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## A Systematic Study of the Japanese Pipunculidae (Diptera) Part V. The Genus *Eudorylas* Aczél

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Fourty species of the Japanese *Eudorylas* Aczél are treated with key to species, descriptions and illustrations of important diagnostic characters. Three of them are newly recorded from Japan and thirty one species are described as new.

### Genus **EUDORYLAS** Aczél

*Eudorylas* Aczél, 1940, 2001. Anz., 132 : 151, 152. Type species: *Pipunculus opacus* Fallen, 1816, Syrphici Sveciae : 15, by original designation.

This genus is separated from the other genera in the tribe Pipunculini by the lacking of the propleural fan. Hardy (1987) placed it as the subgenus of genus *Pipunculus* Latreille by the reason that the propleural fan is difficult to check. We agreed with Aczél(1939), Collin (1945) and Coe (1966)'s opinion that this character has at least generic value. In Japan, as far as we know, first two species of this genus has been described by Matsumura (1918 and 1931) as *Pipunculus kumamotoensis* and *Pipunculus ocularis*. The former species has been proved to be a synonym of *Pipunculus* (*Eudorylas*) *mutillatus* (Loew) by Yano *et al.* (1984). Koizumi recorded two species of this genus in 1959 and one new species in 1960 as follows: *E. mutillatus* (Loew), *javanensis* (de Meijere) and *orientalis* (Koizumi). All of them are the parasites of the green rice leafhopper *Nephotettix cincticeps* (Uhler). Recently, Yano *et al.* (1984) studied on pipunculid flies dwelling in paddy fields in Japan and listed 14 species of these flies, including two more species of the *Eudorylas*: *E. roralis* (Kertész) and *E. macropygus* (de Meijere).

In the present paper, we found thirty one new species and three species of new record from Japan. As mentioned above, it is convinced that this genus is more abundant in Japan than other genera. The Japanese *Eudorylas* consists of small- to very large-sized body length ranging from 3.0 to 8.6 mm but generally about 4-5 mm in average. The body coloration is generally opaque, rarely shining. The abdominal terminalia of both sexes are important in the recognition of species.

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## Key to known males of Japanese species of EUDORYLAS

1. Tergite 8 without membranous area ..... 2
- Tergite 8 with membranous area ..... 8
2. Humeri black in ground color ..... 3
- Humeri dull luteous to brown ..... 5
3. Third antennal segment short acuminate (Fig. 69C) ; third costal section of wing about twice as long as fourth ; abdomen (Fig. 69A) rather flat, tergites 2-4 much wider than long ; tergite 8 about twice as long as tergite 5 ; genitalia as shown in Fig. 87A-D  
..... *E. largexitus* Morakote et Yano, sp. n.
- Third antennal segment long rostrate ; third costal section about as long as fourth ; abdominal tergite 8 shorter than tergite 5 ..... 4
4. Tibiae yellow, without any posteroapical spur ; abdominal tergite 8 moderately large, slightly shorter than tergite 5 ; subshining black species ; genitalia as shown in Fig. 83A-E  
..... *E. fustis* Morakote et Yano, sp. n.
- Tibiae black, with posteroapical spur ; abdominal tergite 8 very short, about one-third as long as tergite 5 ; opaque grey species ; genitalia as shown in Fig. 85C-E ..... *E. hokkaidoensis* Morakote et Yano, sp. n.
5. Tibiae yellow, with posteroapical spur ; third costal section of wing about as long as fourth ; abdominal tergite 8 abnormally enlarged as shown in Fig. 80A-C ..... *E. nasus* Morakote et Yano, sp. n.
- Tibiae mainly black, without posteroapical spur ..... 6
6. Third costal section of wing about twice as long as fourth ; abdominal tergite 8 rather short (Fig. 74B), about half as long as tergite 5 ; opaque grey species ..... *E. cralimes* Morakote et Yano, sp. n.
- Third costal section of wing about as long as fourth ..... 7
7. Abdominal tergite 8 (Fig. 81E) very large, broader than tergite 5  
..... *E. macropygus* (de Meijere)
- Abdominal tergite 8 (Fig. 97F) about as long as tergite 5  
..... *E. roralis* (Kertész)
8. Humeri dull luteous to brown ..... 9
- Humeri black in ground color ..... 18
9. Tibiae mainly black ..... 10
- Tibiae mainly yellow ..... 11
10. Third antennal segment long rostrate ; third costal section of wing about twice as long as fourth ; abdominal tergite 8 (Fig. 97B and D) ; surstyli and epandrium as shown in Fig. 97C ..... *E. orientalis* (Koizumi)
- Third antennal segment short acuminate ; third costal section of wing about as long as fourth ; abdominal terminalia (Fig. 96C-E) ; epandrium and surstyli as shown in Fig. 96F ..... *E. jauanensis* (de Meijere)
11. Third antennal segment yellow to brownish ..... 12
- Third antennal segment black ..... 17
12. Third antennal segment very deep, with lower half bristle-like shape (Fig. 65F) ; legs almost entirely yellow except base of coxae darkened ;

- abdominal tergites 2-5 with yellow marking at posterolateral corners (Fig. 65A and B) ..... *E. luteiventris* Morakote et Yano, sp. n.
- Third antennal segment long acuminate, with lower part not appeared as bristle-like shape ..... 13
13. Tibiae without posteroapical spur ; third costal section slightly shorter than fourth ; abdominal tergite 8 about one-third as long as tergite 5, with membranous area round and clearly seen from ventral ; epan-drium and surstyli as shown in Fig. 95C ..... *E. mutillatus* (Loew)
- Tibiae with posteroapical spur ; third costal section of wing about as long as fourth .....\* ..... 14
14. Abdominal tergite 8 (Fig. 79A-C) abnormally enlarged and very much complicated, epan-drium much longer than wide, V-shape ; surstyli as shown in Fig. 79D and E ..... *E. abnorexitus* Morakote et Yano, sp. n.
- Abdominal tergite 8 normal ..... 15
15. Membranous area on tergite 8 small (Fig. 81D); genitalia as shown in Fig. 93A-C ..... *E. suwai* Morakote et Yano, sp. n.
- Membranous area on tergite 8 large (Fig. 62D or 67D) ..... 16
16. Abdominal tergite 8 (Fig. 62D) about as long as tergite 5 ; genitalia as shown in Fig. 85A-B ..... *E. jenkinsoni* Coe
- Abdominal tergite 8 (Fig. 67D) rather large, about twice as long as tergite 5 ; genitalia as shown in Fig. 90C ..... *E. fascipes* (Zetterstedt)
17. Tibiae with posteroapical spur ; third costal section of wing about as long as fourth ; abdominal tergite 8 with very large almond-like mem-branous area (Fig. 73C) ; genitalia as shown in Fig. 90A-B ..... *E. subfascipes* Collin
- Tibiae without posteroapical spur ; third costal section of wings about one-third as long as fourth ; abdominal tergite 8 about 1.8 times as long as tergite 5, with round membranous area (Fig. 82A-B); genitalia as shown in Fig. 94A-B ..... *E. oshimaensis* Morakote et Yano, sp. n.
18. Thorax with dense pubescence on notopleuron and besides dorsocentral line which the area between dorsocentral line bare (Fig. 71F) ..... 19
- Thorax almost entirely bare, with setae restricted on each dorsocentral line .....\* ..... 20
19. Very large species with wing length about 9 mm ; third costal section of wing greatly long about seven times as long as fourth ; abdominal tergite 8 with very large membranous which is clearly seen only from ventral (Fig. 72B) ..... *E. longistigmus* Morakote et Yano, sp. n.
- Third costal section of wing about 2.5 to 3 times as long as fourth ; r-m cross vein situated about middle of discal medial cell ; abdominal tergite 8 about half as long as tergite 5 ; genitalia as shown in Fig. 89 A-D ; medium black species ..... *E. ocularis* (Matsumura)
20. Femora mainly black ..... 22
- Femora mainly yellow ; tibiae yellow, without any posteroventral spur ; r-m cross vein of wing situated about middle of discal medial cell ; third antennal segment short acuminate ; abdominal tergite 8 about half as long as tergite 5, with round membranous area which is

- only seen from ventral and behind ; genitalia as shown in Fig. 93D-F  
 ..... *E. gilvipes* Morakote et Yano, sp. n.
21. Third antennal segment obtuse below ..... 22  
 — Third antennal segment pointed below ..... 23
22. Third costal section of wing about 2.5 times as long as fourth ; abdomen (Fig. 69D), elongated, parallel-sided tergite 8 about half as long as tergite 5, with oval membranous area on the right side which is only seen from behind and ventral ; genitalia as shown in Fig. 86D-F  
 ..... *E. rudis* Morakote et Yano, sp. n.  
 — Third costal section of wing about as long as fourth abdomen (Fig. 66A) ; abdominal tergite 8 very short, about one-third as long as tergite 5, with roughly oval membranous area on the right side which is only seen from ventral and behind ; genitalia as shown in Fig. 85F- J  
 ..... *E. expletirubus* Morakote et Yano, sp. n.
23. Tibiae mainly yellow ..... 24  
 — Tibiae mainly black ..... 26
24. Tibiae without posteroapical spur ; r-m cross vein of wing situated about middle of discal medial cell ; third costal section of wing about twice as long as fourth ; abdomen (Fig. 82E-F) ; tergite 8 wider than long, with slot-like membranous area ; epandrium and surstyli as shown in Fig. 94C ..... *E. minutus* Morakote et Yano, sp.n.  
 At least fore and mid femora with posteroapical spur ..... 25
25. R-M cross vein of wing situated about middle of discal medial cell ; abdomen (Fig. 78A) ; tergite 8 as long as tergite 5 ; genitalia as shown in Fig. 84C-F ..... *E. fukushimaensis* Morakote et Yano, sp. n.  
 — R-M cross vein situated about basal third of discal medial cell ; abdominal tergites 2-4 much wider than long ; genitalia as shown in Fig. 92A-C ..... *E. inopsicolor* Morakote et Yano, sp. n.
26. Last section of wing vein M1 very undulating ; abdominal tergite 8 (Fig. 63F-G) ; genitalia as shown in Fig. 84A-B  
 ..... *E. diagonalis* Morakote et Yano, sp. n.  
 — Last section of wing vein M1 almost straight ..... 27
27. R-M cross vein of wing situated about middle of discal medial cell ; abdomen rather short ; tergites 2-4 much wider than long ; tergite 8 longer than tergite 5 ; genitalia as shown in Fig. 88A-C  
 ..... *E. oscen* Morakote et Yano, sp. n.  
 — R-M situated about basal third of discal medial cell ..... 28
28. Abdomen (Fig. 68A) rather short ; tergites much wider than long ; tergite 8 roughly triangular shape, compressed to the right, with oval membranous area which is only seen from ventral and behind ; genitalia as shown in Fig. 86A-C ..... *E. Zatistomachus* Morakote et Yano, sp. n.  
 — Abdomen (Fig. 77A) long, cylindrical shape ; abdominal terminalia (Fig. 77B-D) ; tergite 8 with round membranous area which is only seen from ventral and behind ; genitalia as shown in Fig. 91A-C  
 ..... *E. nomurai* Morakote et Yano, sp. n.

## Key to known females of Japanese species of EUDORYLAS

1. Humeri dull luteous to brown ..... 2
- Humeri black ..... 14
2. Femora mainly yellow ..... 3
- Femora mainly black ..... 5
3. Third antennal segment very deep and narrow, with lower half bristle-like shape ; legs almost entirely yellow except base of coxae darkened ; all abdominal tergites mainly yellow but with black markings on tergites 5 and 6 ; ovipositor as shown in Fig. 65F  
..... *E. lutecenter* Morakote et Yano, sp. n.
- Third antennal segment long rostrate .....4
4. Femora with black ring basally which is extending as pointed streak dorsally to near apex ; opaque grey species ovipositor (Fig. 102A-C) moderately large ; base bilobed shape with very deep furrow at middle  
..... *E. duocollis* Morakote et Yano, sp. n.
- Femora with obscure dark brown color dorsally but not extending as a pointed streak as *E. duocollis*; ovipositor as shown in Fig. 62G-H  
..... *E. jenkinsoni* Coe
5. Tibiae mainly black ..... 6
- Tibiae entirely yellow ..... 9
6. Tibiae with a posteroapical spur ..... 7
- Tibiae without any posteroapical spur; third costal section of wing about as long as fourth ; ovipositor as shown in Fig. 96B ; mainly found in paddy fields ..... *E. jauanensis* (de Meijere)
7. Third costal section of wing about twice as long as fourth ; ovipositor (Fig. 97A) with globular base and long slender piercer ; mainly found in paddy fields ..... *E. orientalis* (Koizumi)
- Third costal section of wing about as long as fourth ; ovipositor not as above .....8
8. Tarsi entirely black ; ovipositor (Fig. 100A and B) with very thin piercer as seen from lateral ..... *E. focus* Morakote et Yano, sp. n.
- Tarsi yellow except last tarsal segment black ; ovipositor as shown in Fig. 97G-H ..... *E. roralis* (Kertész)
9. At least four anterior tibiae with posteroapical spur ..... 10
- Tibiae without any posteroventral spur ..... 11
10. Third antennal segment yellow ; third costal section of wing about as long as fourth ; ovipositor as shown in Fig. 67E-G ... *E. fascipes* (Zetterstedt)
- Third antennal segment black ; third costal section of wing about twice as long as fourth ; ovipositor as shown in Fig. 73F-G... *E. subfuscipes* Collin
11. Wing (Fig. 101B) shorter than body, with short vertical vein near apex of third section of vein M1 and also near base of last section of vein M1 ; abdomen (Fig. 101A) rather long in proportion to body  
..... *E. brevisalus* Morakote et Yano, sp. n.
- Not as above ..... 12
12. Third costal section about twice as long as fourth ; abdominal tergite

- 6 abnormally enlarged as shown in Fig. 103B ; ovipositor small, situated over of tergite 6, with subglobular base and upcurved piercer  
 ..... **E. maleficus** Morakote et Yano, sp. n.
- Third costal section of wing as long as or slightly shorter than fourth ; abdominal tergite 6 normal ..... 13
13. Third costal section of wing slightly shorter than fourth ; ovipositor as shown in Fig. 95D ; mainly found in paddy fields ..... **P. mutillatus** (Loew)
- Third costal section of wing as long as fourth ; ovipositor not as above ; abdomen and ovipositor as shown in Fig. 99C  
 ..... **E. misericors** Morakote et Yano, sp. n.
14. Femora mainly yellow to brown ..... 15  
 Femora mainly black ..... 16
15. R-M cross vein of wing situated about middle of discal medial cell ; third costal section of wing about twice as long as fourth ; ovipositor as shown in Fig. 76E ..... **E. gilvipes** Morakote et Yano, sp. n.  
 R-M crossvein of wing situated about basal third of discal medial cell ; ovipositor as shown in Fig. 98C ..... **E. subligo** Morakote et Yano, sp. n.
16. Tibiae yellow ..... 17  
 — Tibiae mainly black ..... 18
17. Third antennal segment oval shape ; abdomen and ovipositor as shown in Fig. 99A and B ..... **E. ashoroensis** Morakote et Yano, sp. n.  
 — Third antennal segment long acuminate ; abdomen and ovipositor as shown in Fig. 61E ..... **E. fustis** Morakote et Yano, sp. n.
18. Tarsi yellow except last tarsal segment black ..... 19  
 — Tarsi entirely black ..... 21
19. Tibiae with posteroapical spur ; ovipositor as shown in Fig. 81G  
 ..... **E. macropygus** (de Meijere)  
 — At least four anterior tibiae with posteroapical spur ..... 20
20. R-M crossvein of wing situated about basal third of discal medial cell ; third antennal segment black, short acuminate; abdomen and ovipositor as shown in Fig. 98A ..... **E. Zig-o** Morakote et Yano, sp. n.  
 Last section of wing vein M1 very undulating (wavy) ; third costal section of wing about twice as long as fourth ; antennal segment short acuminate ; very large species with wing length about 9 mm ; abdomen and ovipositor as shown in Fig. 72E  
 ..... **E. longistigmus** Morakote et Yano, sp. n.
21. R-M cross vein of wing situated about middle of discal medial cell ..... 22  
 — R-M crossvein of wing situated about basal third of discal medial cell ..... 24
22. Third antennal segment yellow, long acuminate ; abdomen and ovipositor as shown in Fig. 100C ..... **E. cycnus** Morakote et Yano, sp. n.  
 — Third antennal segment black, oval shape ..... 23
23. Abdomen and ovipositor as shown in Fig. 98D  
 ..... **E. pinquis** Morakote et Yano, sp. n.  
 Abdomen and ovipositor as shown in Fig. 66E  
 ..... **E. expletirubus** Morakote et Yano, sp. n.
24. Third antennal segment oval shape ..... 25

- Third antennal segment pointed below ..... 26
- 25. Abdomen and ovipositor as shown in Fig. 101C  
..... ***E. ocular-is*** (Matsumura)
- Abdomen and ovipositor as shown in Fig. 100E  
..... ***E. productus*** Morakote et Yano, sp. n.
- 26. Last section of vein M1 very undulating (wavy) ; abdomen and  
ovipositor as shown in Fig. 63A ..... ***E. diagonalis*** Morakote et Yano, sp. n.
- Last section of vein M1 of wing almost straight .....\*
- 27. Abdominal tergite 6 extended at sides which almost touching ventrally ;  
abdomen and ovipositor as shown in Fig. 77D and F  
..... ***E. nomurai*** Morakote et Yano, sp. n.
- Abdominal tergite 6 normal, not extended at sides ..... 28
- 28. Third antennal segment with lower half bristle-like shape; abdomen  
and ovipositor as shown in Fig. 68E  
..... ***E. latistomachus*** Morakote et Yano, sp. n.
- Third antennal segment only long rostrate ; abdomen and ovipositor as  
shown in Fig. 64D-F ..... ***E. hokkaidoensis*** Morakote et Yano, sp. n.

***Eudorylas fustis*** Morakote et Yano, sp. n.

Male (Figs. 61A-C and 83).

Ocellar triangle shining black ; eyes joined for about length of frontal triangle ; frontal triangle and face silvery at some angle ; antennae all black, third segment moderately long, acuminate.

Thorax and scutellum bare, subshining black on dorsum, with obscurely brownish dusting ; humeri black in ground color.

Legs mainly black, except apex of femora yellow ; tibiae and tarsi yellow, but middle third of tibiae with black ring ; last tarsal segments black ; pulvilli yellow, smaller than last tarsal segments.

Wings (Fig. 61D) hyaline ; stigma light brown, extending back to tip of Sc, about length of fourth costal section ; r-m situated about basal third of discal medial cell, last section of vein M1 almost straight ; halteres black, calypteres yellow.

Abdomen (Fig. 61A) with entirely greyish first segment ; tergites 2-5 extensively subshining black but with narrow transverse streaks of brownish dusting anteriorly, posterolateral corners greyish; tergite 8 moderately large, about twice wider than long, slightly shorter than tergite 5, without membranous area, epandrium and surstyli black.

Genitalia as shown in Fig. 83A-E; epandrium and surstyli black, asymmetrical.

Female (Fig. 61E).

Differing from the male as follows : Eyes widely separated from ocellar triangle to base of antennae ; frons parallel-sided from ocellar triangle to lower third, then gradually narrowing to base of antennae, shining black on upper third, remainder lower two-thirds greyish, with a row of short hairs on each side margin ; front ommatidial facets slightly enlarged ; third costal section of wings only slightly longer than fourth costal section; abdomen (Fig. 61E) dull black, elongate, tergites 2-6



almost equal in length ; ovipositor with conical base which is shining black ; piercer yellowish brown, rather short, about length of ovipositor base, slightly upcurved, apex extending back beneath fifth segment.

Length : Body 3.8 mm ; wing 4.5 mm.

*Holotype*: ♂ (Type No. 2741, Kyushu Univ.), Mt. Hikosan, Fukuoka Pref., Kyushu, 21. v. 1985 (R. Morakote).

*Paratypes*: same location as holotype ; 2 ♀♀, 8. v. 1985, 1 ♀, 10. v. 1985, 1 ♂ 1 ♀, 9. v. 1985, 2 ♂♂, 21. v. 1985, 4 ♂♂ 2 ♀♀, 7. v. 1986, 1 ♂, 8. v. 1986, 2 ♀♀, 20. v. 1986, 2 ♂♂, 21. v. 1986 ; Mt. Kurodake, Oita Pref., Kyushu : 1 ♂, 27. iv. 1985, 161 ♀, 28. vi. 1986 ; (Honshu) 5 ♂♂, Boudo-toge, Asahi-mura, Niigata Pref., 2. vii. 1985 ; Iitatemura, Mt. Abukuma, Fukushima Pref. : 1 mating pair, 1 ♂, 7. vii. 1985, 1 ♂, 15. vii. 1985 ; Futakuchi keikoku, Akiu-machi, Miyagi Pref., 12. vii. 1985 ; 1 ♂, Yunohana, Tatei-mura, Fukushima Pref., 14. vii. 1985 ; (Hokkaido) 1 ♀, Botanical Garden, Sapporo, Ishikari, 21. vi. 1986 ; 1 ♀, Hokkaido Univ., Sapporo, Ishikari, 22. vi. 1986 ; 136 ♂ 10 ♀♀, Hitsujigaoka, Sapporo, Ishikari, 23. vi. 1986 ; 26 ♂, Misumai, Sapporo, Ishikari, 24. vi. 1986 ; 226 ♂ 2 ♀♀, Sounkyo, Mt. Daisetsu, Kamikawa, 25-26. vi. 1986 ; 5 ♂♂ 7 ♀♀, Nukabira, Kamishihoro, Tokachi, 28. vi. 1986 ; 26 61 ♀, Akankohan, Mt. O-akan, Kushiro, 4. vii. 1986 ; 3 ♂♂, Iwabetsu kawa, Utoro, Abashiri, 6. vii. 1986. All were collected by R. Morakote. 2 ♂♂, Sapporo, 6. vi. 1959 (T. Kumata). (Honshu) 1 ♂, Sakuramachi, Ojiya, Niigata, 19. v. 1972 (K. Yamagishi) ; 2 ♂♂ 4 ♀♀, Mt. Sanageyama, Toyota, Aichi, 17. v. 1972 (H. Yamada) ; 1 ♂, Mt. Sanageyama, Toyota, Aichi, 18. v. 1972 (T. Tanaka) ; 1 ♂, Uradani, Shitara, Aichi, 15. v. 1971 (K. Yamagishi) ; 16, Mt. Kinkazan, Gifu, 17. vi. 1971 (H. Yamada).

*Host* : Unknown.

*Distribution*: Japan (Hokkaido, Honshu, Kyushu).

*Remarks* : This species is very similar to the Nearctic species *E. nigripes* (Loew) but differing from it as follows : Tibiae with black ring at middle third ; stigma extending back to tip of Sc ; abdominal tergites subshining black ; ovipositor different in profile.

### ***Eudorylas diagonalis* Morakote et Yano, sp. n.**

Male (Figs. 63B-G and 84A-B).

Ocellar triangle shining black ; eyes joined for about length of frontal triangle ; antennae all black (Fig. 63C), third segment rather wide but pointed below.

Thorax and scutellum almost bare except notopleuron area with some short pubescence ; thorax dull, with brownish dusting except notopleuron area cinereous ; humeri black.

Legs almost entirely black, except base of tibiae yellow ; tibiae without postero-apical spur ; pulvilli yellow ; slightly smaller than last tarsal segments.

Wings hyaline ; stigma dark brown, very long, about three times as long as fourth costal section ; r-m situated about basal third of discal medial cell ; last section of vein M1 very undulating (Fig. 63B) ; halteres darkened ; calypteres yellow.

Abdomen (Fig. 63E) almost entirely greyish, but with contrasting blackish transverse band anteriorly ; abdominal terminalia as shown in Fig. 63F and G ; tergite 8 rather small, about half as long as tergite 5, with long and narrow membranous area

which situated diagonally over segment when seen from behind.

Genitalia as shown in Fig. 84A and B ; epandrium slightly wider than long, surstyli symmetrical, triangular shape.

**Female** (Fig. 63A).

Differing from the male as follows : Eyes widely separated ; frons rather long and narrow, slightly curved outward at middle third, as wide as face, extensively grey but medianly shining black as a longitudinal streak ; third costal section only slightly longer than fourth costal section (less than twice) ; all abdominal tergites extensively grey ; ovipositor (Fig. 63A) rather large ; ovipositor base greyish, conical shape ; piercer about twice as long as base, thickened at its base to basal one third then tapering to apex.

Length : Body 4.5 mm ; wing 5 mm.

*Holotype*: ♂ (Type No. 2742, Kyushu Univ.), Iitatemura, Mt. Abukuma, Fukushima Pref., Honshu, 15. vii. 1985 (R. Morakote).

*Paratypes*: (Kyushu) Mt. Hikosan, Fukuoka Pref. : 1♂, 23. v. 1985 ; 1♀, 19. vi. 1985 ; (Honshu) same location as holotype : 1 mating pair and 2♀♀, 7. vii. 1985, 1♀, 15. vii. 1985 ; 1♂, Boudo-toge, Asahi-mura, Niigata Pref., 2. vii. 1985 ; 1♂, Goshikinuma, Urabandai, Fukushima Pref., 10. vii. 1985 ; 1♀, Natsui, Kurogawa-mura, Mt. Azuma, Niigata Pref., 3. vii. 1985 ; 1♀, Tainai, Kurogawa-mura, Niigata Pref., 4. vii. 1985. All were collected by R. Morakote. 1♂, Mt. Makihatayama (BOO-1000 m), Niigata, 3. viii. 1971 (K. Yamagishi) ; 1♂, Nonomi (1000 m), Sakae, Nagano, 27. vii. 1972 (K. Yamagishi).

*Host* : Unknown.

*Distribution*: Japan (Hokkaido, Kyushu).

***Eudorylas jenkinsoni* Coe**

*Eudorylas jenkinsoni* Coe, 1966, Handbk. Ident. Brit. Ins., 10 (2C) : 69.

**Male** (Fig. 62A-F and 85A and B).

Small opaque species ; ocellar triangle shining black ; eyes joined for about twice as long as frontal triangle ; frontal triangle and face silvery at some angle ; antennae (Fig. 62F) with two basal segments black, third segment yellow, long acuminate.

