

Kontyû, Tokyo, 50 (2): 225-232. June 25, 1982

## The Japanese *Spania* (Diptera, Rhagionidae)

Akira NAGATOMI

Entomological Laboratory, Faculty of Agriculture,  
Kagoshima University, Kagoshima, 890 Japan

and

Toyohei SAIGUSA

Biological Laboratory, College of General Education,  
Kyushu University, Ropponmatsu, Fukuoka, 810 Japan

**Synopsis** The genus *Spania* is recorded from Japan for the first time and contains 3 species, namely, *kyushuensis* and *naitoi*, collected in Japan and named as new, and *nigra*, widely distributed in Europe, Japan and N. America.

Up to the present the genus *Spania* contains only 1 species (*nigra* MEIGEN, 1830) distributed in Europe and having 1 subspecies (*nigra americana* JOHNSON, 1923) from Maine, N. America. In this paper 3 species including *nigra* are recorded from Japan and 2 of them are named as new.

In the descriptions, antenna was measured along mid-outer surface, palpus along ventral surface, legs along dorsal surface, and facial swelling (=clypeus) and each segment of antenna, palpus and hind leg at broadest point; length of ocellar triangle means the distance from anterior margin of median ocellus to posterior margin of lateral ocelli.

### Genus *Spania* MEIGEN

*Spania* MEIGEN, 1830, Syst. Besch. bekannt. europ. zweifl. Insekt., 6: 335.

Type-species: *Spania nigra* MEIGEN (monotypic).

For diagnosis of this genus see NAGATOMI (1982). For female genitalia see NAGATOMI and IWATA (1976). This genus is closely related to the genus *Ptiolina* ZETTERSTEDT, 1842 in the following characters, but differs from the latter in the elongate third antennal segment which lacks in the style, the tibial spurs 0:2:0, etc.

The common characters of the Japanese species of *Spania* and *Ptiolina* (which will be described soon) are as follows: Eyes in ♂ divided into 2 portions by a difference in size of facets and border between them situated opposite face near antenna; face practically bare or with minute pile (as in antennal segment 3) especially on lateral sides; antenna with segment 1 not larger than segment 2 and with segment 3 wider than segment 2; sometimes (as an individual variation) veins  $M_1$  and  $M_2$  arising from a point or short stalked, and vein  $M_4$  arising from a juncture between 2nd basal and discal cells.

In the specimens on hand, vein between discal and 1st basal cells 0.6–1.0 times as long as vein between discal and 1st posterior cells, while in *Ptiolina* 0.3–0.7.

### Key to Species of *Spania* Known from Japan

1. Vein  $R_4$  normal and not connected with vein  $R_{2+3}$ ; antennal segment 3 abruptly narrowed on dorsal margin before the middle (except for ♀ of *kyushuensis*) (Figs. 1B–1E).....2
- Vein  $R_4$  peculiar, i.e., its subbasal portion connected at a point or short anastomosed with vein  $R_{2+3}$  (Fig. 2); antennal segment 3 gradually tapering towards tip, with its dorsal margin almost straight (♀ unknown) (Fig. 1A).....*naitoi*
- 2(1). ♂ (eyes contiguous).....3
- ♀ (eyes widely separated).....4
- 3(2). In antennal segment 3, apical portion broad and boundary between basal broad part and apical narrow part rather gradual (Fig. 1B).....*kyushuensis*
- In antennal segment 3, apical portion narrow and boundary between basal broad part and apical narrow part sharply defined (Fig. 1C).....*nigra*
- 4(2). In antennal segment 3, apical portion not abruptly narrower and not clearly arising from lower portion of basal broad part (almost as in ♂ of *naitoi*) (Fig. 1D).....*kyushuensis*
- In antennal segment 3, apical portion abruptly narrower and clearly arising from lower portion of basal broad part (as in ♂ of *kyushuensis*) (Fig. 1E).....*nigra*

### *Spania kyushuensis* NAGATOMI et SAIGUSA, sp. nov.

(Figs. 1B, 1D, 3B, 3D)

The specimens described below may be separated from *nigra* in the shape of antennal segment 3 shown in the key (couplets 3 and 4; see Fig. 1).

