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# LONGIUNGUIS OF JAPAN

## (HOMOPTERA : APHIDIDAE)

By MASATO SORIN

Kôgakkan University, Ise-shi, Mie-ken

In this paper are given 9 Japanese species of the genus *Longiunguis* van der Goot, with a key to the species and descriptions of 5 new species. The syntypes are deposited in the Entomological Institute, Hokkaido University, and the author's collection.

The author is indebted to Prof. C. Watanabe for his kindness in reading through the manuscript and to Prof. K. Yasumatsu, Kyushu University, for valuable advice and encouragement. Many thanks are also due to Dr. M. Miyazaki and Mr. H. Higuchi for their kind help in various ways.

### Key to Japanese species of *Longiunguis*

Apterous viviparous female

- 1 Cornicles longer than basal width . . . . . 2
- Cornicles shorter than or as long as basal width . . . . . 5
- 2 Hind tibiae with pseudosensoria; abdominal marginal setae 2-4 on each segment; body blackish in life . . . . . *L. daisenensis*, sp. nov.
- Hind tibiae without pseudosensoria; abdominal marginal setae 1-2 on each segment; body reddish to dark purple or brownish with white powder in life . . . . . 3
- 3 Dorsal setae of head about half of basal diameter of 3rd antennal segment; antennae 5- or 6-segmented; ultimate segment of rostrum as long as 2nd segment of hind tarsus; cornicles constricted near apex; cauda with 10-12 setae; genital plate with 10-13 setae along hind margin and 2 or 3 on anterior part . . . . . *L. formosanus* (Takahashi)
- Dorsal setae of head as long as or a little longer than basal diameter of 3rd antennal segment; antennae 6-segmented; ultimate segment of rostrum as long as or a little shorter than 2nd segment of hind tarsus; cauda with 14-16 setae; genital plate with 14-20 setae along hind margin . . . . . 4
- 4 Frontal and median tubercles of head well developed; ultimate segment of rostrum as long as 2nd segment of hind tarsus; cornicles over twice as long as basal width, constricted near apex; genital plate with fewer (2 or 3) setae on anterior part; lateral tubercles usually present on 1st-4th and 7th abdominal segments; cauda distinctly constricted at middle, with distal half knobbed . . . . . *L. yasumatsui*, sp. nov.
- Frontal and median tubercles of head not so much developed; ultimate segment of rostrum about 0.8 times as long as 2nd segment of hind tarsus; body usually with dorsal pigmentations; cornicles nearly twice as long as basal width, not constricted near apex; abdomen without lateral tubercles on 2nd-6th segments; genital plate with 6-13 setae on a large anterior part . . . . . *L. sacchari* (Zehntner)
- 5 Abdominal marginal setae 3-7 on each segment except for posterior segments . . . . . 6
- Abdominal marginal setae 1-2 on each segment except for posterior segments . . . . . 7
- 6 Venter of head with 8-10 setae on each side; antennae 6-segmented; hind tibiae with 6-10 pseudosensoria on basal widened part; 7th tergite with 4 setae; 8th tergite with 2 setae . . . . . *L. jamatonicus*, sp. nov.

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- Venter of head with 5-7 setae on each side; antennae 5- or 6-segmented; hind tibiae slender, without pseudosensoria; 7th tergite with 6-8 setae; 8th tergite with 6 setae . . . . . *L. japonicus* (Takahashi)
- 7 Mandibular laminae with 1-3 setae . . . . . 8
- Mandibular laminae usually with 4-5 setae; setae of 3rd antennal segment about 1.3 times as long as basal diameter of the segment; hind tibiae with 5-13 pseudosensoria on basal two-thirds; dorsal sclerites usually present, reticulated; genital plate with 30-40 setae . . . . . *L. tateyamaensis*, sp. nov.
- 8 Median area of head, distal parts of femora, and tibiae with numerous minute pores; setae of 3rd antennal segment as long as or a little shorter than basal diameter of the segment; hind tibiae without pseudosensoria; abdomen with dorsal sclerites; 7th and 8th tergites with numerous minute pores on a large basal part of setae; genital plate with 22-25 setae . . . . . *L. siphonellus* (Essig and Kuwana)
- Head, legs and 7th-8th tergites without minute pores; setae of 3rd antennal segment much shorter than basal diameter of the segment; hind tibiae with 2-5 pseudosensoria on middle part; abdomen without dorsal sclerites; genital plate with 15-20 setae . . . . . *L. montanus*, sp. nov.

1. *Longiunguis daisenensis*, sp. nov.

