scutum, proepisternum, katatergite, and anatergite greyish pruinose. Propimeron shining, but greyish pruinose in lower part. Anepimeron shining, but greyish pruinose along posterior margin; pleural wing process greyish pruinose. Meron greyish pruinose, except on an oval median patch. Metepisternum and metepimeron almost entirely shining to entirely greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum blackish pruinose. Abdomen shining.

*Head*. Vertical diameter of eye approximately 6.5 times as long as width of gena (with subgena) below eye. Flagellum oval, approximately 1.3 times as long as wide. 1 *or* (hair-like), 1 *oc*, 1 *poc*, and 1 *i vt* (*o vt* absent). Vibrissae like the genal setae.

*Thorax*. Scutum with the following paired setae: 2 *npl* (anterior short, hair-like), 1 *pal*, 1 postsutural *dc*; with a row of short setulae along each *ac*, and *dc* line. Scutellum with a pair of apical setae, basal setae absent.

*Legs*. Mid and hind femora, and hind tibia without striking setae. Mid tibia with a setulae in apical third anterodorsally and apicals *a, av, ad* and *pv*. Male. Foreleg as in Fig. 17: 1–4. Fore tarsus: basitarsus without osmeterium; tarsomere 2 no longer than tarsomere 3. Tip of basitarsus and tarsomeres 2–4 of mid tarsus laterally compressed (Fig. 17: 6). Hind tibia with well-developed osmeterium in basal half, below with elongated pit. Female. Fore femur without spinules anteroventrally. Mid tarsus normal.

*Abdomen*. Sternites 4 and 5 of male as in Fig. 17: 5. Epandrium and surstylus as in Fig. 17: 7, 8.

Length of body: 3.2–3.9. Length of wing: 2.3–3.3.

HABITATS OF ADULT AND LARVA. Adults common in lowland meadows, often in moist habitats rich its organic matter and near water. Larvae have been recorded in cattle feeding pens (wet soil, masses of faces), sewage leaks, and overflows [Mangan, 1977], in horse dung [Pont, 1987]. I found larvae in goose and duck droppings.

The larva was described by Meier [1996]; a figure of the cephalopharyngeal skeleton is provided by Mangan [1977].

DISTRIBUTION. PALAEARCTIC REGION. Widely distributed in Palaearctic except the most northern areas; common in desert oases. NEARCTIC REGION. Northwards as far as 40°N.

### *Themira (Enicita) bispinosa* (Melander et Spuler, 1917)
Fig. 18.

*Enicita bispinosa* Melander et Spuler, 1917: 40.

DESCRIPTION. Male, female. *Colour and integument structure.* Frons reddish, but in upper half or third black. Face, gena, subgena, and antennal grooves reddish-yellow. Postcranium black. Antenna reddish-yellow, only flagellum darkened. Thorax black, but proepisternum and postpronotal lobe ventrally reddish. Legs yellow, but femur and tibia of midleg and hindleg darkened. Male.

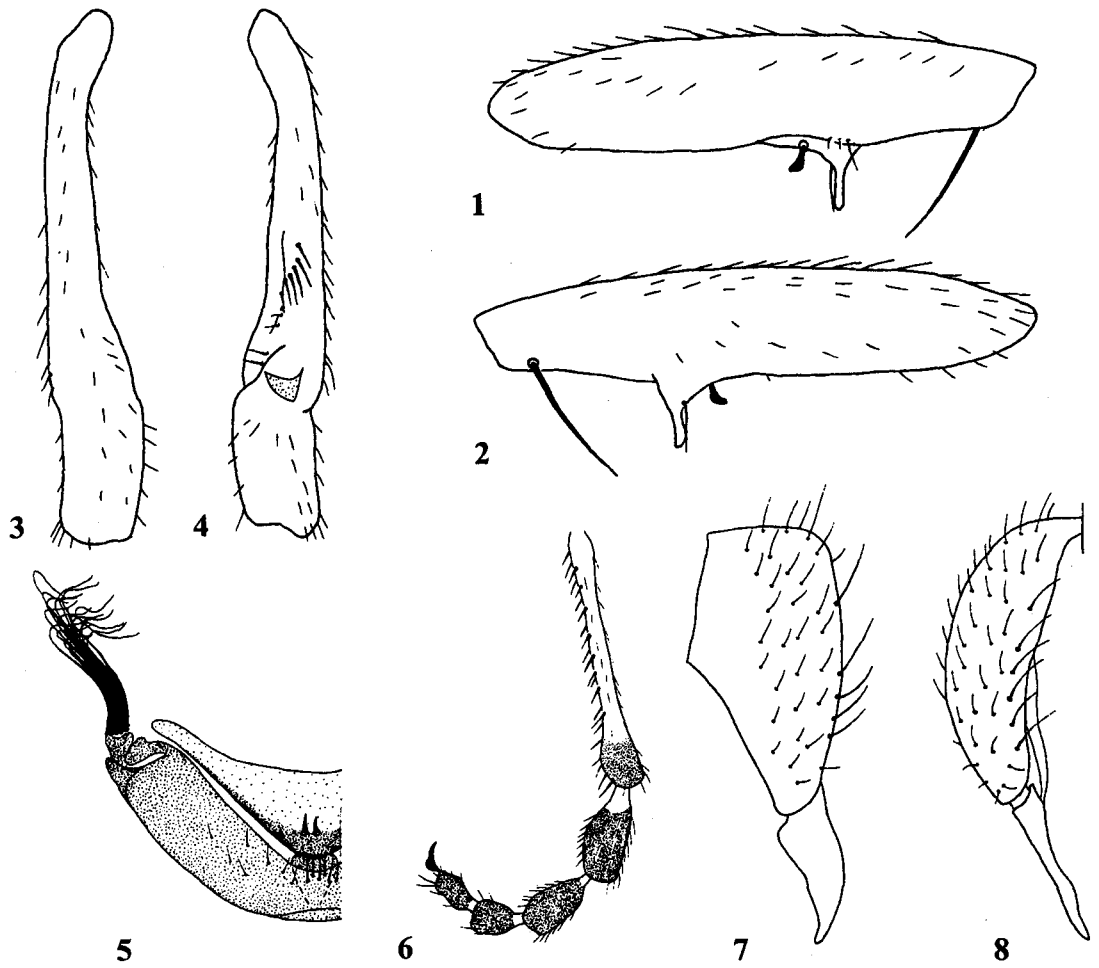



Fig. 17. *Themira (Enicita) annulipes* (Meigen): 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ abdominal sternites 4 and 5; 6 — ♂ mid tarsus (left), posterior view; 7 — epandrium and surstylus (left), lateral view; 8 — epandrium and surstylus (left), dorsal view.

Рис. 17. *Themira (Enicita) annulipes* (Meigen): 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — 4-й и 5-й стерниты брюшка ♂; 6 — лапка средней левой ноги ♂, сзади; 7 — эпандрий и сурстиль (левый), сбоку; 8 — эпандрий и сурстиль (левый), сверху.

Fore tarsus: basitarsus reddish-yellow in basal half and blackish in apical half; tarsomere 2 black, but white basally; tarsomeres 3–5 completely black. Mid tarsus: basitarsus white, but black apically; tarsomeres 2 and 3 black, but white basally; tarsomeres 4 and 5 completely black (Fig. 18: 6). Hind tarsus: basitarsus reddish-yellow, but blackish apically; tarsomere 2 blackish, but white basally; tarsomeres 3–5 completely black. Female. All tarsi blackish, but mid basitarsus, except apical third and hind basitarsus in basal half yellowish. Wing tinged with brownish; veins brown. Calypters and their margins blackish. Halter yellowish. Abdomen black.

Frons and gena subshining. Face and postcranium greyish pruinose. Scutum, procpisternum, anepimeron, pleural wing process, katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Procpimeron shining, but with a band of silvery pollen in lower part. Anepisternum shining. Katepisternum silvery pruinose. Meron greyish pruinose, except on an oval median patch. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining, but tergite 3 basally with narrow stripe of pollen.

*Head*. Vertical diameter of eye approximately 6.5 times as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, approximately 1.3 times as long as wide.1 *or* (short, hair-like), 1 *oc*, 1 *poc*, and 1 *i vt* (*o vt* absent). 1–2 vibrissae.

*Thorax*. Scutum with the following paired setae: 2*npl* (anterior shorter than posterior), 1 *pal*, 1 postsutural *dc*; with a row of short setulae along each *ac* and *dc* line. Procpisternum bare. Scutellum with a pair of apical setae, basal setae hair-like.

*Legs*. Mid femur with several setae in apical half anteriorly. Mid tibia with apicals *a, av* and *pv*. Male. Foreleg as in Fig. 18: 1–4. Fore tarsus: basitarsus without osmeterium; tarsomere 2 no longer than tarsomere 3. Mid tarsus: tip of basitarsus and tarsomeres 2–3 laterally compressed (Fig. 18: 6). Hind tibia with well-developed osmeterium at middle. Female. Fore femur with 2 spinules in apical half anteroventrally (Fig. 18: 5). Mid tarsus normal.

*Abdomen*. Sternites 4 and 5 of male as in Fig. 18: 9. Epandrium and surstyli as in Fig. 18: 7, 8.

Length of body: 3.4–3.6. Length of wing: 2.6–2.7.

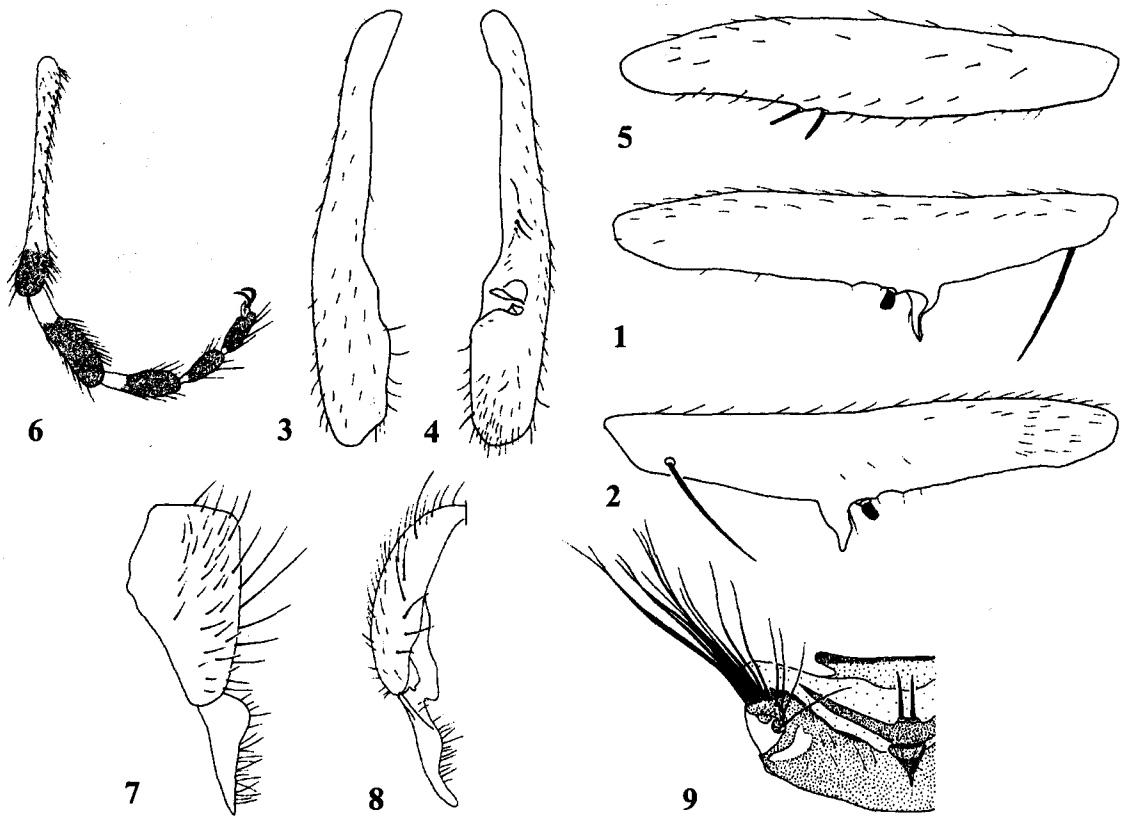



Fig. 18. *Themira (Enicita) bispinosa* Melander et Spuler: 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♀ fore femur (holotype); 6 — ♂ mid tarsus (left), posterior view; 7 — epandrium and surstylus (left), lateral view; 8 — epandrium and surstylus (left), dorsal view; 9 — male abdominal sternites 4 and 5.

Рис. 18. *Themira (Enicita) bispinosa* Melander et Spuler: 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — бедро передней ноги ♀ (голотип); 6 — лапка средней левой ноги ♂, сзади; 7 — эпандрий и сурстиль (левый), сбоку; 8 — эпандрий и сурстиль (левый), сверху; 9 — 4-й и 5-й стерниты брюшка самца.

HABITATS OF ADULT AND LARVA. No data. Immature stages unknown.

DISTRIBUTION. NEARCTIC REGION. USA (New Mexico, Texas).

### *Themira (Enicita) mexicana*, sp.n.
Fig. 19.

DIAGNOSIS. The new species much resembles *Themira bispinosa* Melander et Spuler, 1917, but is distinguished by the shining anepimeron, and by the structure of male fore femur and genitalia.

MATERIAL. Holotype ♂, labelled "Mexico: Mexico, Parque Lag. de Zempoala, clearing at entrance, 9–11.VIII.1989, A.L. Norrbom" (USNM). Paratypes: ♂ with same label as holotype (ZMUM); 2 ♂♂, Mexico, D.F., Desierto Leones, III,IV,V.1965, H.L.H. Krauss (AMNH, ZMUM); ♂, Mexico, [D.F.] Desierto Leones, VI.1955, H.L.H. Krauss (AMNH); ♂, [Mexico] Guerrero, Sierra de Las Aquas Escondidas, 9500 ft, VII., H.H. Smith (CMNM); ♂, "Br.[itish] Honduras [= Belize], Belize-Cori?, VI.1955, H.L.H. Krauss" (USNM).

DESCRIPTION. Male, Female. *Colour and integument structure.* Frons, face, antennal groove, and gena yellow to brown; postcranium black; antenna brown, only flagellum reddish-yellow basally. Thorax and abdomen black. Legs mostly brown, tarsi black. Wing clear, veins brown. Calypters greyish, their margins blackish. Halter white.

Frons shining, other parts of head pruinose. Scutum, proepisternum, posterior margin of anepimeron, meron, katepimeron, metepisternum, anatergite, katatergite, mediotergite, and scutellum pruinose, but meron with shining spot at middle; katepisternum extensively silvery-greyish pruinose; procpimeron, anepisternum and anepimeron, except posterior margin shining. Abdomen shining, but tergites 3 and 4 of male basally with narrow stripe of pollen.

*Head* and eye in profile roundish. Vertical diameter of eye approximately 7 times as long as width of gena (with subgena) below eye. Flagellum oval, 1.5 times as long as wide. Arista bare. 1 *or* (short, hair-like), 1 *oc*, 1 *poc*, and 1 *i vt*, and 1 *o vt* (outer vertical short and thin, 2.5 times shorter than inner vertical). 2–3 vibrissae. Lateral occipital sclerite with 3–5 setae.

*Thorax*. Scutum with the following paired setae: 2*npl* (anterior shorter than posterior), 1*pal*, 1 postsutural *dc*; anepisternum with hairs posteriorly; Scutellum with a pair of long apical setae, basal setae absent. Postcoxal bridge absent: posterior margins of metepimera not fused behind and above hind coxae.

*Legs*. Fore coxa with a long dorsal seta in apical quarter. Mid and hind femora and hind tibia without setae. Mid tibia with 1 *av* in apical third. Male. Fore femur and tibia as in Fig. 19: 1–4. Hind tibia with osmeterium. Female. Fore femur with a one spine in apical half anteroventrally.

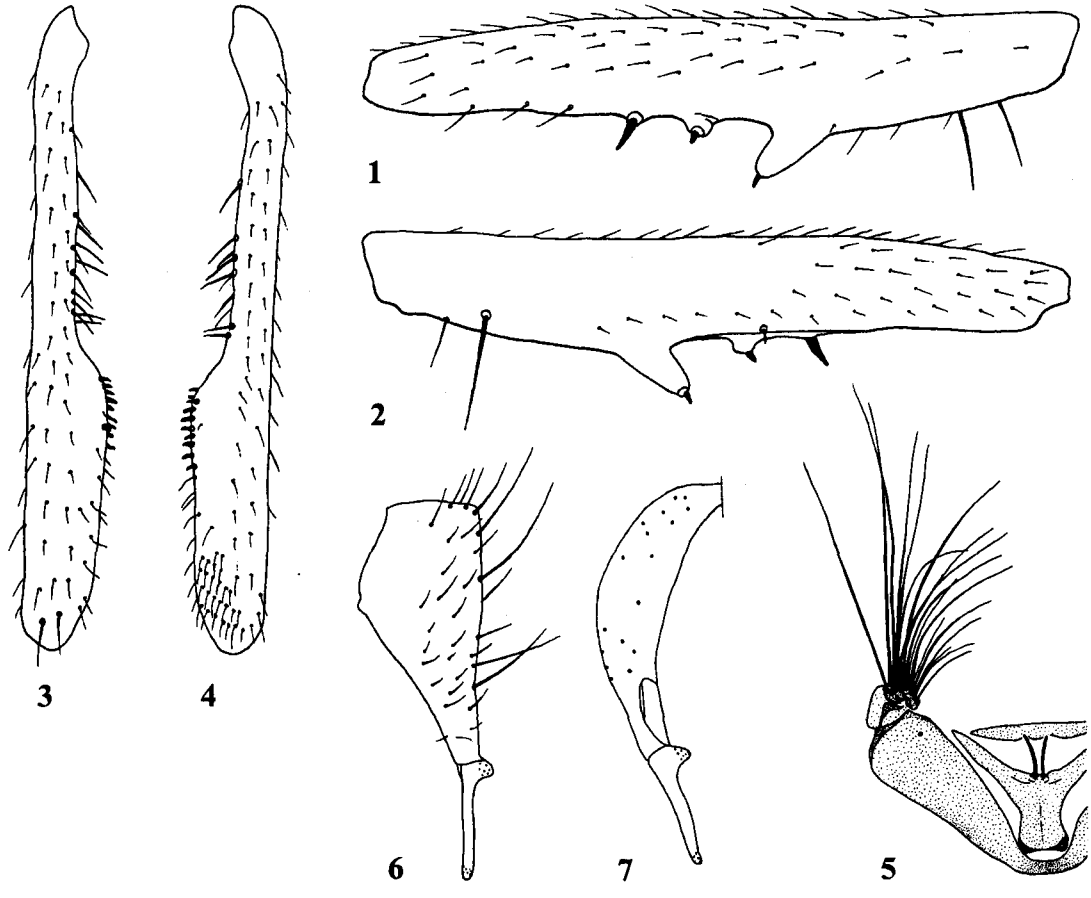



Fig. 19. *Themira (Enicita) mexicana* sp.n.: 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ abdominal sternites 4 and 5; 6 — epandrium and surstylus (left), lateral view; 7 — epandrium and surstylus (left), dorsal view; .