*Male*. Head (Fig. 1B): head and its appendages dark brown to black and more or less pale gray pollinose; ocellar triangle, vertex, upper occiput behind eye, lower occiput, cheek, palpus and proboscis with black hairs, antennal segment 2 with short, sparse hairs and antennal flagellum densely covered with minute pile; width of one eye at middle from a direct frontal view 1.1–1.3 times distance from antenna to median ocellus, 0.7–0.8 times width of face at lowest portion, and 1.5–2.3 times width of frons just above antenna which is 1.4–2.2 times width of ocellar triangle; eyes contiguous for a distance 1.0–1.4 times as long as ocellar triangle; ocellar triangle 0.9–1.0 times as wide as long; space between antennae 0.4–0.6 times width of ocellar triangle, distance from proboscis to antenna 0.9–1.0 times that from antenna to median ocellus; facial swelling 1.1–1.4 times as wide as side of face on a mid line; total length of antenna 1.3–1.5 times distance from antenna to median ocellus; relative lengths of antennal segments 1–3, 57(40–75) : 100 : 666

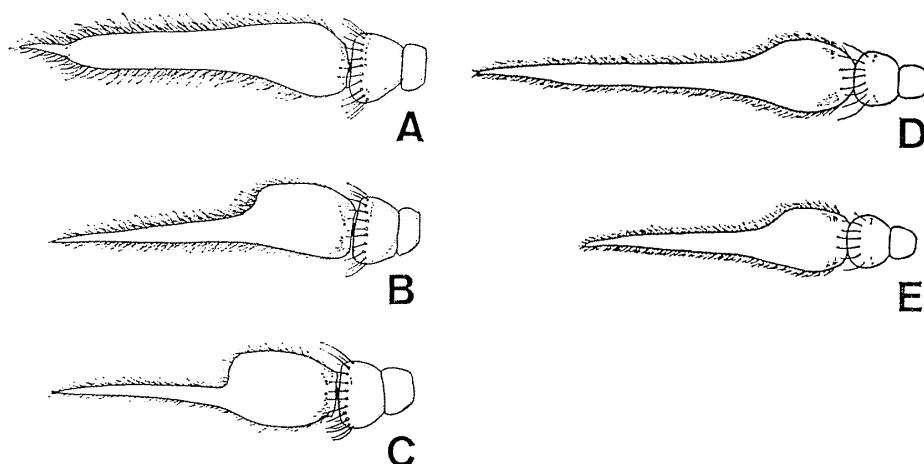


Fig. 1. Left antennae of *Spania* spp., outer view. A: *naitoi* ♂; B: *kyushuensis* ♂; C: *nigra* ♂; D: *kyushuensis* ♀; E: *nigra* ♀.

(600–750) and their relative widths 98(80–120) : 134(120–160) : 173(160–200); antennal segment 3 with broad basal part and narrow apical part arising from lower portion of basal part, and the latter always longer than the former but boundary between them gradual and not sharply defined; palpus 4–5 times as long as wide and 0.6–0.8 times as long as distance from proboscis to antenna (structural characters of head are based on 9 specimens).

Thorax: dark brown to black and more or less plae gray pollinose; mesonotum with 3 indistinct, darker, narrow stripes, of which median one is fainter; mesonotum (except for anterior part including humeral callus) and scutellum with black hairs which are not dense; pleura (except for propleuron) and postscutellum bare; halter dark brown to black and pale gray pollinose.

Wing: membrane tinged with brown; stigma indistinct or slightly darkened; vein  $R_4$  normal and not connected with vein  $R_{2+3}$  which is gently curved; anal cell closed usually before and sometimes at wing margin.

Legs: dark brown to black; coxae and femora more or less pale gray pollinose and black-haired; relative lengths of segments (excluding coxa and trochanter) of fore leg 188(169–210) : 237(223–260) : 100 : 31(27–33) : 26(23–30) : 22(17–25) : 39(33–42), of mid leg 201(185–220) : 290(269–310) : 101(100–108) : 30(27–33) : 26(23–30) : 21(19–25) : 37(31–42), of hind leg 256(238–280) : 311(292–342) : 113(108–123) : 36(31–42) : 28(25–31) : 22(18–25) : 37(33–42), and relative thicknesses of femur, tibia, and tarsomeres 1–3 of hind leg 37(29–42) : 26(23–30) : 18(15–20) : 17(15–20) : 16(13–20) (tarsomere 1, 0.1–0.2, tarsomere 2, 0.4–0.5, tarsomere 3, 0.5–0.7 times as wide as long) (based on 10 specimens).