Apterous viviparous female: Body blackish, tibiae and antennae yellow, tarsi black in life. In cleared specimens body pale; head, basal 2 antennal segments, compound eyes and cornicles blackish brown; legs brown, tarsi dark; genital and anal plates and cauda dark. Head much sclerotized, smooth, somewhat wrinkled on dorsum and venter; frontal tubercles small, with 1 or 2 long fine setae; median tubercle slightly developed; dorsal setae short, about 0.8 times as long as basal diameter of 3rd antennal segment; venter with 4 setae which are about 1.6-3.0 times as long as dorsal ones. Antennae 6-segmented, about 0.67 times as long as body length; 1st segment smooth, a little wider than long, with 5 setae; 2nd a little longer than wide, with 4 setae; 3rd slightly imbricated, not constricted at base, with 3-4 setae which are about half of basal diameter of the segment; distance between primary sensorium and tip of 5th about 1.5 times as long as apical diameter of the segment; apical part of 5th and basal part of 6th dark; relative length of segments as follows: III-57, IV-40, V-47, VI-25+100. Clypeus with 2 pairs of anterior setae; mandibular laminae with 2 setae; ultimate segment of rostrum about 1.33 times as long as 2nd segment of hind tarsus, about 1.4 times as long as basal width, reaching middle coxae, with a pair of secondary setae. Hind tibiae widened on basal three-fourths, with about 9 pseudosensoria on basal part, with many fine setae which are about 1.3 times as long as middle diameter of the segment; first tarsal chaetotaxy 3, 3, 2; 2nd segment of hind tarsi imbricated, without secondary setae, about 0.66 times as long as cauda; empodial setae shorter than claws. Abdomen without sclerites on anterior 6 segments; spinal setae on anterior 5 tergites bluntly pointed, rather short, about 0.66 times as long as basal diameter of 3rd antennal segment; 6th tergite with 4 setae, spinal setae about twice as long as anterior ones; 7th tergite with small sclerites, and with 4 long fine setae; 8th tergite with a sclerotized band, with 2 long fine setae which are about 4 times as long as anterior dorsal setae; marginal area with 3-4 long fine setae on 1st-7th segments; 1st-4th and 7th segments with lateral tubercles which are small, as long as or a little longer than basal width. Cornicles longer, about 1.5 times as long as basal width, slightly imbricated, a little constricted near apex, no flange. Genital plate a little wider than anal

plate, with 15–16 setae along hind margin, with 10–11 setae on a large anterior part. Cauda as long as basal width, constricted at middle, with about 17 setae. Body about 1.56 mm. in length.

Host plant: *Miscanthus* sp.

Described from the syntypes taken on Mt. Daisen, Tottori Prefecture (3. X. 1969, M. Sorin leg.).

This species differs from *Longiunguis jamatonicus* (sp. nov.) in the following points: Body blackish in life. Ventral setae of head fewer; setae of 3rd antennal segment a little longer; cornicles much longer than basal width.

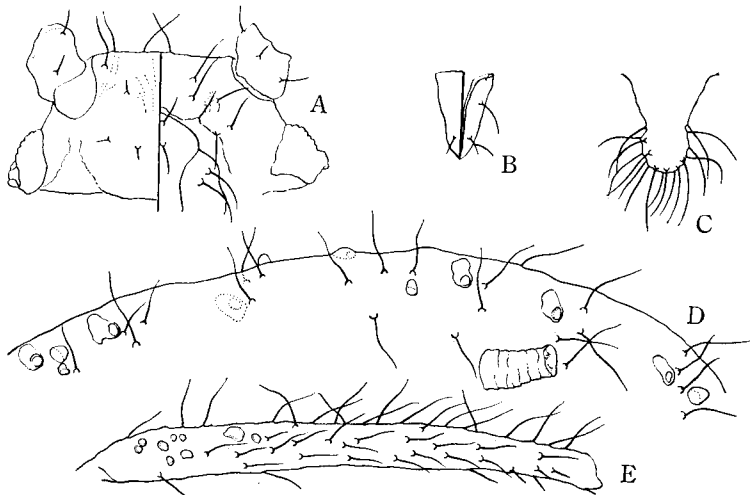


Fig. 1. *Longiunguis daisenensis*, sp. nov., Apterous viviparous female. A: Head; B: Ultimate rostral segment; C: Cauda; D: Lateral abdominal area; E: Hind tibia.

## 2. *Longiunguis formosanus* (Takahashi), comb. nov.

*Aphis formosanus* Takahashi, Aphididae of Formosa, Pt. 1: 54 (1921).

*Aphis miscanthi* Takahashi, Aphididae of Formosa, Pt. 1: 55 (1921).

Oviparous female: Similar to apterous viviparous female, but with many (216–220) pseudosensoria on hind tibiae; genital plate with many (30–32) setae; cauda black. Body 1.62 mm. in length.

Male: Similar to alate viviparous female, but with secondary sensoria 20–23 on 3rd antennal segment, 8–12 on 4th, 5–7 on 5th; distance between primary sensorium and tip of 5th antennal segment shorter, a little longer than apical diameter of the segment. Body 1.35 mm. in length.

Host plant: *Miscanthus* sp.

Specimens examined: Some materials taken at Ise, Mie Prefecture (27. VIII. 1967, 11. VIII. 1969, 7. IX. 1969, 29. XI. 1969, 5. XII. 1969), Hinomisaki, Shimane Prefecture (3. X. 1969).

This species is synonymized with *L. sacchari* (Zehntner) by Takahashi (1931), Shinji (1941) and W. H. Paik (1965) but is distinct chiefly by the following characters:

setae on body shorter; 2nd segment of hind tarsi shorter, as long as ultimate segment of rostrum; genital plate and cauda with fewer setae in apterous viviparous female.