Thorax and scutellum bare, opaque, brownish to greyish pruinose ; humeri dull luteous.

Legs mostly yellow except coxae and last tarsal segment black, femora mainly yellow but with obscurely dark brown dorsally ; tibiae with posteroapical spur ; pulvilli slightly smaller than last tarsal segment.

Wings (Fig. 62E) hyaline ; stigma light brown, extending back to tip of Sc, about length of fourth costal section ; r-m situated at basal third of discal medial cell ; last section of vein M1 slightly undulating ; halteres darkened, calypteres yellow.

Abdomen (Fig. 62A) almost bare, coloration as thorax, sparsely clothed with short pale pubescence, tergite 1 with a row of 3-4 bristles anterolaterally ; tergites 2-4 subequal in length ; tergite 8 wider than long, about as long as or slightly longer than tergite 5, with rather large exclave membranous area which is clearly seen only from

behind.

Genitalia as shown in Fig. 85A and B, epandrium about as wide as long ; surstyli asymmetrical.

Length : Body 4 mm ; wings 4.7 mm.

**Female.**

Differing from the male as follows : Eyes widely separated ; frons entirely cinereous ; front ommatidial facets slightly enlarged ; tergite 6 extending at lateral margin which is almost touching ventrally ; ovipositor as shown in Fig. 62G-I ; ovipositor base bilobed as seen from dorsal ; ovipositor piercer short, about as long as base, greatly thickened at extreme base then suddenly tapering to apex, sharp and straight, apex generally hidden under lateral margin of tergite 6.

Specimens *examined* : (Kyushu) 5♂♂, Mt. Hikosan, Fukuoka Pref., 9. v. 1986 ; Mt. Kurodake, Oita Pref., Kyushu : 26♂2♀♀, 28, v. 1986, 16, 16. ix. 1985 ; (Honshu) 2♀♀, Natsui, Kurogawa-mura, Niigata Pref., 3. vii. 1985 ; (Hokkaido) Akankohan, Mt. O-akan, Kushiro, 4. vii. 1986. All were collected by R. Morakote.

*Host* : Unknown from Japan ; in England as *Errastunus ocellaris* (Fallen) by Waloff (1975) ; and in Germany as *Arthalden paucuellus* (Fallen) (see Coe, 1966b).

*Distribution* : Japan (Hokkaido, Honshu, Kyushu), Europe.

Remarks : This is the first record of this species from Japan.

***Eudorylas hokkaidoensis* Morakote et Yano, sp. n.**

**Male** (Figs. 64A-D and 85C-E).

Ocellar triangle shining black, eyes joined for about length of frontal triangle ; frontal triangle and face silvery at some angle ; antennae all black (Fig. 64D) ; third segment long, acuminate.

Thorax and scutellum bare, dull, brownish to greyish pruinose ; humeri darkened.

Legs all black except joints between femora and tibiae yellow ; fore and mid tibiae with posteroapical spurs ; pulvilli yellow, smaller than last tarsal segment.

Wings hyaline, stigma dark brown, extending back to tip of Sc, about length of next costal section ; r-m situated much after basal third of discal medial cell ; last section of vein M1 very slightly undulating.

Abdomen (Fig. 64A) rather small, oval shape in dorsal view, almost bare, coloration as thorax ; tergite 1 with a row of some bristles anterolaterally ; tergite 5 largest, tergite 8 very small, about one-fourth as long as tergite 5, without membranous area.

Genitalia as shown in Fig. 85C-E ; epandrium and surstyli rather small, much protruding when viewed from side ; epandrium slightly wider than long ; surstyli symmetrical.

**Female.**

Differing from the male as follows : Eyes widely separated ; frons parallel-sided, entirely cinereous ; front ommatidial facets moderately enlarged ; ovipositor (Fig. 64G and H), rather small ; base short, black ; piercer yellow, long, about twice as long as base, greatly thickened at extreme base then suddenly tapering to apex, very slightly upcurved.

Length : Body 3 mm ; wing 3.3 mm.

*Holotype*: ♂ (Type No. 2743, Kyushu Univ.), Sounkyo, Mt. Daisetsusan, Kamikawa, 26. vi. 1986 (R. Morakote).

*Paratypes*: 1♂1♀, same data as holotype ; (Hokkaido) 1♂1♀, Akankohan, Mt. O-akan, Kushiro, 3. vii. 1986, 2♂♂1♀, Kamishibetsu, Kushiro, 5. vii. 1986 ; 1♂1♀, Shunbetsu, Nemuro, 5. vii. 1986 ; 36♂♂5♀♀, Raus Onsen, Nemuro, 8. vii. 1986. All were collected by R. Morakote. 1♀, Zyôzan-kei, Hokkaido, 3. ix. 1958 (S. Takagi).

*Host* : Unknown.

*Distribution* : Japan (Hokkaido).

### ***Endorylas luteioentris*** Morakote et Yano, sp. n.

**Male** (Fig. 65B-D).

Ocellar triangle shining black, eyes joined for about length of frontal triangle, frontal triangle and face silvery at some angle ; antennae (Fig. 65E) with two basal segments brownish, third segment bright yellow, very long and narrow, lower half bristle-like.

Thorax bare, subshining black, with brownish dusting ; scutellum bare, yellowish on posterior half, humeri dull luteous.

Legs almost entirely yellow except basal half of coxae darkened ; mid tibiae with posteroapical spur ; hind tibiae with a single spur at apical third of anterior side ; pulvilli slightly smaller than last tarsal segment.

Wings hyaline ; stigma light brown, extending back to tip of Sc, about twice as long as next costal section ; r-m situated slightly after basal third of discal medial cell ; last section of vein M1 slightly undulating.

Abdomen bare, cylindrical shape, slightly longer than thorax, mainly black, with yellow marking at posterior side corners of tergites 2-5 ; tergite 5 longest ; tergite 8 rather small, about one-fourth as long as tergite 5, with moderately large hexagonal membranous area on the right side which is clearly seen only from behind.

**Female** (Fig. 65A).

Differing from the male as follows : Eyes widely separated ; frons dull black on upper two-thirds, remainder silvery ; pulvilli and claws enlarged about 1.5 times longer than last tarsal segments ; abdomen more extensive yellow than male ; tergites 1-4 almost entirely yellow except narrowing dark band on anterior margin ; tergite 5 almost black but with yellowish side ; tergite 6 entirely black ; ovipositor (Fig. 65F) rather small, with oval black base ; piercer yellow, about as long as base, tapering.

Length : Body 4 mm ; wing 5 mm.

*Holotype*: ♂ (Type No. 2744, Kyushu Univ.), Akankohan, Mt. O-akan, Kushiro, 4. vii. 1986 (R. Morakote).

*Paratypes*: 1♀, same data as holotype ; 1♂, Kamishibetsu, Kushiro, 5. vii. 1986 ; 1♂, Raus Onsen, Nemuro, 8. vii. 1986. All were collected by R. Morakote. 16, Sapporo, Hokkaido, 20. vi. 1986 (M. Suwa) ; 1♂, Mt. Sanageyama, Aichi Pref., Honshu, 14. v. 1970 (H. Yamada).

*Host* : Unknown.

*Distribution* : Japan (Hokkaido, Honshu)

***Eudorylas expletirubus*** Morakote et Yano, sp. n.**Male** (Figs. 66A-D and 85 G-I).

Ocellar triangle shining black, eyes joined for about length of frontal triangle, frontal triangle and face silvery at some angle ; antennae all brownish black, small, third segment oval.

Thorax and scutellum almost bare on dorsum, mainly black but brownish to greyish dusting on dorsum ; humeri black.

Legs almost entirely black, except joints between femora and tibiae yellow ; tibiae without any posteroapical spur ; pulvilli yellow, smaller than last tarsal segment.

Wings hyaline, stigma brownish, extending back to tip of SC, about twice as long as next costal section ; r-m situated much after discal medial cell ; last section of vein M1 straight ; halteres dull black.

Abdomen (Fig 66A) slightly longer than thorax, abdominal segment rather flat ; tergites **2-4** much wider than long ; tergite 1 almost entirely greyish ; tergites **2-5** dull black ; tergite 5 longest ; tergite 8 small, very short, about one-third of tergite 5, with moderately large exclavate membranous area on right side which clearly seen from behind.

Genitalia as shown in Fig. 85G-I; epandrium black, slightly wider than long ; surstyli brownish, symmetrical.

**Female.**

Differing from the male as follows : Body more greyish, eyes widely separated, frons slightly curved outward at middle, subshining black on upper half, remainder cinereous ; ovipositor (Fig. 66E) moderately large, with conical base and strongly upcurved piercer.

Length : Body 3 mm ; wing 4 mm.

*Holotype*: ♂ (Type No. 2745, Kyushu Univ.), Iitatemura, Mt. Abukuma, Fukushima Pref., Honshu, 18. vii. 1985 (R. Morakote).

*Paratypes*: 2 ♂♂ 1 ♀, same data as holotype ; same location as holotype : 1 ♂, 7. vii. 1985 ; 3 ♂♂ 1 ♀, 15. vii. 1985 ; 1 ♂ 1 ♀, Boudo-toge, Asahi-mura, Niigata Pref., 2. vii. 1985 ; 2 ♂♂ 62 ♀♀, Tainai, Kurokawa, Niigata Pref., 3. vii. 1985 ; 1 ♂, Arakawa, Sampokurnachi, Niigata, Pref., 3. vii. 1985 ; 26 ♂♂ 3 ♀♀ ♂♂, Fukuchi-keikoku, Akiu-machi, Miyagi Pref., 12. vii. 1985 ; (Kyushu) 2 ♂♂ 1 ♀, Mt. Hikosan, Fukuoka Pref., 17. vii. 1985. All above specimens were collected by R. Morakote. 1 ♂, Uradani, Kitashidara, Aichi, 7. vii. 1972 (H. Yamada); 1 ♂, Wainai, Towada, Akita, 15-16. vii. 1986 (T. Okadome) ; 1 ♀, Tagoto, Nagoya, Aichi, 18. vi. 1971 (S. Ohkusa).

*Distribution* : Japan (Honshu, Kyushu).

*Remarks* : This species resembles *E. lentiger* Hardy in most respects but differs by having the black humeri and the female ovipositor slightly different in profile.

***Eudorylas rudis*** Morakote et Yano, sp. n.**Male** (Figs. 69D-G and 86D-F).

Ocellar triangle shining black, eyes joined for about length of frontal triangle ; frontal triangle and face silvery at some angle ; antennae (Fig. 69G) all black, third

segment oval shape.

Thorax and scutellum almost bare except notopleuron with some short pubescence, brownish to greyish pruinose on dorsum ; humeri black.

Legs mainly black except extreme tip of femora and narrow base of tibiae and tarsi yellow ; tibiae without any posteroapical spur ; pulvilli yellow, smaller than last tarsal segment.

Wings hyaline, stigma brownish, extending back to tip of Sc, rather long, about 2.5 times as long as next costal section ; r-m situated slightly after basal third of discal medial cell ; last section of vein M1 slightly undulating ; halteres black.

Abdomen small (Fig. 69D), elongate, tergites 1-5 almost parallel-sided, mainly dull black but near posterior margin cinereous ; tergite 5 longest ; tergite 8 small, about half as long as tergite 5, with moderately large membranous area which clearly seen only from behind and ventral.

Genitalia as shown in Fig. 86D-F ; epandrium small black, slightly wider than long ; surstyli symmetrical, larger than its epandrium.

Length : Body 3.8 mm ; wing 4.6 mm.

**Female** : Unknown.

*Holotype* : ♂ (Type No. 2746, Kyushu Univ.), Mt. Kurodake, Oita Pref., Kyushu, 16. ix. 1985 (R. Morakote).

*Paratypes* : 3♂♂, same data as holotype ; 1♂, same location and collector as holotype, 28. v. 1986 ; 2♂♂, Mt. Hikosan, Fukuoka Pref., Kyushu, 30. vii. 1985 ; 1♀, Iitate-mura, Mt. Abukuma, Fukushima Pref., 7. vii. 1985 ; 1♂, Raus Onsen, Nemuro, Hokkaido, 8. vii. 1986 ; all were collected by R. Morakote. 5♂♂, Mt. Kinkazan, Gifu, 17. vi. 1971 (H. Yamada) ; 6♂♂, Mt. Kinkazan, Gifu, 17. vi. 1971 (S. Ohkusa) ; 16, Tagoto, Nagoya, Aichi, 23. vi. 1971 (S. Ohkusa). 1♂, Hikosan, Kyushu, 6. ix. 1958 (K. Kamijo).

*Host* : Unknown.

Distribution : Japan (Hokkaido, Honshu, Kyushu).

### ***Eudorylas latistomachus*** Morakote et Yano, sp. n.

**Male** (Figs. 68A-D and 86A-C).

Ocellar triangle shining black, eyes joined for about length of frontal triangle ; frontal triangle and face silvery at some angle ; antennae all black, third segment with lower half bristles-like shape.

Thorax and scutellum almost bare, brownish to greyish pruinose on dorsum, dorsocentral setae scarcely seen ; scutellum with some black marginal pubescence ; humeri black.

Legs almost entirely black, except joints between femora and tibiae yellow ; tibiae without any posteroapical spur ; pulvilli yellow, slightly smaller than last tarsal segments.

Wings iridescent, tinged with brown ; stigma dark brown, extending back to tip of Sc, about 1.5 times as long as next costal section ; r-m situated slightly after discal medial cell, last section of vein M1 almost straight.

Abdomen (Fig. 68A), rather short and wide, about as long as thorax ; tergites 2-

5 much wider than long ; tergite 1 entirely greyish, with a row of some bristles anterolaterally ; tergites 2-4 black but with greyish dusting posteriorly ; tergite 5 longest ; tergite 8 small, slightly shorter than tergite 8, with moderately large oval membranous area which is occupying on the right side of apex. This membranous area is clearly seen only from behind.

Genitalia as shown in Fig. 86A-C, epandrium small black, about as wide as long ; surstyli large yellowish, asymmetrical.

Length : Body 4 mm ; wing 5 mm.

#### **Female.**

Differing from the male as follows : Eyes widely separated ; frons as wide as face, slightly curved outward at middle ; front ommatidial facets slightly enlarged ; abdomen stout, oval shape as seen from above, opaque grey ; ovipositor (Fig. 68E and F) rather small, base rather flat ; piercer beak-like, rather long about, twice as long as base, slightly upcurved.

Length : Body 3.7 mm ; wing 4.2 mm.

*Holotype*: ♂ (Type No. 2747, Kyushu Univ.), Goshikinuma, Urabandai, Fukushima Pref., 10. vii. 1985 (R. Morakote).

*Paratypes*: 1♂1♀, same data as holotype ; 1♂, Mt. Kurodake, Oita Pref., Kyushu, 8. vi. 1985 (K. Konishi).

*Host* : Unknown.

*Distribution* : Japan (Honshu, Kyushu).

### ***Eudorylas largexitus* Morakote et Yano, sp. n.**

**Male** (Figs. 69A-C and 87A-D).

Ocellar triangle shining black, eyes joined for about length of frontal triangle ; frontal triangle and face silvery at some angle ; antennae all black (Fig. 69C), third segment rather large, about twice as deep as second segment, pointed below.

Thorax and scutellum almost bare except notopleuron with some short pubescence, brownish to greyish pruinose on dorsum ; scutellar marginal hairs inconspicuous ; humeri dull luteous.

Legs mainly black except extreme tip of femora and base of tibiae yellow ; tibiae without any posteroapical spur ; pulvilli yellow, smaller than last tarsal segments.

Wings iridescent, tinged with brown ; stigma dark brown, extending black to tip of Sc, about twice as long as next costal section ; r-m situated at basal half of middle of discal medial cell ; last section of vein M1 almost straight.

Abdomen (Fig. 69A), slightly wider than thorax, widest at tergite 3 ; tergite 1 with a row of a few short bristles anterolaterally ; tergites 2-5 much wider than long, bare, coloration as thorax ; tergite 5 only slightly longer than tergite 4 ; tergite 8 very large, wider than long, about twice as long as tergite 5, without membranous area.

Genitalia as shown in Fig. 87A-D, epandrium rather large, much wider than long, black ; surstyli dark brown, symmetrical.

Length : Body 4.3 mm ; wing 5.5 mm.

**Female** : Unknown.

*Holotype*: ♂ (Type No. 2748, Kyushu Univ.), Goshikinuma, Urabandai, Fukushima Pref., Honshu, 10. vii. 1985 (R. Morakote).

*Host*: Unknown.

*Distribution*: Japan (Honshu).

***Eudorylas* *ocularis*** (Matsumura)

*Pipunculus ocularis* Matsumura, 1931, Six thousand Illustrated Insects of Japan-Empire : 360.

Male (Figs. 70 and 71).

Moderately large size and pilose species ; ocellar triangle shining black ; eyes joined for about length of frontal triangle ; frontal triangle blackish, face silvery ; antennae all black, third segment oval.

Thorax and scutellum (Fig. 71F) blackish, with dense pubescence on back of humeri along sides to base of wings and near dorsocentral line but area between dorsocentral line bare (Fig. 71F) ; scutellum with many marginal pubescence ; humeri black.

Legs almost entirely black except joints between femora and tibiae yellow ; tibiae without any posteroapical spur ; pulvilli smaller than last tarsal segments.

Wings smoky ; stigma dark brown, extending back to tip of SC, rather long, about 2.5 as long as next costal section ; r-m situated slightly before middle of discal medial cell ; last section of vein M1 slightly undulating ; halteres darkened.

Abdomen (Fig. 71A) blackish, conspicuous cylindrical shape, fairly covered with short pubescence on dorsum and longer at sides ; tergite 8 rather small, about half as long as tergite 5, with almost round membranous area on right side which is clearly seen only from behind and ventral.

Genitalia as shown in Fig. 89 A-D, epandrium small, slightly wider than long, black ; surstyli brownish, symmetrical.

Female.

Differing from the male as follows : Eyes widely separated ; frons wider than face, slightly concave at middle, almost entirely subshining black except lower one-fourth cinereous ; thorax and abdomen with sparser pubescence than in male ; abdominal tergites 2-5 subequal in length ; tergite 6 longest, almost twice as long as tergite 5 ; ovipositor (Fig. 101C) large, with conical base and very strongly upcurved piercer ; no constriction between base and piercer.

Length : Body 5 mm ; wing 5.7 mm.

*Type specimen*: male, Sapporo, Matsumura, no other data.

*Specimens examined* : (Hokkaido) 8♂♂ Nukabira, Kamishihoro, Tokachi, Hokkaido, 28. vi. 1986 ; Sounkyo, Mt. Daisetsu, Kamikawa : 1♂2♀♀, 26. vi. 1986 ; 1♂, 11. vii. 1986 ; 1♂, Misumai, Sapporo, Ishikari, 24. vi. 1986 ; 26♂3♀♀, Akankohan, Mt. O-akan, Kushiro, 3. vii. 1986 ; 1♂, Ashoro, Tokachi, 2. vii. 1986 ; 2♀♀, Shunbetsu, Nemuro, 8. vii. 1986 ; 3♀♀, Raus Onsen, Nemuro, 8. vii. 1986. All were collected by R. Morakote.

*Host*: Unknown.



*Distribution* : Japan (Hokkaido).

***Eudorylas longistigmus*** Morakote et Yano, sp. n.

**Male** (Fig. 72A-D).

Ocellar triangle shining black ; eyes joined for about length of frontal triangle ; frontal triangle and face silvery pubescence ; antennae all black, second segment with many bristle above and beneath, those beneath are longer, third segment reniform.

Thorax black but back of humeri along sides to base of wings and anterior corners cinereous, fairly covered with pale pubescence on notopleuron and near dorsocentral line but area between dorsocentral line bare ; scutellum black, with many pale marginal pubescence ; humeri black in ground color.

Legs mainly black except extreme tip of femora base of tibiae and tarsi yellow ; front and mid femora with irregular rows of many pale pubescence posteriorly ; tibiae without any posteroapical spur, hind tibiae strongly twisted as shown in Fig. 72D; pulvilli yellow, slightly smaller than last tarsal segments.

Wings hyaline ; stigma brownish, extending back to tip of Sc, greatly long, about seven times as long as next costal section ; r-m situated much before middle of discal medial cell ; last section of vein M1 greatly undulating ; halteres darkened.

Abdomen fairly large, longer than thorax, about as wide as ; tergites 1-5 fairly covered with short pale pubescence on dorsum, longer at sides ; all abdominal tergites almost entirely greyish but darkened anteriorly ; tergite 8 rather large, about as long as tergite 5, with very large ventral membranous area.

Genitalia with small black epandrium ; surstyli longer than epandrium, brownish.

**Female.**

Differing from the male as follows ; Eyes widely separated, frons entirely cinereous, moderately wide, narrowest at level of median ocellus ; front ommatidial facets slightly enlarged ; hind tibiae not twisted as in male ; third costal section of wing only about twice as long as the fourth ; ovipositor (Fig. 72E) rather large, ovipositor base elongate, piercer longer than base, very strongly upcurved.

Length : Body 8.6 mm ; wing 9 mm.

*Holotype* : ♂, Nagoya, Aichi Pref., Honshu, 18. vi. 1971 (T. Murata), in the collection of Meijo University.

*Paratypes* : same location and collector as holotype : 1♂, 22. vi. 1986 ; 2♀♀, 25. vi. 1971.

*Host* : Unknown.

*Distribution* : Japan (Honshu).

This is the largest species of the Japanese *Eudorylas*.

***Eudorylas fascipes*** (Zetterstedt)

*Pipunculus fascipes* Zetterstedt, 1844, Dipt. Scand., 3 : 964. *Eudorylas fascipes* : Coe, 1966, Handbk. Ident. Brit. Ins., 10 (2C) : 69, 70.

**Male** (Figs. 67A-D and 90C).

Small opaque grey species ; ocellar triangle shining black ; eyes joined for a distance about length of frontal triangle ; frontal triangle entirely cinereous ; antennae with two basal segments dull black, third segment yellow, long rostrate.

Thorax and scutellum almost bare, opaque grey, with brownish dusting ; humeri dull luteous.

Legs with coxae and trochanters black, femora black except extreme base and tip yellow ; tibiae and tarsi yellow ; tibiae with posteroapical spur ; pulvilli smaller than last tarsal segment.

Abdomen with coloration as thorax, almost bare but with sparsely short pale hairs ; segment 8 large, about twice as long as segment 5, with moderately large membranous area on the right side as shown in Fig. 67D ; epandrium and surstyli as shown in Fig. 90C.

#### **Female.**

Differing from the male as follows ; Eyes widely separated ; frons entirely cinereous ; pulvilli as large as last tarsal segment ; abdominal tergite 6 greatly extending at sides almost touching ventrally ; ovipositor (Fig. 67E and G) ; base without dorso-medial groove ; piercer short and straight, generally concealed under tergite 6.

Length : Body 3.5 mm ; wing 4 mm.

**Specimens examined** : 1♂ and 1 mating pair, Shunbetsu, Nemuro, Hokkaido, 5. vii. 1986 (R. Morakote).

**Host** : Unknown from Japan ; in England *Psammotettix confinis* (Dahlbom), *Errastunus ocellaris* (Fallen) and *Grypotes puncticollis* (Herrich-Schaffer) (Homoptera : Cicadellidae) (see Waloff, 1975).

**Distribution** : Japan (Hokkaido), Europe.

Remarks : This is the first record of this species from Japan.

### ***Eudorylas su bfascipes* Collin**

*Eudorylas subfascipes* Collin, 1956, Opus. ent., 21 : 166. - Cole, 1966, Handbk. Ident. Brit. Ins., 10 (ZC) : 68, 70.

**Male** (Figs. 73A-E and 90A and B).

Moderately large, opaque grey species ; ocellar triangle shining black ; eyes joined for about length of frontal triangle ; frontal triangle and face silvery ; antennae all black, third segment long acuminate.

Thorax and scutellum bare, greyish to brownish pruinose on dorsum ; humeri dull luteous.

Legs with coxae and trochanters black ; femora mainly black except extreme base and tip yellow ; tibiae and tarsi yellow ; last tarsal segment black ; hind femora shining black behind ; four anterior tibiae with posteroapical spur ; pulvilli smaller than last tarsal segments.

Wings iridescent, slightly tinged with brown ; stigma dark brown ; extending back to tip of Sc, slightly shorter than next costal section ; r-m situated before basal third of discal medial cell ; last section of vein M1 almost straight.

Abdomen (Fig. 73A) very sparsely clothed with short hairs, all tergites opaque

grey, brownish pruinose on anterior margins ; tergites 2-4 subequal in size ; tergite 8 large, slightly longer than tergite 5, with large almond-like membranous area on the half right which is clearly only seen from behind, this membranous area extending absolutely from the highest extremity of segment 8 almost to the lowest.

Genitalia as shown in Fig. 90A-B, with brownish epandrium and surstyli.

Length : Body 4.3 mm ; wing 5 mm.

#### **Female.**

Differing from the male as follows : Eyes widely separated ; frons slightly curved outward at middle, as wide as face, entirely cinereous ; abdominal tergites 2-4 subequal in length ; tergite 5 longest ; tergite 6 shorter than tergite 5, narrowly extending on lateral margins which is touching ventrally over ovipositor piercer ; ovipositor (Fig. 73F and G), with bilobed base ; piercer slightly longer than base shape and straight.

Length : Body 4 mm ; wing 4.7 mm.

**Specimens examined** : (Hokkaido) 1♂ 3 ♀♀, Hokkaido Univ., Sapporo, Ishikari, 22. vi. 1986 ; 26 62 ♀♀, Souunkyo, Mt. Daisetsu, Kamikawa, 26. vi. 1986 ; 2 ♀♀, Nukabira, Kamishihoro, Tokachi, 28. vi. 1986 ; 1 ♀ Ashoro, Tokachi, 28. vi. 1986 ; 2♂♂ 2 ♀♀, Akankohan, Mt. O-akan, Kushiro, 3. vi. 1986 ; 1 ♀, Shunbetsu, Nemuro, 6. vii. 1986. All were collected by R. Morakote.

**Host** : Unknown from Japan ; in England *Psammotettix confinis* (Dahlbom), *P. notodus* (Ribaut) and *Errastunus ocellaris* (Fallen) (Homoptera : Cicadellidae) (see Waloff, 1975).