Abdomen: dark brown to black, more or less pale gray pollinose and with black hairs which are longer on dorsum.

Genitalia (Figs. 3B & 3D): mid-anterior part of gonocoxosternum longer than in *nigra*; gonostylus short, rather slender and moderately clavate apically.

Length: body 2.3–2.7 mm; wing 2.7–3.2 mm; fore basitarsus 0.25–0.33 mm.

*Female.* Similar to male except as follows. Head (Fig. 1D): frons with black hairs; pile on upper occiput behind eye longer than in ♂; palpus (except basal part) without longer and erect pile; width of one eye at middle from a direct frontal view 1.1–1.4 times distance from antenna to median ocellus (almost as in ♂), 0.4–0.5 times width of face at lowest portion, and 0.5–0.7 times width of frons just above antenna; width of frons at median ocellus 1.1 times that just above antenna, and 2.8–3.4 times width of ocellar triangle; ocellar triangle 1.0–1.1 times as wide as long (almost as in ♂); space between antennae 0.6–0.9 times width of ocellar triangle; distance from proboscis to antenna 1.7–2.3 times that from antenna to median ocellus; facial swelling 1.5–1.8 times as wide as side of face on a mid line; total length of antenna 2.4–3.3 times distance from antenna to median ocellus; relative lengths of antennal segments 1–3, 81(60–100) : 100 : 862(720–950) and their relative widths 103(80–125) : 152(120–175) : 194(160–200); apical portion of antennal segment 3 broader than in ♂ (Fig. 1D); palpus 3–5 times as long as wide and 0.6–0.7 times as long as distance from proboscis to antenna (almost as in ♂) (structural characters of thorax are based on 10 specimens).

Wing: anal cell closed usually at and sometimes before wing margin.

Legs: relative lengths of segments of fore leg 166(150–191) : 216(207–233) : 100 : 27(23–29) : 23(21–27) : 20(18–23) : 35(31–42), of mid leg 185(164–208) : 275(257–300) : 103(93–109) : 26(21–29) : 24(21–27) : 20(15–23) : 34(31–38), of hind leg 239(214–267) : 306(279–327) : 113(107–118) : 33(29–36) : 25(21–29) : 21(18–27) : 35(31–42), and relative thicknesses of femur, tibia, and tarsomeres 1–3 of hind leg 39(36–45) : 24(21–27) : 17(14–19) : 16(14–18) : 16(14–18) (tarsomere 1, 0.1–0.2, tarsomere 2, 0.4–0.6, tarsomere 3, 0.5–0.7 times as wide as long) (based on 10 specimens).

Genitalia: described and figured by NAGATOMI and IWATA (1976) as *Spania* sp.

Length: body 2.1–2.7 mm; wing 2.6–3.1 mm; fore basitarsus 0.28–0.35 mm.

*Distribution.* Japan (Kyushu).

*Holotype:* ♂, Inunaki-tôge, Wakamiya-cho, Fukuoka Pref., Kyushu, 9. v. 1968, T. SAIGUSA.

*Paratypes:* 11♂, 12♀, same data as holotype; 6♂, Mt. Wakasugi, Fukuoka Pref., Kyushu, 9. v. 1965, T. SAIGUSA; 1♂, same locality, 29. iv. 1961, T. SAIGUSA; 4♂, 2♀, Kyusukei (800 m), Mt. Kujû, Ôita Pref., Kyushu, 19–21. v. 1962, T. SAIGUSA; 1♂, same locality, 19. v. 1962, S. IDE; 3♂, Takakuma, Ôsumi, Kagoshima Pref., Kyushu, 24. vi. 1963, A. NAKANISHI.

Holotype in Kyushu University, Fukuoka and paratypes in Kyushu University, Kagoshima University, Kagoshima, British Museum (Natural History), London and U.S. National Museum, Washington, D.C.

