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Systematic Study of the Genus *Phora* LATREILLE from Japan (Diptera, Phoridae) V*

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Abstract Two new species, *Phora saigusai* and *P. nipponica*, are described and illustrated. *Phora indivisa* SCHMITZ and *P. convergens* SCHMITZ are recorded from Japan for the first time and redescribed. A key to the males of the Japanese species of *Phora* is provided.

Phora saigusai sp. nov.

Male. Frons relatively wide, frontal index 0.31–0.33, distinctly narrowed posteriorly, width at the level of mediolateral seta 0.73–0.79 of that at supra-antennal. Preocellar seta relatively short, 0.6× as long as mediolateral, slightly ventral to mediolateral; supra-antennal seta 0.8× as long as preocellar; frontal setulae shorter than supra-antennal, several ones bristly, roughly arranged in two rows. Palpus with about 4 short bristles on distal portion.

Wing hyaline, very slightly tinged with grayish brown; vein R_{4+5} brownish yellow to yellowish brown, other veins brown except pale A_1. Costa long, costal index 0.55–0.57; 1st costal sector distinctly shorter than 2nd, costal sector index 0.74–0.79; vein M_2 weakly bisinuate, vein M_{3+4} bisinuate; vein A_1 complete to wing margin; costal cilia 2.6–4.0× as long as width of 2nd costal sector; axillary margin with 7–8 hairs. Wing length 2.17–2.60 mm, width 1.02–1.21 mm.

Legs black; fore leg with tip of femur, whole tibia and tarsus brownish yellow, 3rd to 5th fore tarsomeres darkened on dorsal surface. Fore tibia 0.84–0.88× as long as 1st to 4th tarsomeres together, with a dorsal row of rather strong setulae; fore tarsus moderately dilated, narrower than tip of fore tibia, relative lengths of fore tarsomeres approximately 17: 11: 10: 8: 7. Mid tibia with 1 anterior bristle and a dorsal row of 4–6 bristles. Hind tibia with 1 anterior bristle; ventroproximal prominence of hind femur indistinct.

Male genitalia shining black; right surstylus reddish brown. Epandrium with an inner longitudinal ridge at proximal portion of right side. Lateral lobe of epandrium with posteroventral corner weakly produced posteriorly and pointed. Right surstylus finger-like, curved inwardly on distal portion, with proximal portion of dorso-inner margin greatly produced to form a roughly rectangular plate. Left surstylus dorsoproximally with a shallow membraneous incision, with posterodorsal

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corner produced posterodorsally and angulate, with dorso-inner margin strongly produced inwardly to form a triangular-shaped projection, which has the posterior margin gnawed; inner side with posterior marginal portion inwardly produced to form a trigonal projection as shown in Fig. 1D. Right hypandrial lobe widely and deeply excavated on posterior 1/2 of ventromesal surface; right lateral margin of the excavation ventrally produced to form a narrow strip-like lobe. Right process of right hypandrial lobe narrow, 3× as long as wide, parallel-sided, with a inner small ridge at distal portion. Left process of right hypandrial lobe greatly enlarged, solid, with distal margin of dorsal surface produced to form a broad laminate flange, with posteroventral corner distally produced to form a flat projection, which bears bluntly topped robust hairs, densely covered with yellowish long hairs on outer lateral surface. Aedeagus without Y-shaped extension of right lateral plate, carrying a small sclerite on posteroventral membraneous area.

Body length: 2.3–2.9 mm.

Female. Differing from male as follows: Frons wider, frontal index 0.38–0.39, parallel-sided. Wing clear, veins pale brown; costa shorter, costal index 0.48–0.49; costal sector index 0.88–0.93; vein M_2 nearly straight on distal 2/3; vein M_{3+4} weakly bisinuate; cilia longer; wing length 1.95–2.33 mm, width 0.93–1.09 mm. Mid tibia with a dorsal row of 2–4 bristles.

Body length: 2.2–2.5 mm.

Holotype: ♂ (Type No. 2514, Kyushu Univ.), Mt. Hakuchôzan (1,300 m), Izumi-mura, Kumamoto Pref., 17. v. 1978, T. SAIGUSA.

Paratypes. [HONSHU] 5♂♂ 6♀♀, Oirase (600 m), Towada, Aomori Pref., 20–21. vii. 1980, H. TAKEMOTO; 3♂♂ 1♀, same locality and date, K. MAETO; 1♂, Yachionsen, Aomori Pref., 4. vii. 1957, M. TAKAHASHI; 1♂, Ooshimizu-Ichinose (1,200–1,420 m), Katashina-mura, Gunma Pref., 24. viii. 1980, T. GOTÔ; 2♂♂ 1♀, Shimashimadani (1,000–1,300 m), Nagano Pref., 27–28. vii. 1980, K. MAETÔ; 1♂ 2♀♀, same locality and date, H. TAKEMOTO; 1♂ 1♀, Tokugo-tôge (1,700–2,100 m), Nagano Pref., 27. vii. 1980, K. MAETÔ; 1♂, Mt. Nishihotakadake (2,000 m), Minamiazumi-gun, Nagano Pref., 18. ix. 1978, T. GOTÔ. [SHIKOKU] 14♂♂ 2♀♀, Mt. Tsurugisan (1,500 m), Ichiu-mura, Tokushima Pref., 20. v. 1982, T. GOTÔ; 5♂♂ 4♀♀, Mt. Ishizuchiyama, Ehime Pref., 11. vi. 1950, S. ITÔ; 3♂♂, Omogo, Ehime Pref., 23. v. 1977, M. HONDA. [KYUSHU] 2♂♂, Mt. Hikosan, Fukuoka Pref., 2. vi. 1978, T. GOTÔ; 1♂, same locality and collector, 25–29. iv. 1979, Malaise trap; 1♂ 1♀, Yoshibu (1,300 m), Mts. Kuju, Ôita Pref., 24. ix. 1978, K. ÔHARA; 1♂, Nitatôge (1,000 m), Unzen, Nagasaki Perf., 4. ix. 1978, T. GOTÔ; 1♂, Aso-Nishiguchi, Kumamoto Pref., 24. v. 1979, H. MAKIHARA; 1♂ 3♀♀, Mt. Sobosan (1,757 m), Taketa City, Ôita Pref., 13. vii. 1979, T. GOTÔ; 1♂ 1♀, same locality as holotype, 16. v. 1978, M. YAMAMOTO; 1♂, same data as holotype; 3♂♂ 1♀, same locality and date, K. ÔHARA; 1♂ 1♀, same locality and date, T. GOTÔ; 1♂ 9♀♀, same locality, 26. v. 1978, K. ÔHARA; 6♂♂ 4♀♀, same locality, 27. v. 1978, K. ÔHARA; 1♂ 1♀, same locality and date, T. GOTÔ; 1♂ 1♀, same