**3. *Longiunguis jamatonicus*, sp. nov.**

Apterous viviparous female: In cleared specimens head, antennae except for 3rd segment which is pale, cornicles, cauda and anal plate blackish; legs, genital plate and dorsal sclerites dark. Head, legs and dorsal sclerites with numerous minute pores in some specimens. Head much sclerotized on dorsum and venter, a little wrinkled on posterior part of dorsum, with a median longitudinal stria; frontal tubercles small, with a seta; anterior setae fine, long, about 1.7 times as long as basal diameter of 3rd antennal segment; posterior setae on dorsum blunt, short, about one-third to one-

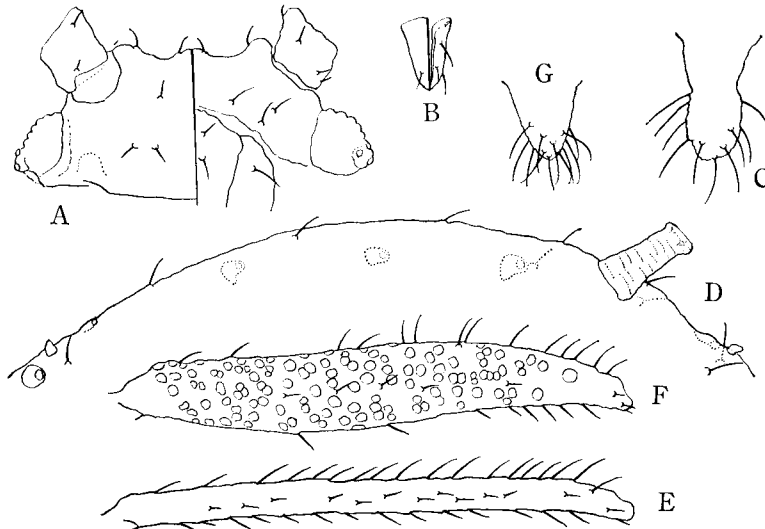


Fig. 2. *Longiunguis formosanus* (Takahashi), Apterous viviparous female. A: Head; B: Ultimate rostral segment; C: Cauda; D: Lateral abdominal area; E: Hind tibia. Oviparous female. F: Hind tibia; G: Cauda.

fourth of anterior ones; venter with about 10 setae which are fine, once to about 1.5 times as long as anterior marginal setae; antennal tubercles not developed, without setae. Antennae 6-segmented, about 0.59 times as long as body length; 1st segment a little longer than wide, a little wrinkled, with 4 fine setae; 2nd a little longer than wide, with 4 blunt short setae; 3rd a little imbricated, a little constricted near base, with 4 blunt setae and a fine seta which is present on apical part and about 1.5 times as long as basal diameter of the segment; 4th to 6th distinctly imbricated; distance between primary sensorium and tip of 5th a little longer than apical diameter of the segment; relative length of segments about as follows: III-50, IV-46, V-47, VI-28+101. Clypeus with 2 pairs of anterior setae; mandibular laminae with 2 or 3 setae; ultimate segment of rostrum about 1.7 times as long as basal width, a little longer than 2nd segment of hind tarsus, with a pair of secondary setae, reaching middle coxae. Femora slightly imbricated, with long fine setae which are shorter than middle

diameter of the segment; hind tibiae widened at basal part, with 6-10 pseudosensoria on basal part, these sensoria distributed on outer side and sometimes fused together, with many fine setae which are about 1.7 times as long as middle diameter of the segment; first tarsal chaetotaxy 3, 3, 2; 2nd segment of hind tarsi without secondary setae, a little shorter than cauda. Abdomen with some small dorsal sclerites on anterior 5 segments, these sclerites sometimes fused together and reticulated; 2 spinal setae on anterior 6 tergites blunt, rather short, about 0.33 times as long as basal diameter of 3rd antennal segment; 7th tergite with 4 setae; 8th tergite with no sclerite, with 2 setae which are fine, about 3 times as long as anterior dorsal setae and as long as ventral setae; lateral tubercles with a small sclerite, shorter than basal width; marginal setae 4-9 on 1st to 7th. Cornicles as long as basal diameter of 3rd

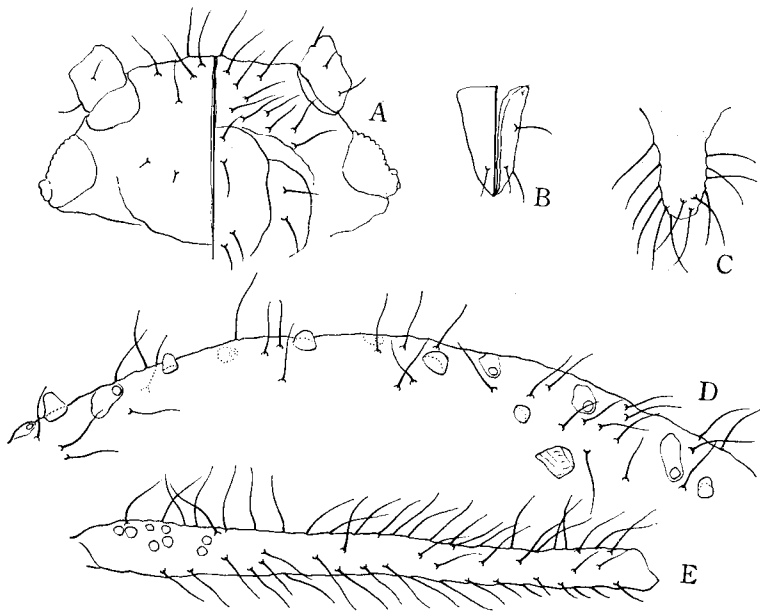


Fig. 3. *Longiunguis jamatonicus*, sp. nov., Apterous viviparous female. A: Head; B: Ultimate rostral segment; C: Cauda; D: Lateral abdominal area; E: Hind tibia.

antennal segment, a little shorter than basal width, no flange, slightly constricted near apex. Genital plate wider than anal plate, with 30-32 setae, about 17 of which arise from along hind margin. Cauda slightly longer than basal width, as long as or a little shorter than ultimate segment of rostrum, a little constricted at middle, with 14-18 setae. Body about 1.83 mm. in length.