Рис. 19. *Themira (Enicita) mexicana* sp.n.: 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — 4-й и 5-й стерниты брюшка ♂; 6 — эпандрий и сурстиль (левый), сбоку; 7 — эпандрий и сурстиль (левый), сверху.

*Wing* longer than abdomen. Alula entirely covered with microtrichia. Margin of upper calypter with very long hairs; margin of lower calypter without hairs.

*Abdomen* not constricted after tergite 1+2; tergites without striking setae; sternites 4 and 5 of male as in Fig. 19: 5. Epandrium and surstylus as in Figs 19: 6, 7; surstyli symmetrical, not fused to epandrium.

Length of body: 4.4–5.9. Length of wing: 3.9–5.1.

HABITATS OF ADULT AND LARVA. No data. Immature stages unknown.

DISTRIBUTION. NEARCTIC and NEOTROPIC REGIONS. Belize and Mexico.

## *Themira (Enicita) simplicipes* (Duda, 1926)
Fig. 20.

*Enicita simplicipes* Duda, 1926: 72.

DESCRIPTION. Male, female. *Colour and integument structure.* Frons yellowish, but often black in upper quarter. Face, gena, subgena, and antennal grooves yellow. Postcranium black. Antenna reddish-yellow, only flagellum darkened. Thorax black, but proepisternum, postpronotal lobe and anterior thoracic spiracle yellowish. Legs yellow, but fore femur dorsally, femora and tibiae of midleg and hindleg darkened. Tarsi of foreleg and hindleg: basitarsis reddish-yellow in basal half and blackish in apical half; tarsomeres 2–5 black. Tarsus of midleg: basitarsus white, but black apically; tarsomere 2 black, but white basally; tarsomeres 3–5 black (Fig. 344: 9). Wing tinged with brownish; veins brown. Calypters and their margins blackish. Halter yellowish. Abdomen black.

Frons subshining. Face, gena, and postcranium greyish pruinose. Scutum, procpisternum, anepimeron, pleural wing process, katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Proepimeron shining, but with a band of silvery pollen in lower part. Anepisternum shining. Katepisternum silvery pruinose. Meron greyish pruinose, except on an oval median patch. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head.* Vertical diameter of eye approximately 6 time as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, approximately 1.3 times as long as wide. 1 *or* (short, hair-like), 1 *oc*, 1 *poc*, and 1 *i vt* (*o vt* absent). 1–2 vibrissae.

*Thorax.* Scutum with the following paired setae: 2*npl* (anterior often shorter and thinner than posterior), 1*pal*, 1 postsutural *dc*. Proepisternum with 1–2 hairs in lower part or bare. Scutellum without apical and basal setae.

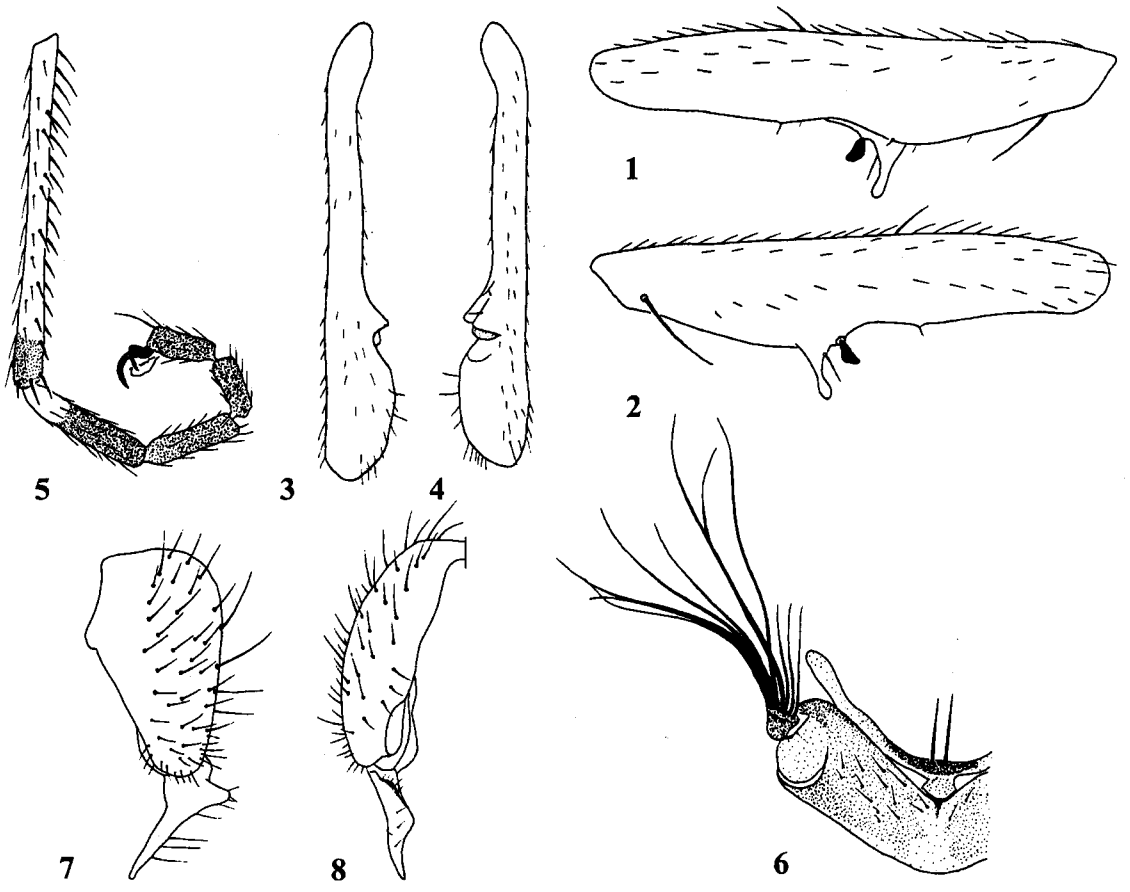



Fig. 20. *Themira (Enicita) simplicipes* Duda: 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ mid tarsus (left), posterior view; 6 — ♂ abdominal sternites 4 and 5; 7 — epandrium and surstylus (left), lateral view; 8 — epandrium and surstylus (left), dorsal view.

Рис. 20. *Themira (Enicita) simplicipes* Duda: 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — лапка средней левой ноги ♂, сзади; 6 — 4-й и 5-й стерниты брюшка ♂; 7 — эпандрий и сурстиль (левый), сбоку; 8 — эпандрий и сурстиль (левый), сверху.

*Legs*. Mid femur with several setae in apical half anteriorly. Mid tibia with 1 *av* in apical third and with apicals *a, av* and *pv*. Male and female tarsi of midleg normal (Fig. 20: 5). Hind femur with 1–2 *ad* in apical third. Hind tibia without striking hairs and setae. Male. Foreleg as in Fig. 20: 1–4. Fore tarsus: basitarsus without osmeterium; tarsomere 2 no longer than tarsomere 3. Hind tibia with well-developed osmeterium in basal half, below with elongated pit. Female. Fore femur without setae.

*Abdomen*. Sternites 4 and 5 of male as in Fig. 20: 6. Epandrium and surstylus as in Fig. 20: 7, 8.

Length of body: 3.0–4.0. Length of wing: 2.7–3.2.

HABITATS OF ADULT AND LARVA. Adults have been found on grass blades. I observed the larvae breeding in a decaying stem of *Chaerephyllum rubellum* Alb.

The larva was described by Meier [1996].

DISTRIBUTION. PALAEARCTIC REGION. Hungary, Romania [Zuska, Pont, 1984]; Russia (North Ossetia).

## Subgenus *Enicomira* Duda, 1926

*Enicomira* Duda, 1926: 27 (as a subgenus of *Themira* Robineau-Desvoidy, 1830). Type-species: *Sepsis minor* Haliday, 1833: 170 (by monotypy).

DESCRIPTION. Head and eye roundish in lateral view. *or* present, like the *poc*. Katepisternum, procepisternum, often meron, metepisternum and metepimeron partly or completely greyish pruinose. *pprn* absent. Fore coxa with well developed *d* in apical quarter. Wing normal, equal or longer than abdomen. Cells *bm* and *br* separate. Abdominal tergites without striking setae. Surstyli symmetrical, short, spatula-like, not fused to epandrium.

COMPOSITION AND DISTRIBUTION. The subgenus includes 4 species: 1 Holarctic (*E. minor* (Haliday, 1833)) and 3 Palaearctic (*E. kanoi* Iwasa, 1995, *E. paludosa* Elberg, 1963 and *E. sabulicola* Ozerov, 1985).

### *Themira (Enicomira) kanoi* Iwasa, 1995
Fig. 21.

*Themira kanoi* Iwasa, 1995: 787.

DESCRIPTION. Male. *Colour and integument structure.* Frons brown, face and gena light brown. Clypeus light brown. Postcranium and subgena black. Antenna blackish, but flagellum basally reddish. Thorax and abdomen black. Legs black, but coxa and trochanter entirely, and all femora basally yellowish. Wing tinged with brownish; veins brown. Calypters white; their margins blackish. Halter white.

Frons subshining. Face, gena and postcranium thinly greyish pruinose. Scutum completely greyish pruinose. Procepis-

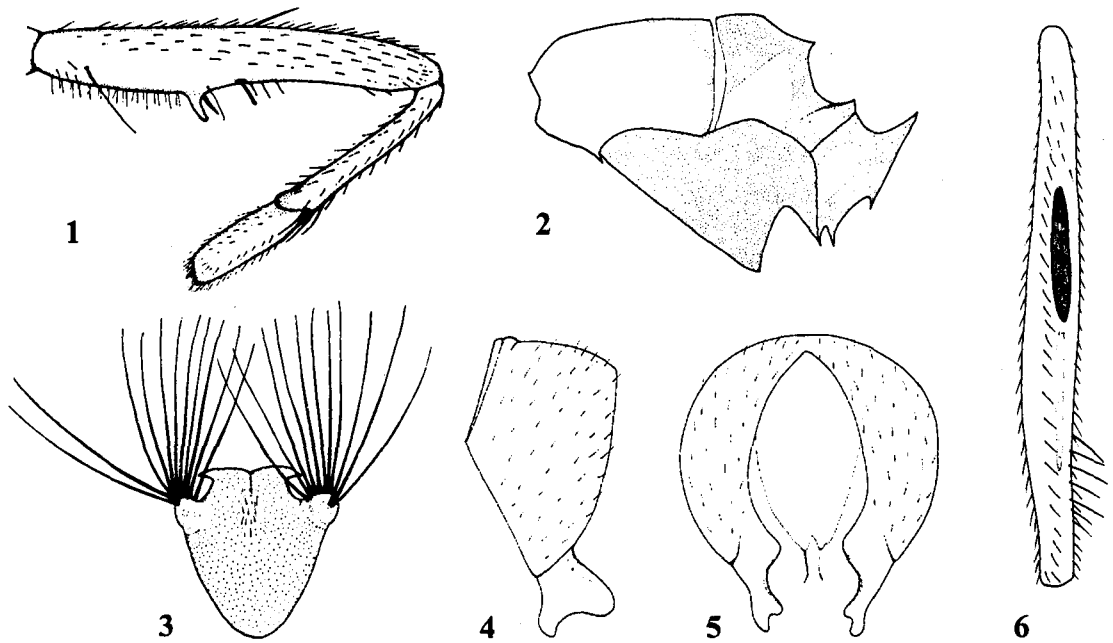



Fig. 21. *Themira (Enicomira) kanoi* Iwasa (after Iwasa, 1985): 1 — ♂ fore femur and tibia (left), anterior view; 2 — pleural scleritas of thorax (pollinosity); 3 — ♂ abdominal sternite 4; 4 — epandrium and surstylus (left), lateral view; 5 — epandrium and surstyli, dorsal view; 6 — male hind tibia (left), anterodorsal view.

Рис. 21. *Themira (Enicomira) kanoi* Iwasa (по Iwasa, 1985): 1 — бедро и голень передней левой ноги ♂, спереди; 2 — плевры груди (опыление); 3 — 4-й стернит брюшка ♂; 4 — эпандрий и сурстиль (левый), сбоку; 5 — эпандрий и сурстили, сверху; 6 — голень задней левой ноги ♂, переднедорсально.

ternum greyish pruinose. Procpimeron shining, but in lower part greyish pruinose. Anepisternum and anepimeron shining, but each greyish pruinose along posterior margin (Fig. 21: 2). Pleural wing process greyish pruinose. Katepisternum completely greyish pruinose. Meron greyish pruinose, except on an oval median part. Katepimeron, metepisternum, metepimeron, katatergite and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head*. Vertical diameter of eye approximately 6 times as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, approximately 1.5 times as long as wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* (*o vt* absent). 1 vibrissa.

*Thorax*. Scutum with the following paired setae: 2*npl* (anterior very short, hair-like), 1 *pal*, 1 postsutural dc; *pprn* absent. Scutellum with a pair of apical setae, basal setae hair-like.

*Legs*. Fore leg as in Fig. 21: 1. Mid femur, and hind tibia without striking setae. Mid tibia only with preapical *ad* and *pv*. Hind femur with 2 thin *ad* in apical half. Hind tibia with osmeterium in basal half.

*Wing* longer than abdomen.

*Abdomen*. Sternite 4 as in Fig. 23: 3. Epandrium and surstylus as in Figs. 21: 4, 5. Surstyli symmetrical, fused to epandrium.

Length of body: 3.3–4.5. Length of wing: 2.9–3.0.

HABITATS OF ADULT AND LARVA. No data. Immature stages unknown.

DISTRIBUTION. PALAEARCTIC REGION. Japan (Honshu).

## *Themira (Enicomira) minor* (Haliday, 1833) Fig. 22.

*Sepsis minor* Haliday, 1833: 170.
*Themira roseni* Becker, 1915b: 129.
*Themira dentimana* Wulp, 1864: 135.
*Themira consobrina* Wulp, 1871: 192.
*Sepsis halidayi* Curtis, 1837: 230. Nomen nudum.

DESCRIPTION. Male, female. *Colour and integument structure*. Body, legs, and antenna black, only face, often gena, sometimes coxa and trochanter of foreleg brownish. Wing tinged with brownish; veins brown. Calypters and their margins white or greyish. Halter white or yellowish.

Frons shining, but along eye margin greyish pruinose, sometimes with narrow stripe of grey pollen in middle. Face, gena, and posteranium greyish pruinose. Scutum entirely greyish pruinose to mainly glossy black, except posteriorly. Procpisternum greyish pruinose. Procpimeron shining, but in lower part greyish pruinose. Anepisternum shining. Katepisternum silvery pruinose. Anepimeron shining, but in posterior third greyish pruinose; pleural wing process greyish pruinose, but shining below greater ampulla. Meron greyish pruinose, except on an oval median patch. Katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head*. Vertical diameter of eye approximately 6 times as long as width of gena (with subgena) below eye. Flagellum in profile roundish, slightly longer than wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* (*o vt* absent). 1–2 vibrissae.

*Thorax*. Scutum with the following paired setae: 2*npl* (anterior approximately 4 times shorter than posterior), 1 *pal*, 1 postsutural *dc*; with a row of short setulae along each *ac*, *dc*, and *ial* line. Procpisternum usually with 1 hair in lower part. Scutellum with a pair of apical setae, basal setae short, hair-like.

*Legs*. Mid tibia only with apical *av*, *ad* and *pv*. Mid and hind femora, and hind tibia without striking setae. Male. Foreleg as in Fig. 22: 1–4. Hind tibia with osmeterium in middle. Female. Fore femur without spinules anteroventrally.

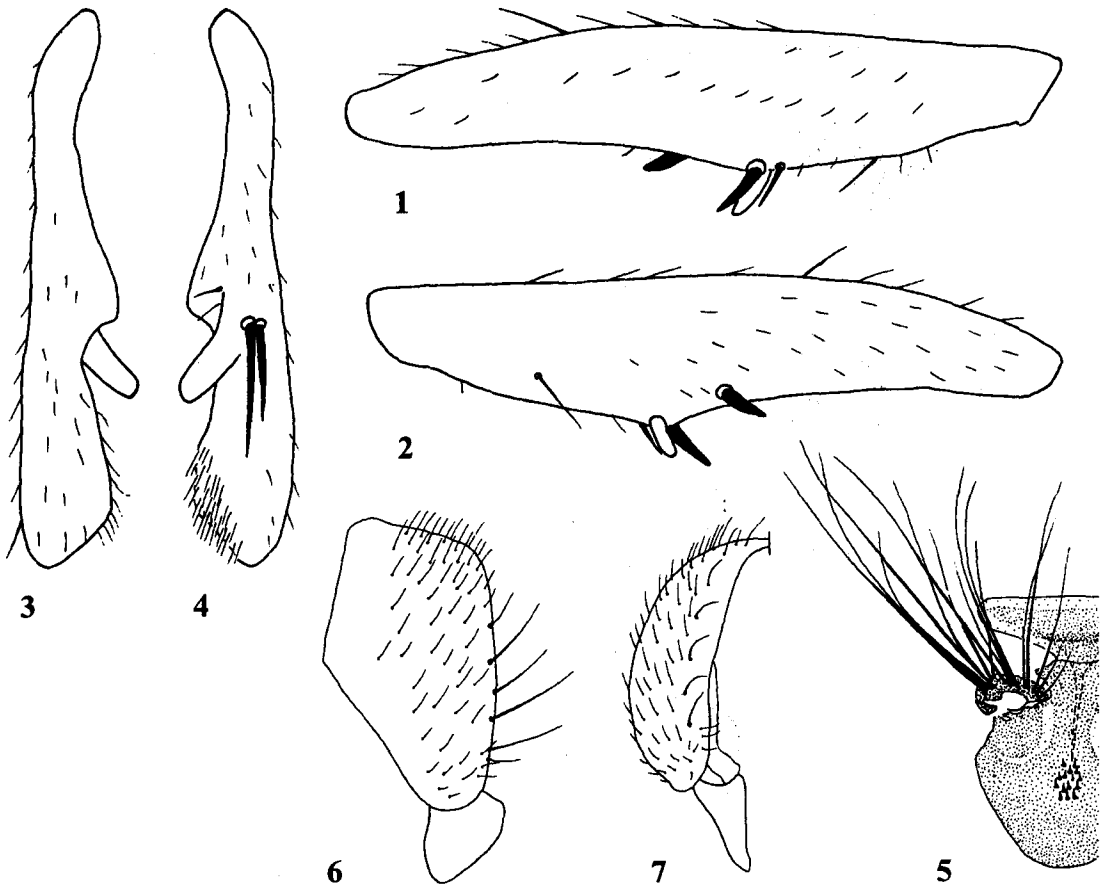



Fig. 22. *Themira (Enicomira) minor* (Haliday): 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ abdominal sternites 4 and 5; 6 — epandrium and surstylus (left), lateral view; 7 — epandrium and surstylus (left), dorsal view.