*Spania naitoi* NAGATOMI et SAIGUSA, sp. nov.

(Figs. 1A, 2, 3A)

This species is peculiar in the wing venation, i.e., the vein  $R_4$  is connected at a point or short anastomosed with the vein  $R_{2+3}$  which makes an angle at a junction with the vein  $R_4$ . It is also separated from *kyushuensis* and *nigra* by having the male antennal segment 3 almost gradually tapering towards apex, with its dorsal margin almost straight as in ♀ of *kyushuensis*.

*Male.* Similar to *kyushuensis* except as follows. Head (Fig. 1A): palpus 0.9–1.0 times as long as distance from proboscis to antenna; eyes contiguous for a distance 0.8–1.1 times as long as ocellar triangle; facial swelling 1.4–1.7 times as wide as side of face on a mid-line; antennal segment 3 almost gradually tapering towards apex as in ♀ of *kyushuensis*; relative lengths of antennal segments 1–3 as 60:100:653(600–680) and their relative widths 120:153(140–160):173(160–200) (structural characters of head are based on 3 specimens).

Wing (Fig. 2): vein  $R_4$  with subbasal portion connected at a point or short anastomosed with vein  $R_{2+3}$ ; vein  $R_{2+3}$  making an angle at a junction with vein  $R_4$ .

Legs: relative lengths of segments (excluding coxa and trochanter) of fore leg 177(177):236(215–246):100:32(31–35):27(27):23(23):38(38), of mid leg 190(185–192):282(262–300):97(92–100):31(31):27(27):23(23):38(38), of hind leg 259(246–269):307(292–315):113(108–115):38(38):31(31):23(23):38(38), and relative thicknesses of femur, tibia, and tarsomeres 1–3 of hind leg 38(38):24(23–27):18(15–23):16(15–19):15(15) (tarsomere 1, 0.1–0.2, tarsomere 2, 0.4–0.5, tarsomere 3, 0.5 times as wide as long) (based on 3 specimens).

Genitalia (Fig. 4A): gonostylus elongate, slender and only weakly clavate apically.

Length: body 2.8–3.0 mm; wing 3.0–3.3 mm; fore basitarsus 0.33 mm.

*Female.* Unknown.

*Distribution.* Japan (Honshu).

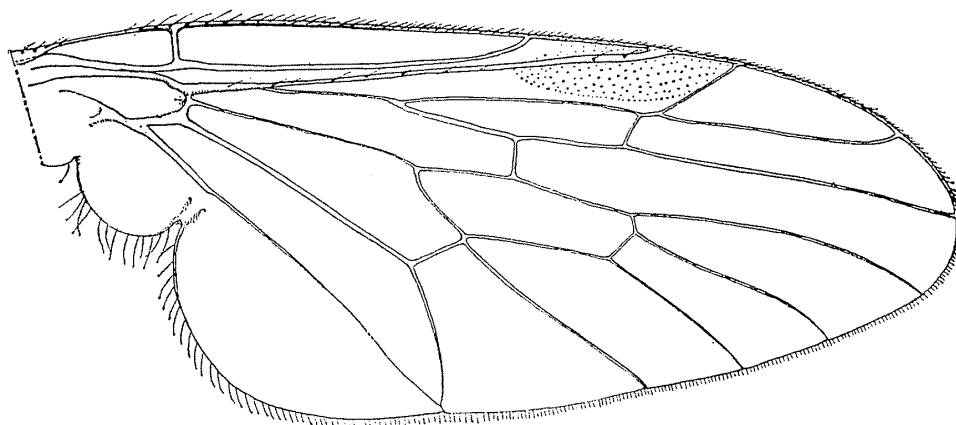


Fig. 2. Male wing of *Spania naitoi*.

Holotype: ♂, Ôginosen, Hyogo Pref., Honshu, 2. v. 1964, T. NAITO (deposited in Kyushu University, Fukuoka).

Paratypes: 2♂, same data as holotype (deposited in Kagoshima University, Kagoshima).

This species is dedicated to Dr. Tikhiko NAITO (Kôbe University), the collector of the type materials.

*Spania nigra* MEIGEN

(Figs. 1C, 1E, 4C)

*Spania nigra* MEIGEN, 1830, Syst. Besch. bekannt. europ. zweifl. Insekt., 6: 335.