Alate viviparous female: In cleared specimens head, antennae and thorax blackish; legs, genital and anal plates and cauda dark. Head smooth, a little wrinkled on middle to hind areas; dorsal setae pointed, posterior ones as long as or a little longer than basal diameter of 3rd antennal segment; venter with 9 setae. Antennae about 0.92 times as long as body length; 3rd with 5-6 setae which are about twice as long as basal diameter of the segment, with 5-12 sensoria in a row; 4th with 5-12 sensoria;

relative length of segments about as follows: III-85, IV-60, V-60, VI-35+116. Ultimate segment of rostrum a little longer than 2nd segment of hind tarsus. Hind tibiae widened on basal part, with 4-9 pseudosensoria on basal half. Abdomen with dorsal sclerites on 3rd to 8th tergites; spinal setae 2 on each of anterior 6 segments, these setae a little longer than basal diameter of 3rd antennal segment; 7th tergite with 4 long setae; 8th tergite with 2 fine long setae which are about thrice as long as anterior ones; lateral tubercles well developed, as long as or a little longer than basal width; lateral sclerites pale brown, with 5-6 setae on each of anterior 4 segments, lateral setae 2 or 3 on 5th-7th segments. Cornicles imbricated, as long as or a little longer than basal width, about twice as long as basal diameter of 3rd antennal segment, no flange. Genital plate with 33-35 setae, about 20 of which arise from along hind

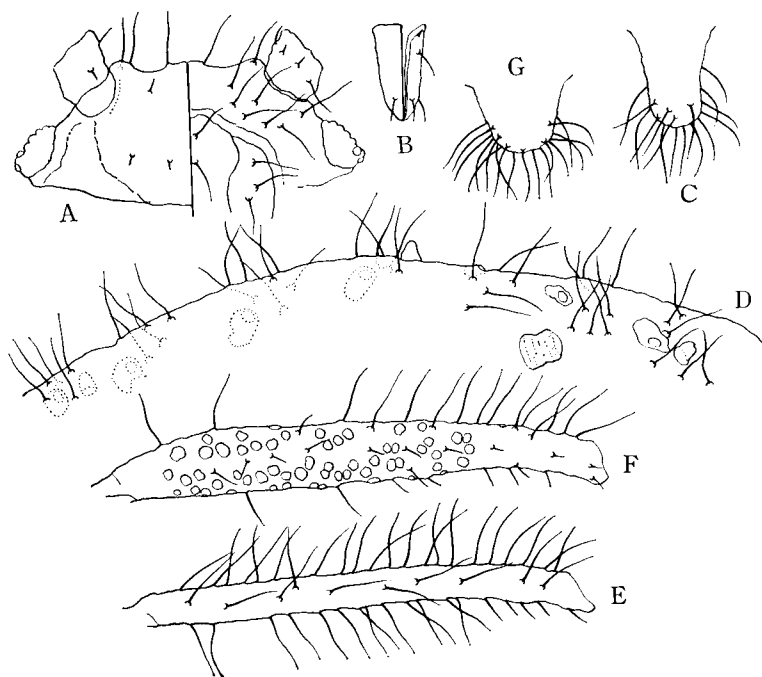


Fig. 4. *Longiunguis japonicus* (Takahashi), Apterous viviparous female. A: Head; B: Ultimate rostral segment; C: Cauda; D: Lateral abdominal area; E: Hind tibia. Oviparous female. F: Hind tibia; G: Cauda.

margin. Cauda a little longer than basal width or ultimate rostral segment, with about 11 setae. Body about 1.51 mm. in length.

Host plant: *Miscanthus* sp.

Described from the syntypes taken on Mt. Kongo, Osaka Prefecture (17. V. 1959); at Hachisu, Iitaka, Mie Prefecture (26. VII. 1959); on Mt. Iwawaki, Osaka Prefecture (29. V. 1960); at Kanazawa, Ishikawa Prefecture (14. VII. 1969) and Bijodaira, Toyama Prefecture (16. VII. 1969).

This species differs from *Longiunguis japonicus* (Takahashi) by the following

characters:

Aptera: Anterior dorsal setae of head longer, venter with numerous setae. Ultimate segment of rostrum longer. Hind tibiae with 6-10 pseudosensoria on basal widened part. Lateral abdominal tubercles shorter than basal width and with a small marginal sclerite; in some specimens anterior 5 tergites with small sclerites but with no sclerite on 8th tergite. Seventh and 8th tergites with fewer setae.

Alata: Dorsal setae of head longer; venter of head with many setae. Setae of 3rd antennal segment longer. Hind tibiae with 4-9 pseudosensoria on basal widened part. Seventh and 8th tergites with fewer setae.

4. *Longiunguis japonicus* (Takahashi), comb. nov.

*Brachysiphum japonicum* Takahashi, Trans. Nat. Hist. Soc. Sapporo 7: 197 (1919).