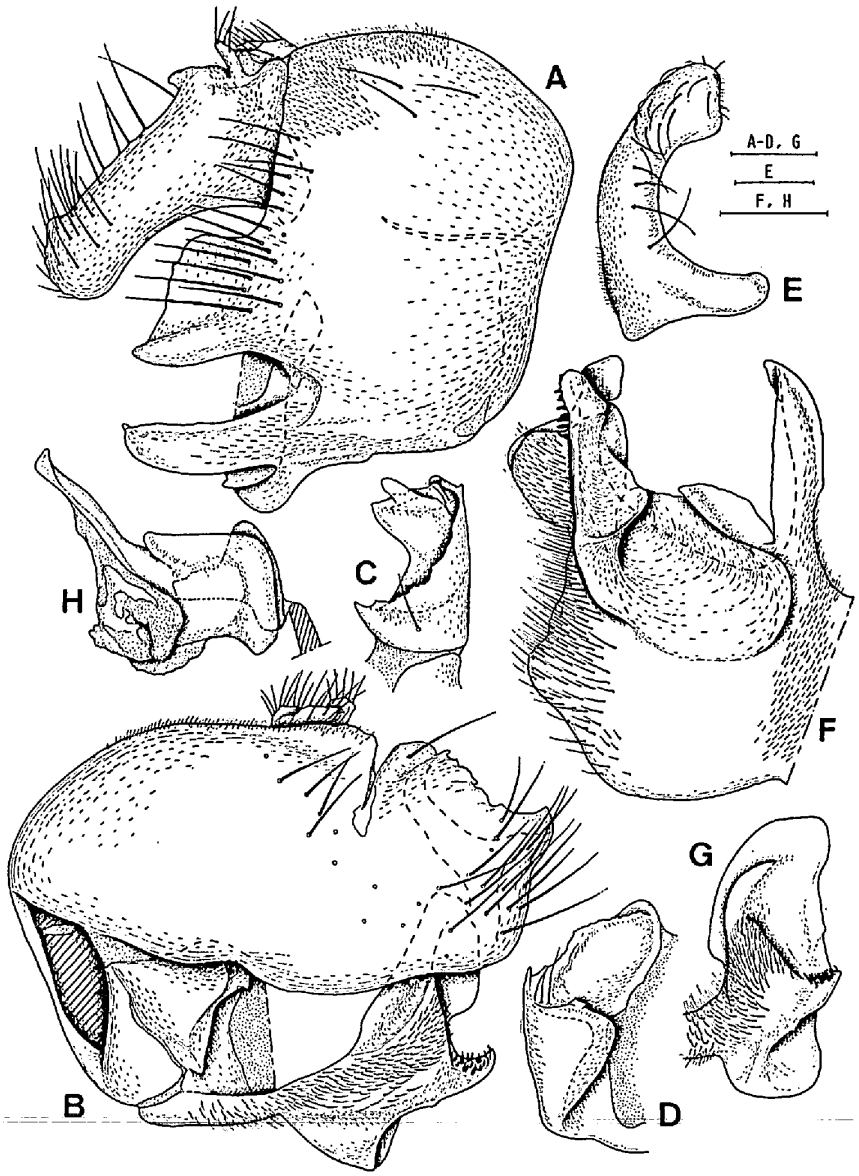

Fig. 1. Male genitalia of *Phora saigusai* sp. nov. A, Genitalia in right lateral view; B, ditto in left lateral view; C, left surstylus in dorsal view; D, ditto in inner view; E, right surstylus in dorsal view; F, right hypandrial lobe in ventral view; G, left process of right hypandrial lobe in posterolateral view; H, aedeagus in right lateral view. Scales: 0.1 mm.

locality, 9. vii. 1978, T. Saigusa; 6 ♂♂ 2 ♀♀, same locality and date, K. Ôhara; 2 ♂♂ 3 ♀♀, same locality and date, T. Gotô; 5 ♂♂ 3 ♀♀, same locality, 5. iv. 1980, T. Gotô; 1 ♂, Kuruson-kyo, Ebino City, Miyazaki Pref., 20. v. 1977, S. Ôhara; 1 ♂, Mt. Takachihonomine (1,574 m), Kirishima, Miyazaki Pref., 26. vii. 1977, K. Nichô; 6 ♂♂ 6 ♀♀, same locality, 7. vii. 1979, T. Gotô.

Distribution. Japan (Honshu, Shikoku, Kyushu).

Remarks. This new species, like most in the genus, is recognized in the male by the genitalia. Particularly the structures of the left surstylus and the left process of right hypandrial lobe described above make it distinct from the other known species.

P. saigusai is frequently found at the mountain deciduous forests and appears in spring to summer.

Phora nipponica sp. nov.