Рис. 22. *Themira (Enicomira) minor* (Haliday): 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — 4-й и 5-й стерниты брюшка ♂; 6 — эпандрий и сурстиль (левый), сбоку; 7 — эпандрий и сурстиль (левый), сверху.

*Wing* equal to or longer than abdomen.

*Abdomen*. Sternites 4 and 5 of male as in Fig. 22: 5. Epandrium and surstylus as in Fig. 22: 6, 7.

Length of body: 2.6–3.7. Length of wing: 2.2–3.2.

HABITATS OF ADULT AND LARVA. The adults have been recorded on horse droppings, on pig dung [Coffey, 1966], on cow dung [Pont, 1979], on flowers of *Angelica sylvestris* [Goot, 1986]. I collected adults on goose groppings near pond covered with silt. Larvae have been found in cattle feeding pens [Mangan, 1977], on sewage and on the muddy banks of a creek [Meier, 1996], in mature heaps and on the compost of cattle dung [Iwasa, 1981], in cesspools [Lobanov, 1962]. I have been found larvae in goose droppings.

The larva was described by Meier [1996].

DISTRIBUTION. PALAEARCTIC REGION. Throughout Europe [Zuska, Pont, 1984]; Russia (European part: Ivanovo, Leningrad, Moscow areas, Moscow City; Asian part: Amur Area, Krasnoyarsk, Primorie provinces, Sakhalin); Asia: Japan, Mongolia; North Africa: Algeria, Jordan, Madeira Island, Morocco, Syria, Tunisia. NEARCTIC REGION. Canada, USA (see Appendix).

## *Themira (Enicomira) paludosa* Elberg, 1963
Fig. 23.

*Themira paludosa* Elberg, 1963: 909.

DESCRIPTION. Male. *Colour and integument structure.* Species mainly black, only fore coxa, all trochanters, and all femora basally yellow. Wing tinged with brownish; veins brown. Calypters and their margins, also halter white.

Frons shining. Face, gena, and postcranium greyish pruinose. Scutum completely greyish pruinose, only postpronotal lobe shining dorsally. Proepisternum greyish pruinose. Proepimeron and anepisternum shining. Katepisternum completely greyish pruinose. Anepimeron shining, but greyish pruinose along posterior margin; pleural wing process greyish pruinose, but shining below greater ampulla. Meron greyish pruinose, except on an oval median patch. Katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head*. Vertical diameter of eye approximately 6 times as long as width of gena (with subgena) below eye. Flagellum with roundish apex, approximately 1.4 times as long as wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* (*o vt* absent). 1 vibrissa.

*Thorax*. Scutum with the following paired setae: 2*npl* (anterior short, hair-like), 1 *pal*, 1 postsutural dc. Scutellum with a pair of apical setae, basal setae absent.

*Legs*. Foreleg as in Fig. 23: 1. Mid and hind femora, and hind tibia without striking setae. Mid tibia only with apicals *ad* and *pv*. Hind tibia with osmeterium in basal half.

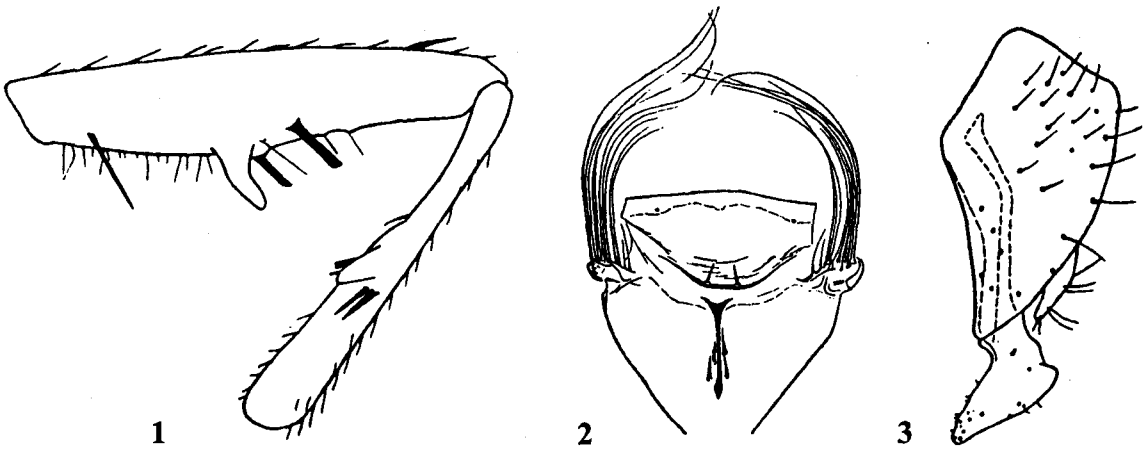



Fig. 23. *Themira (Enicomira) paludosa* Elberg (after Elberg, 1963): 1 — ♂ fore femur and tibia (left leg), anterior view; 2 — ♂ abdominal sternites 4 and 5; 3 — epandrium and surstylus (left), lateral view.

Рис. 23. *Themira (Enicomira) paludosa* Elberg (по Elberg, 1963): 1 — бедро и голень передней левой ноги ♂, спереди; 2 — 4-й и 5-й стерниты брюшка ♂; 3 — эпандрий и сурстиль (левый), сбоку.

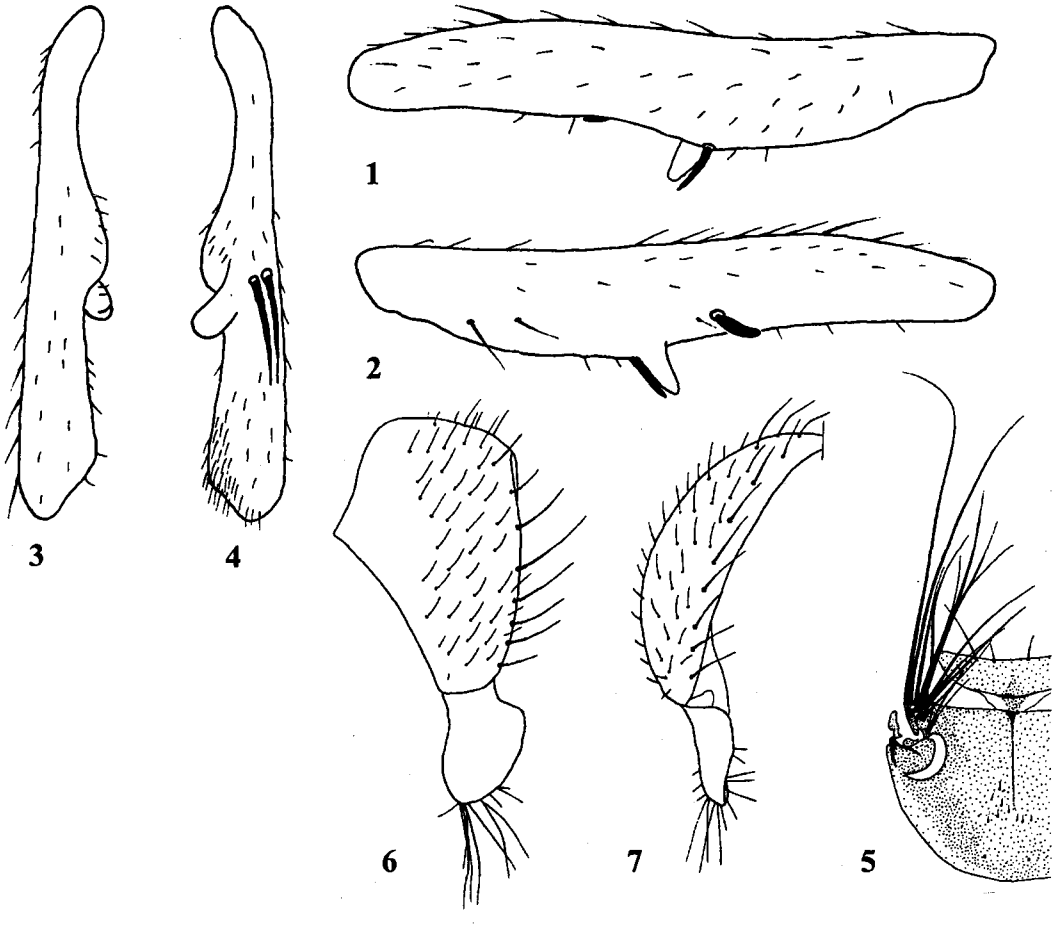



Fig. 24. *Themira (Enicomira) sabulicola* Ozerov: 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ abdominal sternites 4 and 5; 6 — epandrium and surstylus (left), lateral view; 7 — epandrium and surstylus (left), dorsal view.

Рис. 24. *Themira (Enicomira) sabulicola* Ozerov: 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги самца, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — 4-й и 5-й стерниты брюшка ♂; 6 — эпандрий и сурстиль (левый), сбоку; 7 — эпандрий и сурстиль (левый), сверху.

*Wing* longer than abdomen.

*Abdomen*. Sternites 4 and 5 as in Fig. 23: 2. Epandrium and surstylus as in Fig. 23: 3.

Length of body: 2.7. Length of wing: 2.3.

HABITATS OF ADULT AND LARVA. Adults were collected on a marsh [Elberg, 1963]. Immature stages unknown.

DISTRIBUTION. PALAEARCTIC REGION. Estonia.

### *Themira (Enicomira) sabulicola* Ozerov, 1985
Fig. 24.

*Themira sabulicola* Ozerov, 1985: 843.

DESCRIPTION. Male, female. *Colour and integument structure.* Body, legs, and antenna black, only face, gena anteriorly, fore coxa and all trochanters brownish. Clypeus black. Wing tinged with brownish; veins brown. Calypters and their margins white or greyish. Halter white or yellowish.

Frons shining, but along eye margin greyish pruinose, sometimes with narrow stripe of grey pollen in middle. Face, gena, and postcranium greyish pruinose. Scutum greyish pruinose, only with shining spot on postpronotal lobe. Proepisternum greyish pruinose. Procpimeron shining, but greyish pruinose in lower part. Anepisternum shining. Katepisternum silvery pruinose. Anepimeron shining, but greyish pruinose near posterior margin; pleural wing process greyish pruinose. Meron greyish pruinose, except on an oval median patch. Katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head*. Vertical diameter of eye approximately 5 times as long as width of gena (with subgena) below eye. Flagellum in profile roundish, slightly longer than wide. 1 *or*, 1 *oc*, 1 *poc* and 1 *i vt* ( *o vt* absent). 1–2 vibrissae.

*Thorax*. Scutum with the following paired setae: 2 *npl* (anterior approximately 2–3 times shorter posterior), 1 *pal*, 1 postsutural *dc*. Procpisternum usually with a hair in lower part. Scutellum with a pair of apical setae, basal setae absent.

*Legs*. Mid femur and hind tibia without striking setae. Mid tibia only with apicals *av*, *ad* and *pv*. Hind femur with 1–2 *ad* in apical third. Male. Foreleg as in Fig. 24: 1–4. Hind tibia with osmeterium in middle. Female. Fore femur without spinules anteroventrally.

*Wing* longer than abdomen.

*Abdomen*. Sternites 4 and 5 of male as in Fig. 24: 5. Epandrium and surstylus as in Fig. 24: 6, 7.

Length of body: 2.3–3.3. Length of wing: 2.1–2.9.

HABITATS OF ADULT AND LARVA. I have collected adults on sand near a river in the place, where a cows across the river. Immature stages unknown.

DISTRIBUTION. PALAEARCTIC REGION. Russia (Primorie Province).

## Subgenus *Annamira* **subgen.n.**

Type-species: *Sepsis leachi* Meigen, 1826: 291, by present designation.

DIAGNOSIS. Differing from the representatives of all other subgenera, *Annamira* has surstyli fused to epandrium, and pleural sclerites (except katatergite, anatergite and mediotergite) completely shining.

DESCRIPTION. Thorax with shining pleural sclerites, only anatergite, katatergite and mediotergite greyish pruinose. *pprn* present or absent. Pleural sclerites without setae. Scutellum with a pair of apical setae, basal setae absent. Fore coxa with well developed *d* in apical quarter. Wing normal, or moderately to strongly reduced. Cells *bm* and *br* separate or fused. Abdominal tergites without striking setae. Surstyli symmetrical, fused to epandrium.

COMPOSITION AND DISTRIBUTION. The subgenus includes 4 species: 1 Holarctic (*A. leachi* (Meigen, 1826)), 1 Nearctic (*A. notmani* Curran, 1927) and 2 Palaearctic (*A. japonica* Zuska, 1974 and *A. przewalskii* Ozerov, 1986).

ETYMOLOGY. The new subgenus is named after my younger daugther Anna.

### *Themira (Annamira) japonica* Zuska, 1974
Fig. 25.

*Themira japonica* Zuska, 1974: 194

DESCRIPTION. Male, female. *Colour and integument structure.* Head mainly black, only frons near antennae, face, and antenna brownish. Thorax black. Legs black, but all coxae, all femora and tibiae basally, and mid tibia apically yellowish; in male basitarsus, tarsomere 2, and tarsomere 3 basally of mid tarsus yellow. Wing slightly darkened; veins blackish. Calypters and their margins darkened. Halter white. Abdomen black.

Frons shining, with a broad stripe of greyish pollen in middle. Gena, face, and postcranium greyish pruinose. Scutum, including postpronotal lobe, thinly greyish pruinose. Scutellum blackish pruinose. Abdomen shining.

*Head* roundish in lateral view. Vertical diameter of eye approximately 4.5–5 times as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, approximately 1.5 times as long as wide. 1 *or*, 1 *oc*, 1 *poc*, and 1 *i vt* (*o vt* absent). 1 vibrissa.

*Thorax*. Scutum with the following paired setae: 1 *pprn*, 2 *npl* (approximately equal), 1 *pal*, 1 postsutural *dc*.

*Legs*. Hind femur with 1–2 *ad* near middle. Male. Foreleg as in Fig. 25: 1–4. Mid tibia with 1 *av*. Hind tibia with well-developed osmeterium in middle, with 1 *a* in basal third above osmeterium, and with 1 *av* in apical third below osmeterium, posterodorsally as in Fig. 25: 5. Female. Fore femur without striking setae; mid and hind tibiae with 1 *av* in apical third.

*Wing* normal, longer than abdomen. Cells *bm* and *br* separate.

*Abdomen* strongly dilated towards tergite 5 (from above). Sternites 4 and 5 of male as in Fig. 25: 6. Epandrium and surstylus as in Fig. 25: 7, 8.

Length of body: 3.6–4.2. Length of wing: 3.0–3.2.

HABITATS OF ADULT AND LARVA. No data. Immature stages unknown.

DISTRIBUTION. PALAEARCTIC REGION. Russia (Sakhalin), Japan (Hokkaido).

### *Themira (Annamira) leachi* (Meigen, 1826)
Fig. 26.

*Sepsis leachi* Meigen, 1826: 291.
*Themira phantasma* Robineau-Desvoidy, 1830: 746.
*Nemopoda tarsalis* Walker, 1833: 252.
*Nemopoda fumipennis* Walker, 1833: 253.
*Sepsis coxarum* Zetterstedt, 1837: 51. Nomen nudum.
*Sepsis coxarum* Zetterstedt, 1838: 748.
*Themira curvipes* Wulp, 1864: 137.
*Nemopoda umbripennis* Wulp, 1871: 190.