Oviparous female: In cleared specimens head, basal 2 antennal segments, anal plate and cauda blackish; legs, cornicles and genital plate brown or dark. Similar to apterous viviparous female, but differs by the following characters: Genital plate with more setae. Cauda triangular to semicircular, not constricted at middle, much shorter than ultimate rostral segment. Hind tibiae distinctly widened, with numerous pseudosensoria (70-163).

Male: Similar to alate viviparous female, but differs by the following characters: Third antennal segment with more (about 16) sensoria, 4th with about 11 and 5th with about 6 sensoria. Abdomen without dorsal sclerites. Cauda triangular, not constricted at middle.

Host plant: *Miscanthus* sp.

Specimens examined: Some materials taken at Osaka (1. VIII. 1955, 10. IX. 1963); on Mt. Iwawaki, Osaka Prefecture (30. VII. 1960); at Nakatsugawa, Gifu Prefecture (21. VII. 1968); at Ise, Mie Prefecture (9. VIII. 1968, 24. XI. 1969, 3. XII. 1969); at Horaiji, Aichi Prefecture (17. VIII. 1969); and at Hinomisaki, Shimane Prefecture (3. X. 1969).

The sexual forms of this species appear in autumn and the eggs are laid on the under surface of the leaves of the host plant.

5. *Longiunguis montanus*, sp. nov.

Apterous viviparous female: Greenish dark brown in life. In cleared specimens head, antennae except for 3rd and 4th segments which are pale, cornicles, tarsi and cauda dark or blackish. Head distinctly sclerotized on anterior half and middle part of posterior half of dorsum, and between antennae and compound eyes; with an indistinct median longitudinal stria; frontal tubercles slightly developed, with a fine pointed seta; anterior margin a little convex at middle; dorsal setae short, a little shorter than basal diameter of 3rd antennal segment; venter sclerotized, with about 7 setae which are about 3 times as long as dorsal ones. Antennae about 0.7 times as long as body length, 6-segmented; 1st segment a little longer than wide, a little wrinkled at frontal and hind margin, with 5 setae; 2nd a little longer than wide, with 3 setae; 3rd imbricated, a little constricted at base, with 2 or 3 short setae which are about 0.7 times as long as basal diameter of the segment; 4th-6th distinctly imbricated; distance between primary sensorium and tip of 5th a little shorter than apical diameter of the segment; relative length of segments about as follows: III-49, IV-26-31, V-36-38, VI-

27+83-93. Clypeus with 2 pairs of anterior setae; mandibular laminae usually with 2 setae, sometimes with 3; ultimate segment of rostrum a little longer than basal width, as long as or a little shorter than 2nd segment of hind tarsus, reaching middle coxae, with a pair of secondary setae. Trochanter and femur fused together, with an indistinct trace of division; femora slightly imbricated, with fine setae which are as long as middle diameter of the segment; tibiae with fine setae, longest one about twice as long as middle diameter of the segment; hind tibiae with 2-5 pseudosensoria on middle part; first tarsal chaetotaxy 3, 3, 2; 2nd segment of hind tarsus without secondary setae. Abdomen not reticulated; dorsal setae 4 on 1st-5th tergites each; 2 setae between cornicles; 7th tergite with 4 dorsal setae; 8th tergite with 2 fine setae which are about 3 times as long as basal diameter of 3rd antennal segment; marginal

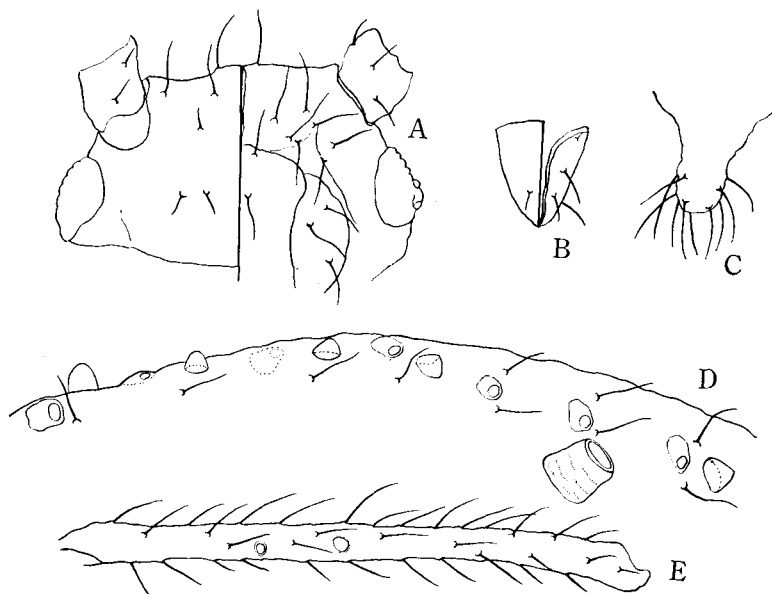


Fig. 5. *Longiunguis montanus*, sp. nov., Apterous viviparous female. A: Head; B: Ultimate rostral segment; C: Cauda; D: Lateral abdominal area; E: Hind tibia.

tubercles present on 1st-4th and 7th, large, triangular, as long as basal width; marginal setae fine, only one seta on 1st-4th each, 2 on 5th-7th each; venter with granules on posterior segments, with fine setae which are about 2.6 times as long as basal diameter of 3rd antennal segment. Cornicles short, about 0.7 times as long as basal width, about half of ultimate segment of rostrum, slightly imbricated, no flange, a little constricted near apex. Genital plate dark, a little wider than anal plate, with 15-20 setae, about 10 of which arise from along hind margin. Cauda dark, about 1.4 times as long as basal width, slightly constricted at middle, rounded at tip, with 10 or 11 setae. Body about 1.26 mm. in length.