**Distribution** : Japan (Hokkaido), Europe.

**Remarks** : This is the first record of this species from Japan.

### ***Eudorylas cralimes* Morakote et Yano, sp. n.**

#### **Male** (Fig. 74).

Moderately large, opaque grey species ; ocellar triangle shining black ; eyes joined for about length of frontal triangle ; frontal triangle and face silvery ; antennae (Fig. 74D) all black, third segment long acuminate.

Thorax and scutellum opaque, brownish to greyish pruinose, almost bare but with some pubescence on notopleuron ; marginal scutellar pubescence inconspicuous ; humeri dull luteus.

Legs with coxae, trochanters and femora black except extreme tip of femora yellowish ; hind femora shining black behind ; tibiae and tarsi mainly yellowish but tibiae with obscurely incomplete dark ring at middle third ; pulvilli smaller than last tarsal segment.

Wings iridescent, slightly tinged with brown, stigma dark brown, extending back to tip of Sc ; about twice as long as next costal section ; r-m situated about basal third of discal medial cell ; last section of vein M1 straight ; cell R5 as shown in Fig. 74E ; halteres black.

Abdomen (Fig. 74B) coloration as thorax, almost bare, with sparsely short pale pubescence ; tergite 1 with a row of 7-8 bristles anterolaterally ; tergites 2-4 subequal in size, tergite 5 longest ; tergite 8 about half as long as tergite 5, without membranous area.

Length : Body 4.5 mm ; wing 5.5 mm.

**Female** : Unknown.

**Holotype** : ♂ (Type No. 2749, Kyushu Univ.), Sounkyo, Mt. Daisetsu, Kamikawa, 26. vii. 1986 (R. Morakote).

**Paratypes** : 1♂, Nukabira, Kamishihoro, Tokachi, 29. vi. 1986 ; 2 ♂♂, Akankohan, Mt. 0-akan, Kushiro, 4. vii. 1986 ; 1♂, Raus Onsen, Nemuro, 8. vii. 1986. All were collected by R. Morakote. 16, Makiminato, Is. Okinawa-honto, 29. iii. 1965 (A. Kiuna).

**Host** : Unknown.

**Distribution** : Japan (Hokkaido, Okinawa).

**Remarks** : This species is similar to *E. hyleus* Perkins in many respects but different from it as follows : Tibiae with obscurely dark ring at middle ; hind tibiae without any erect setae on median portion as in *E. hyleus* ; tergite 8 different in profile.

***Eudorylas oscen*** Morakote et Yano, sp. n.

**Male** (Figs. 75 and 88A-C).

Ocellar triangle shining black ; eyes joined for about length of frontal triangle ; frontal triangle and face silvery ; antennae (Fig. 75D) all black, third segment stout, oval shape.

Thorax and scutellum almost entirely bare, opaque, brownish to greyish pruinose ; humeri black.

Legs all black except base of tibiae ; femora almost bare ; four anterior tibiae with posteroapical spurs ; pulvilli yellow, smaller than last tarsal segments.

Wings iridescent, tinged with brown ; stigma dark brown ; extending back to tip of Sc, about twice as long as next costal section ; r-m situated slightly before middle of discal medial cell ; last section of vein M1 slightly undulating.

Abdomen (Fig. 75A) almost bare, coloration as thorax ; tergites 2-4 subequal in size ; tergite 5 only slightly longer than tergite 4 ; tergite 8 large, slightly longer than tergite 5 ; with triangular membranous area which is clearly seen only from behind and ventral.

Genitalia as shown in Fig. 88A-C ; epandrium much wider than long ; surstyli bird-like shaped.

Length : Body 5.1 mm ; wing 5.8 mm.

**Female** : Unknown.

**Holotype** : ♂ (Type No. 2750, Kyushu Univ.), Nukabira, Kamishihoro, Tokachi, 28. vi. 1986 (R. Morakote).

**Host** : Unknown.

**Distribution** : Japan (Hokkaido).

***Eudorylas gilvipes*** Morakote et Yano, sp. n.

**Male** (Figs. 76A-D and 93D-F).

Ocellar triangle shining black ; eyes joined for about length of frontal triangle ; frontal triangle and face silvery ; antennae all black, third segment short acuminate.

Thorax and scutellum almost bare but with some pubescence on notopleuron and on dorsocentral line, brownish to greyish pruinose ; humeri black.

Legs almost entirely yellow except base of coxae black ; tibiae without posteroapical spur ; pulvilli smaller than last tarsal segment.

Wings hyaline ; stigma brownish ; extending back to tip of Sc, about twice as long as next costal section ; r-m situated slightly before middle of discal medial cell ; last section of vein M1 straight.

Abdomen (Fig. 76B) rather small compared with head or thorax, almost bare, subshining black ; tergite 1 with a row of 2-5 short bristles anterolaterally ; tergites 2-4 almost equal in size, tergite 5 longest ; tergite 8 small, about half as long as tergite 5, with round membranous area on the right side.

Genitalia as shown in Fig. 93D-F ; epandrium and surstyli brownish ; epandrium about as wide as long ; surstyli symmetrical.

Length : Body 3.8 mm ; wing 4.8 mm.

#### **Female.**

Differing from the male as follows : Eyes widely separated ; frons as wide as face, slightly concave at middle ; abdominal tergites 2-5 subequal in length, tergite 6 slightly longer than tergite 5 ; ovipositor (Fig. 76E), with subglobular base ; piercer thickened at its base, slightly longer than base, very slightly upcurved.

Length : Body 3.7 mm ; wing 4.5 mm.

*Holotype* : ♂, Mt. Sanageyama, Toyota, Aichi Pref., Honshu, 14. vi. 1972 (H. Yamada), in the collection of Meijo University.

*Paratypes* : 3♂♂, same data as holotype ; 2♀♀, Iitatemura, Mt. Abukuma, Fukushima Pref., 7. vii. 1985 ; 1♂1♀, 15. vii. 1985 ; 18. vii. 1985 ; 1♀, Fukuchikeikoku, Akiu-machi, Miyagi Pref., 12. vii. 1986. All were collected by R. Morakote. 1♂, Arakawa, Sanpoku-machi, Niigata, 5. vii, 1985, no collector data.

*Host* : Unknown.

*Distribution* : Japan (Honshu).

### ***Eudorylas nomurai* Morakote et Yano, sp. n.**

**Male** (Figs. 77A-E and 91A-C).

Ocellar triangle shining black ; eyes joined for about length of frontal triangle ; frontal triangle and face silvery ; antennae (Fig. 77E) all black, third segment long acuminate.

Thorax bare, brownish pruinose, anterior corners and back of humeri along sides to base of wing conspicuous greyish ; scutellum bare on dorsum but with conspicuous marginal pubescence, cinereous ; humeri black.

Legs almost entirely black except extremely tip of femora and tip of tibiae yellow ; tibiae without any posteroapical spur ; pulvilli smaller than last tarsal segment.

Wings hyaline ; stigma dark brown, extending back to tip of Sc ; about 1.3 times as long as next costal section ; r-m situated slightly after basal third of discal medial cell ; last section of vein M1 slightly undulating.

Abdomen almost bare, opaque, brownish to greyish ; all tergites darkened anteriorly ; tergite 1 with a row of some short bristles anterolaterally ; tergites 2-5 subequal in length abdominal terminalia as shown in Fig. 82B-D ; tergite 8 small, slightly

shorter than tergite 5, with moderately large membranous area ; this membranous area almost rounding, occupying on right side of segment, clearly seen only from behind and ventral.

Genitalia as shown in Fig. 91A-C.

Length : Body 4.7 mm ; wing 5.5 mm.

#### **Female.**

Differing from the male as follows; Eyes moderately separated; frons entirely cinereous, with a row of short pale hairs along each side margin ; front ommatidial facets moderately enlarged ; third costal section of wings about as long as fourth; abdominal tergites 2-4 subequal in length, tergite 5 largest, slightly longer than tergite 4, tergite 6 smallest ; ovipositor (Fig. 77F-G) small compared with its abdomen ; base bilobed apically; piercer slightly longer than base, tapering and straight.

Length : Body 4 mm ; wing 5 mm.

*Holotype*: ♂ (Type No. 2751, Kyushu Univ.), Akankohan, Mt. O-akan, Kushiro, 4. vii. 1986 (R. Morakote).

*Paratypes*: 1 ♀, Sounkyo, Mt. Daisetsu, Kamikawa, 26. vi. 1986 (R. Morakote) ; 1 ♂, Apoi, Hokkaido, 22. vi. 1959 (T. Kumata) ; 16, Subashiri, Shizuoka, Honshu, 30. v. 1959 (K. Kamijo, Honshu).

*Host* : Unknown.

*Distribution* : Japan (Hokkaido, Honshu).

### ***Eudorylas fukushimaensis*** Morakote et Yano, sp. n.

**Male** (Figs. 78A-C and 84C-F).

Very small, opaque species ; ocellar triangle shining black ; eyes joined for about length of frontal triangle ; frontal triangle and face silvery ; antennae (Fig. 78C) all black, third segment short acuminate.

Thorax and scutellum bare, brownish to greyish pruinose ; humeri dull luteus.

Legs with coxae, trochanters and femora black except extreme tip of femora yellow, tibiae and tarsi yellow ; tibiae without any posteroapical spur ; pulvilli smaller than last tarsal segment.

Wings hyaline ; stigma brown, extending back to tip of Sc ; about twice as long as next costal section ; r-m situated about basal third of discal medial cell ; last section of vein M1 almost straight.

Abdomen (Fig. 78A) almost bare, coloration as thorax ; tergite 1 with a row of some short bristles anterolaterally ; tergites 3-5 much wider than long, tergite 5 moderately longer than tergite 4 ; tergite 8 moderately large, as long as tergite 5, with small exclavate membranous area which is clearly seen only from behind and ventral.

Genitalia as shown in Fig. 84C-F.

**Female** : Unknown.

Length : Body 2.8 mm ; wing 3.5 mm.

*Holotype*: ♂ (Type No. 2752, Kyushu Univ.), Iitatemura, Mt. Abukuma, Fukushima Pref., 7. vii. 1985 (R. Morakote).

*Host* : Unknown.

*Distribution* : Japan (Honshu).

***Eudorylas abnorexitus*** Morakote et Yano, sp. n.**Male** (Fig. 79).

Ocellar triangle shining black ; eyes joined for about length of frontal triangle ; frontal triangle and face silvery ; antennae with two basal segments black, third segment brownish, long acuminate.

Thorax and scutellum bare, brownish to greyish pruinose ; humeri dull luteous.

Legs with coxae black, femora mainly dark brown, tibiae and tarsi yellowish, but last tarsal segment darkened ; four anterior tibiae with posteroapical spur ; pulvilli smaller than last tarsal segment.

Wings hyaline ; stigma dark brown extending back to tip of Sc ; about as long as next costal section ; r-m situated slightly before basal third of discal medial cell ; last section of vein M1 slightly undulating.

Abdomen (Fig. 79A-B) bare, coloration as thorax ; tergite 1 with a row of some short bristles anterolaterally ; tergites 1-5 subequal in length which rather short ; tergite 8 greatly enlarged and very much complicated ; epandrium large, much wider than long, V-shape ; surstyli (Fig. 79D-E) smaller than epandrium, symmetrical.

Length : Body 4 mm ; wing 4.5 mm.

**Female** : Unknown.

*Holotype* : ♂ (Type No. 2753, Kyushu Univ.), Iitatemura, Mt. Abukuma, Fukushima Pref., 18. vii. 1985 (R. Morakote).

*Host* : Unknown.

*Distribution* : Japan (Honshu).

***Eudorylas nasus*** Morakote et Yano, sp. n.**Male** (Fig. 80).

Ocellar triangle shining black ; eyes joined for about length of frontal triangle ; frontal triangle and face silvery ; antennae all brownish black, third segment long acuminate.

Thorax and scutellum bare, black ; humeri dull luteous.

Legs with coxae, trochanters and femora black except extreme tip of femora yellow, tibiae and tarsi yellow ; four anterior tibiae with posteroapical spurs ; pulvilli smaller than last tarsal segment.

Wings hyaline ; stigma dark brown, extending back to tip of Sc ; about as long as next costal section ; r-m situated about basal third of discal medial cell ; last section of vein M1 almost straight.

Abdomen (Fig. 80B) almost bare, subshining black ; tergite 1 with a row of some short bristles ; tergites 2-5 subequal in length ; tergite 8 greatly enlarged.

Genitalia as shown in Fig. 80D and E; epandrium and surstyli rather small, epandrium much wider than long.

Length : Body 4.5 mm ; wing 5.5 mm.

**Female** : Unknown.

*Holotype* : ♂, Mt. Daisetsu, Hokkaido, 23. vii. 1968 (M. Suwa), in the collection of Hokkaido University.

*Host* : Unknown.

*Distribution* : Japan (Hokkaido).

***Eudorylas suwai*** Morakote et Yano, sp. n.

**Male** (Figs. 81A-D and 93A-C).

Moderately large size, opaque grey species ; ocellar triangle shining black ; eyes joined for about length of frontal triangle ; frontal triangle and face silvery at some angle ; antennae with two basal segment black, third segment long acuminate, yellowish.

Thorax and scutellum almost bare except notopleuron area with some short pale hairs ; humeri dull luteous.

Legs with black coxae, femora almost entirely black except base and tip yellowish ; trochanters, tibiae and tarsi yellow ; fore and mid tibiae with posteroapical spur ; pullvilli smaller than last tarsal segment.

Abdomen (Fig. 81A) almost entirely bare, opaque grey ; tergite 1 with some long black bristles anterolaterally ; tergite 8 slightly longer than tergite 5, moderately large, with small membranous area at middle of apex which is clearly seen only from behind.

Genitalia as shown in Fig. 93A-C.

Length : Body 5.5 mm ; wing 6 mm.

**Female** : Unknown.

*Holotype* : ♂, Nopporo, Sapporo, Hokkaido, 25. v. 1970 (M. Suwa), in the collection of Hokkaido University.

*Paratypes* : Same locality and collector ; 1♂, 18. v. 1966 ; 16, 17. v. 1970 ; 1♂, 3. v. 1970 ; Jozankei, Hokkaido, 2. v. 1968 (M. Suwa).

**Host** : Unknown.

***Distribution*** : Japan (Hokkaido).

***Eudorylas inopsicolor*** Morakote et Yano, sp. n.

**Male** (Fig. 92A-C).

This species closely resembles the male of *E. fukushimaensis* but differs as follows: Larger ; abdomen longer, almost parallel-sided ; tergites not so much wider than long as that of *E. fukushimaensis* ; genitalia clearly different as shown in Fig. 92A-C.

Length : Body 3.5 mm ; wing 4.5 mm.

**Female** : Unknown.

*Holotype* : ♂ (Type No. 2754, Kyushu Univ.), Akankohan, Mt. O-akan, Kushiro, Hokkaido, 4. vii. 1986 (R. Morakote).

*Paratype* : 16, Sounkyo, Mt. Daisetsusan, Kamikawa, Hokkaido, 11. vii. 1986 (R. Morakote).

**Host** : Unknown.

***Distribution*** : Japan (Hokkaido).



***Eudorylas oshimaensis*** Morakote et Yano, sp. n.

**Male** (Figs. 82A-D and 94A and B).

Ocellar triangle shining black ; eyes jointed for a distance about length of frontal triangle, face silvery pubescence ; antennae all black, third segment long acuminate.

Thorax and scutellum bare, dull black with brownish dusting; humeri dull luteous.

Legs with black coxae, yellow trochanters ; femora mainly dark brown except extreme base and tip yellowish ; tibiae and tarsi yellow ; four anterior tibiae with posteroapical spur ; pulvilli smaller than last tarsal segment.

Wings hyaline, stigma dark brown, extending back to tip of Sc, about 1.5 times as long as fourth costal section ; r-m situated slightly after basal third of discal medial cell ; last section of vein M1 slightly undulating.

Abdomen (Fig. 82A and B) almost bare, opaque brownish to greyish ; tergites 1-5 subequal in size, parallel-sided ; tergite 8 large, almost rounded, about 1.8 times as long as tergite 5, with very large, dumb-bell shape membranous area which clearly seen from dorsal and behind.

Genitalia as shown in Fig. 94A and B.

Length : Body 4.4 mm ; wing 5 mm.

**Female** : Unknown.

**Holotype**: ♂, Amami-Oshima, no date (K. Kamijo), in the collection of Hokkaido University.

**Host** : Unknown.

**Distribution**: Japan (Amami Is.).

***Eudorylas minutus*** Morakote et Yano, sp. n.

**Male** (Figs. 82E-G and 94C).

Small opaque grey species ; head and thorax similar as that of *E. oshimaensis*.

Legs almost entirely black except joints between femora and tibiae yellowish ; tibiae with posteroapical spur ; pulvilli slightly smaller than last tarsal segment.

Wings hyaline, stigma brownish, extending back to tip of Sc, about twice as long as next costal section ; r-m situated slightly before middle of discal medial cell ; last section of vein M1 almost straight.

Abdomen (Fig. 82E and F) gradually widening from first segment to third segment then narrowing again segment 8 ; tergites 2-4 short and very much wider than long ; tergite 8 (Fig. 82E) about half as long as tergite 5, with slot-like membranous area which is clearly seen only from behind.

Genitalia with epandrium and surstyli as shown in Fig. 94C.

Length : Body 2.3 mm ; wing 3 mm.

**Female** : Unknown.

**Holotype**: ♂ (Type No. 2755, Kyushu Univ.), Mt. Hikosan, Fukuoka Pref., 4. ix. 1958 (Hikosan Biol. Lab. Coll.).

**Host** : Unknown.

**Distribution**: Japan (Kyushu).

***Eudorylas mutillatus*** (Loew)

***Pipunculus mutillatus*** Loew, 1857, Ofvers. K. Vetenskakad. Forh., **14 (9) : 374.**

***Pipunculus kumamotoensis*** Matsumura, 1916, Thousand Ins. Jan. Add., 2 : 380

*Dorilas (Eudorylas) cruciator* (Perkins) : Koizumi, 1959, Sci. Rept. Fac. Agr. Okayama Univ., 13 : 41.

***Pipunculus aequalis*** Becker, 1924, Ent. Mitt., 13 : 16.

***Pipunculus matema*** Curran, 1936, Proc. Calif. Acad. Sci. Ser. 4, 22 : 22.

*Pipunculus (E.) hiatus* Hardy, 1956, Ins. of Micronesia, 13 (1) : 5.

*Pipunculus (E.) siscruciator* Hardy, 1966, Bull. Brit. Mus. (Nat. Hist), Ent., 17 (10) : 441.

***Pipunculus (E.) mutillatus*** : Hardy, 1968, Ent. Meddel., 36 : 456 ; —, 1972, Proc. Haw. ent. Soc., 21 (1) : 88. — Lin, 1974, Jour. Taiwan Agr. Res., 23 : 109. — Chandra, 1978, IRRN, 3 : 21. — Yano, 1979, Esakia, 13 : 46. — Yano **et al.**, 1984, Trans. Shikoku ent. Soc., 16 (4) : 56.

**Host** : In Japan *Nephotettix cincticeps* (Uhler), in Philippines N. ***virescens*** (Distant), in Australia *Hecalus* sp.

**Distribution** : Widely spread over Asia, Africa and Europe.

**Remarks** : This species is well-redescribed by Koizumi (1960) and Hardy (1968). It is a very common species in paddy fields in Japan because we have seen a lot of 'specimens of this species in the collections of Kyushu University and Yamaguchi University. The biology and morphology of immature stages of this species has been studied by Morakote and Yano (1987, 1988a). The illustrations of important characters are shown in Fig. 95A-D.

***Eudorylas javanensis*** (de Meijere)

*Pipunculus javanensis* de Meijere, 1907, Tijdschr. Ent., 50 : 262.

***Pipunculus formosanus*** Kertész, 1912, Ann. Mus Nat. Hung., 10 : **298.**

***Pipunculus transversus*** Brunetti, 1923, Fauna of British India, Dipt., 3 : 13.

*Dorilas (Eudorylas) tsuboi* Koizumi, 1959, Sci. Rept. Fac. Agr. Okayama Univ., 13 : 40.

***Pipunculus (E.) javanensis*** : Hardy, 1968, Ent. Meddel., 36 : 451 ; —, 1972, Proc. Haw. ent. Soc., 21 (1) : 87. — Lin, 1974, Jour. Taiwan Agr. Res., 23 : 110. — Yano, 1979, Esakia, 13 : 47. — Yano **et al.**, 1984, Trans. Shikoku ent. Soc., 16 (4) : **59.**

**Host** : In Japan and Taiwan *Nephotettix cincticeps* (Uhler).

**Distribution** : Japan (Honshu, Kyushu), Taiwan, Philippines, Thailand, Laos, India, Java, Sabah.

**Remarks** : This species is well-redescribed by Koizumi (1959) and Hardy (1968). It is a common species in paddy fields in Japan as well as ***E. mutillatus*** (Loew). The biology and morphology of immature stages of this species have been studied by Morakote and Yano (1987, 1988a). The illustrations of important characters are shown in Fig. 96A-F.

***Eudorylas orientalis*** (Koizumi)

*Dorilas (Eudorylas) orientalis* Koizumi, 1959, Sci. Rept. Fac. Agr. Okayama Univ., 13 :

43.

*Eudorylas orientalis* : Koizumi, 1960, Sci. Rept. Fac. Agr. Okayama Univ., 16 : 41.

*Pipunculus orientalis* : Hardy, 1968, Ent. Meddel., 36 : 459; —, 1972, Proc. Haw. ent. Soc., 21 (1) : 88. — Lin, 1974, Jour. Taiwan Agr. Res., 23 : 111. — Yano, 1979, Esakia, 13 : 47. — Yano et al., 1984, Trans. Shikoku ent. Soc., 16 (4) : 61.

*Host* : In Japan and Taiwan *Nephotettix cincticeps* (Uhler).

*Distribution* : Japan (Hokkaido, Honshu, Kyushu, Okinawa), Taiwan, Thailand, Laos, Vietnam, and Philippines.

*Remarks* : The original description by Koizumi (1959) is good. This species is common in paddy fields in Japan as well as *E. mutillatus* (Loew) and *E. javanensis* (de Meijere). The biology and morphology of immature stages of this species have been studied by Morakote and Yano (1987, 1988a). The illustration of important characters are shown in Fig. 97A-D.

### ***Eudorylas macropygus* (de Meijere)**

*Pipunculus macropygus* de Meijere, 1941, Tijds. Ent., 57 : 167.

*Pipunculus (Eudorylas) macropygus* : Hardy, 1968, Ent. Meddel., 36 : 453; - 1972, Oriental Ins. Suppl., 2 : 53. — Yano, 1979, Esakia, 13 : 47. — Yano et al., 1984, Trans. Shikoku ent. Soc., 16 (4) : 64.

*Pipunculus chalybeus* Brunetti, 1923, Fauna British India, Dipt., 3 : 15.

*Host* : Unknown.

*Distribution* : Japan (Okinawa), Taiwan, Thailand, Philippines, Nepal, India, Java, New Ireland, New Britain.

*Remarks* : This species is firstly recorded in Japan by Yano et al. (1984) based on two male specimens from Okinawa. The female of this species has been still unknown from Japan. Hardy (1968) redescribed this species based on the specimens of both sexes from the Philippines. The illustrations of important characters are shown in Fig. 81E-G.

### ***Eudorylas roralis* (Kertész)**

*Pipunculus roralis* Kertész, 1915, Ann. Mus. Nat. Hung., 13 : 389.

*Pipunculus (Eudorylas) roralis* : Hardy, 1968, Ent. Meddel., 36: 461. - 1972, Proc. Haw. ent. Soc., 21 (1) : 90. — Lin, 1974, Jour. Taiwan Agri. Res., 23 : 112. — Yano et al., 1984, Trans. Shikoku ent. Soc., 16 (4) : 62.

*Host* : In Japan (Okinawa) and Taiwan *Nephotettix cincticeps* Uhler.

*Distribution* : Japan (Honshu, Tsushima, Okinawa), Taiwan, Thailand, Philippines.

*Remarks* : This species is well-redescribed by Hardy (1968) based on the specimens from the Philippines. Yano et al. (1984) firstly recorded this species from Japan. The illustrations of important characters are shown in Fig. 97E-H.

***Eudorylas ligo*** Morakote et Yano, sp. n.**Female** (Fig. 98A and B).

Moderately large, brownish grey species slightly wider than face, slightly convex at middle, entirely cinereous ; antennae all black (Fig. 98B), third segment rather wide, pointed below.

Thorax and scutellum almost bare ; humeri black in ground color,

Legs black except tip of femora and tibiae and four basal tarsomeres yellowish ; tibiae with posteroapical spur ; pulvilli longer than last tarsal segment.

Wings hyaline, stigma extending back to tip of Sc, about as long as next costal section ; r-m situated slightly before basal third of discal medial cell ; last section of vein M1 almost straight ; cell R5 as shown in Fig. 99D.

Abdomen almost entirely bare, tergite 1 with a row of some short bristles ; tergites 2-5 subequal in length ; tergite 6 slightly longer than tergite 5 ; ovipositor (Fig. 98A) rather large, with subglobular base ; piercer thick, strongly upcurved, about 1.5 times as long as base, basal third shining black.

Length : Body 3.6 mm ; wing 4.7 mm.

**Male** : Unknown.

**Holotype** : ♀ (Type No. 2756, Kyushu Univ.), Goshikinuma, Urabandai, Fukushima Pref., Honshu, 9. vii. 1985 (R. Morakote).

**Paratypes** : (Hokkaido) 2 ♀♀, Sounkyo, Mt. Daisetsu, Kamikawa, 26. vi. 1986 ; 1 ♀, Misumai, Sapporo Ishikari, Hokkaido, 24. vi. 1986 ; all were collected by R. Morakote.

**Host** : Unknown.

**Distribution** : Japan (Hokkaido, Honshu).

***Eudorylas subligo*** Morakote et Yano, sp. n.**Female** (Fig. 98C).

This species is closely similar to *E. ligo* but differing as follows : Legs mainly yellow, coxae black ; femora brownish at basal half ; third costal section of wing about as long as next costal section ; ovipositor piercer (Fig. 98C) less upcurved than in *E. ligo*, entirely yellow.

Length : Body 4.2 mm ; wing 5.2 mm.