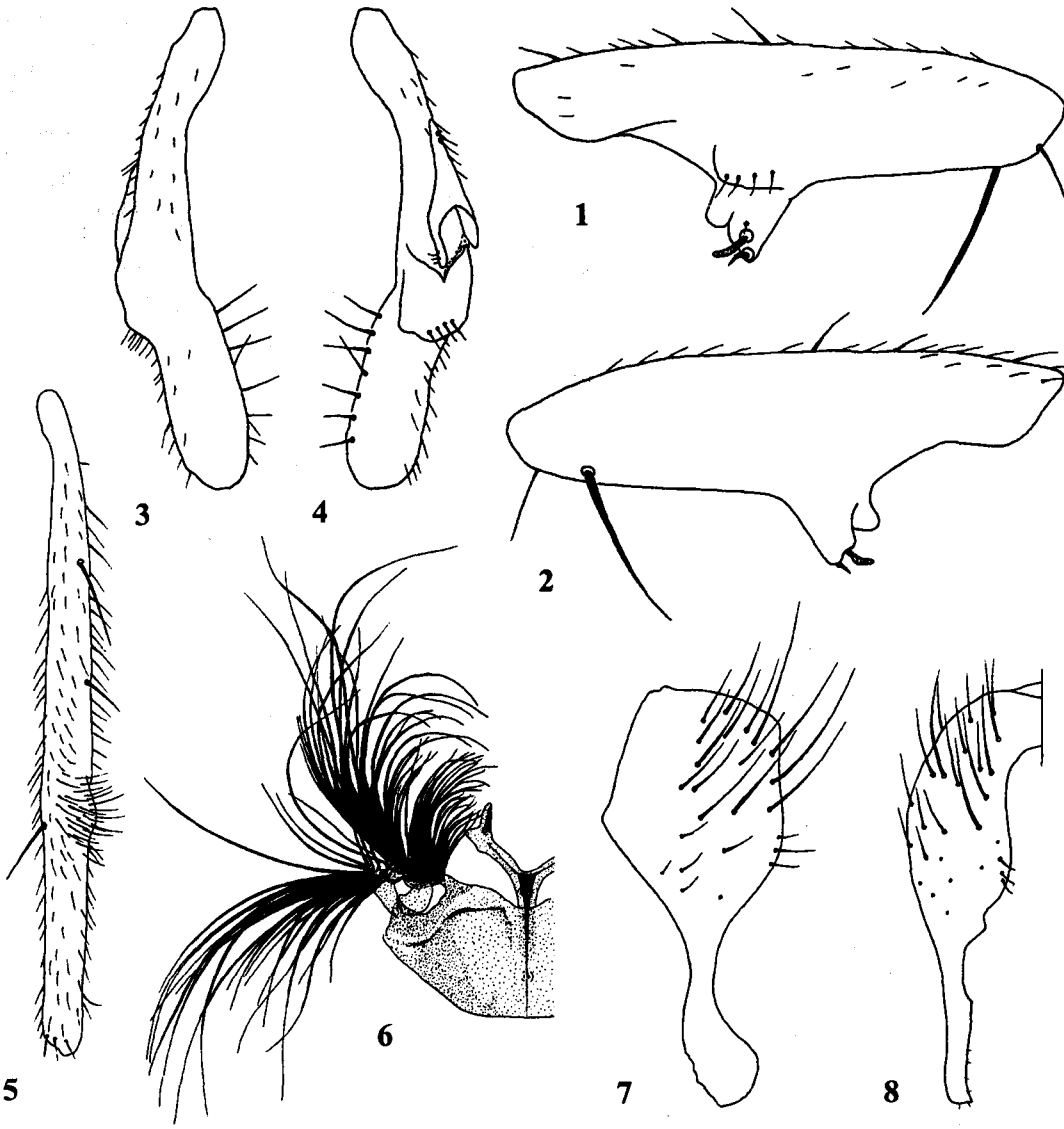



Fig. 25. *Themira (Annamira) japonica* Ozerov: 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ hind tibia; 6 — ♂ abdominal sternites 4 and 5; 7 — epandrium and surstylus (left), lateral view; 8 — epandrium and surstylus (left), dorsal view.

Рис. 25. *Themira (Annamira) japonica* Ozerov: 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — голень левой задней ноги ♂, 6 — 4-й и 5-й стерниты брюшка ♂; 7 — эпандрий и сурстиль (левый), сбоку; 8 — эпандрий и сурстиль (левый), сверху.

DESCRIPTION. Male, female. *Colour and integument structure.* Head mainly black, only frons near antennae, face, and antenna brownish. Thorax black.

Legs black, but all coxae, all femora and tibiae basally, mid tibia apically, mid and hind tarsi yellow to dark brown; in male fore tibia in basal half usually yellow. Wing slightly darkened; veins blackish. Calypters and their margins darkened. Halter white. Abdomen black.

Frons shining, with two stripes of greyish pollen in middle, which are fused in upper part of frons. Gena shining, but along lower margin with a band of greyish pollen. Face and postcranium greyish pruinose. Scutum, including postpronotal lobe, thinly shagreened, with a stripe of weak pollen in middle, and weak pollen on and between postpronotal lobes. Scutellum blackish pruinose. Abdomen shining.

*Head* roundish in lateral view (Fig. 26: 5). Vertical diameter of eye approximately 6–7 times as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, approximately 1.5 times as long as wide. 1 *or*, 1 *oc*, 1 *poc*, and 1 *i vt* (*o vt* absent). 1 vibrissa.

*Thorax*. Scutum with the following paired setae: 2*npl* (anterior approximately 2 times shorter posterior), 1*pal*, 1 postsutural *dc*; *pprn* absent.

*Legs*. Hind femur without striking setae. Male. Foreleg as in Fig. 26: 1–4. Mid tibia without *av*. Hind trochanter with a lobe-like process on inner surface. Hind tibia with a well-developed osmeterium in middle, with 1 *d* in basal third above osmeterium and with 1 *av* in apical third below osmeterium. Female. Fore femur without striking setae. Mid and hind tibiae with 1 *av* in apical third.

*Wing* normal. Cells *bm* and *br* separate.

*Abdomen* strongly dilated towards tergite 5 (from above). Sternites 4 and 5 of male as in Fig. 26: 6. Epandrium and surstylus as in Fig. 26: 7, 8.

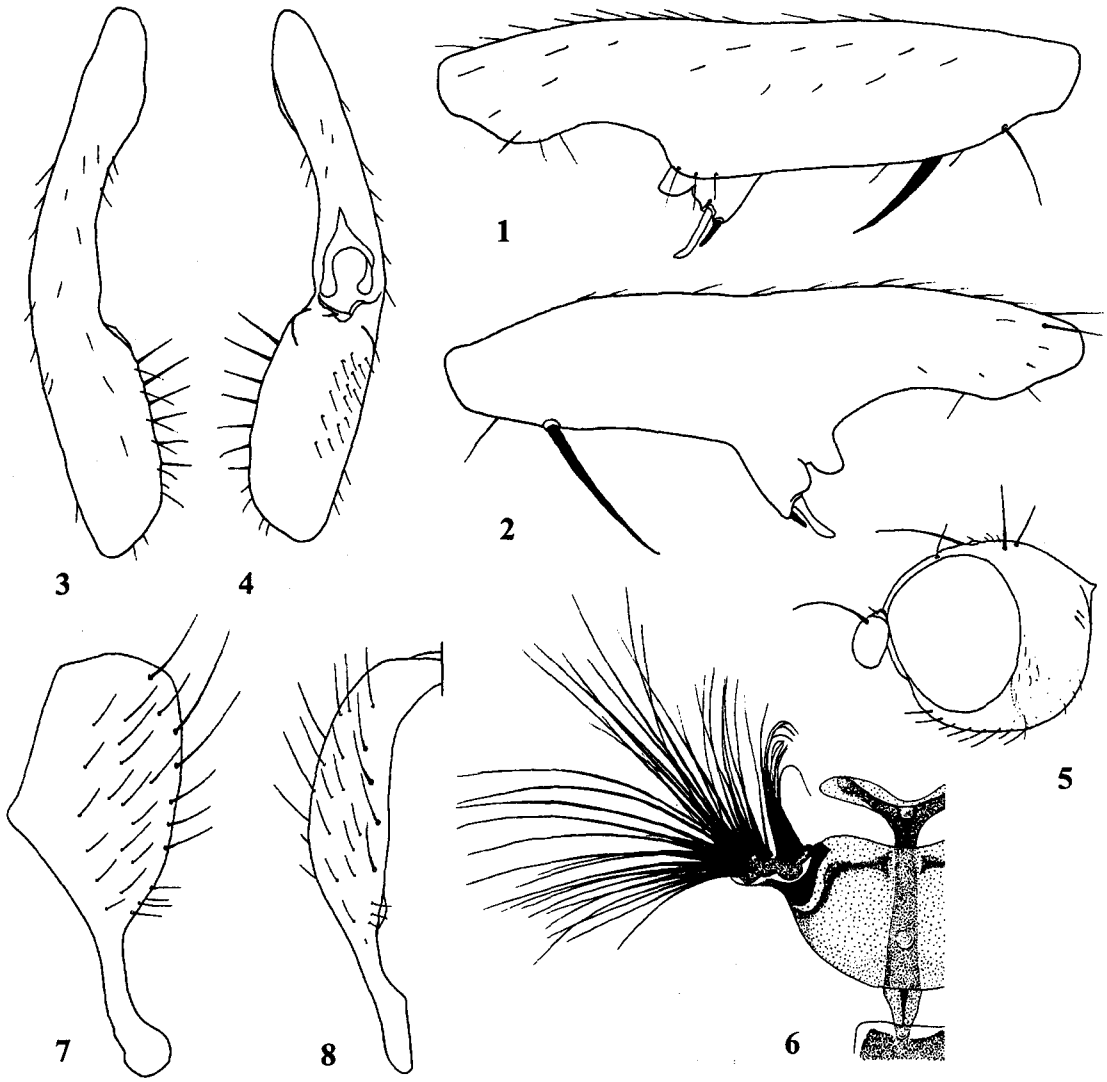



Fig. 26. *Themira (Annamira) leachi* (Meigen): 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — head, lateral view; 6 — ♂ abdominal sternites 4 and 5; 7 — epandrium and surstylus (left), lateral view; 8 — epandrium and surstylus (left), dorsal view.

Рис. 26. *Themira (Annamira) leachi* (Meigen): 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — голова, сбоку; 6 — 4-й и 5-й стерниты брюшка ♂; 7 — эпандрий и сурстиль (левый), сбоку; 8 — эпандрий и сурстиль (левый), сверху.

Length of body: 3.0–4.2. Length of wing: 2.1–2.6.

HABITATS OF ADULT AND LARVA. Adults recorded by Pont [1979] on manured soil, cow dung, human faces. I collected males and females on leaves of *Rubus* sp. on August. The larvae have been found in the decaying stem of umbelliferous plant. The hibernated pupae have been found in decaying grass [Lobanov, 1962].

The larva was described by Meier [1996].

DISTRIBUTION. PALAEARCTIC REGION. Throughout Europe [Zuska, Pont, 1984], Russia (Moscow Area, Moscow City, Ivanovo Area, Altais, Amur Area, Primorie Province), Mongolia. NEARCTIC REGION. Canada (Newfoundland). New for the Nearctic Region.

## *Themira (Annamira) notmani* Curran, 1927
Fig. 27.

*Themira notmani* Curran, 1927: 2.

DESCRIPTION. Male, female. *Colour and integument structure.* Frons reddish-brown to black, but always more light apically. Gena below eye, face, and antenna yellow. Posteranium black. Thorax black. Legs yellow, but femur in apical third (except tip) and hind tibia in basal half darkened. Tarsi of all legs darkened. Wing tinged with brownish; veins brownish. Calypters and their margins, also halter white to brownish. Abdomen black.

Frons shining, with two stripes of greyish pollen in middle, which often are fused in lower part of frons. Face, gena and posteranium greyish pruinose. Scutum brownish pruinose, sometimes notopleuron and partly postpronotal lobe shining. Mediotergite subshining, but greyish pruinose on the border with anatergite. Scutellum pruinose. Abdomen shining.

*Head* in lateral view slightly flattened dorsoventrally. Vertical diameter of eye approximately 5.5 times as long as width of gena (with subgena) below eye. Flagellum in

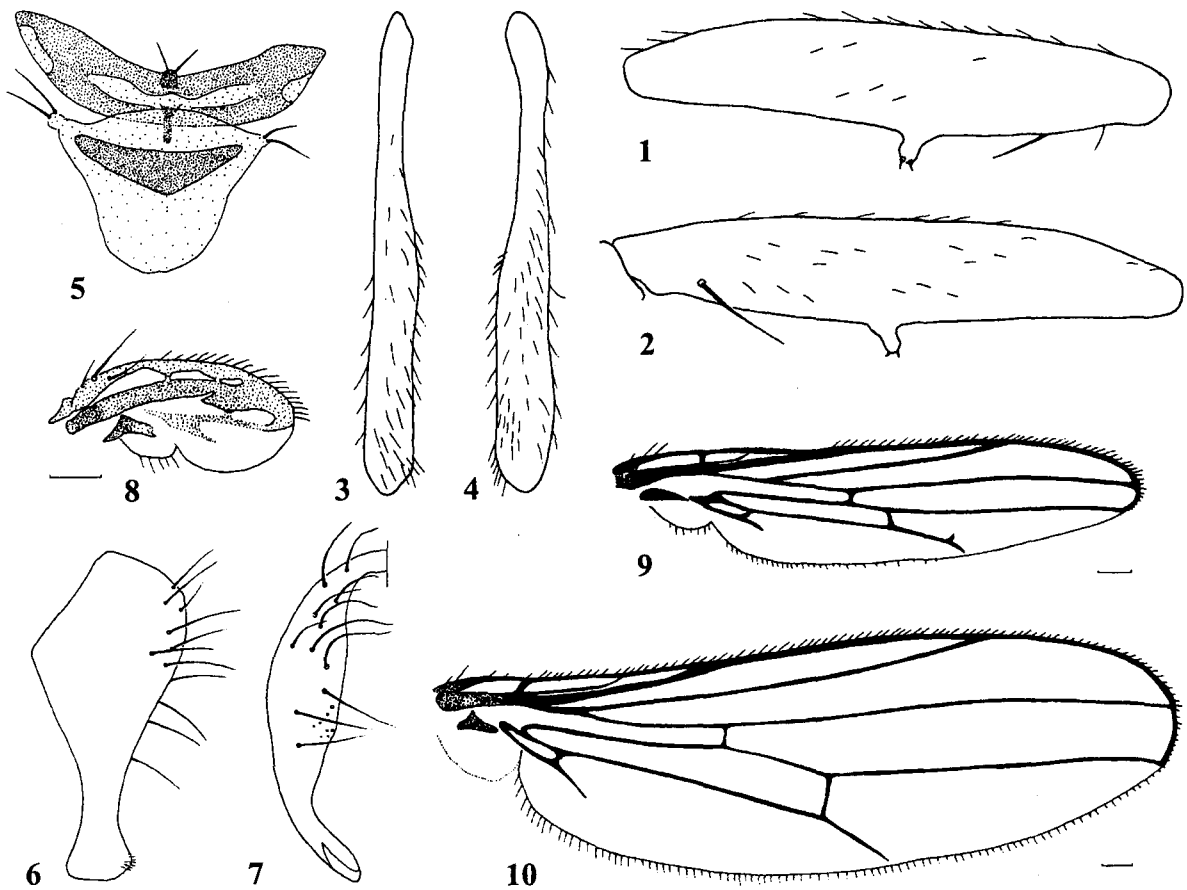



Fig. 27. *Themira (Annamira) notmani* Curran: 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ abdominal sternites 4 and 5; 6 — epandrium and surstylus (left), lateral view; 7 — epandrium and surstylus (left), dorsal view; 8–10 — wing. Scale — 0.1 mm.

Рис. 27. *Themira (Annamira) notmani* Curran: 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — 4-й и 5-й стерниты брюшка ♂; 6 — эпандрий и сурстиль (левый), сбоку; 7 — эпандрий и сурстиль (левый), сверху; 8–10 — крыло. Шкала — 0,1 мм.

profile long-oval, approximately 1.5 times as long as wide. 1 *or*, 1 *oc*, 1 *poc*, and 1 *i vt* (*o vt* absent). 1–2 vibrissae.

*Thorax*. Scutum with the following paired setae: 1 *pprn*, 2 *npl*, 1 *pal*, 1 postsutural *dc*.

*Legs*. Mid tibia with 1 *av* in apical third. Hindleg without striking setae. Male. Foreleg as Figs 27: 1–4; hind tibia with weak and scarcely perceptible osmeterium. Female. Fore femur anteroventrally with a setulae, which is sometimes absent.

*Wing* and halter normal to strong reduced (Fig. 27: 8–10). Cells *bm* and *br* fused.

*Abdomen*. Sternites 4 and 5 of male as in Fig. 27: 5. Epandrium and surstylus as in Fig. 27: 6, 7.

Length of body: 3.4–3.7. Length of wing: 0.4–2.2.

HABITATS OF ADULT AND LARVA. Females from Oregon (see Appendix) were collected on *Rubus parvifrolus*. Immature stages unknown.

DISTRIBUTION. NEARCTIC REGION. Canada (British Columbia, Nova Scotia), USA (New York, Oregon).

## *Themira (Annamira) przewalskii* Ozerov, 1985
Fig. 28.

*Themira przewalskii* Ozerov, 1986a: 53.

DESCRIPTION. Male. *Colour and integument structure*. Head mainly black, only frons apically, face and antenna brownish. Thorax black. Legs black, but all coxae, all femora and fore tibia basally, mid tibia apically, and mid tarsi yellowish. Wing slightly darkened; veins blackish. Calypters and their margins darkened. Halter white. Abdomen black.

Frons shining, with two stripes of greyish pollen in middle, which are fused in lower part of frons. Gena shining, but along lower margin greyish pruinose. Face and postcranium greyish pruinose. Scutum thinly greyish pruinose. Scutellum greyish pruinose. Abdomen shining.

*Head* in lateral view slightly flattened dorsoventrally (Fig. 28: 1). Vertical diameter of eye approximately 4.5 times as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, approximately 1.5 times as long as wide. 1 *or*, 1 *oc*, 1 *poc*, and 1 *i vt* (*o vt* absent). 1 vibrissa.

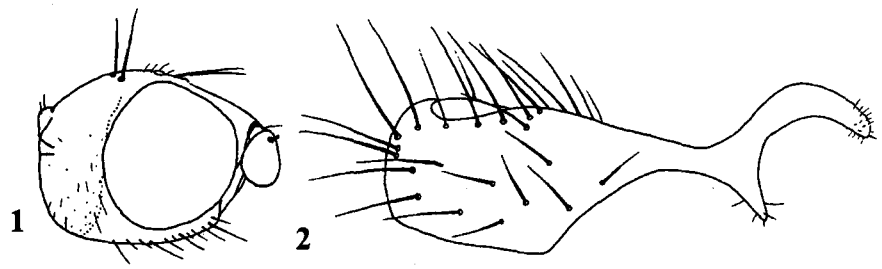
*Thorax*. Scutum with the following paired setae: 2*npl* (anterior approximately 2 times shorter than posterior), 1 *pal*, 1 postsutural *dc*; *pprn* absent.

*Legs*. Mid tibia and hind femur without striking setae. Hind tibia at middle anteroventrally with osmeterium, with 1 *ad* in basal third (above osmeterium) and with 1 *av* below osmeterium.

*Wing* normal, longer than abdomen. Cells *bm* and *br* separate.

Fig. 28. *Themira (Annamira) przewalskii* Ozerov, holotype: 1 — head, lateral view; 2 — epandrium and surstylus (left), lateral view.

Рис. 28. *Themira (Annamira) przewalskii* Ozerov, голотип: 1 — голова, сбоку; 2 — эпандрий и сурстиль (левый), сбоку.