Host plant: *Miscanthus sinensis*.

Described from the syntypes taken on Mt. Odaigahara, Nara Prefecture (15. VIII. 1956); on Mt. Iwawaki, Osaka Prefecture (30. VII. 1960); and on Mt. Omine, Nara

Prefecture (4. VIII. 1961).

This species differs from *Longiunguis japonicus* (Takahashi) chiefly by the following characters: Dorsal setae of head longer, fine distally. Antennal setae longer. Ultimate segment of rostrum shorter. Hind tibiae with 2-5 pseudosensoria on middle part. Abdomen with 4 dorsal setae on anterior 5 segments each; 2 setae between cornicles; 2 on 8th tergite; with no sclerite on 8th tergite; marginal setae only one on anterior 4 segments each, 2 or 3 on 5th-7th each. Cauda shorter, with fewer setae. Marginal tubercles never longer than basal width. Body smaller.

Differs from *L. jamatonicus* (sp. nov.) in the following characters: Head with fewer setae. Marginal abdominal setae fewer. Ultimate rostral segment a little longer than basal width. Cornicles larger. Hind tibiae with fewer pseudosensoria. Cauda with fewer setae.

**6. *Longiunguis sacchari*** (Zehntner)

*Aphis sacchari* Zehntner, Arch. Suikerind. Ned. Ind. 5: 551 (1897) (Original description not seen); Shinji, Monogr. Japan. Aphid.: 565 (1941) ?

*Longiunguis sacchari*: Eastop, Aphid. East Africa: 82 (1958), Aphid. West Africa: 53 (1961), Tax. Study Aust. Aphid.: 490-491 (1966); Paik, Aphid. Korea: 116 (1965).

Host plants: *Echinochloa crusgalli*; *Saccharum officinarum*.

Specimens examined: Some materials taken at Hirao, Osaka Prefecture (8. VIII. 1955, 13. IX. 1956); at Ise, Mie Prefecture (10. VIII. 1966); and at Nago, Loochoos (17. VI. 1968, K. Iha leg.).

**7. *Longiunguis siphonellus*** (Essig and Kuwana)

*Aphis siphonella* Essig and Kuwana, Proc. Calif. Acad. Sci. 4th Ser. 8 (3): 73 (1918).

*Pergandeida siphonella*: Shinji, Monogr. Japan. Aphid.: 656 (1941).

*Longiunguis siphonella*: Takahashi, Trans. Amer. Ent. Soc. 92: 521 (1966).

Host plant: Pear.

Specimens examined: Some apterae and larvae taken at Tokyo (22. V. 1961, J. Minamikawa leg.).

**8. *Longiunguis tateyamaensis***, sp. nov.

Apterous viviparous female: Reddish purple in life. In cleared specimens head, antennae except for basal half of 3rd segment which is pale, cornicles, anal plate and cauda blackish; legs and genital plate brown. Head sclerotized except for posterior marginal area; frontal tubercles developed, with one or 2 setae; median tubercle developed, with a pair of setae; dorsal anterior setae fine, about 1.3 times as long as basal diameter of 3rd antennal segment; dorsal posterior setae bluntly pointed, about half of anterior ones; venter with 9-11 long setae which are about thrice as long as middle diameter of 3rd antennal segment. Antennae about 0.75 times as long as body length, 6-segmented; 1st segment much longer than basal width, a little wrinkled, with 5 setae; 2nd slightly imbricated, with 4 setae; 3rd-6th distinctly imbricated; 3rd with 5 long fine setae, longest one about 1.3 times as long as basal diameter of the segment; distance between primary sensorium and tip of 5th a little shorter than apical diameter of the segment; relative length of segments as follows: III-64, IV-50, V-51, VI-30+116. Clypeus with 2 pairs of anterior setae; mandibular laminae usually with 4-5 setae; ultimate segment of rostrum about 1.5 times as long as basal width, as long as 2nd

segment of hind tarsus, with 2 secondary setae, reaching middle coxae. Femora slightly imbricated on upper side, with many long fine setae which are a little shorter than middle diameter of the segment; hind tibiae widened at basal part, with 5-13 pseudo-sensoria on basal two-thirds, with many fine setae which are about 1.7 times as long as middle diameter of the segment; first tarsal chaetotaxy 3, 3, 2; 2nd segment of hind tarsus without secondary setae; empodial setae as long as claws. Abdomen with dorsal sclerites on 1st-7th tergites but in some specimens without such sclerites; dorsal setae 2 on 1st-6th tergites, sometimes 4 on 3rd and 5th tergites, these setae blunt, rather short, about 0.7 times as long as basal diameter of 3rd antennal segment; 7th tergite with 4 long dorsal setae; 8th tergite with 2 long fine setae which are about thrice as long as anterior ones; lateral tubercles present on anterior 4 segments and 7th, these tubercles nearly as long as basal width, slightly sclerotized, in some specimens with small sclerites; marginal setae 1 or 2 on anterior 7 segments each; ventral