**Male** : Unknown.

**Holotype** : ♀ (Type No. 2757, Kyushu Univ.), Boudo-toge, Asahi-mura, Niigata Pref., Honshu, 2. vii. 1985 (R. Morakote).

**Paratype** : 1 ♀, Natsui, Kurokawa, Niigata, Pref., Honshu, 3. vii. 1985 (R. Morakote).

**Host** : Unknown.

**Distribution** : Japan (Honshu).

***Eudorylas pinquis*** Morakote et Yano, sp. n.**Female** (Fig. 98D).

Moderately large, dull greyish species. Frons as wide as face, almost entirely

greyish but shining black at middle as a longitudinal streak ; antennae all black, third segment oval shape.

Thorax and scutellum dull greyish, almost bare ; humeri black in ground color.

Legs entirely black except apex of femora and narrow base of tibiae ; pulvilli yellow, slightly smaller than last tarsal segment ; femora with a row of short and thick hairs posteromedially ; tibiae without posteroapical spur.

Wings iridescent, slightly tinged with brown ; stigma dark brown, extending back to tip of Sc, about as long as next costal section ; r-m situated about middle of discal median cell ; last section of vein M1 very undulating.

Abdomen (Fig. 98D) moderately large in proportion to the body ; tergites 2-5 subequal in length ; tergite 6 longest, about three to four times as long as tergite 5 ; abdominal sternite with conspicuous black hairs near posterior margin; ovipositor rather large and stout, short ; no constriction between base and piercer, gradually narrowing from base to tip of piercer, strongly upcurved; piercer about length of base.

Length : Body 5.5 mm ; wing 5.5 mm.

**Male** : Unknown.

**Holotype** : ♀ (Type No. 2758, Kyushu Univ.), Mt. Hikosan, Fukuoka Pref., Kyushu, 8. v. 1985 (R. Morakote).

**Paratypes** : Same location as holotype, 1 ♀, 22. v. 1985 ; 1 ♀, 23. v. 1985 ; 1 ♀, 19. vi. 1985 ; 1 ♀, Boudo-toge, Asahimura, Niigata Pref., 2. vii. 1985 ; all specimens above were collected by R. Morakote.

**Host** : Unknown.

**Distribution** : Japan (Honshu, Kyushu).

### ***Eudorylas ashoroensis*** Morakote et Yano, sp. n.

**Female** (Fig. 99A and B).

Rather small species. Face very narrow, dull black ; frons greyish but with longitudinal shining black streak medianly ; antennae with third segment yellowish, oval shape.

Thorax and scutellum almost bare, dull greyish to brownish; humeri black in ground color.

Legs mainly black except apex of femora, tibiae and four basal tarsomeres yellowish ; tibiae with conspicuous posteroapical spur ; pulvilli yellowish, about twice as long as last tarsal segment.

Wings hyaline, stigma brownish, extending back to tip of Sc, about as long as next costal section ; r-m situated slightly after basal third of discal medial cell ; last section of vein M1 almost straight.

Abdomen (Fig. 99A) almost bare, dull brownish black, long cylindrical shape ; tergite 1 with a row of some short bristle anterolaterally ; tergites 1-5 subequal in size ; tergite 6 slightly longer than tergite 5 ; ovipositor (Fig. 99A and B) with small globular base and rather large piercer ; piercer about 2.5-3 times as long as base, thick when seen in lateral view.

Length : Body 3.2 mm ; wing 4.3 mm.

**Male** : Unknown.

**Holotype** : ♀ (Type No. 2759, Kyushu Univ.), Ashoro, Tokachi, Hokkaido, 2. vi.

1986 (R. Morakote).

*Host* : Unknown.

*Distribution* : Japan (Hokkaido).

***Eudorylas misericors*** Morakote et Yano, sp. n.

**Female** (Fig. 99C).

Moderately large species. Frons about twice as wide as face, dull black ; antennae with two basal segments black, third segment long acuminate, yellowish.

Thorax and scutellum dull greyish, almost bare ; humeri dull luteous.

Legs mainly black ; femora yellowish at extreme base and tip ; tibiae yellowish, without any apical spur ; four basal tarsomeres yellowish ; pulvilli slightly smaller than last tarsal segment.

Wings hyaline, stigma brownish, extending back to tip of Sc, about as long as next costal section ; r-m situated about basal fourth of discal median cell ; last section of vein M1 almost straight.

Abdomen (Fig. 99C) greyish pruinose, with sparsely short pubescence on tergites ; tergites 2-5 subequal in length ; tergite 6 slightly longer than tergite 5 ; ovipositor with subglobular base ; piercer yellowish, strongly upcurved, about twice as long as base.

Length : Body 4.8 mm ; wing 5.6 mm.

**Male** : Unknown.

*Holotype* : ♀ (Type No. 2760, Kyushu Univ.), Nukabira, Kamishihoro, Tokachi, Hokkaido 29. vi. 1986 (R. Morakote).

*Paratype* : 1 ♀, Akankohan, Mt. O-akan, Kushiro, Hokkaido, 3. vii. 1986 (R. Morakote).

*Host* : Unknown.

*Distribution* : Japan (Hokkaido).

***Eudorylas focus*** Morakote et Yano, sp. n.

**Female** (Fig. 100A and B).

Small dull greyish brown species. Frons as wide as face, entirely cinereous, face silvery pubescence ; antennae all black, third segment narrow and deep, rostrate.

Thorax and scutellum bare, dull greyish brown ; humeri dull luteous.

Legs mainly black except apex of femora, tibiae and four basal tarsomeres yellowish ; tibiae with conspicuous posteroapical spur ; pulvilli long, about twice as long as last tarsal segment.

Wings hyaline, stigma brownish, extending back to tip of Sc, about as long as next costal section ; r-m situated slightly after basal third of discal median cell ; last section of vein M1 almost straight.

Abdomen (Fig. 100A and B) almost bare, dull, opaque grey ; tergites 2 and 5 equal in length, longest ; tergite 6 slightly shorter than tergite 5 ; ovipositor base rather flat ; ovipositor piercer very thin as seen from side, about twice as long as base.

Length : Body 3.3 mm ; wing 4 mm.

**Male** : Unknown.

*Holotype* : ♀ (Type No. 2761, Kyushu Univ.), Iitatemura, Mt. Abukuma, Fuku-

shima Pref., Honshu, 7. vii. 1985 (R. Morakote).

*Paratypes*: 2 ♀♀, Toyama, Honshu, 19. ix. 1958 (S. Takagi) ; 2 ♀♀, Kamidake, Toyama, Honshu, 20. ix. 1958 (S. Takagi).

*Host*: Unknown.

*Distribution*: Japan (Honshu).

***Eudorylas cygnus*** Morakote et Yano, sp. n.

**Female** (Fig. 100C and D).

Moderately large, dull greyish species. Frons as wide as face, entirely cinereous, face silvery pubescence ; antennae (Fig. 100D) with two basal segments black, third segment yellowish, long acuminate.

Thorax almost bare, dull brownish to greyish ; humeri dull luteous.

Legs black except apex of femora ; tibiae without any posteroapical spur ; pulvilli as long as last tarsal segment.

Wings hyaline, stigma extending back to tip of Sc, about as long as next costal section ; r-m situated about basal three-sevenths of discal median cell ; last section of vein M1 almost straight.

Abdomen (Fig. 100C) dull brownish grey, almost bare ; tergite 2 widest then gradually narrowing to succeeding tergites ; tergites 2-6 subequal in length ; ovipositor moderately large ; piercer straight, about twice as long as base.

Length : Body 4.8 mm ; wing 5.5 mm.

**Male** : Unknown.

*Holotype*: ♀, Apoi, Hokkaido, 4. vii. 1963 (T. Kumata), in the collection of Hokkaido University.

*Paratypes*: 2 ♀♀, Mt. Daisetsu, Hokkaido, 10. vii. 1952 (S. Takagi).

*Host* : Unknown.

*Distribution*: Japan (Hokkaido).

*Remarks*: This species has the ovipositor like that of *E. monothrix* Hardy but differs by having the almost entirely black legs (almost entirely yellow in *E. monothrix*).

***Eudorylas productus*** Morakote et Yano, sp. n.

**Female** (Fig. 100E).

Moderately large, dull greyish species. Frons slightly wider than face, dull black ; face silvery pubescence ; antennae all black, third segment oval.

Thorax dull greyish, bare except notopleuron with some short fine hairs ; humeri black in ground color.

Legs black except apex of femora and narrow base of tibiae yellowish ; tibiae without posteroapical spur ; last tarsal segment small ; pulvilli about half as long as last tarsal segment.

Wings hyaline, stigma brownish, extending back to tip of Sc, about as long as next costal section ; r-m situated about basal third of discal median cell ; last section of vein M1 very undulating.

Abdomen (Fig. 100E) dull greyish, almost bare ; tergites 2-5 subequal in length ;

tergite 6 about twice as long as tergite 5 ; ovipositor without constriction between base and piercer, strongly upcurved ; piercer about twice as long as base.

Length: Body 4.5 mm; wing 5 mm.

**Male** : Unknown.

**Holotype** : ♀ (Type No. 2762, Kyushu Univ.), Iitatemura, Mt. Abukuma, Fukushima Pref., Honshu, 18. vi. 1985 (R. Morakote).

**Paratypes** : 1 ♀, Sapporo, no date, Matsumura Coll. ; 1 ♀, Apoi, Hokkaido, 22. vii. 1959 (K. Kamijo) ; 1 ♀, Sapporo, Hokkaido, 12. viii. 1967 (M. Suwa).

**Host** : Unknown.

**Distribution** : Japan (Hokkaido, Honshu).

***Eudorylas brevisalus*** Morakote et Yano, sp. n.

**Female** (Fig. 101A and B).

Moderately large black species. Frons much convex at middle, about as wide as face, dull black. Antennae of specimen lost.

Thorax and scutellum black, almost bare ; humeri dull luteous.

Legs mainly black except apex of femora, tibiae and tarsi yellowish ; tibiae with obscurely brownish black marking at middle posteriorly, without any posteroapical spur ; pulvilli as long as last tarsal segment.

Wings (Fig. 101B) shorter than body, hyaline, stigma brownish, extending back to tip of Sc, about as long as next costal section ; r-m situated slightly before basal third of discal median cell ; last section of vein M1 slightly undulating ; third and fourth section of vein M1 with vertical fork vein which is rather short as shown in Fig. 101B.

Abdomen (Fig. 101A) rather long in proportion to the body, black, almost bare ; tergites 2-5 subequal in length ; tergite 6 longest, slightly longer than tergite 5 ; ovipositor base very small, subglobular ; piercer about twice as long as base, straight.

Length : Body 5.6 mm ; wing 4.5 mm.

**Male** : Unknown.

**Holotype** : ♀ (Type No. 2763, Kyushu Univ.), Mt. Hikosan, Fukuoka Pref., Kyushu, 8. ix. 1968 (Hikosan Biol. Lab. Coll.).

**Host** : Unknown.

**Distribution** : Japan (Kyushu).

***Eudorylas duocollis*** Morakote et Yano, sp. n.

**Female** (Fig. 102A-C).

Moderately large greyish species. Frons about as wide as face, slightly convex on upperhalf, dull black, face silvery pubescence ; antennae with two black basal segments ; third segment yellowish, long acuminate.

Thorax and scutellum dull greyish, almost bare ; humeri dull luteous.

Legs with black coxae ; femora with black ring at base which extending as a pointed streak to near apex posterodorsally ; otherwise yellowish ; pulvilli about twice as long as last tarsal segment.

Wings hyaline, stigma brownish, extending back to tip of Sc, slightly shorter than next costal section ; r-m situated about basal third of discal median cell ; last section



of vein M1 slightly undulating.

Abdomen (Fig. 102A) dull greyish, almost bare, tergites 2-4 subequal in length, tergite 5 longest, about twice as long as tergite 6 ; ovipositor (Fig. 102A-C) rather large ; base conspicuously bilobed at apex, with deep furrow between the two lobes ; piercer brownish black, slightly longer than base.

Length : Body 5 mm ; wing 5.5 mm.

**Male** : Unknown.

*Holotype*: ♀, Nopporo, Sapporo, Hokkaido. 25. v. 1970 (M. Suwa), in the collection of Hokkaido University.

*Paratype*: 1 ♀, same location and collector as holotype, 17. v. 1970.

*Host* : Unknown.

*Distribution* : Japan (Hokkaido).

***Eudorylas maleficus*** Morakote et Yano, sp. n.

**Female** (Fig. 103A and B).

Ocellar triangle shining black ; frons slightly wider than face, slightly convex at middle, mainly cinereous with longitudinal median shining black streak ; antennae all black, third segment stout, pointed below.

Thorax and scutellum almost bare, scutellum with some short marginal bristles ; humeri black in ground color.

Legs entirely black, pulvilli smaller than last tarsal segment ; tibiae without any posteroapical spur.

Wings hyaline, stigma brownish, extending back to tip of Sc, about twice as long as next costal section ; r-m situated slightly after basal third of discal median cell ; last section of vein M1 almost straight.

Abdomen (Fig. 103A) opaque grey, with some sparsely black pubescence ; tergites 2-4 subequal in length ; tergite 5 black pubescence ; tergites 2-4 subequal in length ; tergite 5 shorter than tergite 4 ; tergite 6 abnormally enlarged as shown in Fig. 103B ; ovipositor small, with globular base ; piercer short, strongly upcurved.

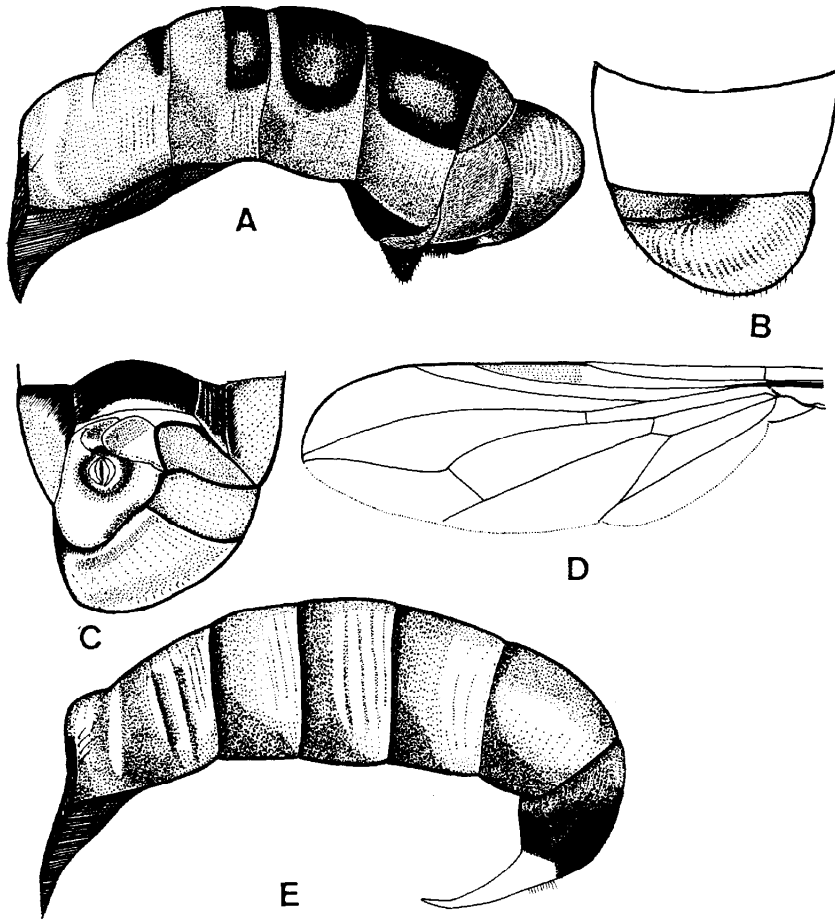
Length : Body 4.8 mm ; wing 6 mm.

**Male** : Unknown.

*Holotype*: ♀ (Type No. 2764, Kyushu Univ.), Kurokawa, Niigata Pref., 12. x. 1982 (K. Baba).

*Host* : Unknown.

*Distribution* : Japan (Honshu).



**Fig. 61.** *Eudorylas fustis* Morakote et Yano, sp. n. : A. Male abdomen, lateral ; B and C. male abdominal terminalia (B. dorsal, C. ventral) ; D. wing ; E. female abdomen, lateral.

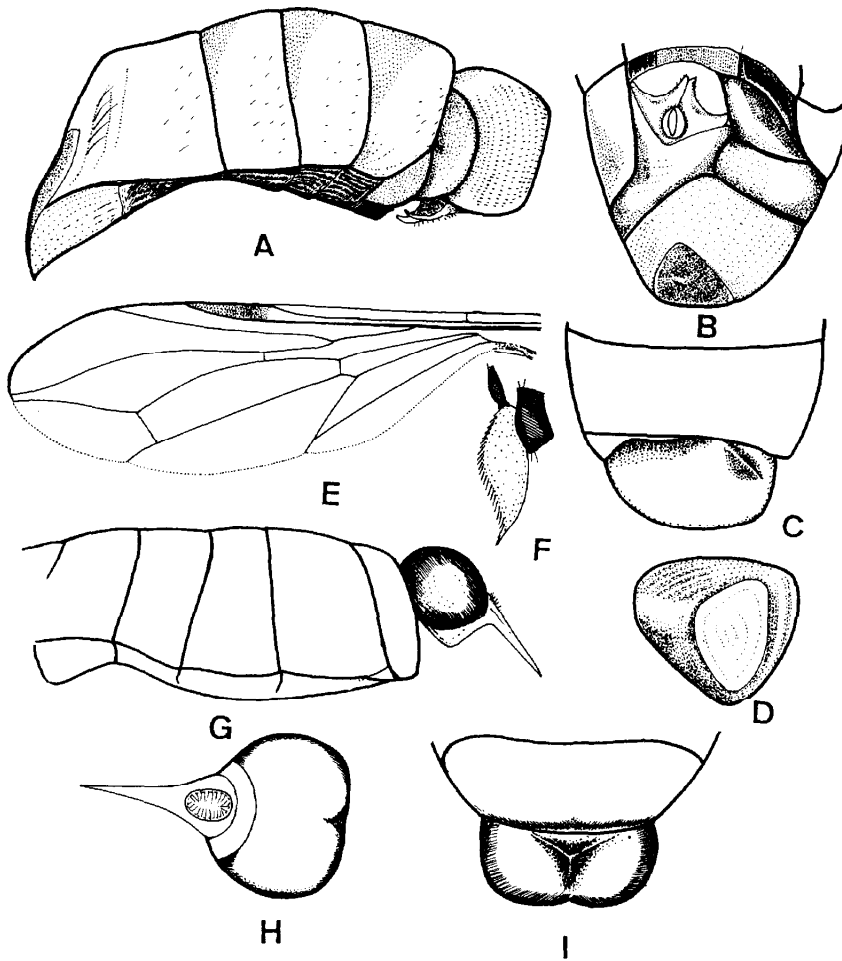
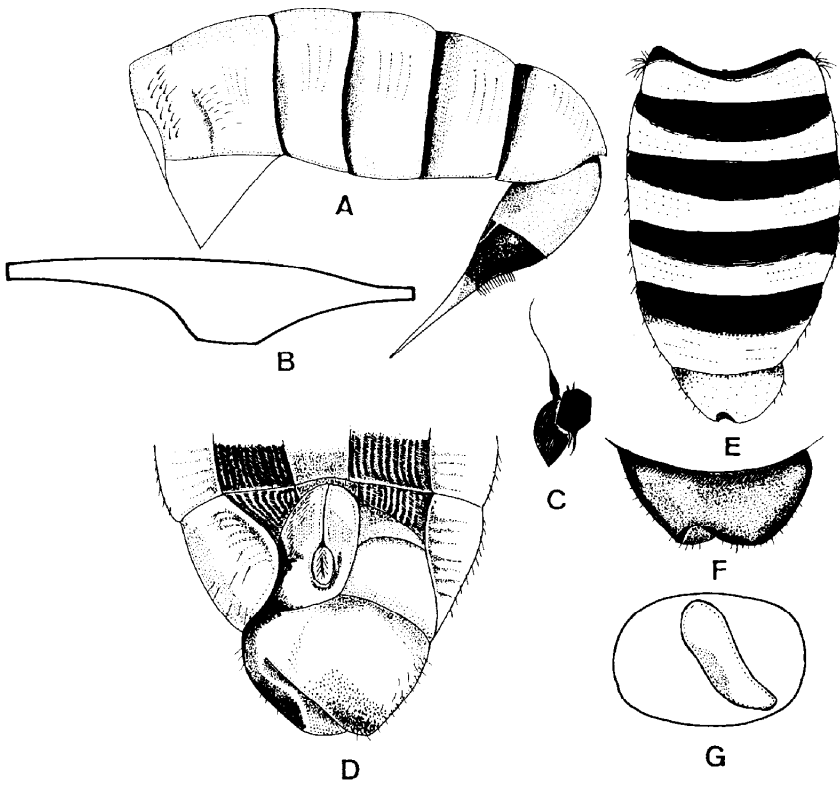


Fig. 62. *Eudorylas jenkinsoni* Coe : A. Male abdomen, lateral ; B and C. male abdominal terminalia (B. ventral, C. dorsal) ; D. male abdominal segment 8, behind ; E. wing ; F. antenna ; G. female abdomen, lateral ; H and I. female ovipositor.



**Fig. 63.** *Eudorylas diagonalis* Morakote et Yano, sp. n. : A. Female abdomen, lateral ; B. cell R5 of wing ; C. antenna ; D. male abdominal terminalia, ventral ; E. male abdomen, dorsal ; F and G. male abdominal segment 8 (F. dorsal, G. behind).

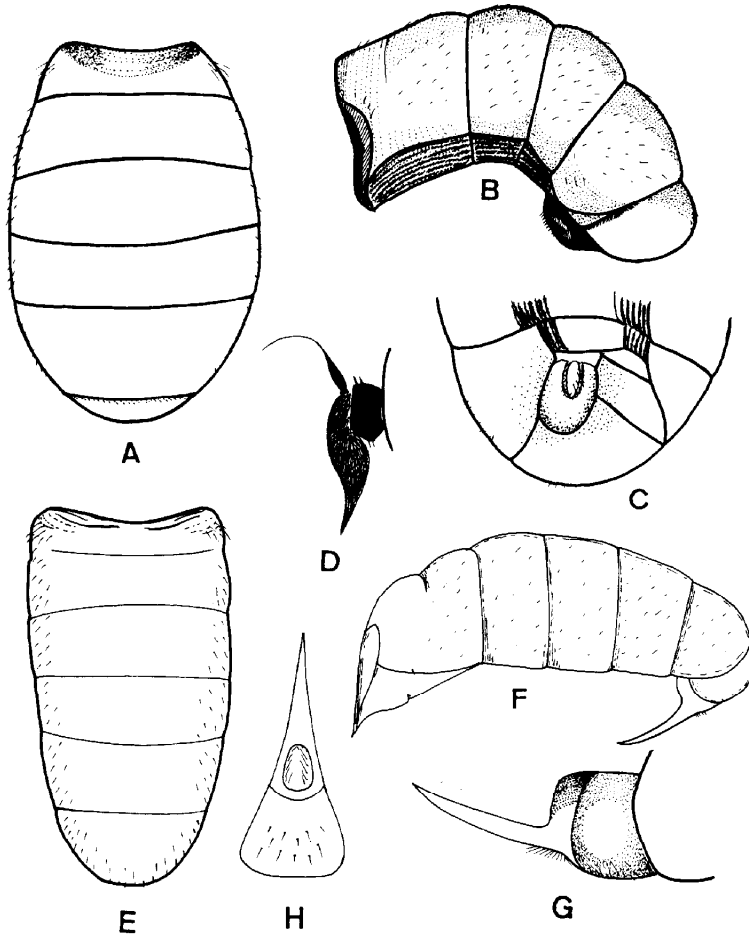


Fig. 64. *Eudorylas hokkuidoensis* Morakote et Yano, sp. n. : A and B. Male abdomen (A. dorsal, B. lateral) ; C. male abdominal terminalia, ventral ; D. antenna ; E and F. female abdomen (E. dorsal, B. lateral) ; G and H. female ovipositor.