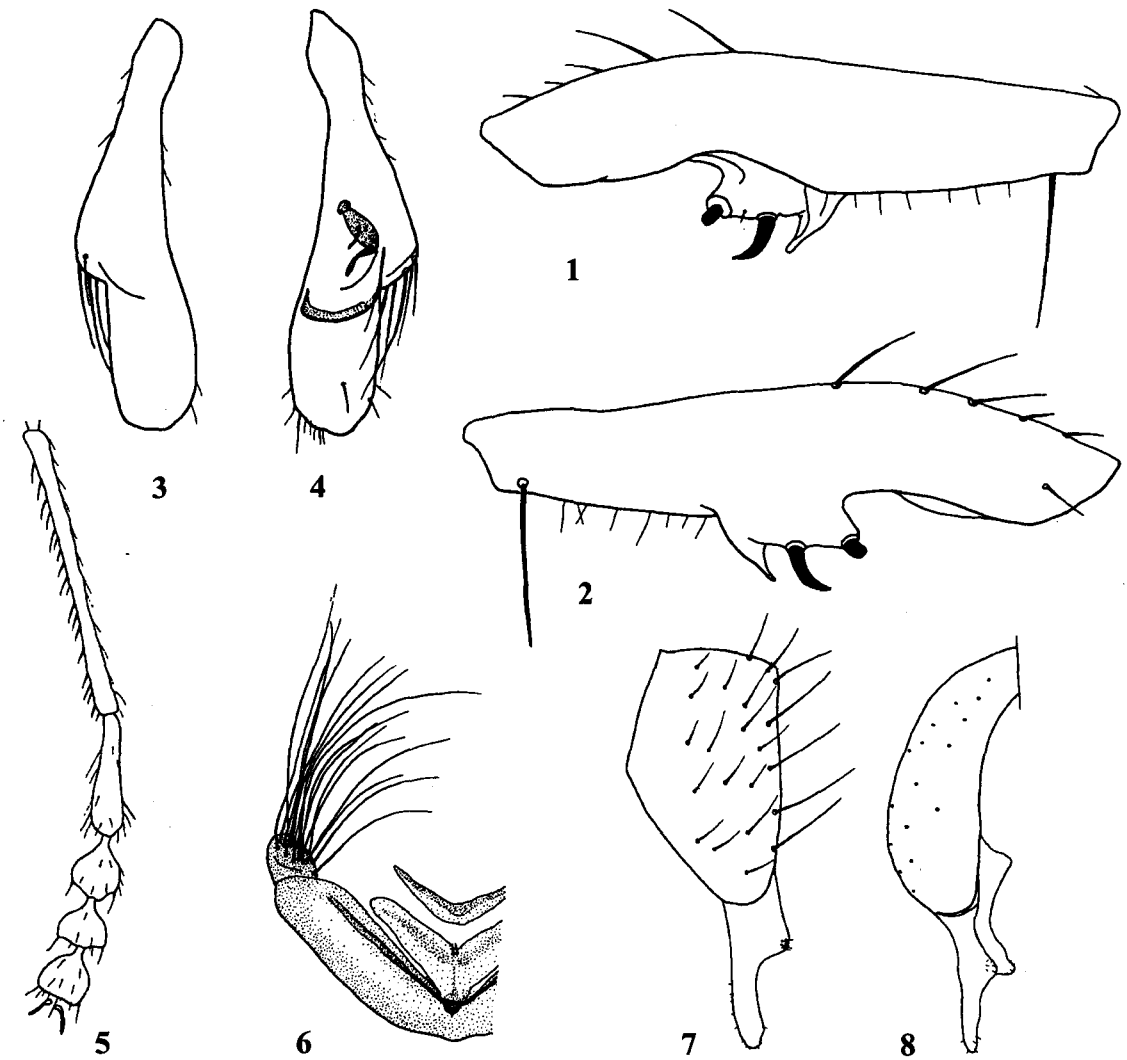




Fig. 29. *Themira (Nadezhdamira) latitarsata* Melander et Spuler: 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ mid tarsus, dorsal view; 6 — ♂ abdominal sternites 4 and 5; 7 — epandrium and surstylus (left), lateral view; 8 — epandrium and surstylus (left), dorsal view.

Рис. 29. *Themira (Nadezhdamira) latitarsata* Melander et Spuler: 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — лапка средней ноги ♂, сверху; 6 — 4-й и 5-й стерниты брюшка ♂; 7 — эпандрий и сурстиль (левый), сбоку; 8 — эпандрий и сурстиль (левый), сверху.

*Abdomen* strongly dilated towards tergite 5 (from above). Epandrium and surstylus as in Fig. 28: 2.

Length of body: 3.7. Length of wing: 2.6.

HABITATS OF ADULT AND LARVA. No data. Immature stages unknown.

DISTRIBUTION. PALAEARCTIC REGION. China (Gansu).

## Subgenus *Nadezhdamira* **subgen.n.**

Type-species: *Sepsis superba* Haliday, 1833: 170, by present designation.

DIAGNOSIS. *Nadezhdamira* differs from all known subgenera by lacking of dorsal seta in apical quarter on fore coxa.

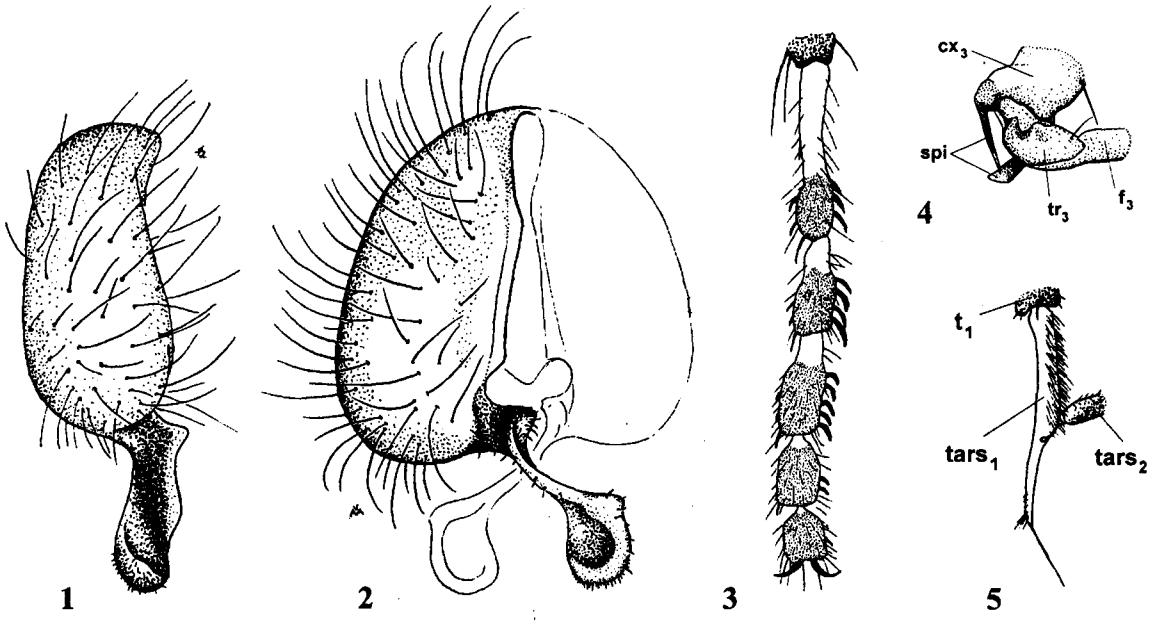



Fig. 30. *Themira (Nadezhdamira) maculitarsis* Curran, holotype: 1 — epandrium and surstylus, lateral view; 2 — epandrium and surstyli, dorsal view; 3 — ♂ tarsi of mid leg (left), dorsal view; 4 — ♂ coxa and trochanter of hind leg (left), ventral view ($cx_3$ — coxa, $f_3$ — femur, tr — trochanter, spi — spines); 5 — ♂ first tarsomere of fore leg (left), anterior view ($t_1$ — tibia, $tars_1$ — basitarsus, $tars_2$ — tarsomere 2).

Рис. 30. *Themira (Nadezhdamira) maculitarsis* Curran, голотип: 1 — эпандрий и сурстиль, сбоку; 2 — эпандрий и сурстили, сверху; 3 — лапка средней левой ноги ♂, сверху; 4 — тазик и вертлуг задней левой ноги ♂, снизу ($cx_3$ — тазик, $f_3$ — бедро, tr — вертлуг, spi — шипы); 5 — 1-й чл. лапки передней левой ноги самца, спереди ($t_1$ — голень, $tars_1$ — 1-й членик лапки, $tars_2$ — 2-й членик лапки).

DESCRIPTION. Head roundish in lateral view. Katepisternum, procpisternum, often meron, metepisternum and metepimeron partly or completely greyish pruinose. *pprn* present. Male fore femur strongly curved. Fore coxa without *d* in apical quarter. Wing normal, longer than abdomen. Cells *bm* and *br* separate. Surstyli symmetrical, not fused to epandrium.

COMPOSITION AND DISTRIBUTION. The subgenus includes 5 species: 2 Holarctic (*N. pusilla* (Zetterstedt, 1847) and *N. malformans* Melander et Spuler, 1917), 2 Nearctic (*N. latitarsata* Melander et Spuler, 1917 and *N. maculitarsis* Curran, 1929) and 1 Palaearctic (*N. superba* (Haliday, 1833)).

ETYMOLOGY. The new subgenus is named after my older daugther Anna.

## *Themira (Nadezhdamira) latitarsata* Melander et Spuler, 1917

Fig. 29.

*Themira latitarsata* Melander et Spuler, 1917: 45.

DESCRIPTION. Male, female. *Colour and integument structure.* Body, legs and antenna dark brown to black. Wing tinged with brownish; veins brown. Calypters and their margins, also halter white.

Frons shining. Face, gena, antennal grooves, and postcranium greyish pruinose. Scutum greyish pruinose. Procpisternum greyish pruinose. Procpimeron shining, but along lower margin greyish pruinose. Anepisternum shining. Katepisternum silvery pruinose. Anepimeron shining, but along posterior margin greyish pruinose; pleural wing process greyish pruinose. Meron greyish pruinose completely or with a small median shining spot. Katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head.* Vertical diameter of eye approximately 5 times as long as width of gena (with subgena) below eye. Flagellum in profile oval, 1.5 times as long as wide. 1 *or*, 1 *oc*, 1 *poc*, and 1 *i vt* (*o vt* absent). 1–2 vibrissae.

*Thorax.* Scutum with the following paired setae: 1 *pprn*, 2 *npl* (anterior shorter and thinner than posterior), 1 *pal*, 1 postsutural *dc*; with a row of short setulae along each *ac* and *dc* line. Procpisternum with 1–2 hairs in lower part. Scutellum with long apical setae, basal setae hair-like.

*Legs.* Mid femur without striking setae. Male. Foreleg as in Fig. 29: 1–4. Mid tibia with long hairs in apical half ventrally and on posteroventral surface, with 1–2 apical *pv*. Tarsomeres 3–5 of midleg strongly compressed dorsoventrally (Fig. 29: 5). Hind femur at middle ventrally with small tubercle, armed with 3–4 long hairs, and usually with 2 thin *av* in apical half. Hind tibia near middle ventrally bent; with osmeterium in basal half. Female. Fore femur anteroventrally with 1–3 spinules. Hind femur with 1–2 thin *av* in apical half. Hind tibia without setae.

*Abdomen.* Syntergite 1+2 at sides with several thin setulae. Tergites 4 and 5 each of male, and tergite 5 of female with a row of marginal setae. Sternites 4 and 5 of male as in Fig. 29: 6. Epandrium and surstylus as in Fig. 29: 7, 8.

Length of body: 2.7–3.5. Length of wing: 2.5–3.3.

HABITATS OF ADULT AND LARVA. No data. Immature stages unknown.

DISTRIBUTION. NEARCTIC REGION. USA (Montana, New York, Oregon, Pennsylvania, Vermont, Washington).

## *Themira (Nadezhdamira) maculitarsis* Curran, 1929

Fig. 30.

*Themira maculitarsis* Curran, 1929: 10.

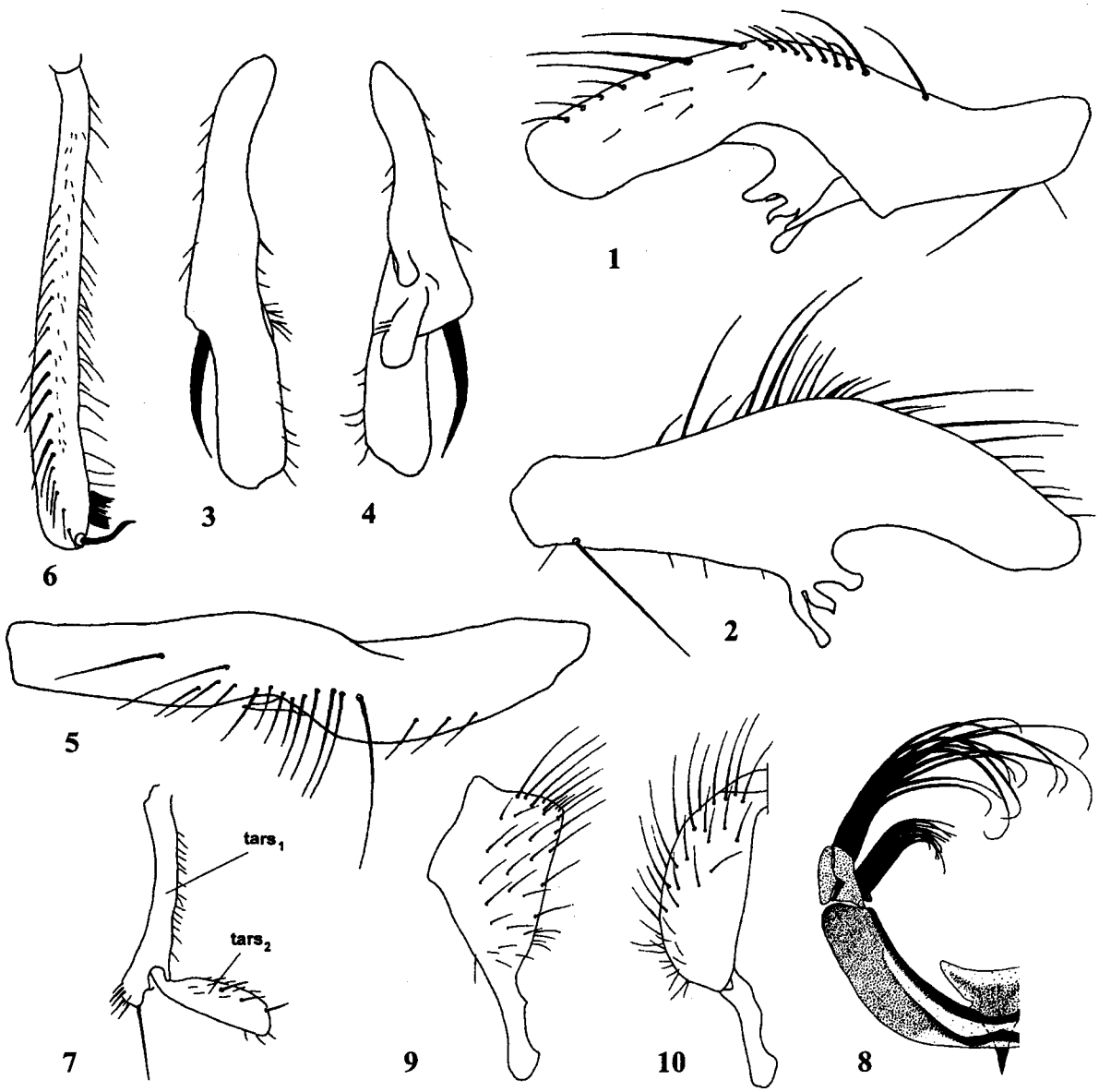



Fig. 31. *Themira (Nadezhdamira) malformans* Melander et Spuler: 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ fore femur (left), dorsal view; 6 — ♂ hind tibia (left), anterior view; 7 — first and second tarsomeres of ♂ fore leg (left), posterior view ($tars_1$ — basitarsus, $tars_2$ — tarsomere 2); 8 — ♂ abdominal sternites 4 and 5; 9 — epandrium and surstylus, lateral view; 10 — epandrium and surstylus, dorsal view.

Рис. 31. *Themira (Nadezhdamira) malformans* Melander et Spuler: 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — бедро передней левой ноги ♂, сверху; 6 — голень задней левой ноги ♂, спереди; 7 — 1-й и 2-й членики лапки передней левой ноги ♂, сзади ($tars_1$ — 1-й членик лапки, $tars_2$ — 2-й членик лапки); 8 — 4 и 5 стерниты брюшка самца; 9 — эпандрий и сурстиль (левый), сбоку; 10 — эпандрий и сурстиль (левый), сверху.

DESCRIPTION. Male. *Colour and integument structure.* Body, legs (except tarsi of midleg) and antenna dark brown to black. Tarsi of midleg (Fig. 30: 3): basitarsus white, but black in apical third; tarsomere 2 white in basal half and black in apical half; tarsomere 3 black, but white in basal quarter; tarsomere 4 black, but white basally; tarsomere 5 completely black. Wing tinged with brownish; veins brown. Calypters and their margins, also halter white.

Frons shining. Face, gena, antennal grooves, and postcranium greyish pruinose. Scutum mainly shining, but between postpronotal lobes and near scutellum thinly greyish pruinose. Proepisternum greyish pruinose. Proepimeron shining, along lower margin greyish pruinose. Anepisternum shining. Katepisternum mainly shining, but greyish pruinose along anterior margin, also in upper posterior and lower corners. Anepimeron shining; pleural wing process greyish pruinose. Meron greyish pruinose, except on an oval median patch. Katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen mainly shining, but tergites (1+2), 3 and 4 each with narrow stripe of pollen basally, and tergite 6 completely pruinose.

*Head.* Vertical diameter of eye approximately 4 times as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, approximately 1.2 times as long as wide. 1 *or*, 1 *oc*, 1 *poc*, and 1 *i vt* (*o vt* absent). 1 vibrissa.

*Thorax.* Scutum with the following paired setae: 1 *pprn*, 2*npl* (anterior short, hair-like), 1*pal*, 1 postsutural *dc*; with a row of short setulae along each *ac*, *dc*, and *ial* line. Proepisternum with 1–2 hairs in lower part. Scutellum with long apical setae, basal setae absent.

*Legs.* Femur and tibia of foreleg as in*Th. pusilla* and*Th. latitarsata*. Basitarsus of foreleg is connected with tarsomere 2 near its middle (Fig. 30: 5). Mid femur on apical half posteroventrally with a row of curved setulae. Mid tibia only with apical setae; posterior part of back areas of all tarsomeres of midleg with several flattened spine-like setae (Fig. 30: 3), black areas of tarsomeres are wider than white. Hind coxa apically on anteroventral surface with a long pointed spine (Fig. 30: 4). Hind trochanter posteroventrally with a strongly compressed and cut apically spine (Fig. 30: 4). Hind femur with a row of long hairs posteriorly in basal third, with 2–3 *ad* in apical half. Hind tibia without a bend near middle ventrally, apically with a comb of short golden hairs posteriorly and group of straight hairs on dorsal surface, with osmeterium in basal half, which surrounded long thin setae and hairs.