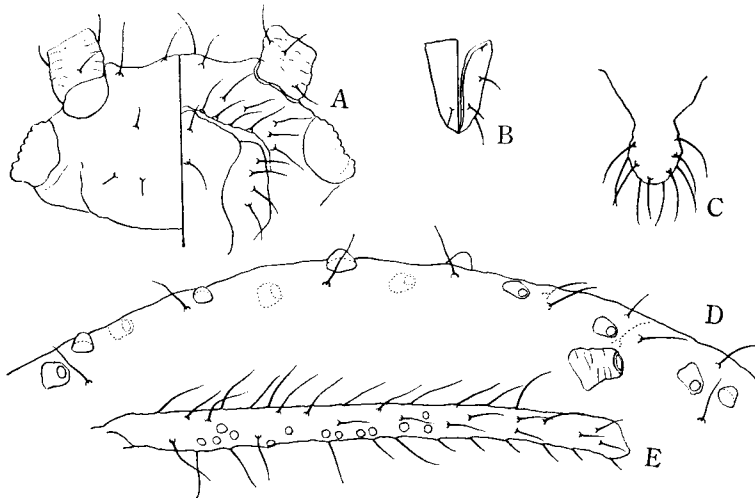


Fig. 6. *Longiunguis tateyamaensis*, sp. nov., Apterous viviparous female. A: Head; B: Ultimate rostral segment; C: Cauda; D: Lateral abdominal area; E: Hind tibia.

setae as long as dorsal ones of 8th tergite. Cornicles roughly imbricated, about 0.8 times as long as basal width, no flange. Genital plate with about 30-40 setae, 14-20 of which arise from along hind margin. Cauda black, about 1.2 times as long as basal width, distinctly constricted at middle, with 9-11 setae. Body about 1.61 mm. in length.

Alate viviparous female: In cleared specimens head, thorax, basal 2 antennal segments and cornicles deep brown to blackish; other antennal segments dark; legs pale except for distal half of femora, both ends of tibiae, and tarsi dark; marginal abdominal sclerites, genital and anal plates and cauda dark. Head a little wrinkled on middle and posterior parts; frontal tubercles developed with 2 long fine setae; dorsal setae pointed, about 1.4 times as long as basal diameter of 3rd antennal segment; venter with 10 setae which are fine, about twice to thrice as long as dorsal posterior ones. Antennae a little shorter than body length; 1st segment slightly imbricated on distal part; 3rd with 7 fine long setae, longest one about thrice as long as basal

diameter of the segment, with 5-6 sensoria in a row on basal half to three-fifths; other segments without secondary sensoria; relative length of segments about as follows: III-80, IV-66, V-60, VI-30+110. Rostrum not reaching middle coxae, ultimate segment a little shorter than 2nd segment of hind tarsus. Hind tibiae with 6-7 pseudosensoria on basal half. Abdomen without sclerites on anterior 5 tergites; 6th-8th tergites each with a sclerotized band. Cornicles a little longer than basal width. Cauda pale brown, a little constricted at middle, a little longer than basal width. Body 1.4 mm. in length.

Host plant: *Miscanthus* sp.

Described from syntypes taken on Mt. Tateyama, Toyama Prefecture (16. VII. 1969).

This species differs from *L. montanus* (sp. nov.) by the following characters of the aptera: Median tubercle of head developed. Setae on head longer. Setae of 3rd antennal segment longer, about 1.3 times as long as basal diameter of the segment. Mandibular laminae with many setae; ultimate segment of rostrum about 1.5 times as long as basal width. Hind tibiae with many pseudosensoria. Genital plate with more setae. Body larger, reddish purple in life, living on the under surface of the leaves of the host plant.

#### 9. *Longiunguis yasumatsui*, sp. nov.

Apterous viviparous female: Body dark purple, with white powder; antennae pale on middle; legs whitish, tarsi black in life. In cleared specimens head, basal 2 and 6th antennal segments, cornicles, anal plate and cauda blackish; genital plate dark. Head distinctly sclerotized and a little wrinkled; with a median longitudinal stria; frontal tubercles well developed, with 1 or 2 fine setae; median tubercle well developed but not higher than frontal tubercles, with a pair of fine setae; dorsal anterior setae slightly longer than posterior setae which are as long as basal diameter of 3rd antennal segment; venter with 2 or 3 setae which are about twice as long as dorsal posterior ones. Antennae 6-segmented; 1st segment wider than long, with 5 setae; 2nd longer than wide, with 4 setae; 3rd to 6th distinctly imbricated; 3rd as long as or a little shorter than fore femora, not constricted at base, with 5 setae which are variable in length, longest one as long as basal diameter of the segment; distance between primary sensorium and tip of 5th as long as apical diameter of the segment; relative length of segments about as follows: III-52, IV-36, V-37, VI-22+85. Clypeus with 2 pairs of anterior setae; mandibular laminae usually with one seta, sometimes with 2; ultimate segment of rostrum reaching middle coxae, as long as 2nd segment of hind tarsus, with a pair of secondary setae. Femora slightly imbricated, with fine setae, longest one about 0.8 times as long as middle diameter of the segment; hind tibiae without pseudosensoria, longest seta about 1.3 times as long as middle diameter of the segment; first tarsal chaetotaxy 3, 3, 2; 2nd segment of hind tarsus without secondary setae; empodial setae a little shorter than claws. Abdomen usually without dorsal sclerites but sometimes with small reticulated sclerites; dorsal setae 4 on 1st-7th tergites, these setae fine, anterior ones about 1.3 times as long as basal diameter of 3rd antennal segment; 8th tergite with 2 long setae which are about twice as long as basal diameter of 3rd antennal segment; marginal setae only one on anterior 4 segments each; lateral tubercles small, slightly sclerotized on anterior 2-4 segments and 7th; ventral setae a little longer than dorsal ones on 8th tergite. Cornicles imbricated,

distinctly constricted near apex, about 2.3 times as long as basal diameter, 1.25 times as long as ultimate segment of rostrum. Genital plate larger than anal plate, with 14-18 setae along hind margin and 2-3 anterior setae. Cauda about 1.2 times as long as wide, distinctly constricted at middle, distal half knobbed, with 14-17 setae. Body about 1.39 mm. in length.