A couple of specimens collected in Hokkaido may be separated from *kyushuensis* in the shape of antennal segment 3 (see couplets 3 and 4 in the key; see Fig. 1). In this respect they are identical with *nigra* MEIGEN, 1830 hitherto known from Europe and North America.

In *nigra* the vein  $M_3$  is usually incomplete, but VERRALL (1909: 319) wrote as follows: "the abbreviated third veinlet from the discal cell does not afford a trustworthy character in either sex, as I know it is sometimes complete in the male while in the three females I have seen it is abbreviated in two but complete in the other." In the specimens from Hokkaido (also in *kyushuensis* and *naitoi*) the vein  $M_3$  is always complete.

VERRALL (1909: 361) wrote that the frons is "quite bare" in female *nigra*. The senior author examined the female specimens of *nigra* from Europe in the British Museum (Natural History) and found that the frons is black-haired as in the specimen from Hokkaido and *kyushuensis*.

*Male*. Similar to *kyushuensis* except as follows. Head (Fig. 1C): eyes contiguous for a distance 0.8 times as long as ocellar triangle, total length of antenna 1.2 times distance from antenna to median ocellus, and relative lengths of antennal segments 1–3 as 60 : 100 : 560 and their relative widths 120 : 140 : 180; antennal segment 3 with broad basal part and comparatively thin apical part arising from lower portion of basal part, and boundary between them sharply defined.

Legs: relative lengths of segments (excluding coxa and trochanter) of fore leg 192 : 250 : 100 : 33 : 25 : 21 : 42, of mid leg 200 : 292 : 108 : 38 : 33 : 25 : 42, of hind leg 275 : 325 : 108 : 38 : 33 : 25 : 42, and relative thicknesses of femur, tibia, and tarsomeres 1–3 of hind leg 38 : 25 : 17 : 17 : 13 (tarsomere 1, 0.15, tarsomere 2, 0.45, tarsomere 3, 0.4 times as wide as long) (based on 1 specimen).

Genitalia (Fig. 3C): mid-anterior part of gonocoxosternum shorter than in *kyushuensis*; gonostylus longish, stout and strongly clavate apically.

Length: body 2.3 mm; wing 3.0 mm; fore basitarsus 0.30 mm.

*Female*. Similar to *kyushuensis* except as follows. Head (Fig. 1E): antennal segment 3 as in ♂ of *kyushuensis*, i.e., apical narrow part broader than in ♂, boundary between basal broad part and apical narrow part not so sharp, but the latter