*Abdomen.* Tergites (1+2)–5 each at sides with several thin setae; besides this, tergites 4 and 5 each with a row of thin marginal setae. Epandrium and surstyli as in Fig. 30: 1, 2.

Length of body: 3.2. Length of wing: 3.0.

HABITATS OF ADULT AND LARVA. No data. Immature stages unknown.

DISTRIBUTION. NEARCTIC REGION. Canada (Manitoba).

## *Themira (Nadezhdamira) malformans* Melander et Spuler, 1917

Fig. 31.

*Themira malformans* Melander et Spuler, 1917: 46.

DESCRIPTION. Male. *Colour and integument structure.* Black, but sometimes frons in lower third and gena brownish. Wing tinged with brownish; veins brown. Calypters and their margins, also halter white.

Frons shining, but along eye margin greyish pruinose. Face, gena, and postcranium greyish pruinose. Scutum greyish pruinose, but shining along *ac* and *dc* lines, also postpronotal lobe and notopleuron partly shining. Proepisternum greyish pruinose, but along lower margin shining. Proepimeron shining, but in lower part greyish pruinose. Anepisternum shining. Katepisternum greyish pruinose, but with big shining spot in upper posterior corner. Anepimeron on anterior half shining, in posterior half (sometimes only third) greyish pruinose; pleural wing process shining below greater ampulla. Meron almost mainly shining, but along margins greyish pruinose. Katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head.* Vertical diameter of eye approximately 4 times as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, approximately 1.5 times as long as wide. 1 *or*, 1 *oc*, 1 *poc*, and 1 *i vt* (*o vt* absent). 1–2 vibrissae.

*Thorax.* Scutum with the following paired setae: 1*pprn*, 2 *npl* (anterior 2–3 times shorter than posterior), 1 *pal*, 1 postsutural *dc*. Proepisternum with 1–2 hairs in lower part. Scutellum with a pair of apical setae, basal setae absent.

*Legs.* Foreleg as in Fig. 31: 1–4; fore femur with a row of long setae dorsally; basitarsus with a long seta apically (Fig. 31: 7). Mid femur anteriorly in apical half with several setae. Mid tibia only with apical setae: *v*, *pv*, *d*, and 2 long *av*. Hind femur in basal half posteriorly with straight hairs, in apical half with 2–3 thin*ad*. Hind tibia in apical half with a rows of *av* and curved apically *d*, near tip with comb of black short spinules dorsally and one curved spine anteriorly (Fig. 31: 6); with osmeterium in basal half.

*Abdomen.* Syntergite 1+2 and tergite 3 at sides with several thin setulae. Tergites 4 and 5 each with a row of marginal setae. Sternites 4 and 5 as in Fig. 31: 8. Epandrium and surstylus as in Fig. 31: 9, 10.

Length of body: 2.9–3.2. Length of wing: 2.9–3.1.

HABITATS OF ADULT AND LARVA. No data. Immature stages unknown.

DISTRIBUTION. PALAEARCTIC REGION. Sweden, Russia (Kola Peninsula). NEARCTIC REGION. Canada (Hudson Bay).

## *Themira (Nadezhdamira) pusilla* (Zetterstedt, 1847)

Fig. 32.

*Sepsis pusilla* Zetterstedt, 1847: 2295.
*Themira spinosa* Verrall, 1886: 233.
*Themira incisurata* Melander et Spuler, 1917: 44.

DESCRIPTION. Male. *Colour and integument structure.* Black, but gena sometimes brownish. Wing tinged with brownish; veins brown. Calypters and their margins white or yellowish. Halter white.

Frons shining. Face, gena, and postcranium greyish pruinose. Antennal grooves subshining. Scutum greyish pruinose. Proepisternum greyish pruinose. Proepimeron shining, but along lower margin greyish pruinose. Anepisternum shining. Katepisternum greyish pruinose. Anepimeron shining, but in posterior third greyish pruinose; pleural wing process greyish pruinose. Meron completely greyish pruinose or with a small shining spot at middle. Katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head.* Vertical diameter of eye approximately 5 times as long as width of gena (with subgena) below eye. Flagellum in profile long-oval, 1.5 times as long as wide. 1 *or*, 1 *oc*, 1 *poc*, and 1 *i vt* (*o vt* absent). 1 vibrissa.

*Thorax.* Scutum with the following paired setae: 1 *pprn*, 2*npl* (anterior approximately 2.5 times shorter than posterior), 1 *pal*, 1 postsutural *dc*; with a row of short setulae along each *ac*, *dc* and *ial* line. Proepisternum bare or with 1 hair in lower part. Scutellum with a pair of long apical setae, basal setae hair-like.

*Legs.* Foreleg as in Fig. 32: 1–4. Mid femur without striking setae. Mid tibia with straight hairs in apical third posteroventrally, near tip with 1 curved*p*. Tarsi of midleg normal, not compressed (Fig. 32: 5). Hind femur with 2–4 long *av* at middle and with 1–2 *ad* in apical half. Hind tibia with a median ventral excision near middle and the tibia bent at this point (Fig. 32: 6), with a group of setulae near middle posteroventrally; osmeterium in basal half.

*Abdomen.* Syntergite 1+2 at sides with several thin setulae. Tergites 4 and 5 each with a row of marginal setae. Sternites 4 and 5 as in Fig. 32: 7. Epandrium and surstylus as in Fig. 32: 8, 9.

Length of body: 2.7–2.8. Length of wing: 1.9–2.3.

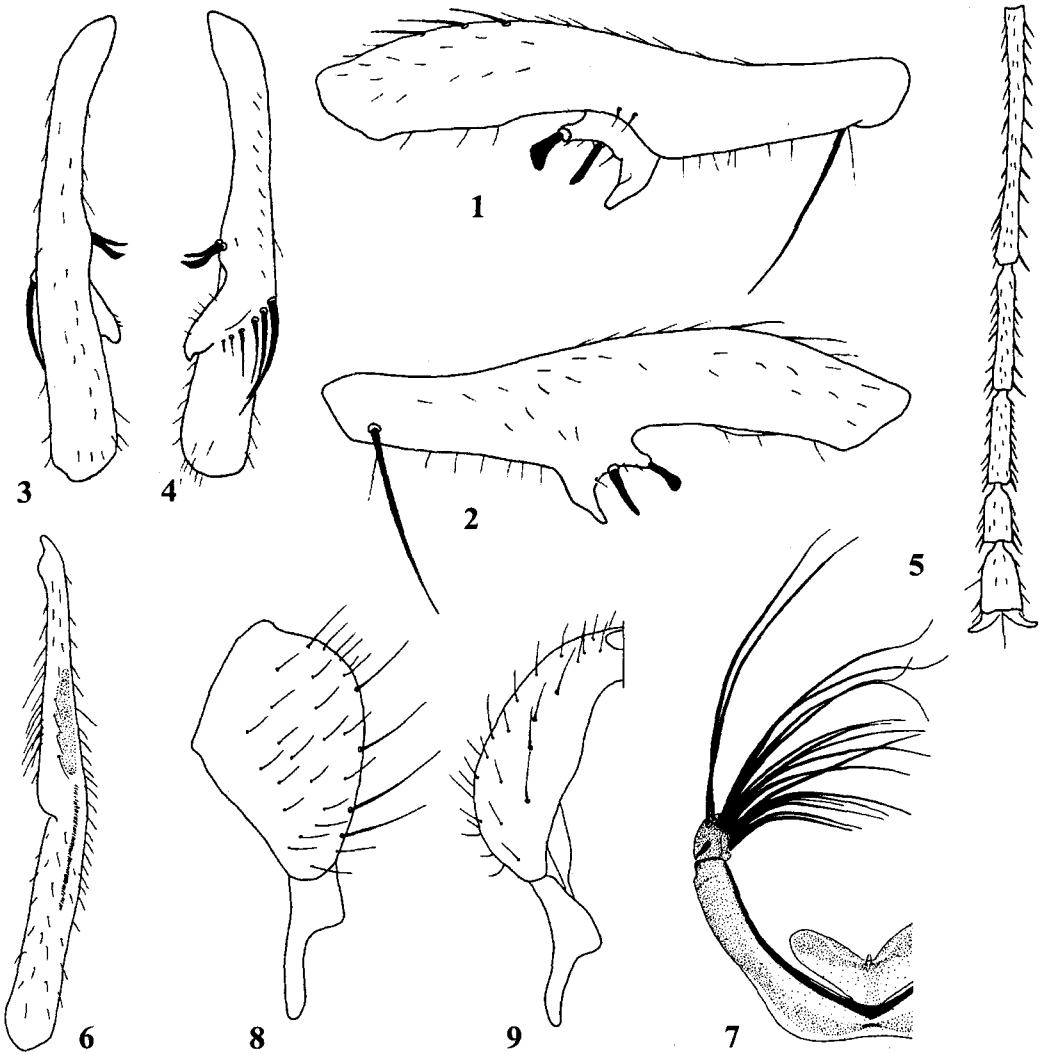



Fig. 32. *Themira (Nadezhdamira) pusilla* (Zetterstedt): 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 — ♂ fore tibia (left), posterior view; 4 — ♂ fore tibia (left), anterior view; 5 — ♂ mid tarsus, dorsal view; 6 — ♂ hind tibia (left), anterior view; 7 — ♂ abdominal sternites 4 and 5; 8 — epandrium and surstylus, lateral view; 9 — epandrium and surstylus, dorsal view.

Рис. 32. *Themira (Nadezhdamira) pusilla* (Zetterstedt): 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — лапка средней ноги ♂, сверху; 6 — голень задней левой ноги ♂, спереди; 7 — 4-й и 5-й стерниты брюшка ♂; 8 — эпандрий и сурстиль (левый), сбоку; 9 — эпандрий и сурстиль (левый), сверху.

HABITATS OF ADULT AND LARVA. According to Stackelberg [1958], the adults are not rare on the banks of rivers and lakes on sand and on decaying algae. Immature stages unknown.

DISTRIBUTION. PALAEARCTIC REGION. Finland, Great Britain, Ireland, Russia (Leningrad, Tyumen areas), Sweden; Asia: Mongolia. NEARCTIC REGION. USA (Alaska, New York).

*Themira (Nadezhdamira) superba* (Haliday, 1833)

Fig. 33.

*Sepsis superba* Haliday, 1833: 170.

DESCRIPTION. Male, female. *Colour and integument structure.* Black, only frons often dark brown. Wing tinged with brownish; veins brown. Calypters, their margins, and halter white or yellowish.

Frons shining. Face, gena, and postcranium greyish pruinose. Scutum greyish pruinose with shining stripes along lines *ac, dc,* and *ial* to almost completely shining. Procpisternum greyish pruinose. Procpimeron shining in upper half and greyish pruinose in lower part. Anepisternum shining. Katepisternum shining, but greyish pruinose along anterior margin. Anepimeron shining, but greyish pruinose along posterior margin; pleural wing process greyish pruinose, but shining below greater ampulla. Meron almost completely shining, only along margins greyish pruinose. Katepimeron, metepisternum, metepimeron, katatergite, and anatergite greyish pruinose. Mediotergite greyish pruinose, but shining near abdomen. Scutellum greyish pruinose. Abdomen shining.

*Head.* Vertical diameter of eye approximately 4 times as long as width of gena (with subgena) below eye. Clypeus often strongly projecting beyond the mouth. Flagellum in profile oval, approximately 1.5 times as long

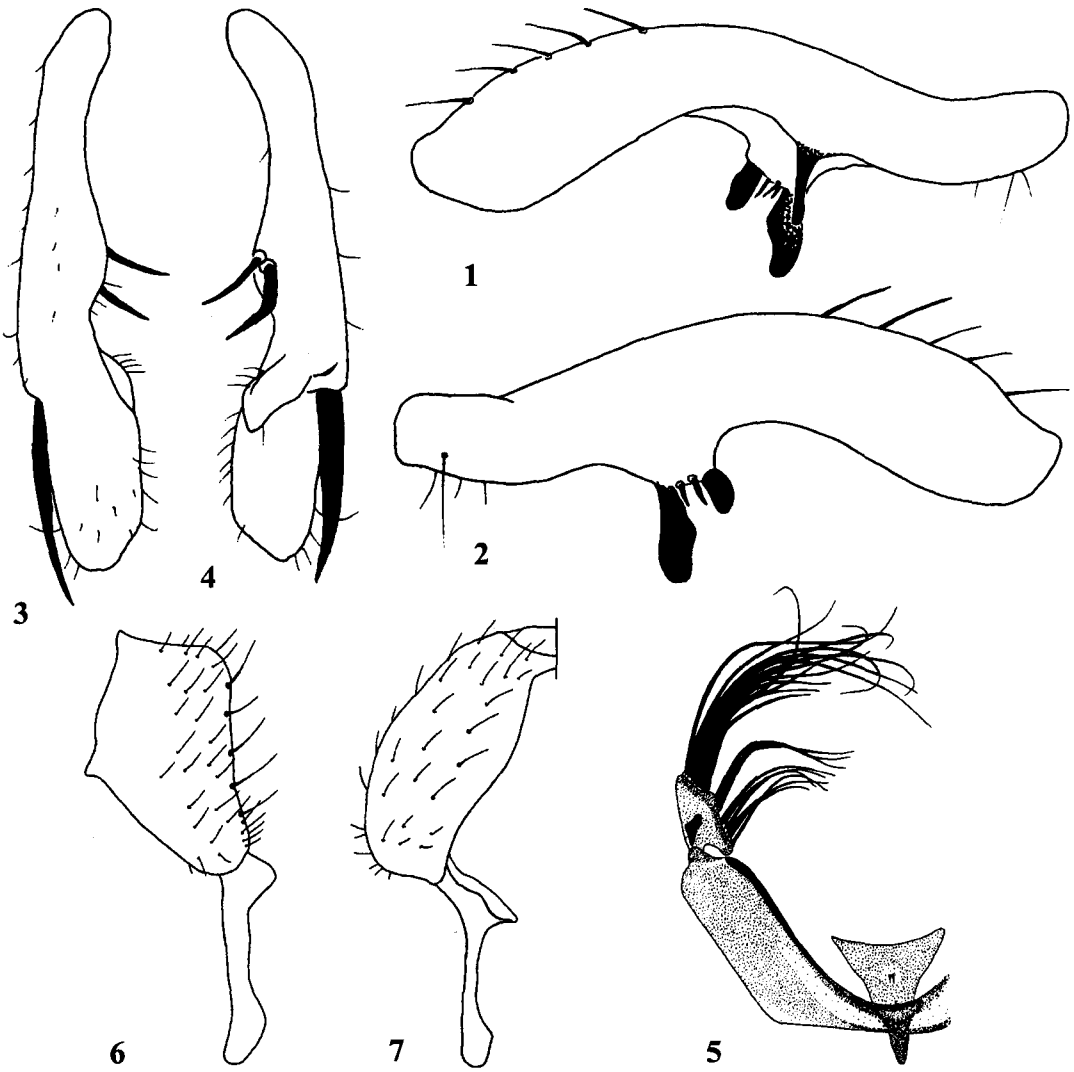



Fig. 33. *Themira (Nadezhdamira) superba* (Haliday): 1 — ♂ fore femur (left), posterior view; 2 — ♂ fore femur (left), anterior view; 3 —♂ fore tibia (left), posterior view; 4 —♂ fore tibia (left), anterior view; 5 —♂ abdominal sternites 4 and 5; 6 — epandrium and surstylus (left), lateral view; 7 — epandrium and surstylus (left), dorsal view.

Рис. 33. *Themira (Nadezhdamira) superba* (Haliday): 1 — бедро передней левой ноги ♂, сзади; 2 — бедро передней левой ноги ♂, спереди; 3 — голень передней левой ноги ♂, сзади; 4 — голень передней левой ноги ♂, спереди; 5 — 4-й и 5-й стерниты брюшка ♂; 6 — эпандрий и сурстиль (левый), сбоку; 7 — эпандрий и сурстиль (левый), сверху.

as wide. 1 *or*, 1 *oc*, 1 *poc*, and 1 *i vt* ( *o vt* absent). Vibrissae like the genal setae.

*Thorax*. Scutum with the following paired setae: 1 *pprn*, 1–2 *npl* (anterior short, hair-like, or absent), 1 *pal*, 1 postsutural *dc*; with a row of short setulae along each *ac*, *dc*, and *ial* line. Procpisternum bare or with 1–2 hairs in lower part. Scutellum with a pair of apical setae, basal setae absent.

*Legs*. Male. Foreleg as in Fig. 33: 1–4; fore femur without long setae dorsally. Mid femur with a row of curved hair-like setae in apical half posteroventrally. Mid tibia usually without *av*, but with apical setae: *v*, *pv*, *d* and 2 long *av*. Hind femur posteriorly with long straight hairs, in apical half with 2–3 thin *ad*. Hind tibia without striking setae; osmeterium in basal half. Female. Fore femur with 3–4 spinules in apical half anteroventrally. Mid femur without striking setae. Mid tibia with 1 *av* in apical third and with apicals *v*, *pv*, *d* and *av*.

*Abdomen*. Syntergite 1+2 at sides with several thin setulae. Tergites 4 and 5 of male each with a row of marginal setae, in female without setae. Sternites 4 and 5 of male as in Fig. 33: 5. Epandrium and surstylus as in Fig. 33: 6, 7.

Length of body: 2.6–3.3. Length of wing: 2.5–2.7.

HABITATS OF ADULT AND LARVA. Adults were collected by Duda [1926] on pastures and around creeks, along banks of water reservoirs [Stackelberg, 1958], near stockyards and in grass near a cesspit [Minder, 1963], and on flowers of *Heracleum* [Goot, 1986]. I collected males and females around a dirty pool near a petrol station, and I reared larvae *Th. superba* from stil taken there.

The larva was described by Meier [1996].

DISTRIBUTION. PALAEARCTIC REGION. Throughout Europe [Zuska, Pont, 1984]; Russia (European part: Leningrad and Moscow areas, Moscow City, North Ossetia, Voronezh Area; Asian part: Chelaybinsk Area, Irkutsk Area, Krasnoyarsk Province, Yakutia).