Male. Frons moderately wide, frontal index 0.29–0.31, narrowed posteriorly, width at the level of mediolateral seta 0.68–0.80 of that at supra-antennal. Preocellar seta relatively long, 0.7× as long as mediolateral, distinctly ventral to mediolateral; supra-antennal seta 0.7× as long as preocellar; frontal setulae bristly, as long as supra-antennal, roughly arranged in two rows. Palpus with 4–6 short bristles on distal portion.

Wing hyaline, slightly tinged with grayish brown; vein R_{4+5} brownish yellow to reddish brown, veins M_1, M_2 and M_{3+4} brown, vein A_1 pale. Costa long, costal index 0.55–0.58; 1st costal sector distinctly shorter than 2nd, costal sector index 0.76–0.85; vein M_2 weakly bisinuate, vein M_{3+4} bisinuate; vein A_1 incomplete, obsolescent at distal extreme; costal cilia relatively short, 2.5–3.0× as long as width of 2nd costal sector; axillary margin with 6–9 hairs. Wing length 2.54–3.23 mm, width 1.10–1.47 mm.

Legs black; fore leg with tip of femur, whole tibia and tarsus brownish yellow to brown, 2nd to 5th fore tarsomeres darkened. Fore tibia 0.9× as long as 1st to 4th tarsomeres together, with a dorsal row of rather strong setulae; fore tarsus dilated, slightly narrower than tip of fore tibia, relative lengths of fore tarsomeres approximately 21: 11: 10: 8: 8. Mid tibia with 1 anterior bristle and a dorsal row of 4–7 bristles. Hind tibia with 1 anterior bristle; ventroproximal prominence of hind femur indiscernible.

Male genitalia shining black; right surstylus yellowish brown. Epandrium with a longitudinal inner ridge at proximal marginal portion of right side. Lateral lobe of epandrium with posterior margin emarginate and with posterodorsal and posteroventral corners somewhat produced and pointed. Right surstylus narrowed on proximal 3/5, then gradually widened distally in lateral view, curved inwardly on distal portion, bearing bristly hairs on distal 2/5. Left surstylus dorsoproximally with a realtively deep membraneous incision, surstylus narrow, abruptly widened on distal portion in lateral view, with dorsoproximal portion of dorsal surface strongly produced dorsally to form a heavy process as shown in Fig. 2D. Right hypandrial lobe widely and deeply excavated on posterior 1/2 of ventromesal surface. Right process of right hypandrial lobe gradually tapering to rounded distal margin, with an inner triangular-shaped ridge as shown in Fig. 2E. Left process of right hypandrial lobe enlarged, solid, parallel-sided in lateral view, excavated on posterior

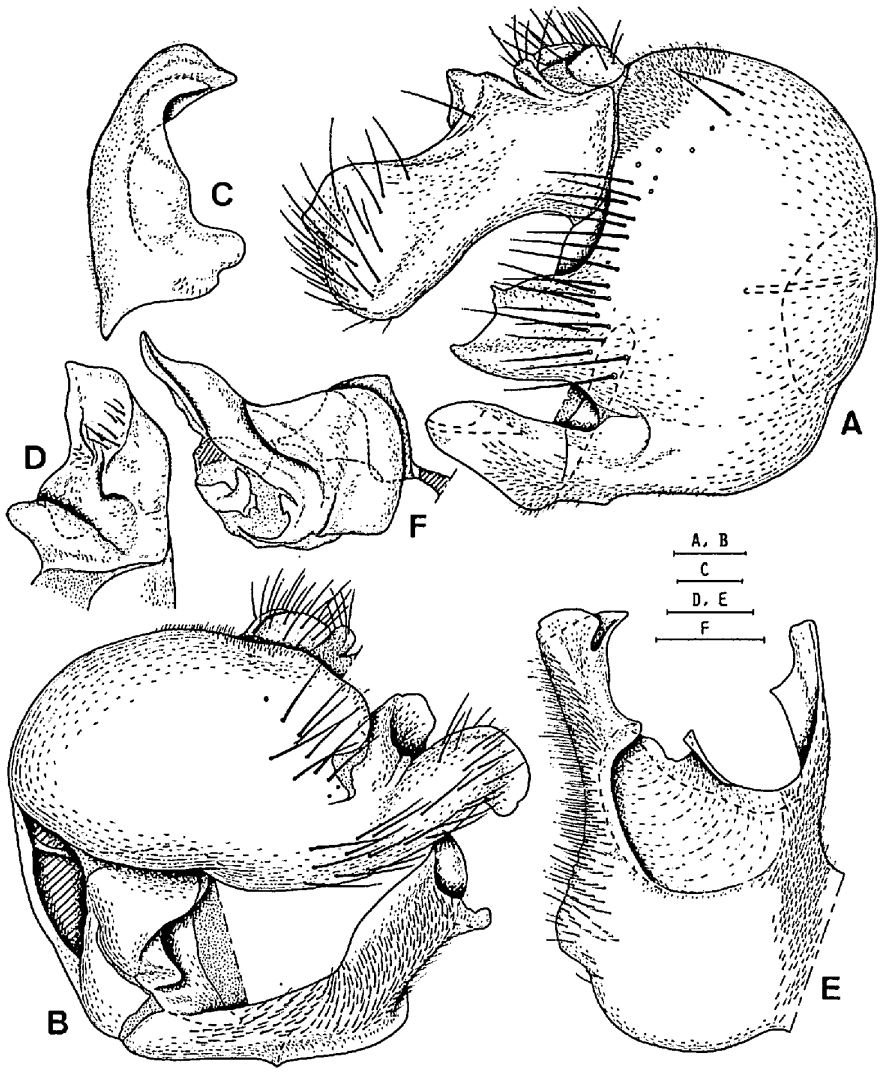

Fig. 2. Male genitalia of *Phora nipponica* sp. nov. A, Genitalia in right lateral view; B, ditto in left lateral view; C, right surstylus in dorsal view; D, left surstylus in dorsal view; E, right hypandrial lobe in ventral view; F, aedeagus in right lateral view. Scales: 0.1 mm.

surface, densely covered with yellowish longish hairs on left lateral surface. Aedeagus without Y-shaped extension of right lateral plate, carrying a small sclerite on posteroventral membraneous area.

