

A Synopsis of the *Syntretus* Foerster Species of Taiwan (Hymenoptera: Braconidae: Euphorinae)¹

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ABSTRACT

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The present synopsis is the first review of the *Syntretus* Foerster species distributed in Taiwan. Twelve species are revised of which seven proved to be new to science: *S. choui* sp. n., *S. extensus* sp. n., *S. secutensus* sp. n., *S. subglaber* sp. n., *S. temporalis* sp. n., *S. transitus* sp. n. and *S. varus* sp. n. The rear five species are new to the fauna of Taiwan. Detailed descriptions are presented for the new species; taxonomic remarks are added to the known species. A key is provided for the twelve *Syntretus* species recorded in Taiwan and completed with 84 original figures of diagnostic significance. A checklist was compiled for the *Syntretus* species of the East Palearctic and Oriental Regions.

Key words: Braconidae, *Syntretus*, New species, New record, Key to species, Taiwan, Checklist.

Introduction

The genus *Syntretus* Foerster, 1862 is a middle-sized taxon comprising 31 species in the Holarctic Region (28 species are listed in the Palearctic Region, three species in the Nearctic Region) and three species in the Ethiopian Region (Shenefelt 1969; Tobias 1986; Belokobylskij 1993b, 1996; Chen & van Achterberg 1997). In the Oriental Region the first *Syntretus* species has been described by Belokobylskij (1993a). This paper is the second one reporting *Syntretus* species from the Oriental Region. By this contribution the number of the *Syntretus* species increased to 42 world-wide.

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In the present paper a total of 12 *Syntretus* species are reviewed: 7 are new to the science (their enumeration is given in the abstract) and 5 have been previously listed but hitherto not from Taiwan (*S. bulbosus* Chen et van Achterberg, *S. glaber* Chen et van Achterberg, *S. lyctaea* Cole, *S. parvicornis* (Ruthe), *S. testaceus* (Capron)).

Concerning the hosts of the *Syntretus* species two Palaearctic ones have been recorded as the parasitoids of adult ichneumonid wasp (*S. lyctaea*) and adult bumble-bee (*S. splendidus*), respectively.

In the terminology Huber & Sharkey (1993) as well as Wahl & Sharkey (1993) were considered. In the material examined only "in BP" (= in the Hungarian Natural History Museum, Budapest) is indicated as the depository institution; otherwise the depository is the Department of Applied Zoology, Taiwan Agricultural Research Institute, Taichung, Taiwan.

Key to the *Syntretus* Foerster species of Taiwan

The 12 species in Taiwan represent the nominate subgenus *Syntretus*. Belokobylskij (1993a) has set up the subgenus *Parasyntretus* within the genus *Syntretus* on the basis of the species *S. amoenus* Belokobylskij described from Vietnam and deviating from all other *Syntretus* species by its conspicuously shortened radial cell (Fig. 106 in Belokobylskij 1993a).

- 1 (14) Propodeum entirely polished, at least close along its hind margin rugulose (Figs. 73, 76, 79).
- 2 (3) Temple in dorsal view longer than eye; head in dorsal view subcubic, 1.5 times as broad as long (Fig. 15). Petiole three times as long as broad behind (Fig. 60). Antenna with 17 antennomeres, first flagellomere a bit longer than second flagellomere, further flagellomeres gradually shortening so that penultimate flagellomere twice as long as broad. Hind femur 3.8 times as long as broad medially (Fig. 67). R1 approaching tip of wing (Fig. 44). Head dark rusty brown, meso- and metasoma blackish brown, legs reddish yellow, wings subhyaline. Female: 2.3 mm ----- *S. varus* sp.n.
- 3 (2) Temple in dorsal view either as long as eye (Figs. 6, 9, 12) or shorter than eye (Figs. 7, 10, 11).
- 4 (9) Temple in dorsal view as long as eye (Figs. 6, 9, 12).
- 5 (6) Pterostigma unusually long, four times as long as wide, r-rs distinctly longer than half width of pterostigma (Fig. 35). Hind femur long, five times as long as broad, dorso-medially slightly indented (Fig. 63). Antenna with 26–32 antennomeres. Head in dorsal view 1.5–1.6 times as broad as long (Fig. 6). R1 reaching tip of wing (Fig. 35). Basal half of petiole somewhat flattened, pair of spiracles at middle or slightly beyond middle of petiole. Body reddish yellow, vertex and frons brown, mesosoma dorsally and tergites black. Legs yellow. Female: 5 mm... ----- *S. extensus* sp. n.
- 6 (5) Pterostigma less long, at most 3–3.3 times as long as wide, r-rs at most half as long as width of pterostigma (Figs. 38, 41). Hind femur less long, 3.8–4 times as long as broad. Antenna with 18–23(–25) antennomeres.
- 7 (8) Pterostigma issuing r-rs less distally from its middle, r-rs half as long as width of pterostigma (Fig. 41). Petiole 2.8 times as long as broad behind, posteriorly more broadening, i.e. twice broader behind than basally (Fig. 57). Flagellomeres 2–10 relatively short and thick, 1.6–1.8 times as long as broad (Fig. 81–82). Dark coloured species: head reddish yellow, vertex dark brownish; mesosoma and metasoma black; legs reddish yellow. Female: 3.2 mm ----- *S. temporalis* sp. n.