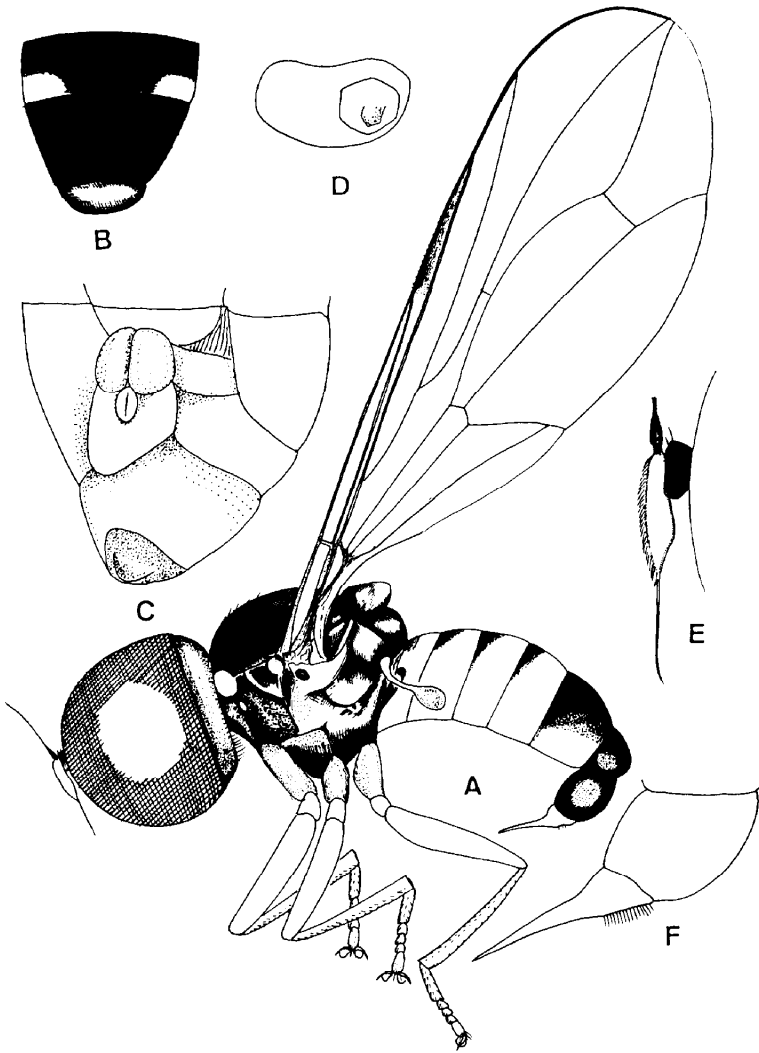
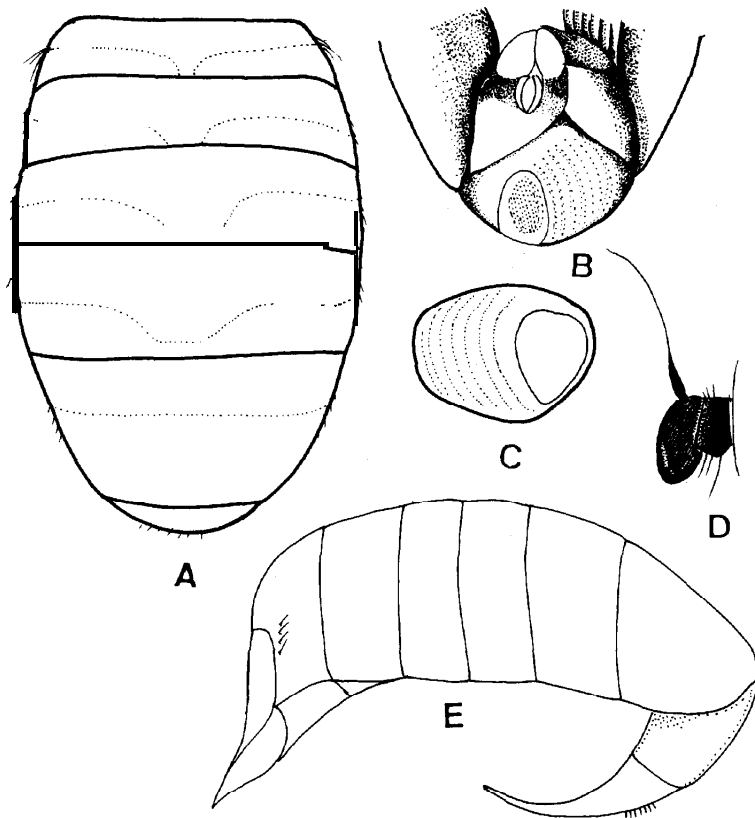
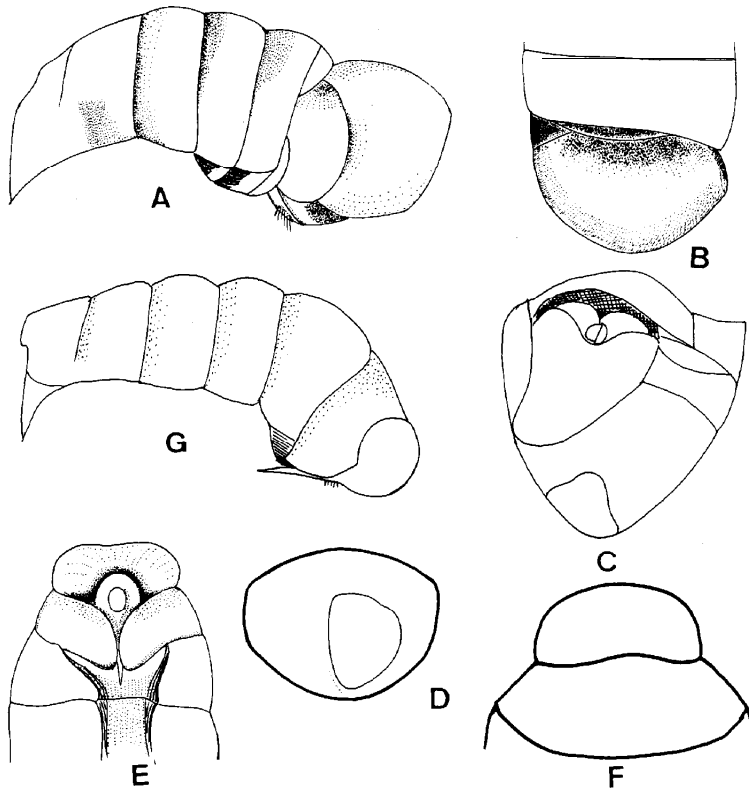


Fig. 65. *Eudorylas luteiventris* Morakote et Yano, sp. n. : A. Female; B and C. male abdominal terminalia (B. dorsal, C. ventral) ; D. male abdominal segment 8, behind ; E. antenna ; F. ovipositor, lateral.

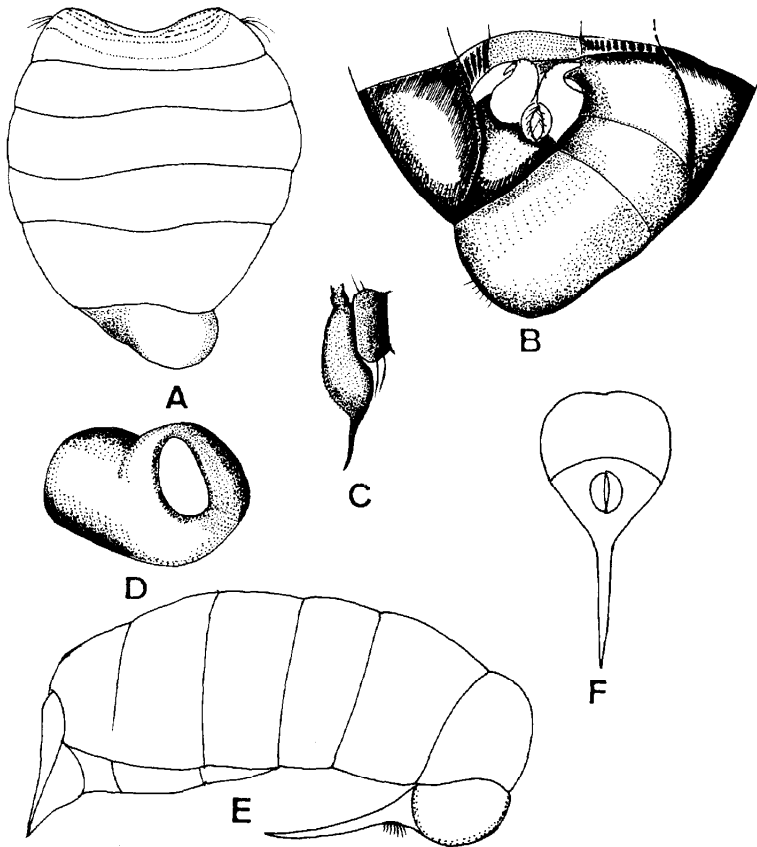


**Fig. 66.** *Eudorylas expletirubus* Morakote et Yano, sp. n. : A. Male abdomen, dorsal ; B. male abdominal terminalia, ventral ; C. male abdominal segment 8, behind ; D. antenna; E. female abdomen.



**Fig. 67.** *Eudorylas fascipes* Zetterstedt : A. Male abdomen, lateral ; B and C. male abdominal terminalia (B. dorsal ; C. ventral) ; D. male abdominal segment 8, behind ; E. female abdomen, ventral ; F and G. female abdominal terminalia (F. dorsal, G. ventral).





**Fig. 68.** *Eudorylas latistomachus* Morakote et Yano, sp. n. ; A. Male abdomen, dorsal ; B. male abdominal terminalia, ventral ; C. antenna ; D. male abdominal segment 8, behind ; E. female abdomen, lateral ; F. ovipositor, ventral.

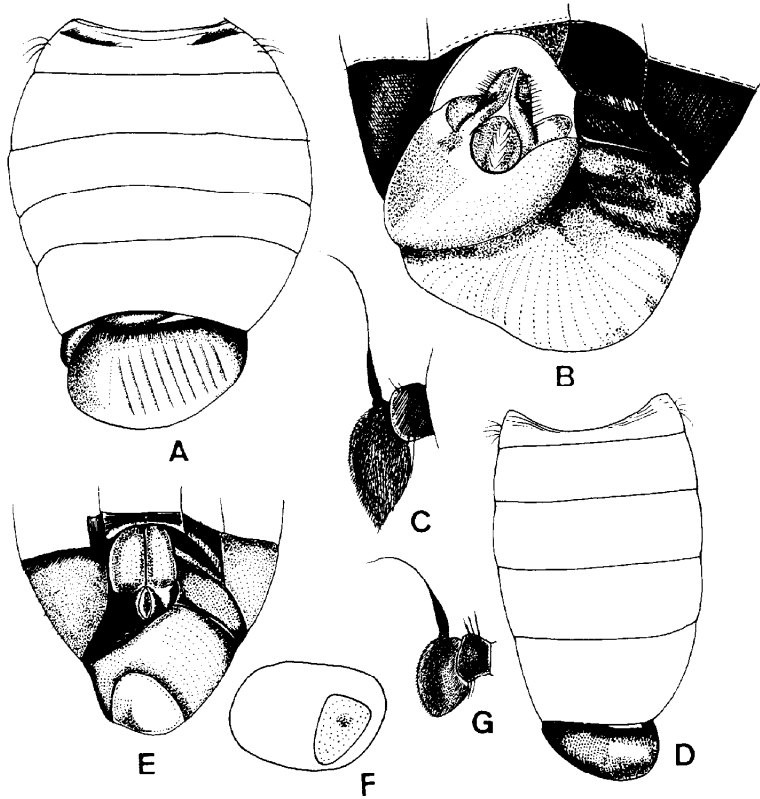
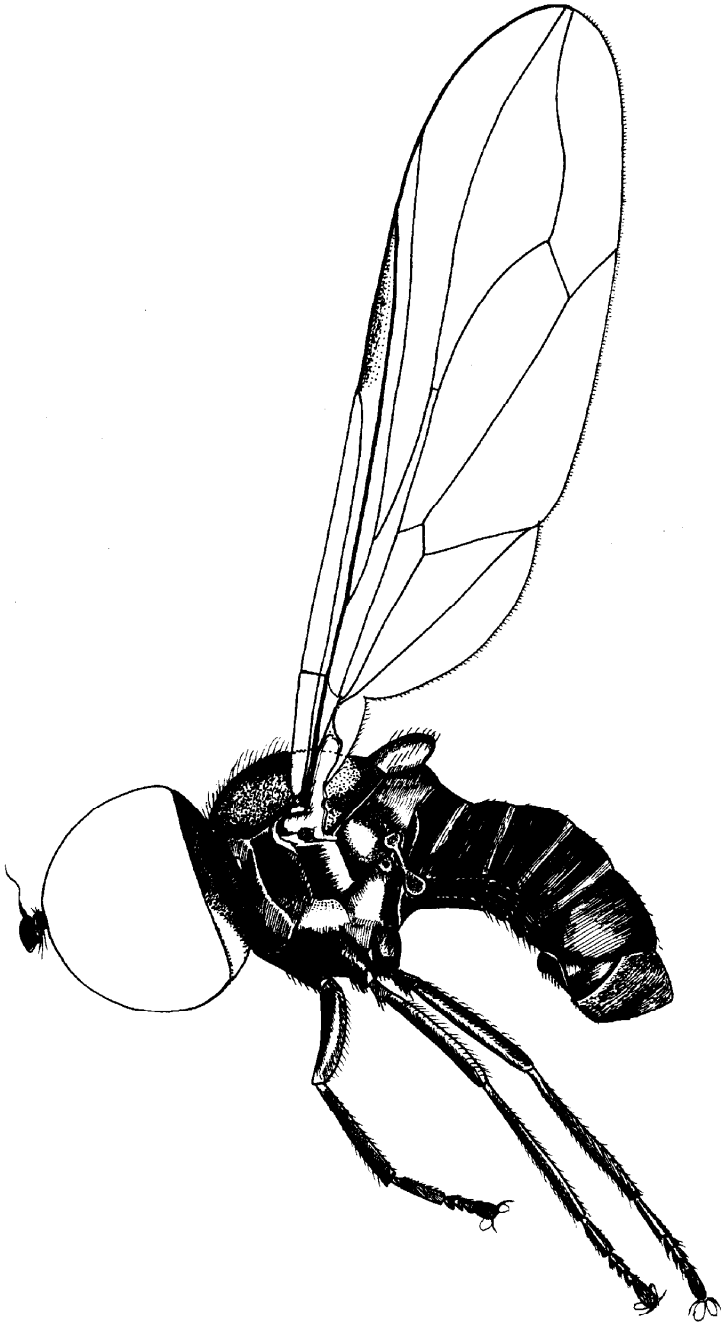
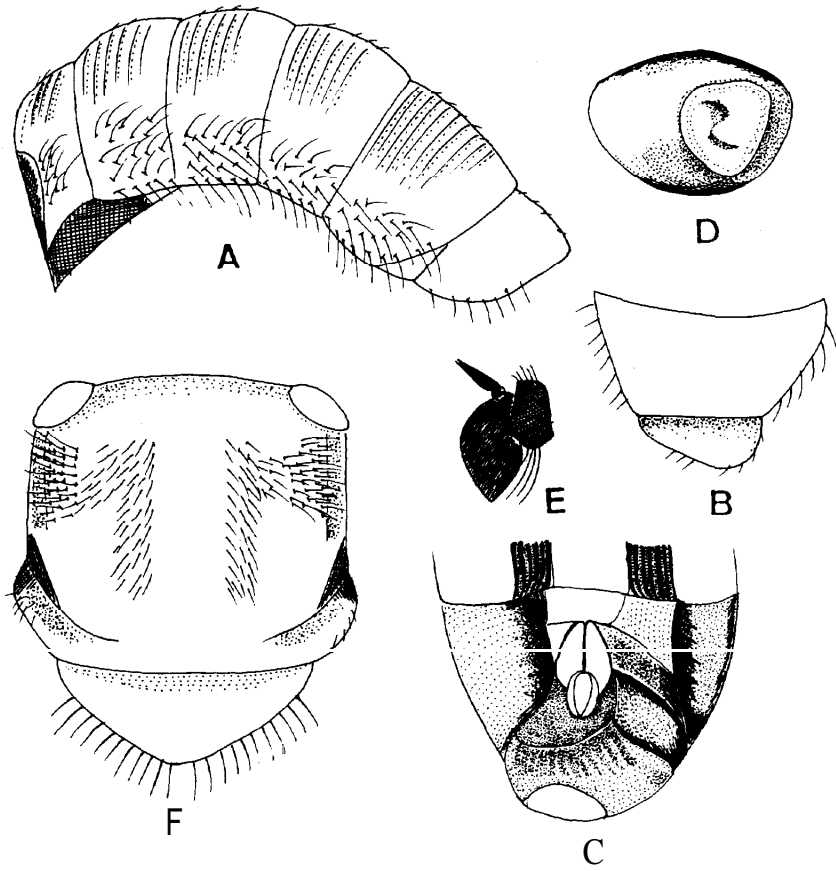


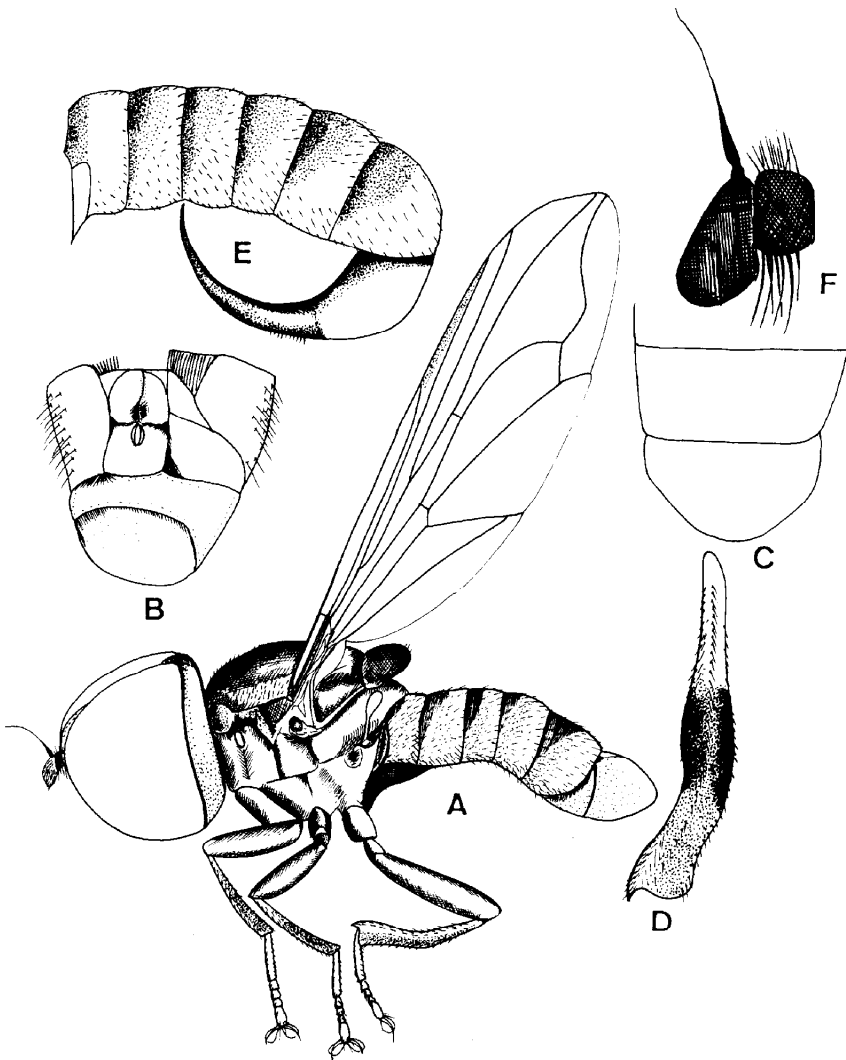
Fig. 69. A-C. *Eudorylas largexitus* Morakote et Yano sp. n. (male) : A. Abdomen, dorsal ; B. abdominal terminalia, ventral, C. antenna. D-G. *Eudorylas rudis* Morakote et Yano, sp. n. (male) : D. abdomen, dorsal ; E. abdominal terminalia, ventral ; F. abdominal segment 8, behind ; G. antenna.



**Fig. 70.** Male of *Eudorylas ocularis* (Matsumura) (male).



**Fig. 71.** *Eudorylas ocularis* (Matsumura) (male) : A. Abdomen, lateral ; B and C. abdominal terminalia (B. dorsal ; C. ventral) ; E. antenna ; F. thorax, dorsal.



**Fig. 72.** *Eudorylas longistigmus* Morakote et Yano, sp. n. (A-F, male): A. Body, lateral; B and C. abdominal terminalia (B. ventral; C. dorsal); D. hind tibia, anterior; E. female abdomen, lateral; F. antenna.

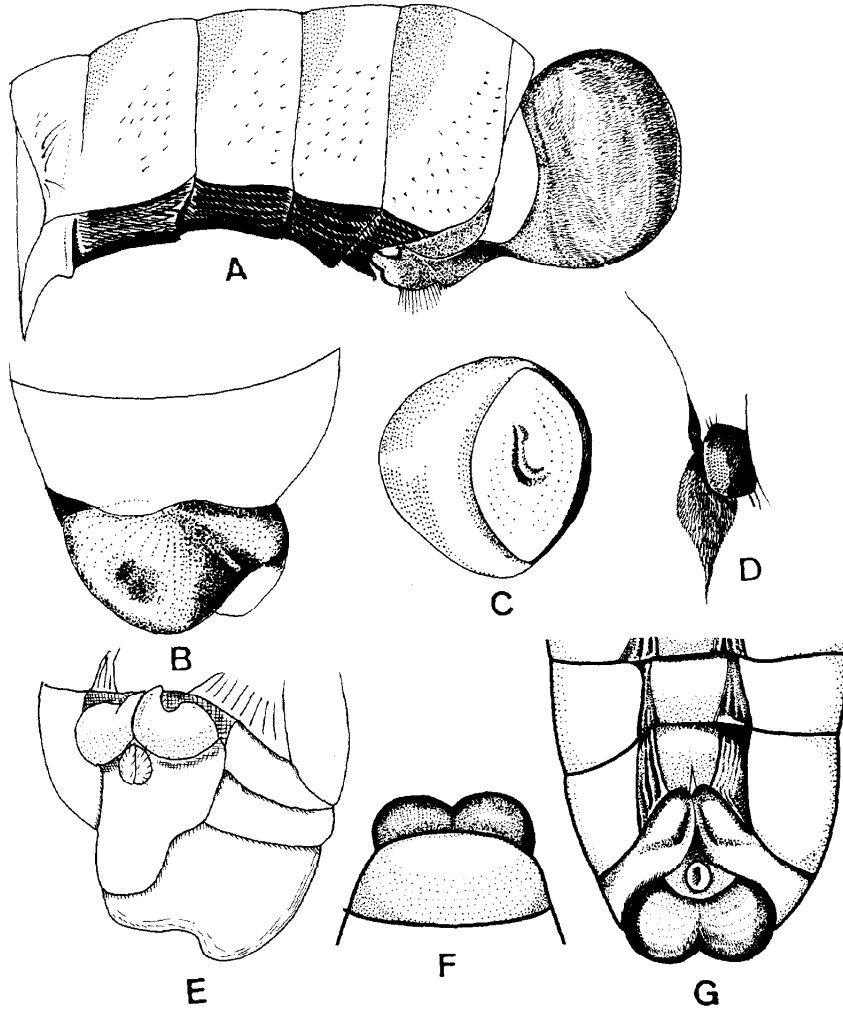
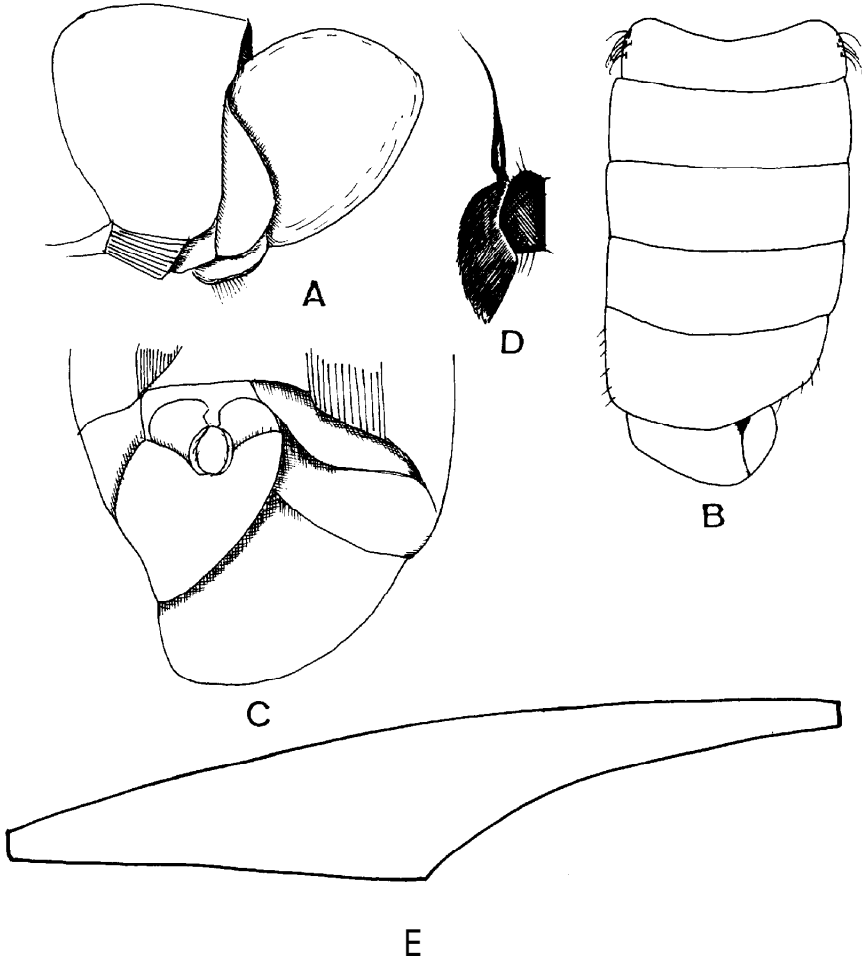


Fig. 73. *Eudorylas subfascipes* Collin (A-E, male) : A. Abdomen, lateral ; B. abdominal terminalia, dorsal ; C. abdominal segment 8, behind ; D. antenna ; E. abdominal terminalia, ventral ; F and G. female abdominal terminalia, (F. dorsal, G. ventral).



**Fig. 74.** *Eudorylas cralimes* Morakote et Yano, sp. n. (male) : A and C. Abdominal terminalia (A. lateral, C. ventral) ; B. abdomen, dorsal ; D. antenna ; E. cell R5 of wing.