Body length: 2.5–3.8 mm.

Female. Differing from male as follows: Frons wider, frontal index 0.35–0.36, parallel-sided; preocellar seta at the same level with mediolateral or slightly ventral. Wing clear, veins M_1, M_2 and M_{3+4} yellow to pale brown; costal index 0.50–0.53; costal sector index 0.87–0.88; wing length 2.54–2.95 mm, width 1.18–1.33 mm. Fore tibia and tarsus more yellowish; mid tibia with a dorsal row of 3–4 bristles.

Body length: 2.7–3.3 mm.

Holotype: ♂ (Type No. 2515, Kyushu Univ.), Mt. Hiuchigatake (1,660 m), Hinoemata-mura, Fukushima Pref., 22. viii. 1980, Tadao GOTÔ.

Paratypes. [HOKKAIDO] 1 ♂, Upepesanke, 22. vii. 1970, A. NAKANISHI. [HONSHU] 23 ♂♂ 6 ♀♀, same data as holotype; 8 ♂♂ 2 ♀♀, same locality and collector as holotype, 23. viii. 1980; 8 ♂♂ 3 ♀♀, Ichinose-Sanpeitôge (1,420–1,760 m), Katashina-mura, Gunma Pref., 20. viii. 1980, T. GOTÔ; 8 ♂♂ 4 ♀♀, same locality and collector, 24. viii. 1980; 1 ♂ 1 ♀, Shigakôgen (1,600 m), Nagano Pref., 11. ix. 1953, S. ITÔ; 1 ♂, Mt. Kitadake (2,240 m), Ashiyasu-mura, Yamanashi Pref., 29. vii. 1979, K. ÔHARA; 3 ♂♂, same locality, 27. viii. 1980, T. GOTÔ; 2 ♂♂, same locality, 28. viii. 1980, T. GOTÔ; 5 ♂♂ 4 ♀♀, Tokugo-tôge (2,000 m), Nagano Pref., 26. viii. 1978, K. MAETÔ; 1 ♂ 1 ♀, Mt. Nishihotakadake (2,000 m), Minamiazumi-gun, Nagano Pref., 18. ix. 1978, T. GOTÔ; 1 ♂, Mt. Kisokomagatake, Nagano Pref., 9. viii. 1963, T. SAIGUSA.

Distribution. Japan (Hokkaido, Honshu).

Remarks. This new species superficially resembles *P. convergens* SCHMITZ in having the large body and the similar wing, but the former is easily distinguished from the latter by the mid tibia with 1 anterior bristle and by the differently shaped male genitalia.

P. nipponica is found at the subalpine deciduous and conifer forests in Central Honshu. It appears in summer.

Phora convergens SCHMITZ

Phora convergens SCHMITZ, 1920, Jaarb. nat. Gen. Limb., **4**: 117; 1927, Konowia, **6**: 152; 1955, Flieg. palaearkt. Reg., **33**: 321.

Male. Frons moderately wide, frontal index 0.29–0.31, narrowed posteriorly, width at the level of mediolateral seta 0.73–0.76 of that at supra-antennal. Preocellar seta 0.6× as long as mediolateral, at the same level with mediolateral; supra-antennal 0.7–0.8 of preocellar in length; frontal setulae bristly, long, 0.7–1.1× as long as supra-antennal, arranged in two rows. Palpus with 4 short bristles.

Wing hyaline, very slightly tinged with grayish brown; vein R_{4+5} brownish yellow, veins M_1, M_2 and M_{3+4} brown, vein A_1 pale. Costa long, costal index 0.55–0.56; 1st costal sector distinctly shorter than 2nd, costal sector index 0.71–0.77; veins M_2 and M_{3+4} weakly bisinuate; vein A_1 complete to wing margin, sometimes obsolescent at distal extreme; cilia relatively long, 3.3–4.0× as long as width of 2nd costal sector; axillary margin with 7–8 short hairs. Wing length 2.54–3.43 mm, width 1.18–1.57 mm.

Legs black; fore leg with tip of femur, whole tibia and tarsus brownish yellow, 2nd to 5th fore tarsomeres brown on dorsal surfaces. Fore tibia 0.87× as long as 1st to 4th tarsomeres together, with a dorsal row of spine-like short hairs; fore tarsus distinctly dilated, 1st to 3rd tarsomeres as wide as tip of fore tibia, relative lengths of fore tarsomeres approximately 29 : 15 : 14 : 12 : 10. Mid tibia with 2