## Nomenclatorial summary

Genus *THEMIRA* Robineau-Desvoidy, 1830

subgenus *Enicita* Westwood, 1840
*annulipes* (Meigen, 1826) (*Sepsis*)
*varipes* (Meigen, 1838) (*Nemopoda*)
*crassiseta* (Duda, 1926) (*Enicita,* as var. *Enicita annulipes* (Meigen, 1826)).
*elegantipes* (Ouellet, 1940) (*Enicita*)
*bispinosa* Melander et Spuler, 1917 (*Themira*)
*mexicana* Ozerov, sp.n.
*simplicipes* (Duda, 1926) (*Enicita*)

subgenus *Annamira* subgen.n.
*japonica* Zuska, 1974 (*Themira*)
*leachi* (Meigen, 1826) (*Sepsis*)
*phantasma* Robineau-Desvoidy, 1830 (*Themira*)
*tarsalis* (Walker, 1833) (*Nemopoda*)
*fumipennis* (Walker, 1833) (*Nemopoda*)
*coxarum* (Zetterstedt, 1837) (*Sepsis*). Nomen nudum.
*coxarum* (Zetterstedt, 1838) (*Sepsis*)
*curvipes* Wulp, 1864 (*Themira*)
*umbripennis* (Wulp, 1871) (*Nemopoda*)
*notmani* Curran, 1927 (*Themira*)
*przewalskii* Ozerov, 1985 (*Themira*)

subgenus *Enicomira* Duda
*kanoi* Iwasa, 1995 (*Themira*)
*minor* (Haliday, 1833) (*Sepsis*)
*halidayi* (Curtis, 1837) (*Sepsis*). Nomen nudum.
*dentimana* Wulp, 1864 (*Themira*)
*consobrina* Wulp, 1871 (*Themira*)
*roseni* Becker, 1915 (*Themira*)
*paludosa* Elberg, 1963 (*Themira*)
*sabulicola* Ozerov, 1985 (*Themira*)

subgenus *Nadezhdamira* subgen.n.
*latitarsata* Melander et Spuler, 1917 (*Themira*)
*maculitarsis* Curran, 1929 (*Themira*)
*malformans* Melander et Spuler, 1917 (*Themira*)
*pusilla* (Zetterstedt, 1847) (*Sepsis*)
*spinosa* Verrall, 1886 (*Themira*)
*incisurata* Melander et Spuler, 1917 (*Themira*)
*superba* Haliday, 1833 (*Themira*)

subgenus *Themira* Robineau-Desvoidy
*arctica* (Becker, 1915) (*Cheligaster*)
*dampfi* Becker, 1915 (*Themira*)
*bifida* Zuska, 1974 (*Themira*)
*biloba* Andersson, 1975 (*Themira*)
*flavicoxa* Melander et Spuler 1917 (*Themira*)
*germanica* Duda, 1926 (*Themira*)
*gracilis* (Zetterstedt, 1847) (*Sepsis*)
*lucida* (Staeger, 1844) (*Sepsis*)
*athabasca* Mangan, 1976 (*Themira*) — syn.n.
*lutulenta* Ozerov, 1986 (*Themira*)
*makiharai* Iwasa, 1984 (*Themira*)
*mesopleuralis* Iwasa, 1984 (*Themira*)
*mongolica* Soós, 1972 (*Themira*)
*nigricornis* (Meigen, 1826) (*Sepsis*)
*falleni* (Staeger in Schiødte, 1844) (*Sepsis*)
*putris* (Linnaeus, 1758) (*Musca*)
*fimeti* (Linnaeus, 1761) (*Musca*)
*conssencis* (Harris, 1780) (*Musca*)
*pilosa* Robineau-Desvoidy, 1830 (*Themira*)
*saigusai* Iwasa, 1981 (*Themira*)
*seticrus* Duda, 1926 (*Themira*)
*shimai* Iwasa, 1984 (*Themira*)

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## APPENDIX. Material examined from North America.

***Themira (Enicita) annulipes*** (Meigen, 1826)

**CANADA**. *Alberta*: Whitecourt N Edmonton, 17.VIII.1965, T. & W. Ivie, 2 ♂♂ (AMNH); *British Columbia*: Smithers, 450–500 m, 22.VI.1978, N.L.H. Krauss, 1 ♀ (AMNH); Vancouver Isl., Courtenay, 0–50 m, 1.VII.1978, N.L.H. Krauss, 1 ♂, (USNM); *New Hampshire*: Berlin, Coos Co., 28.VI.1967, N.L.H. Krauss, 1 ♂ (USNM); N Haverhill, Noxon Camp, 2000 ft, 5.VII.1931, J.M. Aldrich, 1 ♀ (USNM); *Nova Scotia*: Truro, VII.1967, N.L.H. Krauss, 1♂ (USNM); *Ontario*: Kemptville, 15.VII.1983, L. Huggert, 3 ♂♂ (ZIL); Ottawa, 21.VI.1955, C.W. Sabrosky, 1 ♀ (USNM); Ottawa, Brittania Bay, 26.V.1960, W.W. Wirth, 1 ♂ (USNM); **USA**. *Alaska*: Anchoraga, 5.VIII.1964, K.M. Sommerman, 1 ♂ (USNM); *Maine*: Katahdin, 3–4.V.1959, 2 ♂♂, 1 ♀ (USNM); Orono, 14.VII.1958, 1 ♂, (USNM); *New York*: Albany Co., Pinebush, 100 m, (42°42′45″N, 73°52′53″W), 20.VII.1987, T.L.McCabe, 1♀ (NYSMA); Allegany State Park, 28.V–3.VI.1963, W.W. Wirth, 1 ♂, 1 ♀ (USNM); Batavia, 5.VII.1933, R.H. Lewis, 1 ♀ (NYSMA); Central Park, New York City, 6.IX.1961, P.H. Arnaud, Jr., 1 ♂ (AMNH); Genesee Co., County Park, 26.V.1993, C. Vasey, 1 ♀ (NYSMA); Genesee Co., Pembroke, (42°59′07″N, 78° 23′11″W), 10.VIII.1984, J.K.Barnes, 1 ♂ (NYSMA); Greene Co., nr. Platte Clove, (42°09′27″N, 74°07′33″W), 12–27.VII.1987, J.K. Barnes, 1 ♂ (NYSMA); Hamilton Co., 10 km E Indian L., 555 m, (43°45′30″N, 74°10′14″W), 3.VII.1980, McCabe and Teale, 1 ♀ (NYSMA); Hamilton Co., 10 km E Indian L., 555 m, (43°45′30″N,

74°10'14"W), 21–29.V.1980, McCabe and Teale, 1 ♀ (NYSMA); Hamilton Co., 10 km E Indian L., 555 m, (43°45'30"N, 74°10'14"W), 25.VII.1980, McCabe and Teale, 1 ♀ (NYSMA); Hamilton Co., Browns Tract, 555 m, (43°48' 49"N, 74°41'55"W), 21–24.VI.1985, J.K. Barnes, 1♀ (NYSMA); Hamilton Co., Wells, Jimmy Cr. & W. Br. Sacandaca R., 16–18.V. 1987, J.K. Barnes, 1 ♀ (NYSMA); Ithaca, 20.IV.1968, M.A. Deyrup, 1 ♀ (AMNH); Ivory, Chautauqua Co., 31.V.1963, W.W. Wirth, 1♂ (USNM); Tompkins Co., Lloyd-Cornell Res. (McLean Bog), 20–21.VI.1988, Jeffrey K.Barnes, 1♀ (NYSMA); Warsaw, Oatka Creek, 11.VI.1963, W.W. Wirth, 1♀ (USNM); *Ohio*: Ashtabula Co., Geneva S. P., (41°51'05"N, 80°58'02"W), 16.VI.1976, D.L. Deonier, 1♀ (USNM); Willoughby, Lake Co., 21.V.1965, J.C. & D.Pallister, 1 ♂ (AMNH); *Utah*: Cedar Brakes, 27.VII.1956, A.L. Melander, 1 ♂ (USNM); *Washington*: Mt. Vernon, 3.VII.1923, A.L. Melander, 1 ♀ (USNM).

### ***Themira (Enicita) bispinosa*** Melander et Spuler, 1917

Holotype ♀: "Austin[,] Tex.[as]" (USNM).

**USA.** *New Mexico*: 2–3 miles E Mogollon, 7200–7600 ft., Catron Co., 13.VII.1961, F., P. & M. Rindge, 1 ♂ (AMNH); Bear Trap Camp, 28 mi. SW Magdalena, 8500 ft., Socorro Co., 2.VII.1965, F., P. & M. Rindge, 1 ♀ (AMNH).

### ***Themira (Themira) flavicoxa*** Melander et Spuler, 1917

Holotype♂: "Cld.Sp.Har L.I.Aug. [= Cold Spring Harbor, Long Island, August (USA, New York)]" (USNM). Paratypes: "Cld.Sp.Har* L.I.Aug.", 2 ♂♂, 4 ♀♀ (USNM); "Chicago Ill", 1 ♀ (USNM).

**USA.** *Delaware*: Rehoboth, 25.VI.1939, A.L. Melander, 3♂♂ (USNM); *Maryland*: Prince Georges Co., Patuxent Nat. Wildlife Refuge, 30.VI.1986, R. Danielsson, 1♂, 1♀ (ZIL); *New York*: Cold Spring Harbor, Long Island, 9.VII.1927, A.L. Melander, 1 ♂, (USNM); *Ohio*: Mercer Co., Grand Lake St. Marys S. P., (40° 32'08"N, 84°27'09"W), 11.IX.1976, B.A. Steinly, 1 ♂ (USNM); Mercer Co., Montezuma Creek, (40°29'06"N, 84°33'00"W), 11.IX.1976, B.A. Steinly, 1 ♀ (USNM).

### ***Themira (Nadezhdamira) latitarsata*** Melander et Spuler, 1917

Lectotype ♂: "Pullman[,] Wash[ington]", (USNM). Paralectotypes: "Pullman Wash 20 July 04", 4 ♀♀ (USNM); "Corvallis, 1902 Ore.", 1♂ (USNM); "Lynden Vt June 13'14", 1♂ (USNM); "Libby, Mont. 11 Aug. 1916 AL Melander", 2♂♂, 1♀ (USNM); "Jay Peak, Vt.* Summit, 4018 ft.* July 14,1891", "A.P. Morse", 1 ♀ (USNM); "Friday Harbor, Wash.* 5-29-06", 1♂, 1♀ (USNM).

**USA.** *New York*: Albany Co., Thatcher Park, 29.V.1923, M.D. Leonard, 1 ♂ (NYSMA); *Oregon*: Hood River, 30.VI.1917, A.L. Melander, 1 ♂ (USNM); *Washington*: 5-mile Lake, 9.VII.1925, A.L. Melander, 1 ♂ (USNM).

### ***Themira (Annamira) leachi*** (Meigen, 1826)

**CANADA.** *Newfaundland*: Port au Choix, VII.1926, 1♀ (AMNH).

### ***Themira (Nadezhdamira) malformans*** Melander et Spuler, 1917

Lectotype (♂) and paralectotype (♀) labelled: "H.B.T. [= Hudson Bay Territory", "A[.]L[.]Melander Collection[,] 1961" (USNM).

### ***Themira (Enicomira) minor*** (Haliday, 1833)

**CANADA.** *Alberta*: Lethbridge, 27.VI.1968, W.W. Wirth, 1 ♀ (USNM); *British Columbia*: 13 km E Mission, Deroche,18.VII.1988, R. Danielsson, 1 ♀ (ZIL); Nicola, 29.VII.1923, E.R. Buckell, 1 ♂, 1 ♀ (UAE); Revelstoke, Murphys Ranch, 1.VII.1968, W.W. Wirth, 1 ♂ (USNM); Vancouver Isl., Duncan, VI.1965, N.L.H. Krauss, 1 ♂ (USNM); Vancouver Isl., Elk Lake, 11.VII.1924, A.L. Melander, 2♂♂, 3 ♀♀ (USNM); *New Brunswick*: Boiestown, 13.VII.1931, J.M. Aldrich, 2 ♂♂ (USNM); Shippigan, 14.VII.1931, J.M. Aldrich, 1 ♂ (USNM); *Ontario*: Algonquin Park, 26–30.VI.1955, Sabrosky, 23 ♂♂, 21 ♀♀ (USNM); Arnpriorn, 19.VIII.1930, C.H. Curran, 2♂♂, 1♀ (AMNH); Kemptville, 15.VII.1983, L. Huggert, 2♂♂ (ZIL); Ottawa, Mer Bleue, 2.VII.1938, A.L. Melander, 1 ♀ (USNM); Pembroke, 5.VII.1938, A.L. Melander, 1 ♂ (USNM); Pt.Stanley, 10.V.1919, G.J. Spencer, 1 ♀ (AMNH); *Québec*: Gaspé, L'Anse-aux Griffons, 19.VII.1931, J.M. Aldrich, 1♀ (USNM); Grande Vallée, Gaspe, 20.VII.1931, J.M. Aldrich, 9 ♂♂, 4♀♀ (USNM); Mantane, 12.VIII.1967, A. Stone, 1♀ (USNM); *Saskatchewan*: La Ronge, 360–390 m, VII.1977, N.L.H. Krauss, 1 ♀ (AMNH); **USA.** *Alaska*: Matanuska, 5.VI.1944, J.C. Chamberlin, 1 ♀ (USNM); *California*: "Asilomar", 1.X.1946, A.L. Melander, 2 ♂♂ (USNM); "Atwood", 19.V.1944, A.L. Melander, 2♂♂, 3♀♀ (USNM); "Green Val.", 27.VII.1944, A.L. Melander, 2 ♂♂ (USNM); "Herkey Camp", 14.V. 1950, A.L. Melander, 3♂♂, 2♀♀ (USNM); "Jenks Lake", 10.VIII. 1954, A.L. Melander, 1 ♀ (USNM); "Jenks Lake", 28.VI.1957, A.L. Melander, 1♂ (USNM); "Jenks Lake", 26.VII.1953, A.L. Melander, 1 ♂ (USNM); "Jenks Lake", 30.VII.1958, A.L. Melander, 1♂ (USNM); "Jenks Lake", 24.VIII.1950, A.L. Melander, 1♂ (USNM); "Jenks Lake", 31.V.1956, A.L. Melander, 14 ♂♂, 4 ♀♀ (USNM); "Smith River", 23.VII.1932, J.M. Aldrich, 1 ♂ (USNM); Hallelujah Jct., Lassen Co., 13.VII.1968, R.W. Pinger, 1♂ (USNM); Lake Henshaw, 7.V.1945, A.L. Melander, 7 ♂♂, 2 ♀♀ (USNM); Mojave Desert, "Big Rock Wash", 12.V.1944, A.L. Melander, 1 ♂ (USNM); Mojave Desert, "Thorn", 30.V.1944, A.L. Melander, 1♂ (USNM); Mojave Desert, Lovejoy Lake, 10.V.1944, A.L. Melander, 8 ♂♂, 2 ♀♀ (USNM); Orick, 18.IX.1934, A.L. Melander, 2♀♀ (USNM); Redlands, 25.V.1935, A.L. Melander, 1 ♀ (USNM); Riverside, 15.VI.1942, A.L. Melander, 3 ♂♂ (USNM); Riverside, 19.V.1935, A.L. Melander, 1 ♀ (USNM); Whitewater, 16.V.1954, A.L. Melander, 2♂♂ (USNM); *Colorado*: "Rky Mt. Park", 12.VII. 1934, A.L. Melander, 6♂♂, 1♀ (USNM); 2 mi. NE Valmont, Boulder Co., 13.VI.1966, B. & C.Durden, 1♀ (AMNH); Custer Co., 10 mi SW of Wetmore, 8.VIII.1973, G.F. & S. Hevel, 4♂♂, 4♀♀ (USNM); Estes Park, 11.VII.1934, A.L. Melander, 4 ♂♂ (USNM); Golden, 17.VI.1940, A.L. Melander, 4 ♂♂, 1 ♀ (USNM); Pagosa Spgs., hot springs, 27.V.1969, W.W. Wirth, 3♀♀ (USNM); Park Co., Como 9800 ft., 19.VIII.1949, J.F. Hanson, 1♀ (USNM); Rio Grande Co., South fork, 8000 ft., 20.VI.1972, W.W. Wirth, 1♂, 1♀ (USNM); Ward, about 9300 ft., 25.VI.1922, 1 ♀ (AMNH); *Connecticut*: Avon Old Farms, Avon, 25.VI.1929, C.H.Curran, 4 ♂♂ (AMNH); Candlewood Lake, 30.VIII.1941, A.L. Melander, 5 ♂♂ (USNM); Putnam Park, 18–19.VII.1939, A.L. Melander, 2 ♂♂ (USNM); Redding, 17.VIII.1930, A.L. Melander, 1 ♂ (USNM); *Delaware*: Rehoboth, 25.VI.1939, A.L. Melander, 2 ♂♂ (USNM); *Illinois*: Fox Lake, 7.IX.1973, L. Bezarl, M. Ebertz, C. Kitayama, 1 ♂ (USNM); McHenry, 21.VIII.1927, A.L. Melander, 6 ♂♂ (USNM); Pistakee Bay, 7.VII.1933, A.L. Melander, 1 ♀ (USNM); *Indiana*: Newman Lake, 16.V.1925, A.L. Melander, 1 ♀ (USNM); Whritewater River, W. Fork near Laurel, 12.VI.1978, J.T. Regensburg, 3 ♂♂, 1 ♀ (USNM); *Maryland*: Colesville, 4.VII.1976, W.W. Wirth, 1 ♂ (USNM); Colesville, 4.VI.1977, W.W. Wirth, 1 ♂ (USNM); Howard Co., 1 mi N, 6 mi W of Fulton, 26.VI.1983, G.F. & J.F. Hevel, 1 ♂, 2 ♀♀ (USNM); Plummers Isl., 8–20.VII.1968, Paul Spangler, 1 ♀ (USNM); Prince Georges Co., Patuxent Nat. Wildlife Centre, 8.VI.1982, L. Huggert, 1♂, 1♀ (ZIL); *Massachusetts*: Naushon, 15.VIII.1926, A.L. Melander, 1 ♂ (USNM); S. Yarmouth, 1.VIII.1939, A.L. Melander, 1 ♀ (USNM); *Michigan*: Keweenaw Co., Isle Royale, 17.VII.1938, G. Steyskal, 1♂, 1♀ (USNM); Presque Isle Co., Ocqueoc Lake, 18–23.VII.1987, R.W. & E.R. Hodges, 1♂ (USNM); *Minniesota*: Clearw Co., Upper Rise Lake, 16.VII.1937, H.R. Dodge, 1♀ (USNM); Koronis Lake, Paynesville, 18.VIII.1921, F.P. Metcalf, 1 ♂ (USNM); *Montana*: Dayton, 13.VII.1935, A.L. Melander, 9 ♂♂, 3 ♀♀ (USNM); Georgestown Lake, 31.VII.1923, A.L. Melander, 2 ♂♂ (USNM); *Nebraska*: Cherry Co., Big Alkali Lake, 2.VI.1969, W.W. Wirth, 2♂♂, 1 ♀ (USNM); Cherry Co., Snake River, river margin, 2.VI.1969, W.W. Wirth, 5♂♂ (USNM); Cherry Co., Twin Lake, alkali lake, 2.VI.1969, W.W. Wirth, 1 ♂, 1 ♀ (USNM); *New Hampshire*: Franconia Notch, 8.VII.1931, J.M. Aldrich, 4♂♂, 3♀♀ (USNM); Lost River, 7.VII.1931, A.L. Melander, 7 ♂♂ (USNM); Pittsburg, Rt 3, Connecticut Lakes, 22–24.VI.1972, B.J. & F.C. Thompson, 2 ♀♀ (AMNH); Stewartstown, 29.VI.1976, F.C. & B.J. Thompson, 1 ♀ (USNM); *New York*: Akron, 9.VIII.1929, A.L. Melander, 1 ♀ (USNM); Albany Co., Pinebush, 100 m, (42°42'45"N, 73°52'53"W), 12.VII., 12.VIII.1985, T.L. McCabe, 2♀♀ (NYSMA); Albany Co., Voorheesville, Black Cr Swamp, (42° 39'54"N, 73°58'07"W), 17.VI.1983, J.K.Barnes, 2♀♀ (NYSMA); Batavia, 5.VII.1933, R.H.Lewis, 1♀ (NYSMA); Black Cr. Swamp, (42°39'54"N, 73°58'07"W), 18–25.VII.1984, Jeffrey K. Barnes, 1♂ (NYSMA); Bronx, 23.VI.1940, S.C. Harriot, 3 ♂♂, 1 ♀ (AMNH); Cherrytown, 4 mi. NNW Kerhonkson, Ulster Co., 1–14.VII.1971, P. & B. Wygodzinsky, 1 ♀ (AMNH); Cold Spring Harbor, Long Island, 9.VII.1927, A.L. Melander, 8 ♂♂, 2♀♀ (USNM); Cold Spring Harbor., Long Island, 2.VII.1931, E. Curran, 3 ♂♂ (AMNH); Genesee Co., County Park, 26.V.1993, C. Vasey, 1 ♂ (NYSMA); Greene Co., nr. Platte Clove, (42° 09'27"N,