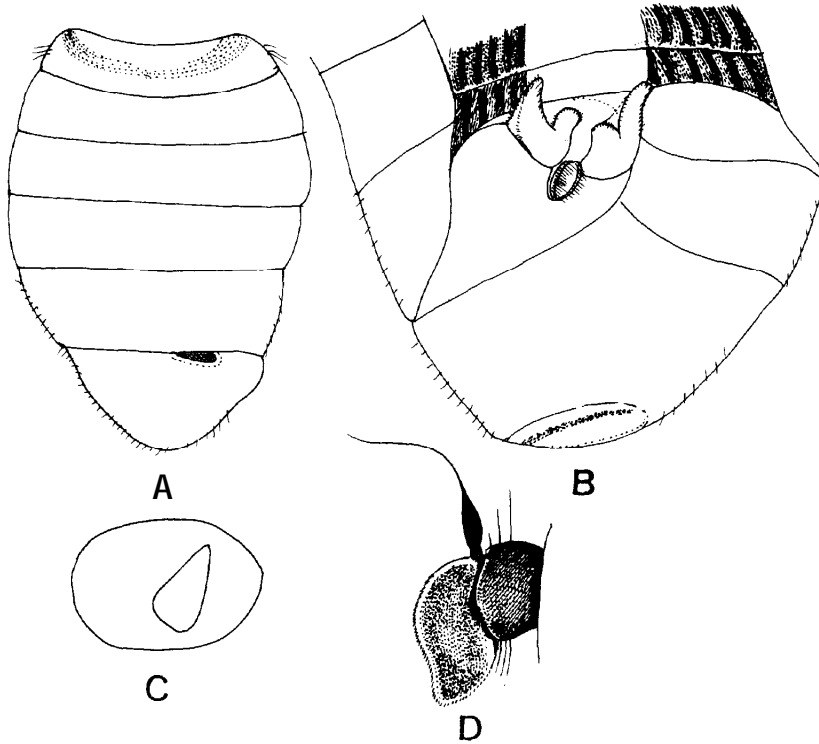
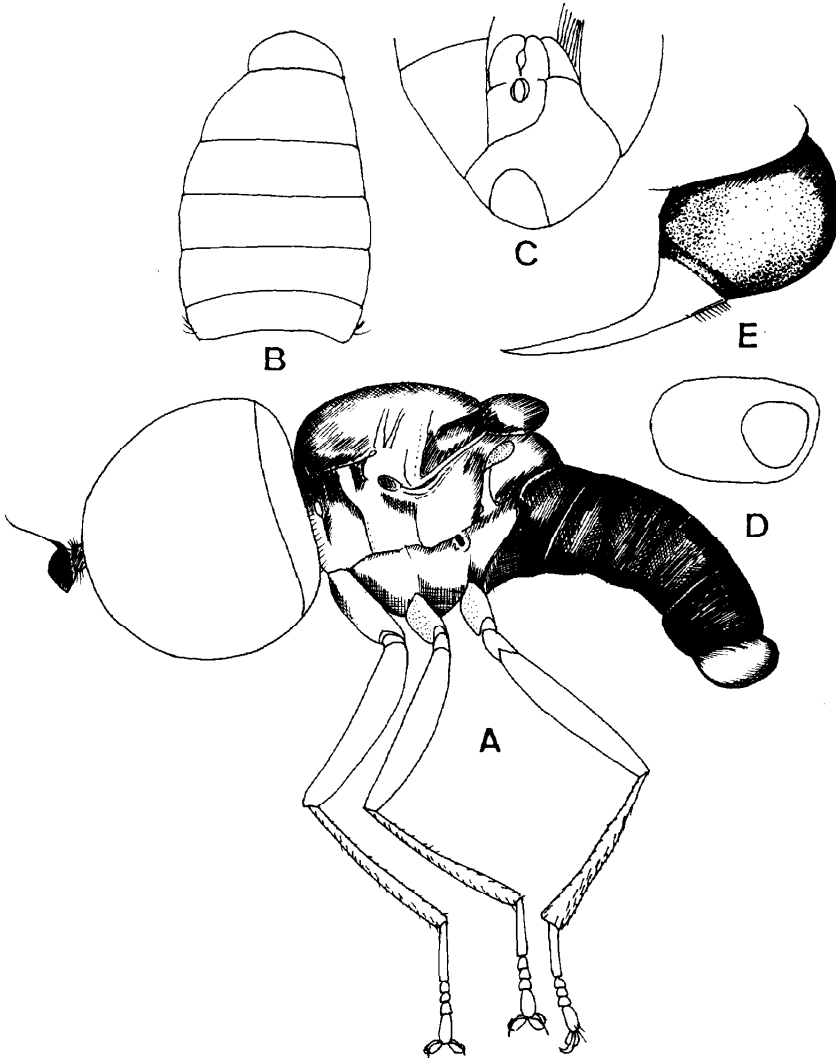


Fig. 75. *Eudorylas oscen* Morakote et Yano, sp. n. (male) : A. Abdomen, dorsal ; B. abdominal terminalia, ventral ; C. abdominal segment 8, behind ; D. antenna.





**Fig. 76.** *Eudorylas gilvipes* Morakote et Yano, sp. n. (A-D, male) : A. Body, lateral ; B. abdomen, dorsal ; C. abdominal terminalia, ventral ; D. abdominal segment 8, behind ; E. female ovipositor, lateral.

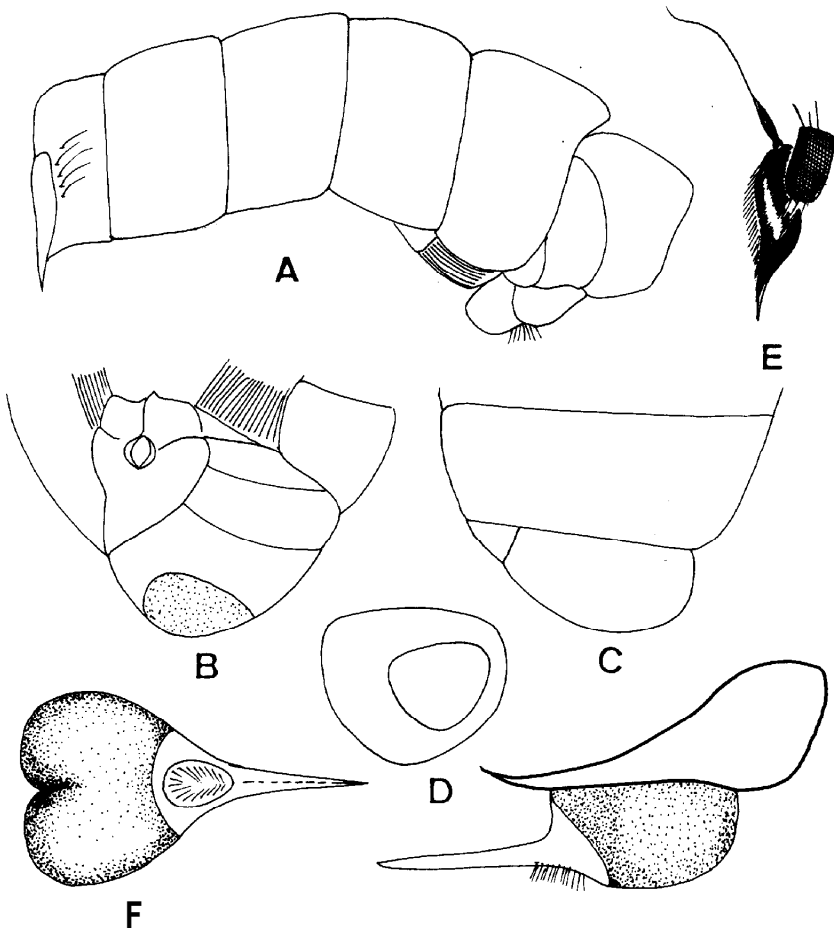


Fig. 77. *Eudorylas nomurai* Morakote et Yano, sp. n. (A-E, male) : A. Abdomen, lateral ; B and C. abdominal terminalia (B. dorsal, C. ventral) ; D. abdominal segment 8, behind ; E. antenna ; F and G. female ovipositor.

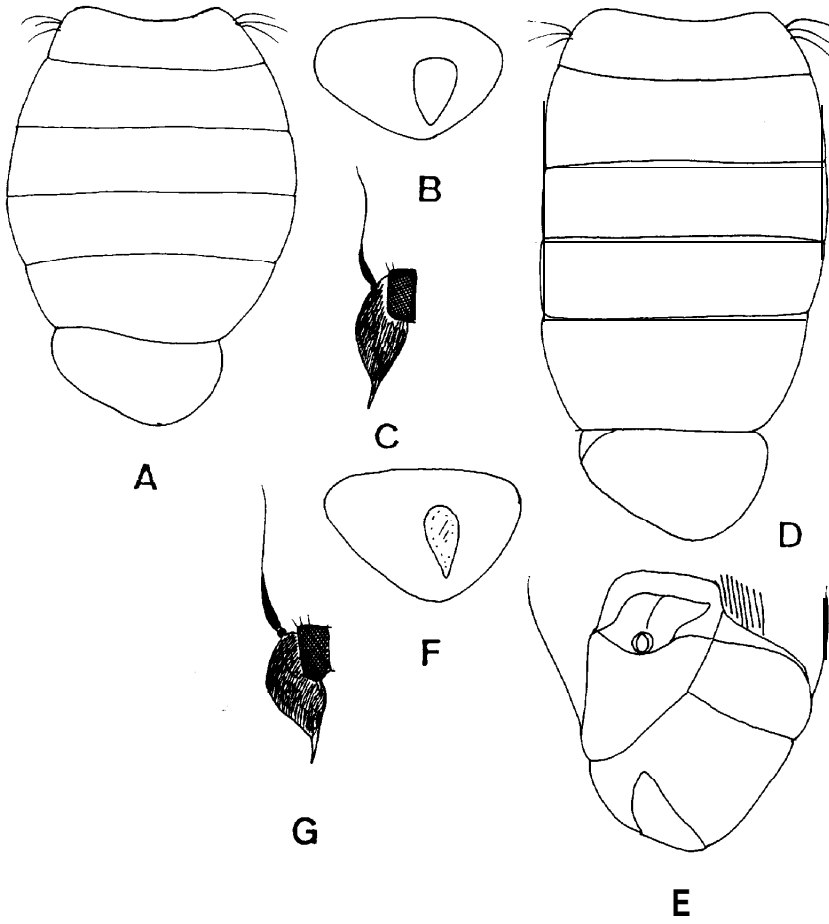
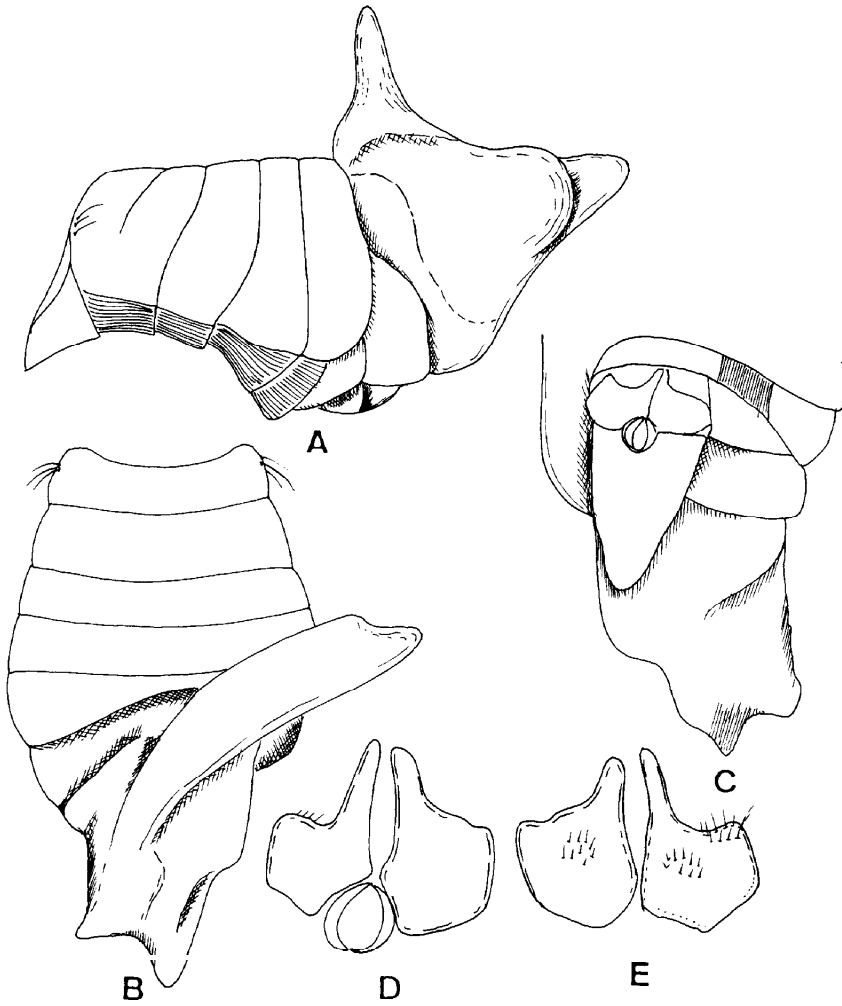
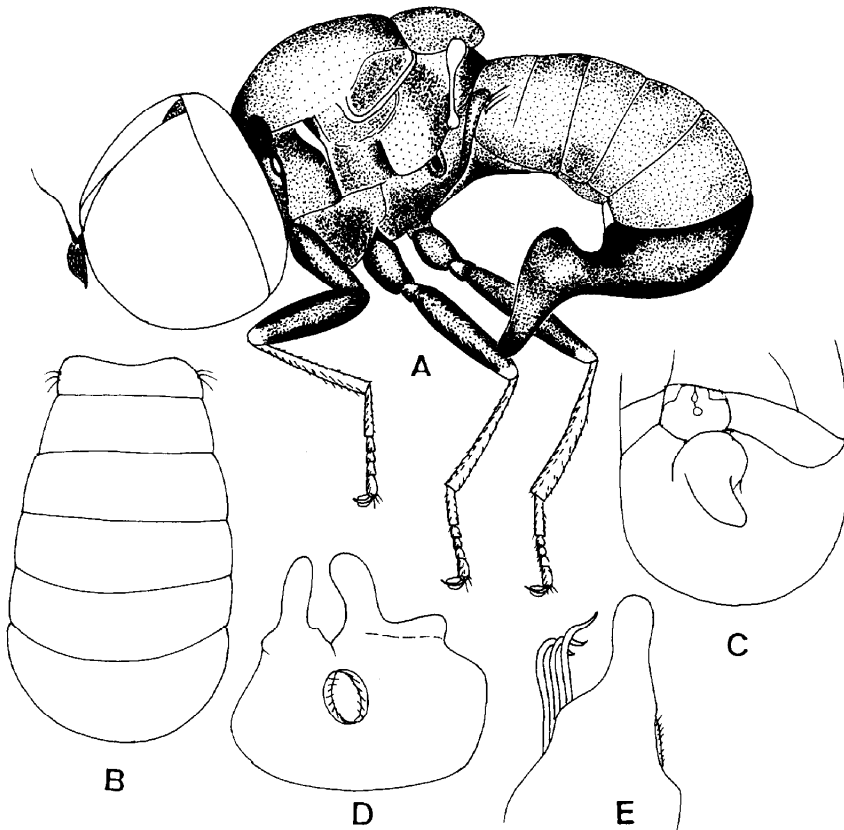


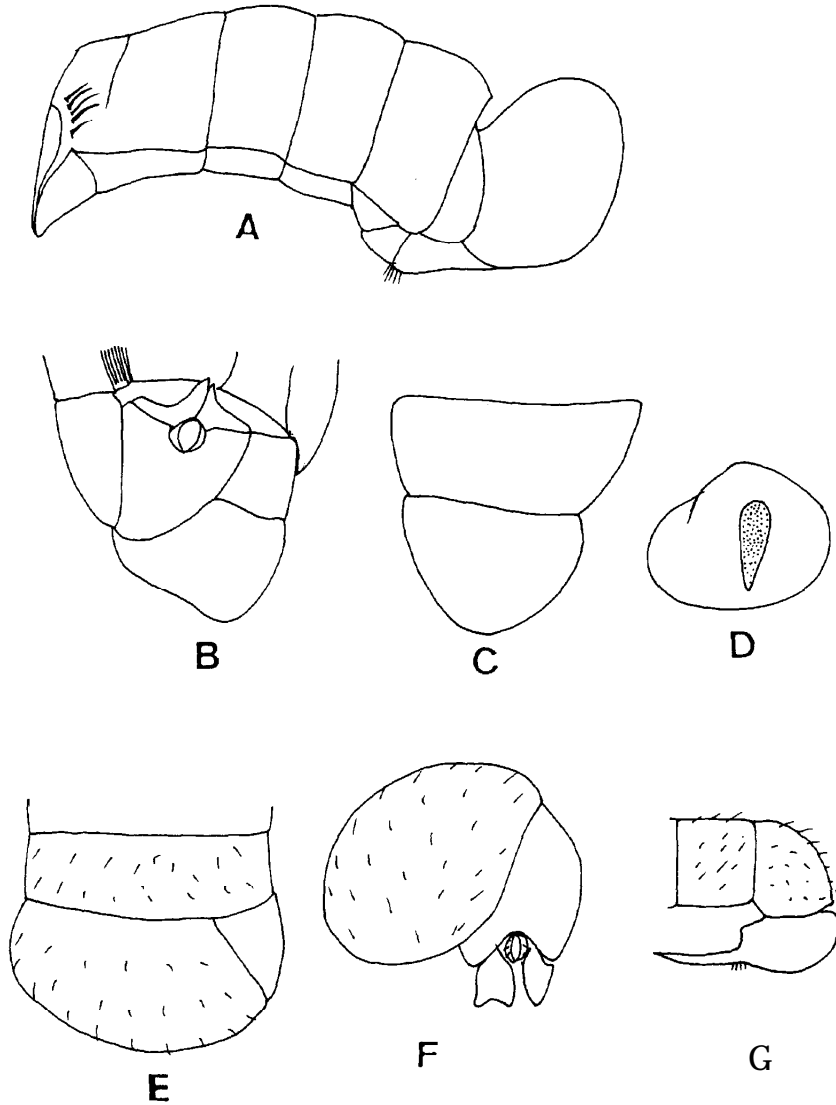
Fig. 78. A-C. *Eudorylas fukushimaensis* Morakote et Yano, sp. n. (male) : A. abdomen, dorsal ; B. abdominal segment 8, behind ; C. antenna. D-G. *E. inopscolor* Morakote et Yano, sp. n. (male) : D. Abdomen, dorsal ; E. abdominal terminalia, ventral ; F. abdominal segment 8, behind ; G. antenna.



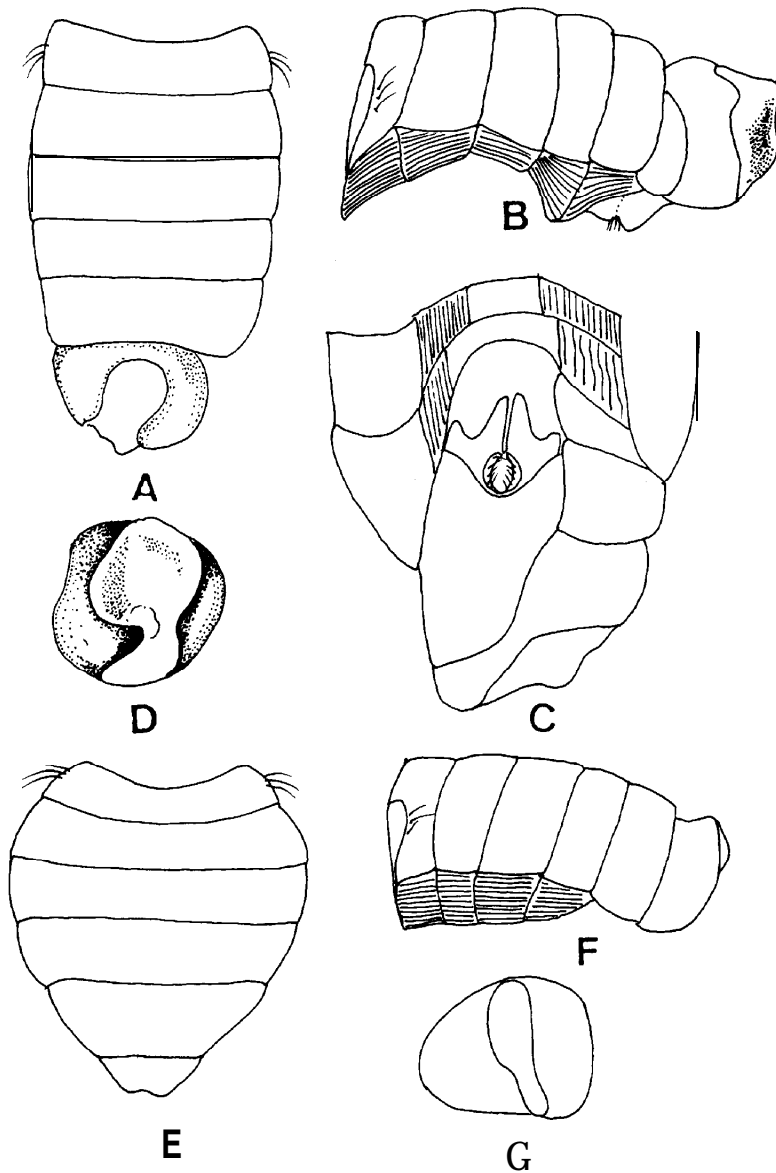
**Fig. 79.** *Eudorylas abnorexitus* Morakote et Yano, sp. n. (male) : A and B. Abdomen (A. lateral ; B. dorsal) ; C. abdominal terminalia, ventral ; D and E. genital surstyli (E. dorsal, B. ventral).



**Fig. 80.** *Eudorylas nasus* Morakote et Yano, sp. n. (male) : A. Body, lateral ; B. abdomen, lateral ; C. abdominal terminalia, ventral ; D. epandrium and surstyli, dorsal ; E. genitalia, lateral.



**Fig. 81.** A-D. *Eudorylas suwai* Morakote et Yano, sp. n. (male) : A. abdomen, lateral ; B and C. abdominal terminalia (B. ventral, C. dorsal) ; D. abdominal segment 8, behind. E-G. *E. macropygus* de Meijere (Copy from Hardy, 1968) : E and F. Male abdominal terminalia (E. dorsal, F. ventral) ; G. female ovipositor, lateral.



**Fig. 82.** A-D. *Eudorylas oshimaensis* Morakote et Yano, sp. n. (male) : A and B. Abdomen (A. dorsal, B. lateral) ; C. abdominal terminalia, ventral ; D. abdominal segment 8, behind. E-G. *E. minutus* Morakote et Yano, sp. n. (male) : E and F. Abdomen (E. dorsal, F. lateral) ; G. abdominal segment 8, behind.

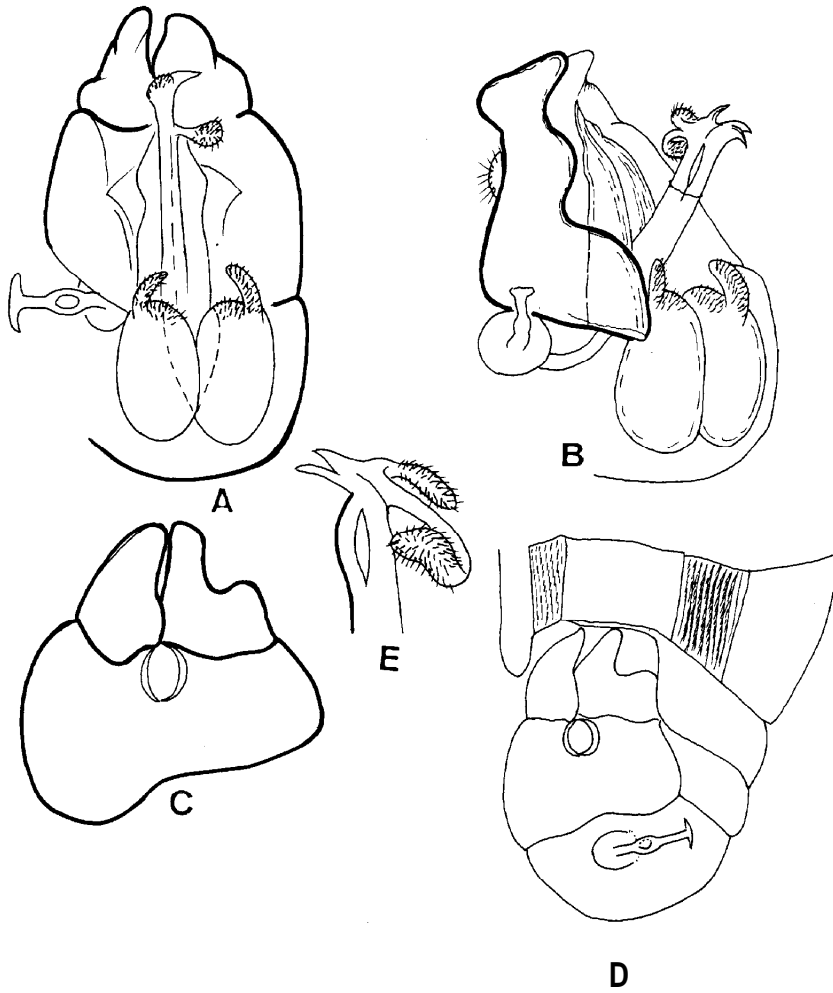
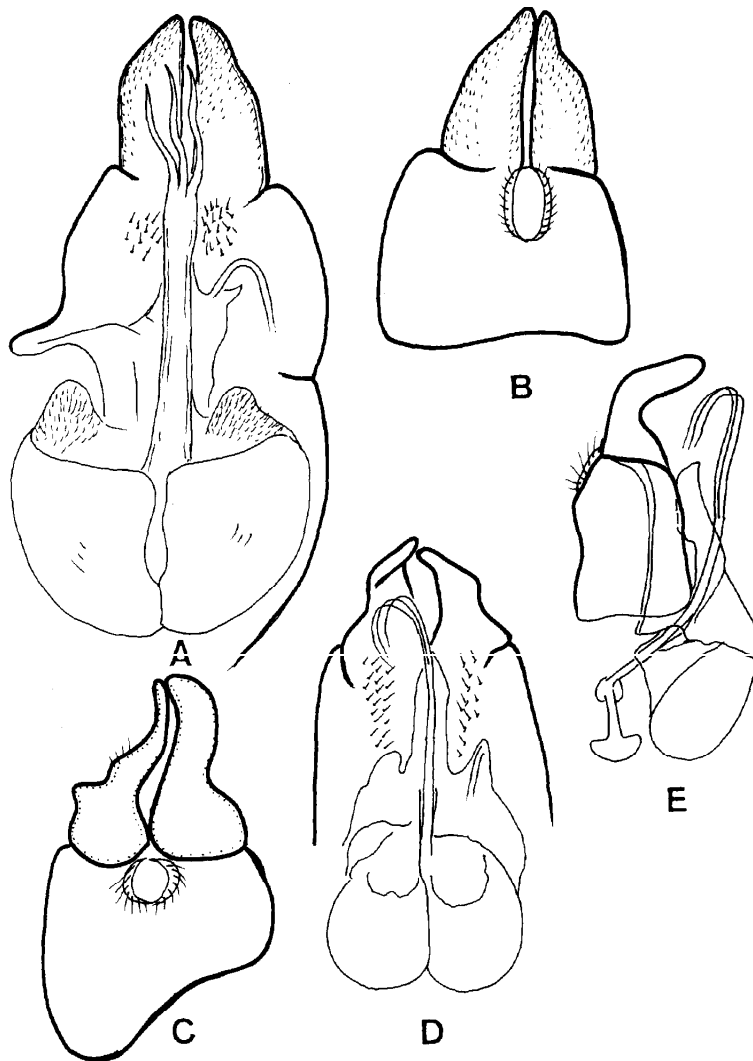
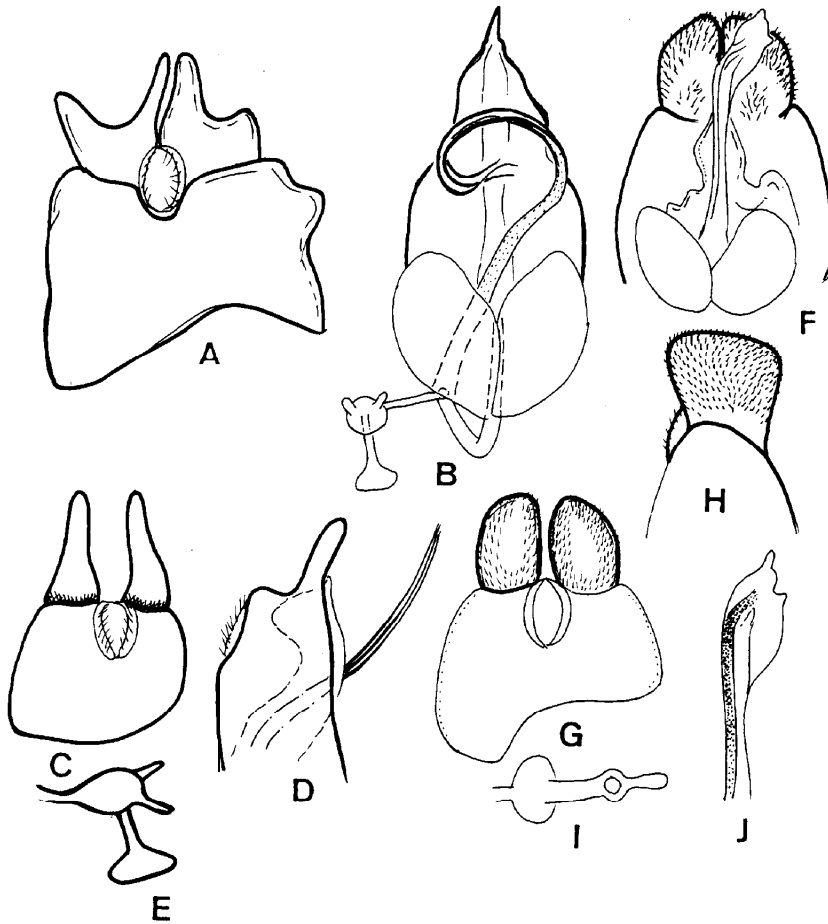


Fig. 83. *Eudorylas fustis* Morakote et Yano, sp. n. (male) : A and B. Genitalia (A. dorsal, B. lateral) ; C. epiandrium and surstyli ; D. abdominal terminalia, ventral ; E. apex of aedeagus, dorsal.