Oviparous female: Very similar to apterous viviparous female, but differs by the following characters: Ultimate segment of rostrum about 1.1 times as long as 2nd segment of hind tarsus. Hind tibiae much widened, with about 133 pseudosensoria distributed on whole length. Abdomen faintly reticulated on dorsum of anterior part; lateral tubercles very small on 1st and 7th segments, absent on other segments; 8th

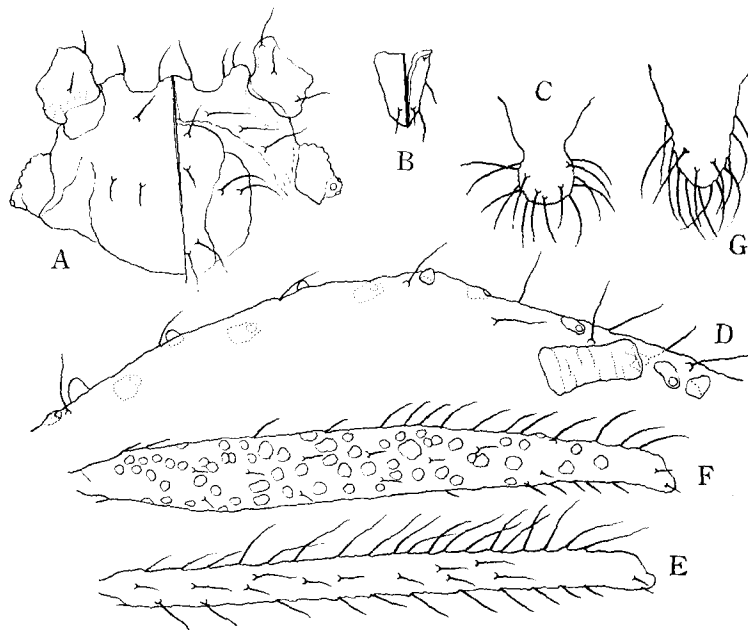


Fig. 7. *Longiunguis yasumatsui*, sp. nov., Apterous viviparous female. A: Head; B: Ultimate rostral segment; C: Cauda; D: Lateral abdominal area; E: Hind tibia. Oviparous female. F: Hind tibia; G: Cauda.

tergite with 6-9 setae including marginal ones. Genital plate with more setae (about 23) along hind margin. Body about 1.36 mm. in length.

Male: Alate. In cleared specimens head, basal 2 antennal segments, thorax, distal half of femora, both ends of tibiae, cornicles and cauda dark. Head distinctly sclerotized, smooth on dorsum; frontal tubercles with 2 setae; venter with 2 setae. Antennae longer than body length, 6-segmented; basal 2 segments a little longer than wide and slightly imbricated; 3rd with 20-22 sensoria, with 6 setae which are shorter than basal diameter of the segment; 4th with 8-9 sensoria; 5th with 6-9 sensoria; relative length of segments about as follows: III-87, IV-61, V-60, VI-26+100. Clypeus with 2 pairs of anterior setae; mandibular laminae with a seta; ultimate segment of rostrum not reaching middle coxae, with a pair of secondary setae. Wing veins

normal, darker along veins. First tarsal chaetotaxy 3, 3, 2; 2nd segment of hind tarsus as long as ultimate segment of rostrum, without secondary setae. Abdomen with a dorsal sclerotized band on 4th-8th tergites each; anterior 4 segments with marginal sclerites which are provided with 2 or 3 setae; 8th tergite with 4 setae including marginal ones. Cornicles slender, a little longer than ultimate segment of rostrum. Cauda longer than basal width, with about 10 setae, with minute setae on whole surface. Penis sheath with about 10 setae, claspers with numerous setae. Body about 1.4 mm. in length.

Host plant: *Miscanthus* sp.

Described from the syntypes taken on Mt. Daisen, Tottori Prefecture (3. X. 1969, 18. X. 1969).

This species differs from the apterous viviparous female of *L. sacchari* (Zehntner) by the following characters: Head strongly sclerotized, frontal and median tubercles well developed. Cornicles distinctly constricted near apex. Second segment of hind tarsus shorter, as long as ultimate segment of rostrum. Lateral tubercles of abdomen present on anterior 2-4 segments. Genital plate with fewer setae. Cauda black, distinctly constricted at middle, the distal half being knobbed. Distance between primary sensorium and tip of 5th antennal segment as long as or a little longer than apical diameter of the segment.

Differs from the apterous viviparous female of *L. formosanus* (Takahashi) by the following characters: Setae of body longer. Frontal and median tubercles of head well developed. Cornicles slender, basal diameter as wide as or a little wider than apical diameter. Lateral tubercles larger.

The sexual forms of this aphid appear in autumn and the eggs are laid on the under surface of the leaves and the surface of the leaf sheaths of the host plant.