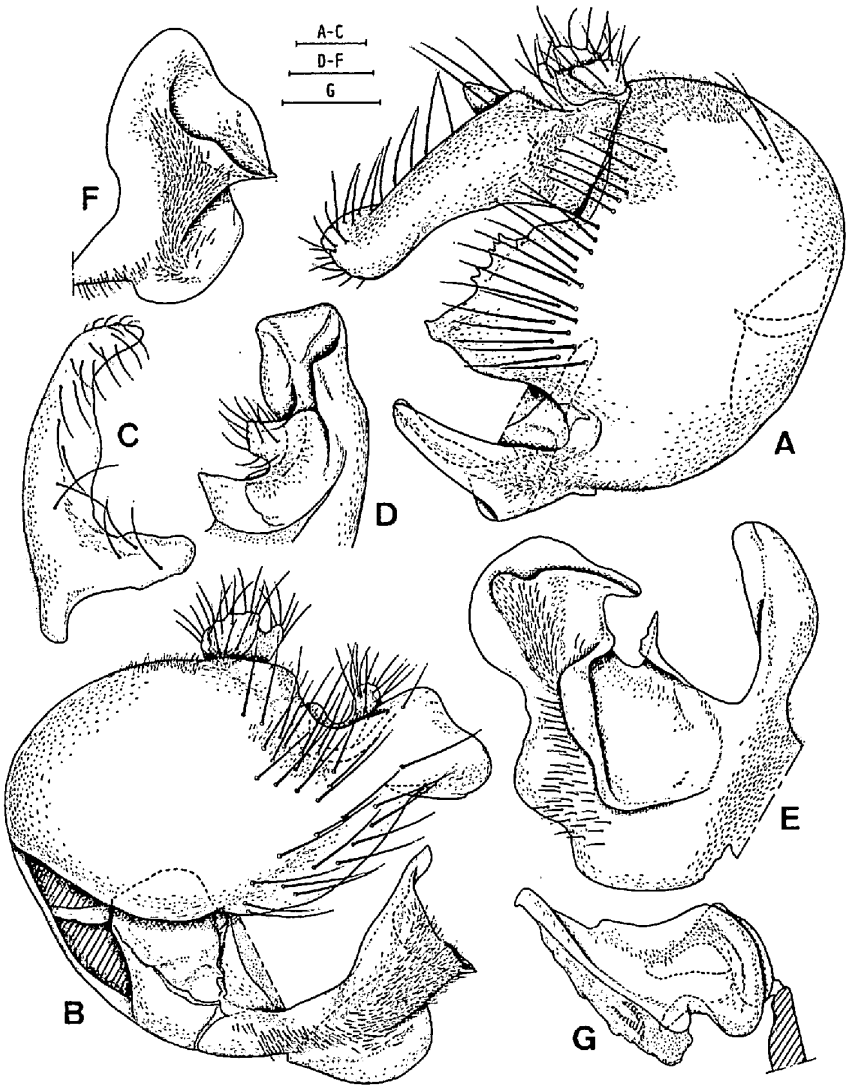

Fig. 3. Male genitalia of *Phora convergens* Schmitz. A, Genitalia in right lateral view; B, ditto in left lateral view; C, right surstylus in dorsal view; D, left surstylus in dorsal view; E, right hypandrial lobe in ventral view; F, left process of right hypandarial lobe in posterolateral view; G, aedeagus in right lateral view. Scales: 0.1 mm.

anterior bristles and a dorsal row of 6–8 bristles. Hind tibia with 1 anterior bristle; ventroproximal prominence of hind femur indistinct.

Male genitalia shining black; right surstylus reddish brown. Epandrium with an inner ridge at proximal marginal portion of right side. Lateral lobe of epandrium broad, with oblique posterior margin serrate and with posteroventral corner pointed. Right surstylus slender, with distal portion inwardly curved, with proximal portion of dorso-inner margin greatly produced inwardly to form a roughly rectangular plate. Left surstylus dorsoproximally with a narrow membraneous incision, narrowed posteriorly on proximal 2/3, then widened in lateral view, produced dorsally

near middle of dorso-inner margin to form a bristly haired projection. Right hypandrial lobe widely and deeply excavated on posterior 2/3 of ventromesal surface. Right process of right hypandrial lobe slender, gradually tapering to apex, with an inner strip-like ridge. Left process of right hypandrial lobe very enlarge, solid, with distal margin of dorsal surface produced to form a yellowish laminate flange, densely clothed with yellowish longish hairs on left lateral surface. Aedeagus without Y-shaped extension of right lateral plate, carrying a small U-shaped sclerite on posteroventral membraneous area.

Body length: 2.5–3.2 mm.

Female. Differing from male as follows: Frons wider, frontal index 0.35–0.36, parallel-sided; preocellar seta at the same level with mediolateral, shorter than in male. Wing clear, costa brownish, M_1, M_2 and M_{3+4} pale brown; costa shorter, costal index 0.50–0.51; costal sector index 0.83–0.84; wing length 2.39–3.09 mm, width 1.06–1.37 mm. Mid tibia with 2 anterior bristles as in male and a dorsal row of 3–4 bristles.

Body length: 2.1–3.0 mm.

Specimens examined. [HOKKAIDO] 77 ♂♂, Gensei-kaen, Sarobetsu, Soya, 8. ix. 1977, M. YAMAMOTO; 3 ♂♂ 4 ♀♀, Shiretoko-goko, Abashiri, 6. xi. 1977, M. YAMAMOTO. [HONSHU] 3 ♂♂ 7 ♀♀, Mt. Oodake (900–1,584 m), Mts. Hakkodasan, Aomori Pref., 13. viii. 1980, T. GOTÔ; 48 ♂♂ 9 ♀♀, Mt. Hiuchigatake (1,660 m), Hinoemata-mura, Fukushima Pref., 22–23. viii. 1980, T. GOTÔ; 18 ♂♂ 7 ♀♀, Ichinose-Sanpeitôge (1,420–1,760 m), Katashina-mura, Gunma Perf., 20–24. viii. 1980, T. GOTÔ; 2 ♂♂, Mt. Kinpozan, Yamanashi Pref., 5. ix. 1975, J. EMOTO; 1 ♂, same locality and date, T. GOTÔ; 44 ♂♂ 37 ♀♀, Mt. Kitadake (1,600–2,240 m), Ashiyasu-mura, Yamanashi Pref., 27–28. viii. 1980, T. GOTÔ; 2 ♂♂, Mt. Kisokomagatake, Nagano Pref., 9. viii. 1963, T. SAIGUSA; 1 ♂, same locality and collector, 13. viii. 1963; 1 ♂, same locality and collector, 19. viii. 1963; 2 ♂♂, Norikurakôgen (1,800 m), Minamiazumi-gun, Nagano pref., 25. vii. 1979, K. ÔHARA (light trap).

Distribution. Japan (Hokkaido, Honshu), Europe.

Remarks. So far as Japanese species are concerned, this species seems to be related to the preceding species on account of the narrow left surstylus, but it is readily distinguished from the latter by the mid tibia bearing 2 anterior bristles and the details of male genitalia.