**Fig. 84.** A-B. *Eudorylas diagonalis* Morakote et Yano, sp. n. (male): A. Genitalia, dorsal ; B. epandrium and surstyli, dorsal. C-F. *E. fukushimaensis* Morakote et Yano, sp. n. (male) : C. epandrium and surstyli, dorsal ; D and F. genitalia (D: dorsal, F: lateral).



**Fig. 85.** A and B. Male genital parts of *Eudorylas jenkinsoni* Coe; C-E. male genital parts of *E. hokkaidoensis* Morakote et Yano, sp. n. ; F-J. male genital parts of *E. expletirubus* Morakote et Yano, sp. n. A. epandrium and surstyli, dorsal; B. genitalia, dorsal; C. epandrium and surstyli, dorsal; D. genitalia, lateral; E. ejaculatory apodeme; F. genitalia, dorsal; G. epandrium and surstylf, dorsal; H. surstyli, lateral; I. ejaculatory apodeme; J. aedeagus, lateral.

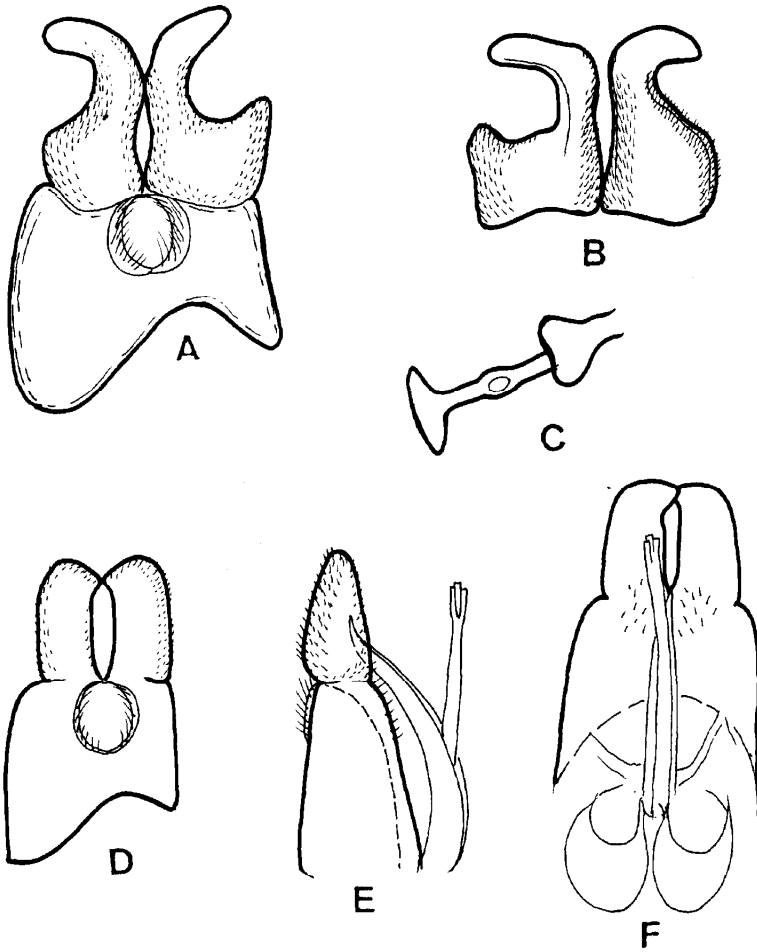


Fig. 86. A-C. Male genital parts of *Eudorylas latistomachus* Morakote et Yano, sp. n. ; D-F. male genital parts of *E. rudis* Morakote et Yano, sp. n. A. epandrium and surstyli, dorsal ; B. surstyli, ventral ; C. ejaculatory apodeme ; D. epandrium and surstyli, dorsal ; E. genitalia, lateral ; F. genitalia, dorsal.

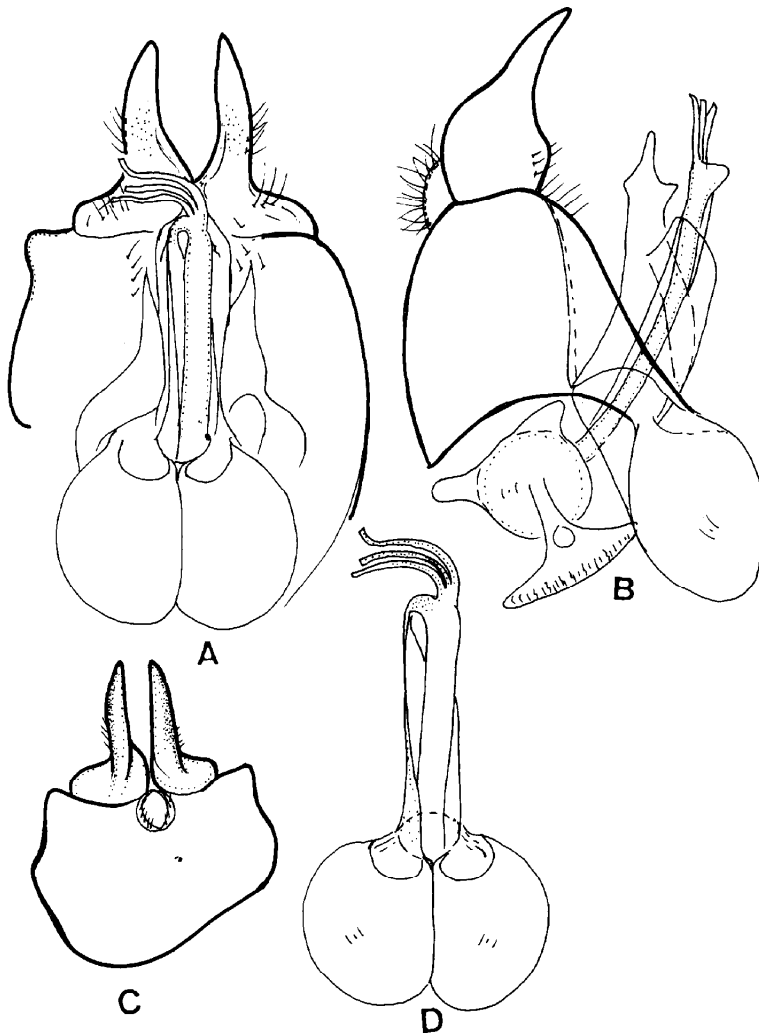
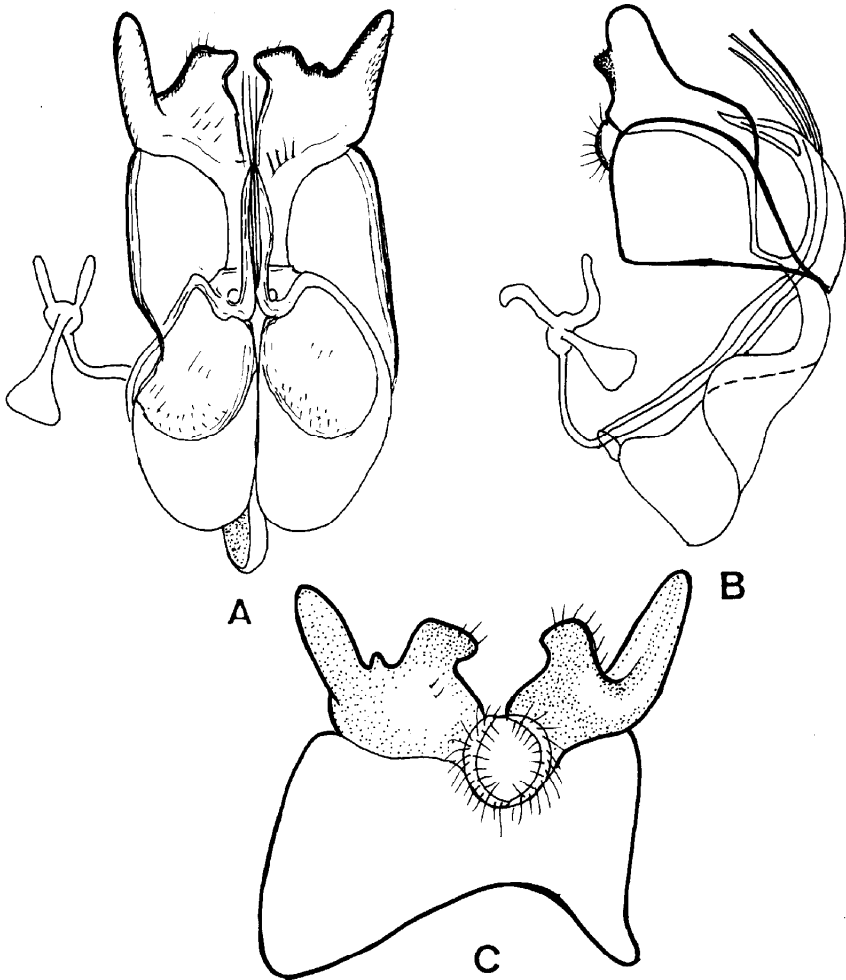
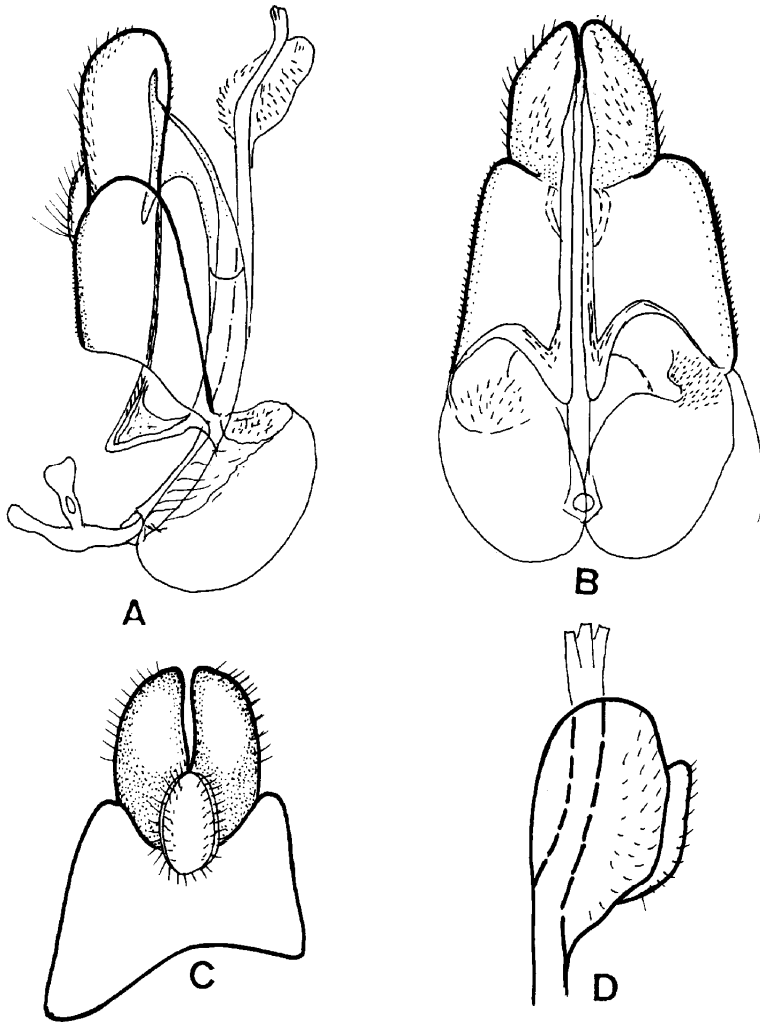


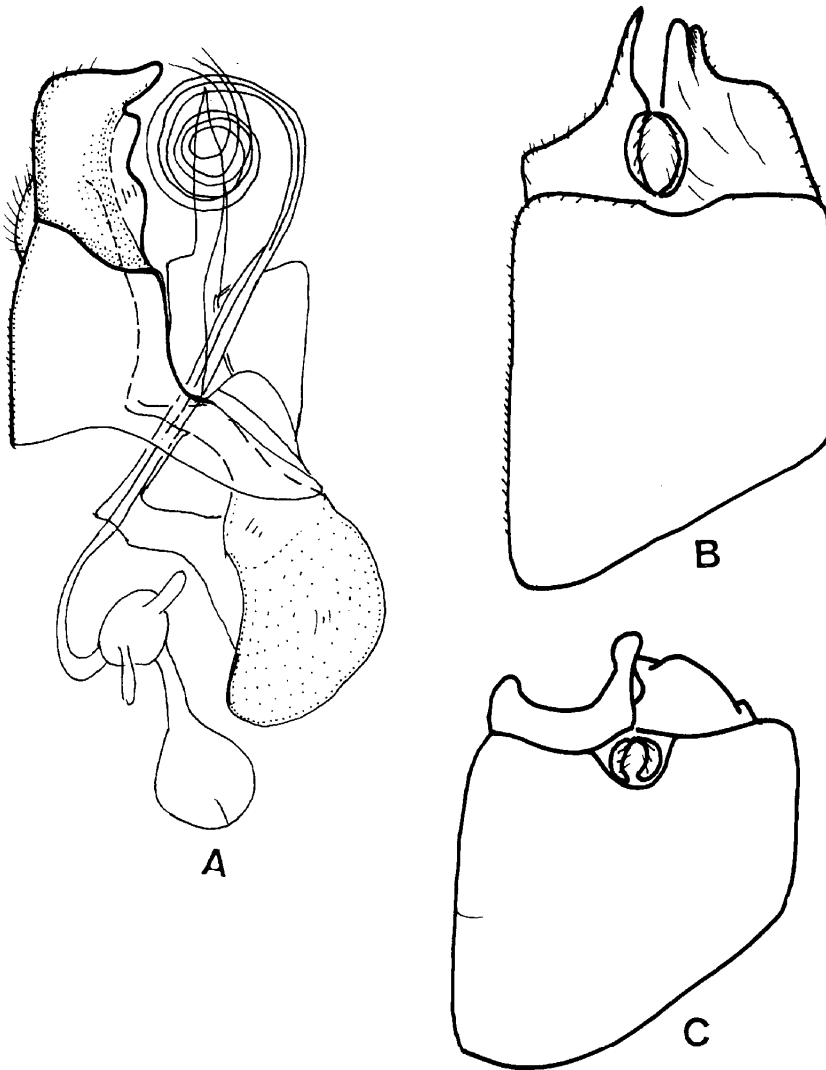
Fig. 87. Male genitalia and genital parts of *Eudorylas largexitus* Morakote et Yano, sp. n. A. dorsal ; B. lateral ; C. epandrium and surstyli, dorsal ; D. hypandrium and aedeagus, dorsal.



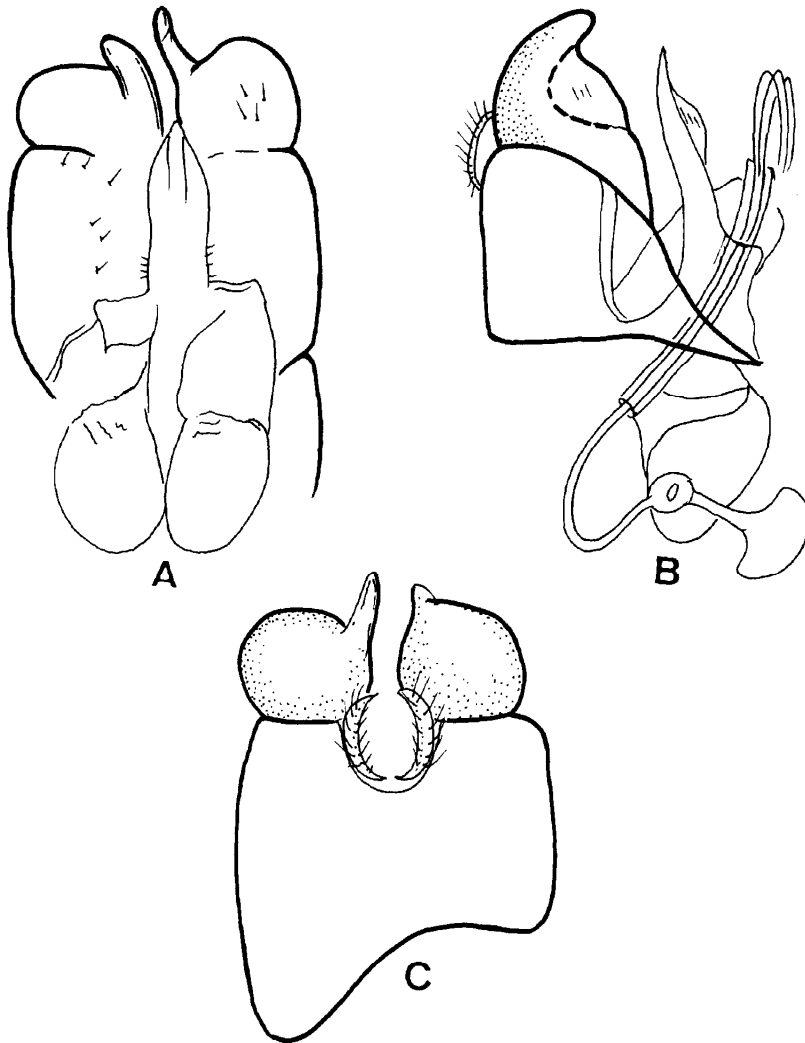
**Fig. 88.** Male genitalia and genital parts of *Eudorylas oscen* Morakote et Yano, sp. n. A. dorsal ; B. lateral ; C. epandrium and surstyli, dorsal.



**Fig. 89.** Male genitalia and genital parts of *Eudorylas ocularis* (Matsumura). A. lateral ; B. dorsal ; C. epandrium and surstyli, dorsal ; D. apex of aedeagus, lateral.

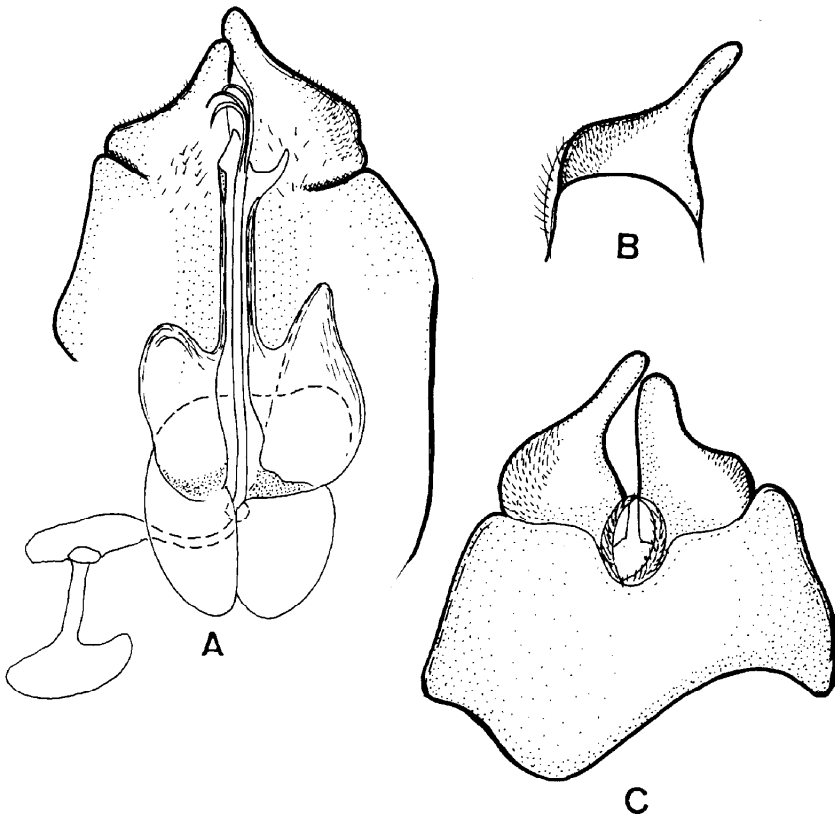


**Fig. 90.** A and B. Male genitalia and genital parts of *Eudorylas subfascipes* Collin ; C. Epandrium and surstyli of *E. fascipes* (Zetterstedt), dorsal.

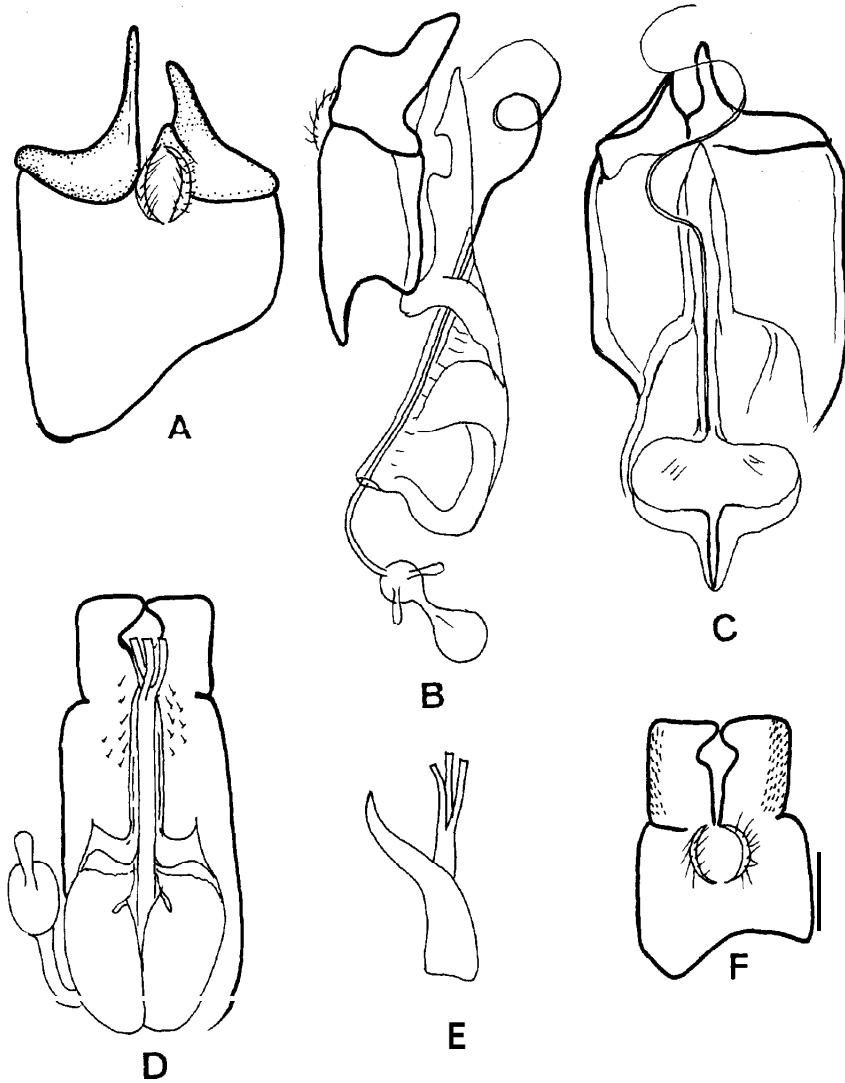


**Fig. 91.** Male genitalia and genital parts of *Eudorylas nomurai* Morakote et Yano, sp. n. A. genitalia, dorsal ; B. ditto, lateral ; C. epandrium and surstyli, dorsal.