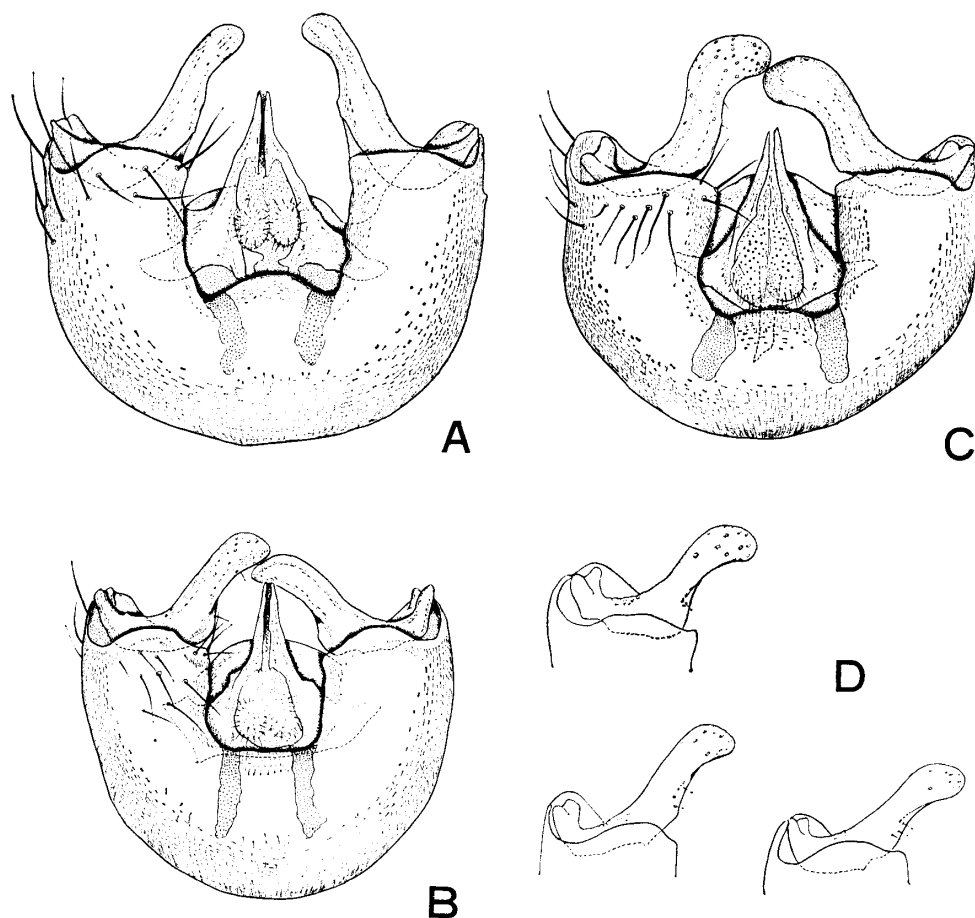


Fig. 3. Male genitalia (excluding epandrium and cerci) of *Spania* spp., ventral view. A: *naitoi*; B & D (right gonostyli): *kyushuensis*; C: *nigra*.

part clearly arising from lower portion of the former; space between antennae 0.5 times width of ocellar triangle, relative lengths of antennal segments 1–3 as 60 : 100 : 600 and their relative widths 100 : 140 : 160.

Legs: relative lengths of segments of fore leg 191 : 255 : 100 : 32 : 27 : 23 : 36, of mid leg 209 : 318 : 118 : 36 : 27 : 18 : 36, of hind leg 273 : 345 : 127 : 45 : 32 : 23 : 45, and relative thicknesses of femur, tibia, and tarsomeres 1–3 of hind leg 45 : 32 : 18 : 18 : 18 (tarsomere 1, 0.14, tarsomere 2, 0.4, tarsomere 3, 0.6 times as wide as long).

Length: body 2.5 mm; wing 2.9 mm; fore basitarsus 0.28 mm.

*Distribution.* Europe, Japan (Hokkaido) and N. America (Maine).

Specimens examined: 1♂, Kurodake, Mt. Daisetsu, Hokkaido, 12. viii. 1967, M. HONDA; 1♀, Nagayamadake, Mt. Daisetsu, Hokkaido, 13. viii. 1967, M. HONDA.

**Acknowledgments** We wish to express our sincere thanks to Dr. T. NAITO (Kôbe University), Prof. A. NAKANISHI (Kyushu University), and Mrs. M. YAFUSO (formerly HONDA) (University of the Ryukyus) for the gift of the material. The

drawings were prepared by the junior author except Figs. 1D and 1E which were made by Miss Yoshiko IKESHIMA (Kagoshima University). Her help is greatly appreciated.

### References

- JAMES, M. T., 1965. Family Rhagionidae. In STONE *et al.* (ed.), A catalog of the Diptera of America north of Mexico: 342-348. *U.S. Dep. Agric. Handb.*, 276.
- LEONARD, M. D., 1930. A revision of the dipterous family Rhagionidae (Leptidae) in the United States and Canada. *Amer. ent. Soc. Mem.*, 7: 1-181.
- NAGATOMI, A., 1982. The genera of Rhagionidae (Diptera). *J. nat. Hist.*, 16: 31-70.
- & K. Iwata, 1976. Female terminalia of lower Brachycera (Diptera). I. *Beitr. z. Ent.*, 26: 5-47.
- OLDROYD, H., 1969. Diptera Brachycera. (a) Tabanoidea and Asiloidea. *Handbk. Ident. Br. Insects*, 9. 132 pp.
- SZILÁDY, E., 1934. Die palaearktischen Rhagioniden. *Annls. hist.-nat. Mus. natn. hung.*, 28: 229-270.
- VERRALL, G. H., 1909. *British Flies*. Vol. 5. 780 pp. London.