P. convergens inhabits the subalpine conifer forests in Honshu and Hokkaido and appears in summer to early autumn. The males were observed flying in swarm, assembling in large numbers, above a stake and behind a standing board in a plain (personal communication).

Phora indivisa SCHMITZ

Phora indivisa SCHMITZ, 1948 a, Brotéria, **44**: 112; 1955, Flieg. palearkt. Reg., **33**: 323.

Male. Frons moderately wide, frontal index 0.30, slightly narrowed posteriorly

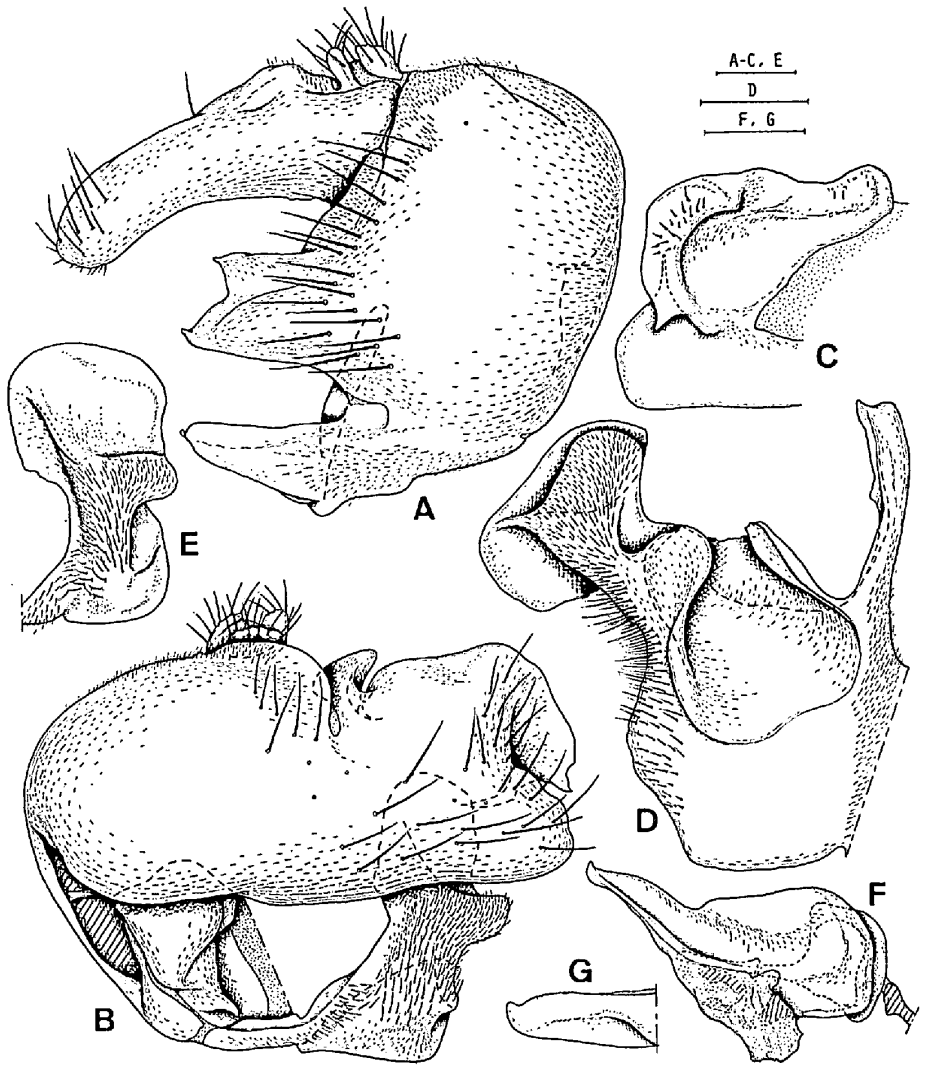

Fig. 4. Male genitalia of *Phora indivisa* SCHMITZ. A, Genitalia in right lateral view; B, ditto in left lateral view; C, left surstylus in inner view; D, right hypandrial lobe in ventral view; E, left process of right hypandrial lobe in posterolateral view; F, aedeagus in right lateral view; G, distal portion of aedeagus in dorsal view. Scales: 0.1 mm.

width at the level of mediolateral seta 0.86 of that at supra-antennal. Preocellar seta 0.7 of mediolateral in length, at the same level with medioateral; supra-antennal seta 2/3 as long as preocellar; frontal setulae rather sparse, bristly, as long as supra-antennal, arranged in two rows. Palpus with 4 short bristly hairs.

Wing hyaline, slightly tinged with gray; vein R_{3+4} reddish brown, veins M_1, M_2 and M_{3+4} brown, vein A_1 pale yellow. Costal index 0.55; 1st costal sector distinctly shorter than 2nd, costal sector index 0.74; veins M_2 and M_{3+4} bisinuate; vein A_1 complete to wing margin; costal cilia 2.3× as long as width of 2nd costal sector, 0.11 mm long; axillary margin with 7 hairs. Wing length 2.63 mm, width 1.21 mm.