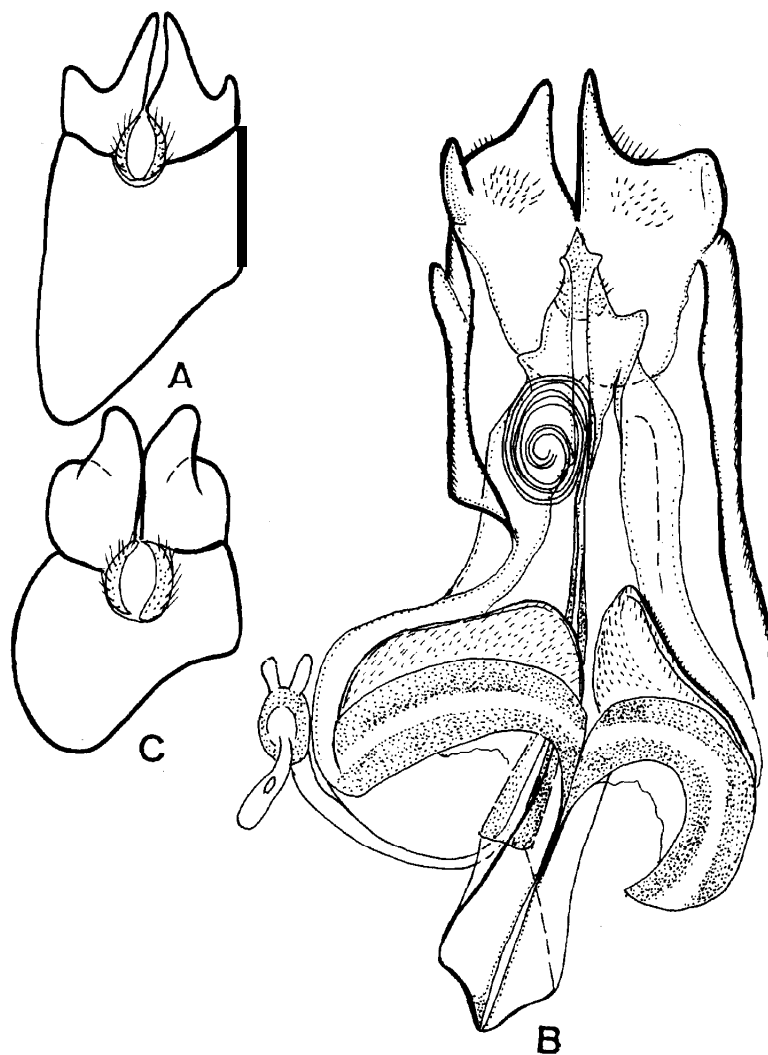




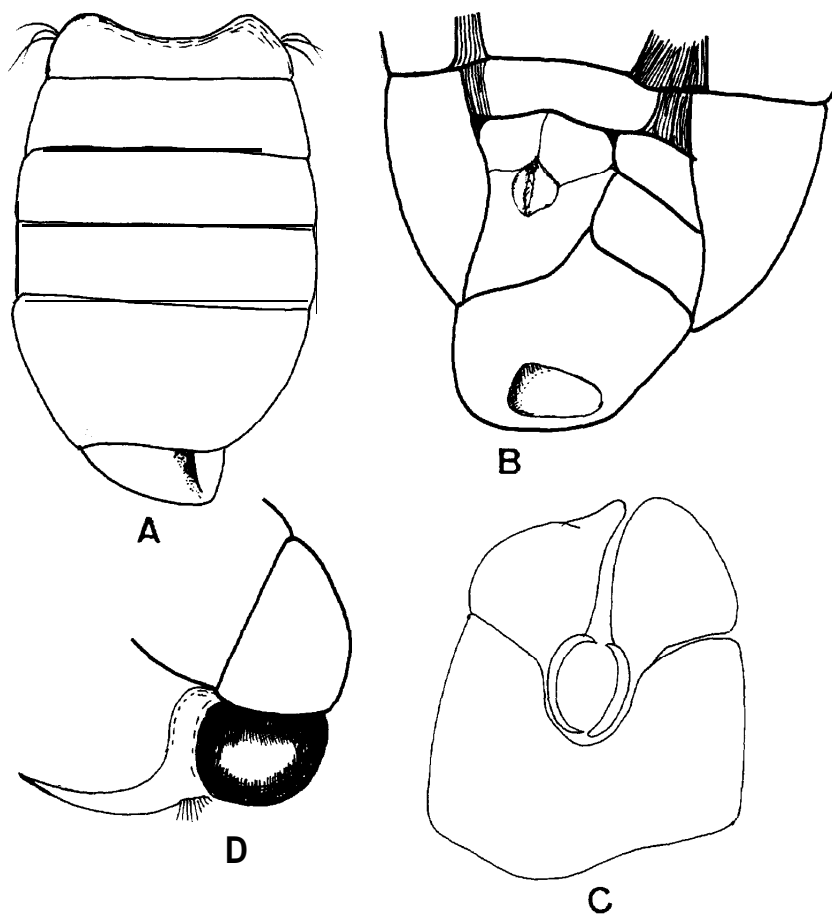
**Fig. 92.** Male genitalia and genital parts of *Eudorylas inopsicolor* Morakote et Yano, sp. n. A. genitalia, dorsal ; B. surstyli, lateral ; C. epandrium and surstyli, dorsal.



**Fig. 93.** A-C. Male genitalia and genital parts of *Eudorylas suwai* Morakote et Yano, sp. n. ; D-F. male genitalia and genital parts of *E. gilvipes* Morakote et Yano, sp. n. A. epandrium and surstyli, dorsal ; B. genitalia, lateral ; C. ditto, dorsal ; D, ditto, dorsal ; E. aedeagus, lateral ; F. epandrium and surstyli, dorsal.



**Fig. 94.** A and B. Genitalia and genital parts of *Eudorylas oshimaensis* Morakote et Yano, sp. n. ; C. epandrium and surstyli of male of *E. minutus* Morakote et Yano, sp. n.



**Fig. 95.** *Eudorylas mutillatus* (Loew) (A-C, male) : A. abdomen, dorsal ; B. abdominal terminalia, ventral ; C. epandrium and surstyli, dorsal ; D. female ovipositor, lateral.

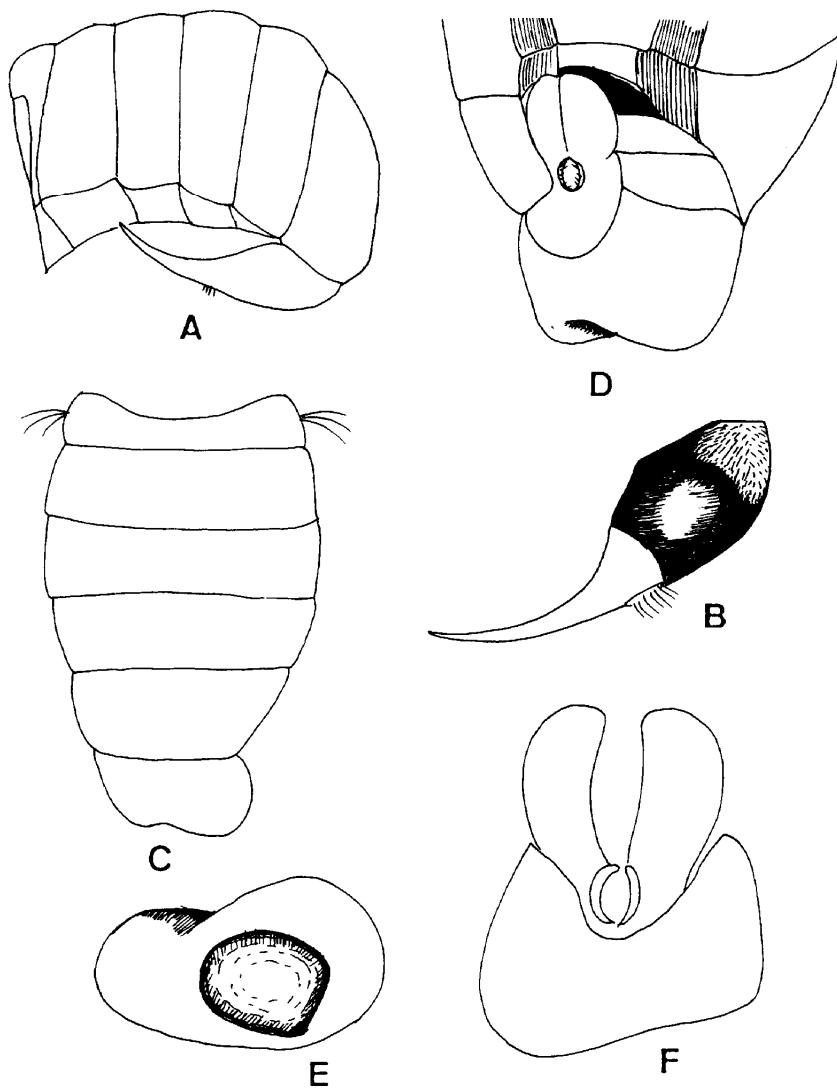
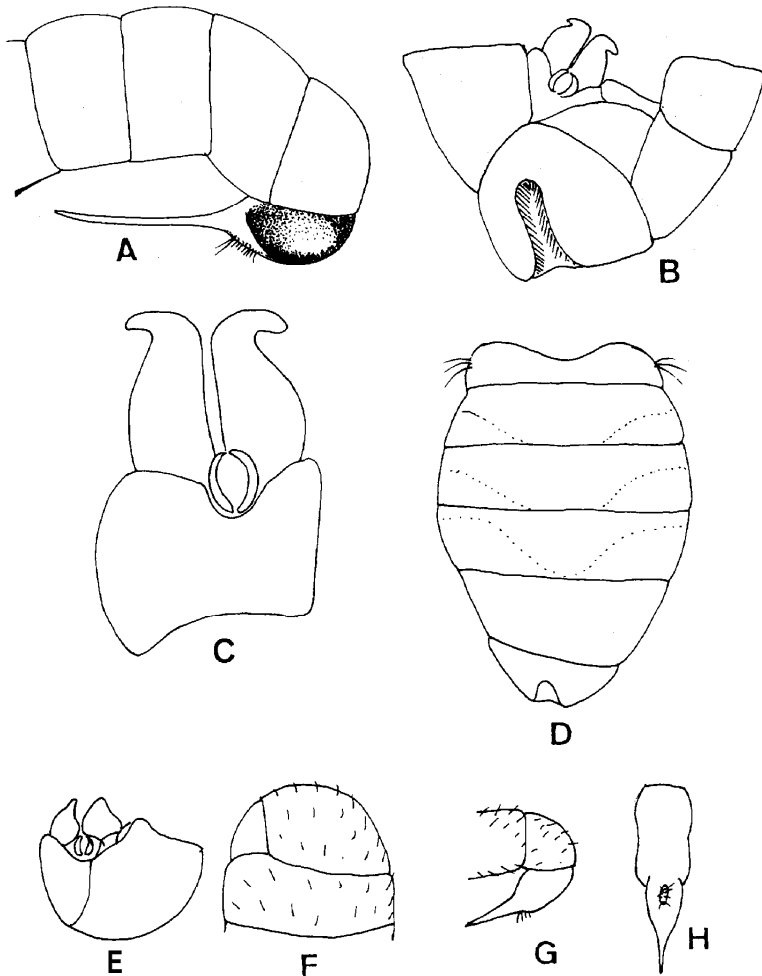
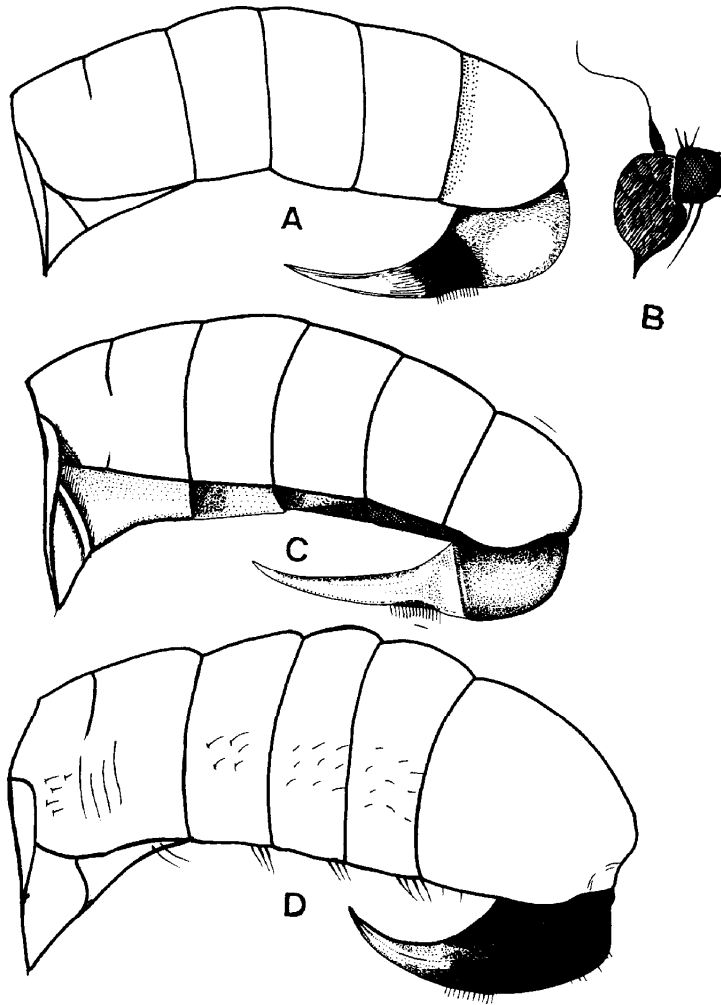


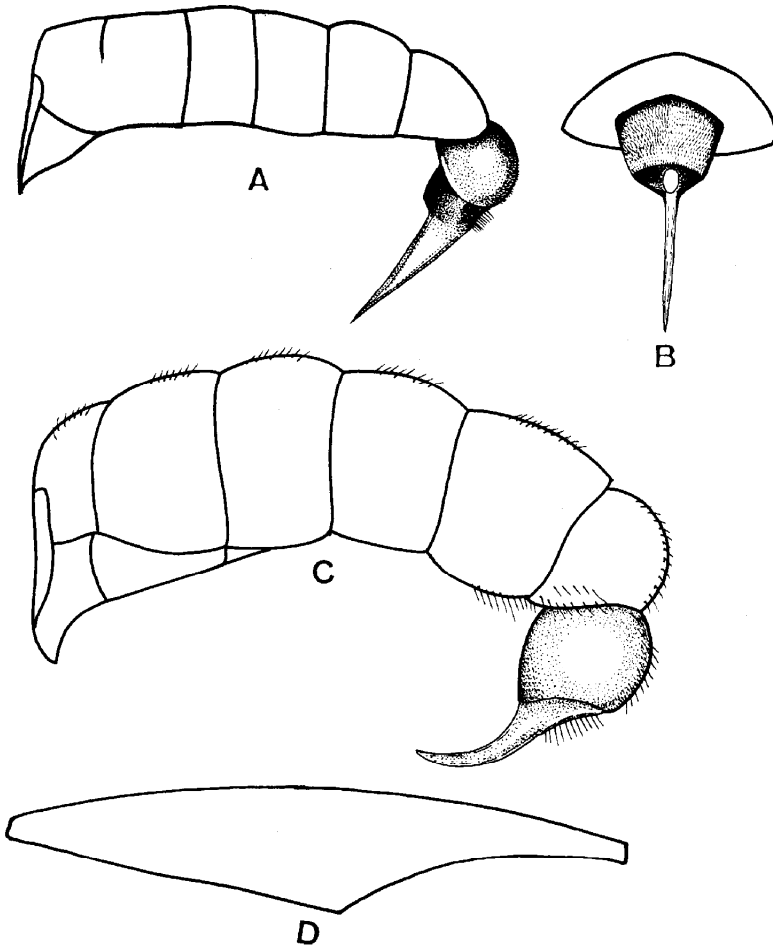
Fig. 96. *Eudorylas javanensis* (de Meijere). A. female abdomen, lateral ; B. ovipositor, lateral ; C-F. male : C. abdomen, dorsal ; D. abdominal terminalia, ventral ; E. abdominal segment 8, behind ; F. epandrium and surstyli, dorsal.



**Fig. 97.** A-D. *Eudorylas orientalis* (Koizumi): A. female abdomen, lateral ; B. male abdominal terminalia, ventral ; C. epandrium and surstyli, dorsal ; D. male abdomen, dorsal. E-H. *E. rovalis* (Kertész): E and F. male abdominal terminalia ; G and H. female ovipositor (E-H. copy from Hardy, 1968).

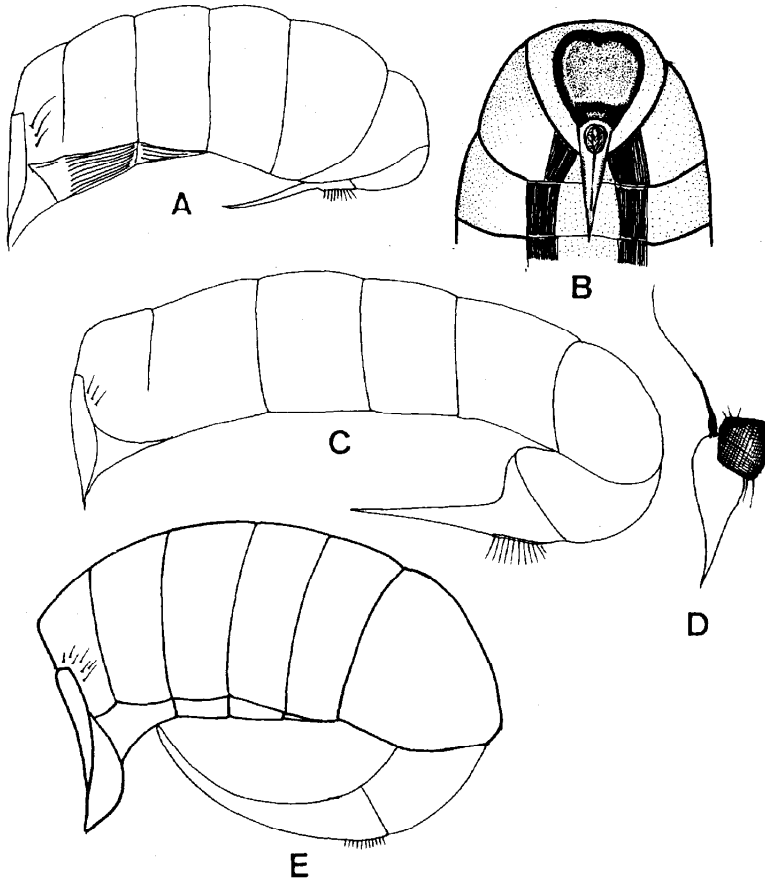


**Fig. 98.** A and B. *Eudorylas ligo* Morakote et Yano, sp. n.: A. Abdomen ; B. antenna ; C. female abdomen of *E. subligo* Morakote et Yano, sp. n. ; D. female abdomen of *E. pinquis* Morakote et Yano, sp. n.

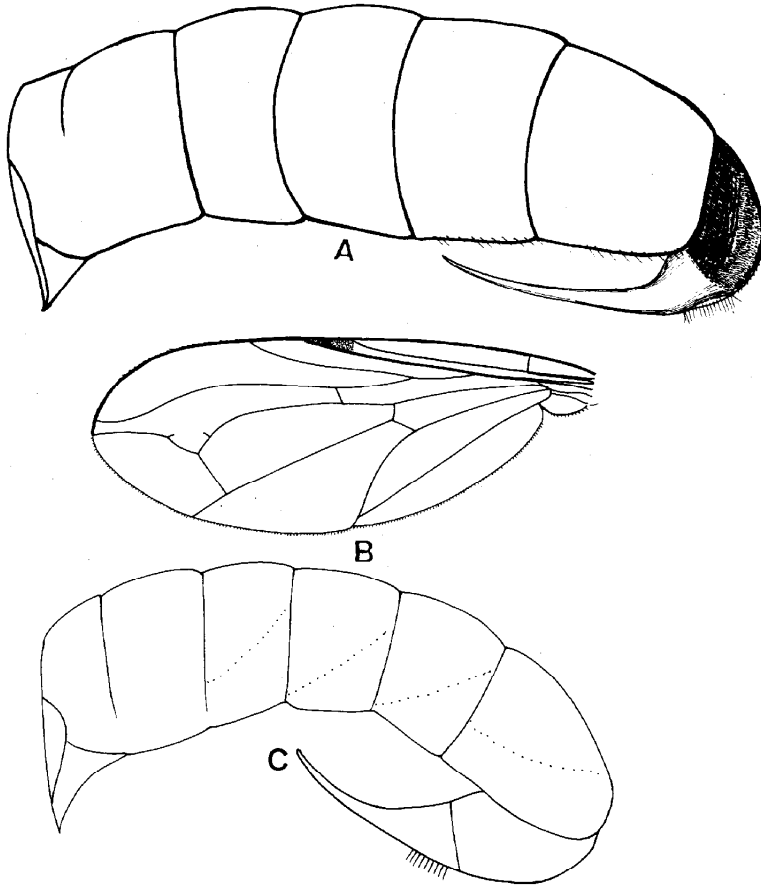


**Fig. 99.** A and B. *Eudorylas ashoroensis* Morakote et Yano, sp. n. (female) : A. Abdomen, B. ovipositor ; C. female abdomen of *E. misericors* Morakote et Yano, sp. n. ; D. cell R5 of wing of *E. ligo* Morakote et Yano, sp. n.





**Fig. 100.** A and B. *Eudorylas focus* Morakote et Yano, sp. n. (female) : A. Abdomen, lateral ; B. abdominal terminalia, ventral. C and D. *E. cycnus* Morakote et Yano, sp. n. (female) : A. abdomen, lateral ; D. antenna. E. Female abdomen of *E. productus* Morakote et Yano, sp. n., lateral.



**Fig. 101.** A and B. *Eudorylas brevisalus* Morakote et Yano, sp. n. (female) : A. Abdomen, lateral ; B. wing. C. Female abdomen of *E. ocellaris* (Matsumura).

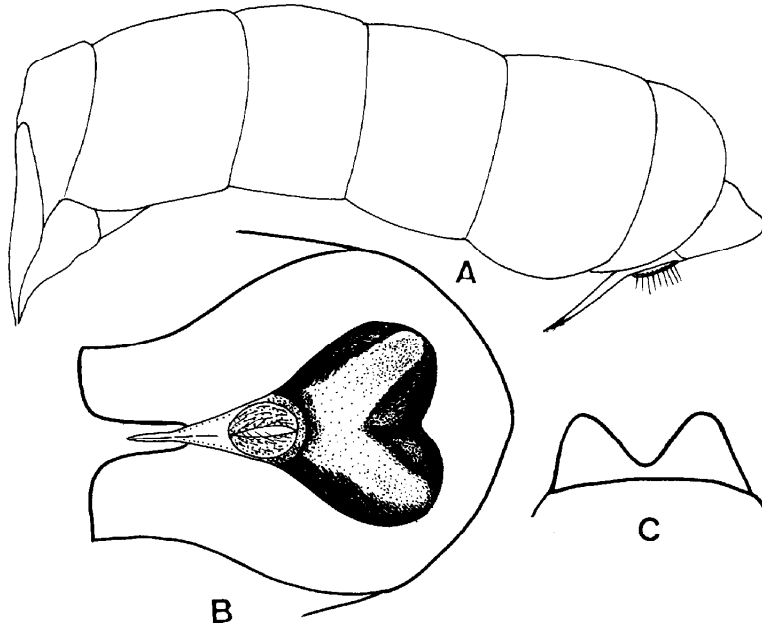


Fig. 102. A-C. *Eudorylas duocollis* Morakote et Yano, sp. n. (female) : A. Abdomen, lateral ; B. abdominal terminalia, ventral ; C. ovipositor, dorsal.

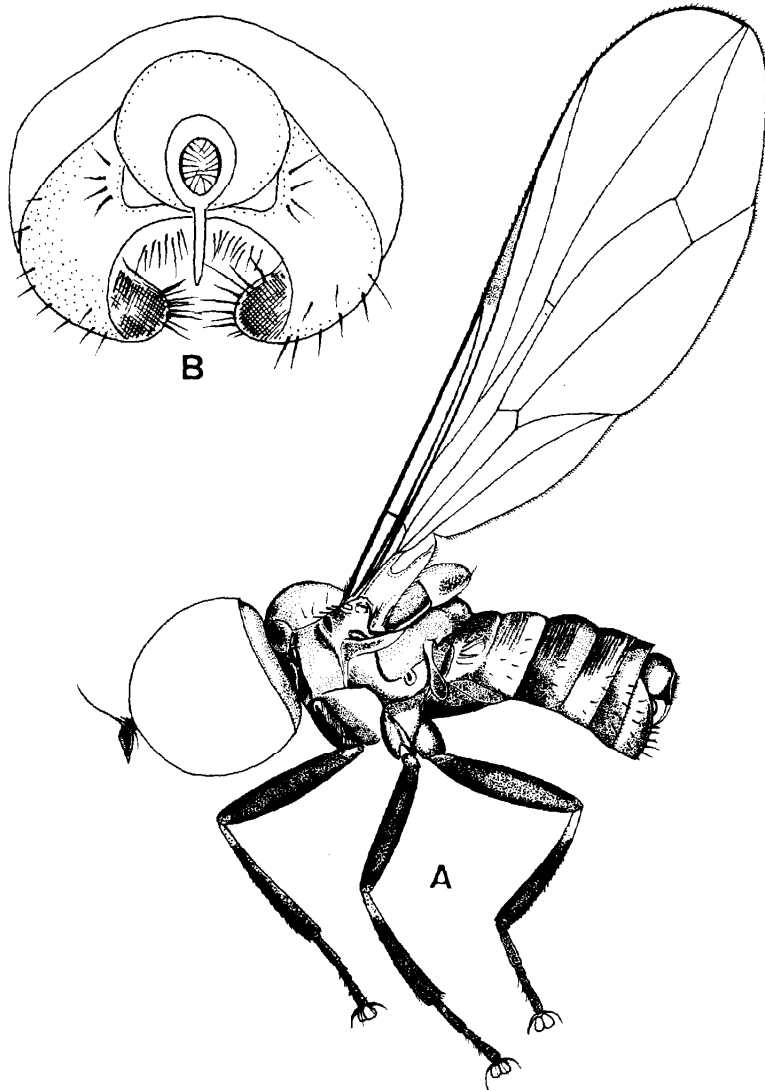


Fig. 103. *Eudorylas maleficus* Morakote et Yano, sp. n. (female) : A. Body, lateral ; B. abdominal terminalia, behind.