74°07'33"W), 5–12.VII.1988, Jeffrey K. Barnes,1♀ (NYSMA); Grindstone Isl., Jefferson Co., 6.VIII.1914, H. Kahl, 1♂ (CMNH); Hamilton Co., 10 km E Indian L., 555 m, (43° 45'30"N, 74°10'14"W), 21–29.V. 1980, McCabe and Teale, 1♂, 4♀♀ (NYSMA); Hamilton Co., 10 km E Indian L., 555 m, (43° 45'30"N, 74°10'14"W), 18.VI.1980, McCabe and Teale, 1 ♀ (NYSMA); Hamilton Co., Browns Tract, 555 m, (43°48'49"N, 74° 41'55"W), 21–24.VI.1985, J.K. Barnes, 1 ♂ (NYSMA); Jefferson Co., Grindstone Isl., 6.VIII.1914, H. Kahl, 1 ♂ (CMNH); Lake George, 26.VII.1929, A.L. Melander, 5 ♂♂, 2 ♀♀ (USNM); Lewis Co., Brantingham L., 22.VI.1963, W.W. Wirth, 1 ♀ (USNM); Michigan Hollow Danby, Tompkins Co., 18.VI.1963, W.W. Wirth, 1♀ (USNM); Oakdale, Long Island, 10.VII.1932, C.H. Curran, 1 ♂ (AMNH); Orleans Co., Shelby Iroquois NWR, (43° 08'02"N, 78°28'29"W), 30–31.VIII.1984, J.K. Barnes, 1♀ (NYSMA); Peekskill, 11.VI.1927, A.L. Melander, 1♀ (USNM); Rensselaer Co., Schodack, Rte 150, (42°33'09"N, 73°39'04"W), 23.VI–6.VII.1987, Barnes & Carlow, 1♀ (NYSMA); Saratoga Co., nr. L. Desolation, (43°09'14"N, 73°58'36"W), 10–29.VI.1987, Barnes & Carlow, 1♂, 2♀♀ (NYSMA); Tompkins Co., Lloyd-Cornell Res. (McLean Bog), 20–21.VI.1988, Jeffrey K. Barnes, 2♂♂, 1♀ (NYSMA); Trenton Falls, 8.VI.1921, M.D. Leonard, 1♂ (NYSMA); W. Winfield, 8.VI.1921, M.D. Leonard, 1 ♀ (NYSMA); Warsaw, Oatka Creek, 11.VI.1963, W.W. Wirth, 5♂♂, 1♀ (USNM); Washington Co., Eldredge Swamp, (43°03'34"N, 73° 21'27"W), 5–12.VII.1988, Jeffrey K.Barnes, 1♀ (NYSMA); Washington Co., Eldridge Swamp, (43°03'34"N, 73°21'27"W), 15-22.VII.1985, J.K. Barnes, 1♂ (NYSMA); Washington Co., Eldridge Swamp, (43°03' 34"N, 73°21'27"W), 11.VII–6.VIII.1986, J.K. Barnes, 1♂, 2♀♀ (NYSMA); Washington Co., Eldridge Swamp, (43°03'34"N, 73° 21'27"W), 19–28.V.1986, J.K. Barnes, 1 ♂ (NYSMA); Washington Co., Eldridge Swamp, (43°03'34"N, 73°21'27"W), 28.V–21.VI.1986, J.K. Barnes, 2 ♂♂ (NYSMA); *Ohio*: Beaver Creek S. P., Columbiana Co., (40°43'08"N, 80° 36'05"W), 7.VII.1976, B.A. Steinly, 2 ♀♀ (USNM); Geneva S. P., Ashtabula Co., (41°51'05"N, 80°58'02"W), 16.VI.1976, D.L. Deonier, 13 ♂♂, 4 ♀♀ (USNM); Geneva S. P., Lake Erie, Ashtabula Co., (41°51'05"N, 80°58'02"W), 16.VI.1976, D.L. Deonier, 2♂♂ (USNM); Indian Cr., C. P. near Oxford, 25.V.1976, B.A. Steinly, 1 ♂, 1 ♀ (USNM); Mohawk Reservoir, Coshocton Co., (40°21'01"N, 82°05'00"W), 30.VI.1976, B.A. Steinly, 2 ♂♂ (USNM); Mosquito Creek S. P., Trumball Co., (41° 18'04"N, 80°46'00"W), 13.IX.1976, B.A. Steinly, 2 ♂♂ (USNM); Punderson Lake S. P., Geauga Co., (41°27'06"N, 81°12'09"W), 12.IX.1976, B.A. Steinly, 1 ♂ (USNM); Pymatuning Lake S. P., Ashtabula Co, (41°34'08"N, 81°31'09"W), 13.IX.1976, B.A. Steinly, 3 ♀♀ (USNM); *Oregon*: Benton Co., Finley Refuge, 3.VII.1972, G. Steyskal, 1 ♂ (USNM); Deschutes Co., Deschutes Riv. No of Bend, 4.VII.1971, G. Steyskal, 3 ♂♂ (USNM); Klamath Co., 19 mi W k. Falls, 24.VI.1971, G. Steyskal, 1♀ (USNM); Lane Co., 2 mi S Florence, 7.VII.1971, G. Steyskal, 1♂ (USNM); Lane Co., Summer Lake, 15.VI.1984, R. Danielsson, 1♂ (ZIL); *Pennsylvania*: Allegheny Co., Pittsburgh, Bear Run, 13.VII.1918, 3 ♀♀ (CMNH); Fairview, VII.1954, M.R. Wheeler, 1♂ (AMNH); Pittsburg, Bear Run, Allegheny Co., 13.VII. 1918, R.H. Crandall, 3 ♀♀ (CMNH); Presque Isle S. P., Lake Erle, Erle Co., (42°08'03"N, 80°08'05"W), 6.V.1977, B.A. Steinly, 10♂♂, 7♀♀ (USNM); *South Dakota*: Devils Lake, 7.VII.1933, 2♂♂ (USNM); Lawrence Co, Beaver Creek, 15.VI.1969, W.W. Wirth, 1♀ (USNM); *Utah*: Heber, 25.VII.1940, G.F. Knowlton, 1♀ (USNM); Kanab, 19.IV.1935, A.L. Melander, 1 ♂ (USNM); L. Cottonwood Canyon, 8000 ft, 23.VI. 1940, A.L. Melander, 1♂ (USNM); Randolph, 9.VIII.1938, G.F. Knowlton, F.C. Harmston, 1 ♀ (USNM); Randolph, 18.VII.1958, G.F. Knowlton, 1 ♂ (USNM); Sevier, 27.VII.1940, A.L. Melander, 1 ♂ (USNM); *Virginia*: Fairfax, VII. 1954, M.R. Wheeler, 1 ♂ (AMNH); Grayson Co., 15 km S Galax at Chesnut Creek, 28.VI.1986, W.E. Steiner, 2♂♂, 2♀♀ (USNM); Lexington, 12.IV.1954, H. Stalker, 1♀ (USNM); Natur Bridge, 18. VI.1944, A.L. Melander, 1 ♀ (USNM); *Washington*: Brewster, 15. VIII.1934, A.L. Melander, 1 ♀ (USNM); Ilwaco, 28.VI.1925, A.L. Melander, 1♀ (USNM); Lewis Co., Mineral, 25.VII.1988, R. Danielsson, 1♂, 2 ♀♀ (ZIL); Mt. Rainier, Yakima Park, 14.VIII.1940, A.L. Melander, 1♂ (USNM); Mt. Vernon, 3.VII.1923, A.L. Melander, 5 ♂♂, 2 ♀♀ (USNM); Puget, 4.VII.1925, A.L. Melander, 1 ♂ (USNM); *Wisconsin*: Chetek, 9.VII.1933, A.L. Melander, 1 ♂ (USNM).

### *Themira (Themira) nigricornis* (Meigen, 1826)

**USA**. *Connecticut*: Redding, 15.IV.1934, A.L. Melander, 1 ♂ (USNM); *Maryland*: 4 mi SW of Ashton, 10.IV.1983, G.F. & J.F. Hevel, 1 ♂ (USNM); *New Jersey*: Ft. Lee, 16.IV.1918, A.H. Sturtevant, 1♀ (AMNH); Ramsey, 19.IV.1931, 1♀ (AMNH); *New York*: Brown Farm, 1 km S Caroline Center, Tompkins Co., 19.IV.1986, W.L. Brown Jr., 1 ♂ (AMNH); Hamilton Co., 10 km E Indian L., 555 m, (43°45'30"N, 74°10'14"W), 3.V.1980, McCabe and Teale, 1 ♂ (NYSMA); Hampton Bay, Long I., 11.IV.1955, HAS, 2 ♀♀ (NYSMA); Huntington, Long Island, 5.V.1925, F.M. Schott, 1 ♀ (AMNH); Ithaca, 20.IV.1968, M.A. Deyrup, 1 ♂ (AMNH); Old Forge Dump, 13.V.1954, HAS, 1 ♂ (NYSMA); *Pennsylvania*: Clearfield Co., Shawville, 20.IV.1940, J. Bauer, 1 ♂ (CMNH); Fairview, VII.1954, M.R. Wheeler, 1 ♂ (AMNH); Indiana, 13.IV.1960, W.H. Yackley, 1 ♀ (CMNH); Indiana, 2.IV.1963, W.H. Yackley, 1 ♀ (CMNH); N. Alexandria, 2.IV.1963, W.H. Yackley, 1 ♀ (CMNH); Perry Co., 1.8 mi NW New Bloomfield, 3.V.1969, J.W. Adams, 1 ♀ (USNM); Shawville, Clearfield Co., 20.IV.1941, J. Bauer, 1 ♂ (CMNH).

### *Themira (Annamira) notmani* Curran, 1927

Holotype ♀: "Summit[,] Grant Mt.[,] Essex Co[,] N.Y. [= New York] 10 Sept[ember] 1926[,] H. Notman" (AMNH).

**CANADA**. *British Columbia*: 20 km NE Creston, 19.VIII.1983, M. Sörensson, 1 ♀ (ZIL); *Nova Scotia*: Cap Breton, Mt. Frensch, Lake Benijes, 20.VIII.1983, L. Huggert, 1 ♂, 2 ♀♀ (ZMUM, ZIL); Cape Breton Isl., Highland National Park, North Mt., 400 m, 5.VIII.1983, P6766864, 2 ♂♂, 4 ♀♀ (NHML); USA. *Oregon*: Saddle Mt. St. Pk. on Trl. ca 2000–2500', 14.VI.1979, M.D. Schwartz, 3 ♀♀ (AMNH, ZMUM);

### *Themira (Nadezhdamira) pusilla* (Zetterstedt, 1847)

Holotype of *Themira incisurata*,: "Mt Constitution[,] Orcas Id., Wash.[ington], July 7, 1905" (USNM).

**USA**. *Alaska*: Goose Cove, Muir Inlet, Glacier Bay, 6.VII.1965, D.M. De Long, 1 ♂ (USNM); Home, VIII.1960, M.R. Wheeler, L. Throckmorton, 1 ♂ (AMNH); *New York*: Cold Spring Harbor, Long Island, 9.VII.1927, A.L. Melander, 3 ♂♂ (USNM).

### *Themira (Themira) putris* (Linnaeus, 1758)

**CANADA**. *Alberta*: Edmonton, 26.VIII.1927, H.A. MacGregor, 2 ♀♀ (UAE); Edmonton, 7.V.1930, O. Peck, 1 ♂ (UAE); Gull Lake, 19.VI.1929, E.H. Strickland, 2♂♂, 3♀♀ (UAE); Lethbridge, 31.VII–2.VIII.1923, H.E. Gray, 2 ♀♀ (UAE); Lethbridge, 10.VII.1922, H.L. Seamans, 1♀ (UAE); Lethbridge, 30.VII.1941, R.W. Salt, 1♀ (UAE); Lethbridge, 2–8.VII.1923, H.E. Gray, 8♂♂, 12♀♀ (UAE); Suffield, 31.VII.1949, F. Snyder, 1 ♂ (USNM); Tilley, 21–30.VIII.1939, E.H. Strickland, 1♂, 3♀♀ (UAE); *British Columbia*: Kaploops, 2.VII.1968, W.W. Wirth, 2 ♂♂, 2 ♀♀ (USNM); *New Brunswick*: Shippigan, 14.VII.1931, J.M. Aldrich, 1 ♂ (USNM); *Ontario*: Algonquin Park, 26–30.VI.1955, Sabrosky, 1 ♂, 1 ♀ (USNM); *Québeck*: Islet, 12.VIII.1967, A. Stone, 1 ♂ (USNM); **USA**. *Alaska*: Kwethock, 12.VIII.1957, R.H. Washburn, 1♂ (USNM); *California*: Buena Park, 19.V.1944, A.L. Melander, 1♀ (USNM); Jenks Lake, 14.VII.1950, A.L. Melander, 1 ♂, 1 ♀ (USNM); Knotts Ranch, 11.IV.1956, A.L. Melander, 1 ♂ (USNM); Lake Elsinore, 25.V.1944, A.L. Melander, 2 ♂♂, 2 ♀♀ (USNM); Lake Elsinore, 10.V.1950, A.L. Melander, 5 ♂♂, 6 ♀♀ (USNM); Mojave Desert, Lovejoy Lake, 10.V.1944, A.L. Melander, 1 ♂ (USNM); San Jose, Santa Clara Co., 25.X.1967, R.R. Pinger, 5♂♂, 2♀♀ (USNM); San Jose, Santa Clara Co., 31.V.1968, R.R. Pinger, 3 ♂♂, 2 ♀♀ (USNM); San Jose, Santa Clara Co., 27.V.1942, C. Reed, 1 ♂, 3 ♀♀ (USNM); *Colorado*: Golden, 17.VI.1940, A.L. Melander, 1♀ (USNM); Tenn. Pass, about 10300 ft., (39°22'N, 106°19'W), 30.VII–2.VIII.1919, 1 ♂ (AMNH); *Iowa*: Ames, 5 ♀♀ (CMNH); *Maine*: Mount Desert Isle, 10.VII.1929, 1 ♀ (AMNH); *Michigan*: Keweenaw Co., Isle Royale, 17.VII.1938, G. Steyskal, 1♀ (USNM); *Nebraska*: Lincoln, salt lake, 19.VI.1969, W.W. Wirth, 2 ♂♂ (USNM); *New York*: Albany, 3.V.1910, 9 ♂♂, 7 ♀♀ (NYSMA); Cold Spring Harbor., Long Island, 2.VII.1931, E. Curran, 1 ♀ (AMNH); L. Chautauqua, 5.IX.1927, A.L. Melander, 2♂♂, 1♀ (USNM); Lundlowville, 1 ♀ (CMNH); Sharon, 26.VI.1934, A.L. Melander, 9 ♂♂, 2 ♀♀ (USNM); *North Dakota*: Mountrail Co., White Lake, 8.VI.1969, W.W. Wirth, 1♂, 1♀ (USNM); Ramsey Co., Devils Lake, 5.VI.1969, W.W. Wirth, 2 ♂♂, 1 ♀ (USNM); *Ohio*: Indian Cr., C. P. near Oxford, 25.V.1976, B.A. Steinly, 1♂ (USNM); *Pennsylvania*: Allegheny Co., VII.1910, 3 ♂♂, 2 ♀♀ (CMNH); *Washington*: Mt. Rainier, Berkeley Park, 23.VIII.1934, A.L. Melander, 1♂ (USNM); Pullman, 26.IV.1923, V. Argo, 1♀ (USNM); *Wisconsin*: "W.M. Wheeler, Collection", 1♀ (AMNH); Madison, 10–14.VII.1935, H.R. Dodge, 1 ♂, 2 ♀♀ (USNM).