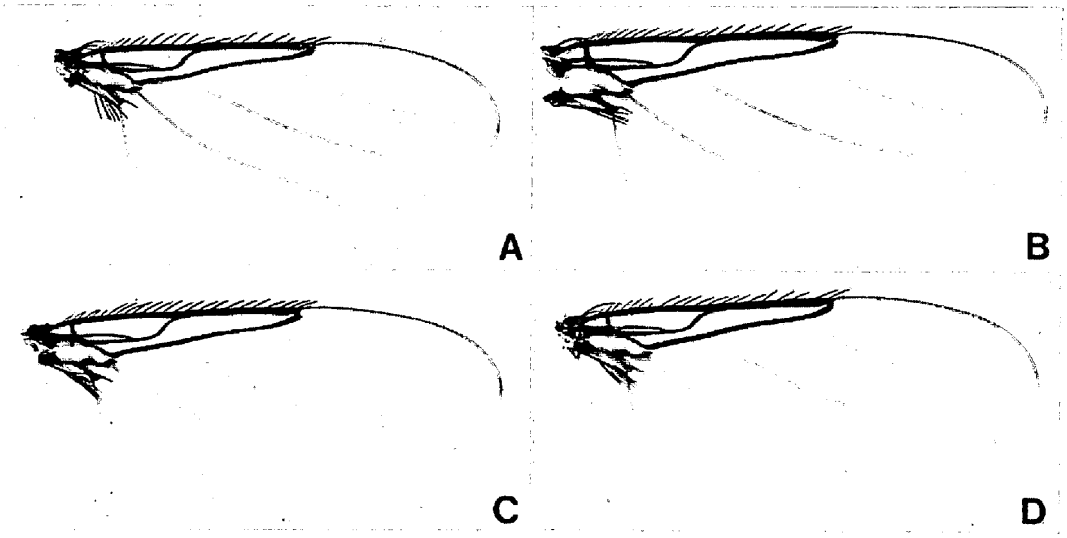

Fig. 5. Male wings. A, *Phora saigusai* sp. nov.; B, *P. nipponica* sp. nov.; C, *P. convergens* SCHMITZ; D, *P. indivisa* SCHMITZ.

Legs black; fore leg with tip of femur, whole tibia and tarsus yellowish brown, 2nd to 5th fore tarsomeres darkened. Fore tibia slightly shorter than 1st to 4th tarsomeres together, bearing a dorsal row of spine-like hairs; fore tarsus distinctly dilated, as wide as tip of fore tibia, all tarsomeres longer than wide, relative lengths of fore tarsomeres approximately 14: 7: 7: 6: 6. Mid tibia with 1 anterior bristle and a dorsal row of 5 bristles. Hind tibia with 1 anterior bristle; ventroproximal prominence of hind femur indiscernible.

Male genitalia shining black. Epandrium with an inner long ridge at proximal marginal portion of right side. Lateral lobe of epandrium nearly parallel-sided, with posterior margin emarginate and with posterodorsal and posteroventral corners shortly produced posteriorly and pointed. Right surstylus slender, curved inwardly on distal protion, with proximal portion of dorso-inner margin strongly produced to form a roughly rectangular plate. Left surstylus dorsoproximally with a shallow membraneous incision, broad, roughly quadrate in lateral view, produced on ventral 1/2 of posterior margin to form a large flat projection with distal margin rounded, with inner posterodorsal corner shortly produced inwardly to form a flat process which is sharply pointed on its posteroventral corner as shown in Fig. 4C. Right hypandrial lobe widely and deeply excavated on posterior 1/2 of ventromesal surface, with right lateral margin of the excavation produced to form a narrow strip-like lobe. Right process of right hypandrial lobe relatively small, tapering distally to rounded tip, with an inner weak ridge at distal portion. Left process of right hypandrial lobe markedly enlarged, solid, produced on dorsodistal portion to form a large laminate flange which is yellowish and translucent, with a weak excavation on posterior surface and a deep one on ventral surface, densely covered with yellowish longish hairs on outer lateral surface. Aedeagus somewhat slender,

without Y-shaped extension of right lateral plate, carrying a U-shaped sclerite lying on ventral membraneous area.

Body length: about 2.8 mm.

Female. Unknown.

Type specimen examined. Holotype (♂), Oberlaussa, A. S., Europe, leg. H. FRANZ, x655.

Specimen examined. [HONSHU] 1 ♂, Kisokomagatake, Nagano Pref., 19. viii. 1963, T. SAIGUSA.

Distribution. Japan (Honshu), Europe (Austria).

Remarks. This species and the preceding three form a small species group characterized by the slender right surstylus and the epandrial inner dridge, but it is very distinctive in the structures of left surstylus and the left process of right hypandrial lobe.

P. indivisa may be a very rare species. In Europe it has been known by the type-specimen only. The Japanese specimen, which was directly compared with the type in Schmitz's Collection, is the second to be recorded.

Key to the Males of the Japanese Species of *Phora*

1. Hind tibia with 2 anterior bristles on proximal 1/2.....2
— Hind tibia with 1 anterior bristle on proximal 1/2.....3
2. Wing markedly tinged with brown; costal index about 0.53; costal cilia long, 3.5× as long as width of 2nd costal sector; frons narrowed posteriorly; right surstylus very large, roughly elongate rectangular.....*dubia* (ZETTERSTEDT)
— Wing slightly tinged with grayish brown; costa rather short, costal index 0.46–0.47; costal cilia short, 2.0–2.3× as long as width of 2nd costal sector; frons parallel-sided; right surstylus spatulate.....*occidentata* MALLOCH
3. Mid tibia with 2 anterior bristles on proximal 1/2.....4
— Mid tibia with 1 anterior bristle on proximal 1/2.....8
4. Frons moderately wide, frontal index 0.29–0.31.....5
— Frons distinctly narrow, frontal index 0.13–0.22; mid tibia with a dorsal row of 7–9 long bristles; right surstylus large, entirely short haired.....*contractifrons* GOTÔ
5. First costal sector shorter than 2nd, costal sector index 0.71–0.89.....6
— First costal sector much longer than 2nd, costal sector index 1.22–1.23; costa short, costal index 0.46–0.47; wing brownish; left surstylus with posterodorsal corner produced into a long, slender, pointed process (visible without dissection); small species, body length 1.9–2.2 mm.....*convallium* SCHMITZ
6. Wing clear or slightly brownish; right surstylus strongly spatulate or slender.....7
— Wing markedly tinged with brown; right surstylus very large, roughly elongate rectangular (aberrant specimen with hind tibia bearing 1 anterior bristle on

proximal 1/2)..... *dubia* (ZETTERSTEDT)

7. Costa rather short, costal index 0.46–0.47; costal cilia short, 2.0–2.3× as long as width of 2nd costal sector; frons parallel-sided; right surstylus spatulate; left surstylus with distal margin bearing 3 pointed processes (aberrant specimen with hind tibia bearing 1 anterior bristle on proximal 1/2)..... ..... *occidentata* MALLOCH

— Costa long, costal index 0.55–0.56; costal cilia relatively long, 3.3–4.0× as long as width of 2nd costal sector; frons distinctly narrowed posteriorly; right surstylus slender, reddish brown.....*convergens* SCHMITZ

8. Hind femur with ventroproximal prominence sparsely setulose or bearing a few bristly hairs, in some species such a prominence indiscernible.....9

— Hind femur with ventroproximal prominence triangular and basally furnished with bristly hairs; costal index 0.48–0.49; costal cilia long, 4–5× as long as width of 2nd costal sector; right surstylus with posterodorsal corner more or less produced posterodorsally and rounded.....*pubipes* SCHMITZ

9. Anal tube of normal form, with cerci and hypoproct short bristly haired; lateral lobe of epandrium present; left process of right hypandrial lobe produced poterodorsally and inwardly 10

— Anal tube somewhat portruding posterodorsally, with ceric and hypoproct bearing longish bristly hairs; lateral lobe of epandrium absent; left process of right hypandrial lobe shortly extending posteriorly; right surstylus small, square in shape.....*prisca* GOTÔ

10. Left process of right hypandrial lobe short, bilobed distally; right hypandrial lobe with poteroventral surface flat.....11

— Left process of right hypandrial lobe slender and long, or enlarged and solid; right hypandrial lobe with posteroventral surface shallowly or deeply excavated 14

11. Right hypandrial lobe with posterior margin produced to form a small projection near its middle; right surstylus roughly spatulate.....12

— Right hypandrial lobe with posterior margin entire, without such a projection; right surstylus ovate or roughly rectangular.....13

12. Left surstylus with a U-shaped notch at ventral 1/4 of posterior margin; right surstylus with distal margin distinctly rounded; wing slightly tinged with grayish brown.....*amplifrons* GOTÔ

— Left surstylus without such a notch; right surstylus with distal margin nearly straight; wing clear.....*kitadakensis* GOTÔ

13. Right surstylus roughly ovate in lateral view, entirely clothed with short hairs; right process of right hypandrial lobe large, parallel-sided, with distal margin rounded.....*crinitimargo* GOTÔ

— Right surstylus small, roughly rectangular in lateral view, with posterior margin straight and with posteroventral corner angulate; right process of right hypandrial lobe equilateral triangular, pointed at apex.....*parvisaltator* GOTÔ

14. Right hypandrial lobe with posteroventral surface shallowly excavated; right process of right hypandrial lobe flat, slender and sparsely short haired or bare 15
— Right hypandrial lobe with posteroventral surface deeply excavated; right process of right hypandrial lobe enlarged and solid, in most species bearing dense longish hairs on left lateral surface 18
15. Right surstylus triangle-shaped in lateral view; left surstylus with posterodorsal portion partially translucent and shallowly excavated; epandrial lobe weakly developed, not protruding posteriorly beyond membraneous incision separating left surstylus form epandrium 16
— Disagreeing with above characters; epandrial lobe well developed, roughly rectangular 17
16. Left process of right hypandrial lobe with distal portion excavated; left surstylus with proximal dorso-inner margin inwardly produced to form a rectangular process; costal cilia short, 1.3–2.0× as long as width of 2nd costal sector ..... *bullata* Schmitz
— Left process of right hypandrial lobe without such a excavation at distal portion; left surstylus with proximal dorso-inner margin inwardly produced to form a slender triangular process; costal cilia moderately long.. *incisurata* Gotô
17. Right surstylus markedly large, strongly widened distally in lateral view, angulate at posterodorsal corner; epandrial lobe rugose on outer surface, with distal margin denticulate..... *holosericea* Schmitz
— Right surstylus elongate ovate in lateral view; epandrial lobe smooth on outer surface and on distal margin; small species, body length 1.6–2.0 mm..... ..... *edentata* Schmitz
18. Right surstylus slender, curved inwardly; left process of right hypandrial lobe with left lateral surface clothed with dense longish hairs..... 19
— Right surstylus roughly spatulate in lateral view; left process of right hypandrial lobe almost bare; lateral lobe of epandrium posteriorly produced into two long, pointed processes ..... *lacunifera* Gotô
19. Left surstylus broad, dorsoproximally with a shallow membraneous incision; left process of right hypandrial lobe very large, posterodorsally with a broad, laminate flange; right surstylus parallel-sided on distal 2/3 in lateral view..20
— Left surstylus narrow, separated from epandrium by a deep membraneous incision; left process of right hypandrial lobe without such a broad flange; right surstylus gradually widened distally on distal 1/2 in lateral view .... *nipponica* sp. nov.
20. Left process of right hypandrial lobe with posteroventral corner produced to form a flat projection which bears bluntly topped hairs; left surstylus with posterodorsal corner shortly produced and angulate..... *saigusai* sp. nov.
— Left process of right hypandrial lobe without such a projection at posteroventral corner; left surstylus with posterodorsal corner rounded.. *indivisa* Schmitz

Through part I to V, I have recorded 19 species of *Phora* from Japan. Nine of them are endemic to Japan. As to the remaining species, 7 are Palaearctic, 2 Holarctic and 1 mainly Oriental in distribution. No species in common only with North America has been found in Japan.

The Japanese *Phora* seems to be separated into several species groups. Grouping of the species and discussion on the phylogenetic relationships will be appeared in a separate paper when I have finished my study on the Nepalese and the Taiwanese *Phora* species in my collection which include a number of close relatives of the Japanese and the European species.

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