- 8 (7) Pterostigma issuing r-rs more distally from its middle, r-rs clearly less than half as long as width of pterostigma (Fig. 38). Petiole 3–3.3 times as long as broad behind, posteriorly less broadening, i.e. only somewhat broader behind than basally (Fig. 54). Flagellomeres 2–10 relatively less short and less thick, 2.1–2.2 times as long as broad (Fig. 83). Light coloured species: head and mesosoma yellow to brownish yellow; vertex, mesonotum, scutellum and propodeum light brown to brown; metasoma brown to dark brown; legs yellow to pale yellow. Female: 1.9–3 mm, male: 1.5–2.9 mm. See also couplet-lead 13 (12) ----- *S. parvicornis* (Ruthe)
- 9 (4) Temple in dorsal view shorter than eye, head in dorsal view 1–1.7 times as broad as long (Figs. 7, 10).
- 10(11) Pterostigma long, four times as long as wide (Fig. 39). Hind femur five times as long as broad medially (Fig. 64). Antenna with 37 antennomeres, first flagellomere 1.6 times as long as second flagellomere. Petiole three times as long as broad behind, broadening at its hind third (Fig. 55). Nervellus (or Cu & cu-a) of hind wing antefurcal (Fig. 48, see horizontal arrow). Body yellow; vertex, mesonotum and propodeum brown to blackish brown; tergites brown, petiole black; tegula pale yellow; legs yellow. Female: 5.5 mm----- *S. secutensus* sp. n.
- 11(10) Pterostigma less long, at most 3.5 times as long as wide (Figs. 36, 38). Hind femur 4–4.5 times as long as broad medially. Petiole broadening at its hind fourth (Fig. 54).
- 12(13) Pterostigma long, 3.3–3.4 times (female, Fig. 36) and 2.9 times (male) as long as wide. Antenna with 26–28 (female) and 23 (male) antennomeres, first flagellomere 3–3.2 times as long as broad apically (Fig. 1). Nervellus (or Cu & cu-a) of hind wing interstitial (Fig. 47, see horizontal arrow). Head in dorsal view transverse, 1.6–1.7 times as broad as long, temple shorter than eye and receded close beyond eye (Fig. 7). Reddish yellow; vertex, mesosoma dorsally and tergites brown to blackish. Female: 3–4 mm, male: 3–3.2 mm----- *S. glaber* Chen et van Achterberg
- 13(12) Pterostigma less long, 2.8–3.1 times as long as wide (Fig. 38). Antenna with (17–)18–25 (female) and 16–21 (male) antennomeres, first flagellomere 2.5–3 times as long as broad apically (Fig. 2). Nervellus (or Cu & cu-a) of hind wing antefurcal (cf. Fig. 46, see horizontal arrow). Head in dorsal view somewhat less transverse, 1.5–1.6 times as broad as long, temple usually as long as (sometimes slightly shorter than) eye and receded not close beyond eye (Fig. 9). Reddish yellow or yellow, dorsally brownish to dark brown. Female: 1.9–3 mm, male: 1.5–2.9 mm. See also couplet-lead 8 (7)----- *S. parvicornis* (Ruthe)
- 14 (1) Propodeum at least medially rugulo-subrugulose (Figs. 71, 72, 74), usually with carinae or areolation and at least along carinae rugo-rugulose (Figs. 68–72, 74–75, 77–78).
- 15(16) Propodeum polished, at least medially and transversely rugulose-subrugulose (Figs. 71, 74). For further details see couplets 11 (10) — 13(12) ----- *S. glaber* Chen et van Achterberg + *S. parvicornis* (Ruthe)
- 16(15) Propodeum with carinae (Figs. 72, 75) or areolation (Figs. 68–70, 77–78).
- 17(20) Propodeum with a pair of posterior carinae, between carinae propodeum more (*S. lyctaea*) or less (*S. subglaber*) rugo-rugulose (Figs. 72, 75).
- 18(19) Eye in dorsal view 1.3 times as long as temple, i.e. temple somewhat shorter than eye and moderately receded (Fig. 8). Petiole 2.9 times as long as broad behind, relatively thick, i.e. its hind breadth 1.7 times as broad as its thinnest section at laterope (Fig. 53). Antenna with (25-)29 antennomeres, first

flagellomere 1.3 times as long as second flagellomere (cf. Fig. 1) (cf. Fig. 1C in Cole 1959). Nervellus (or Cu & cu-a) of hind wing interstitial (cf. Fig. 47, see horizontal arrow). Propodeum smooth and shiny, medially rugose and laterally rugulose (Fig. 72). Ground colour of body reddish yellow, dorsally (mesonotum, scutellum, propodeum and tergites) brown to blackish. Female: 3.2–3.5 mm -----

----- *S. lyctaea* Cole

- 19(18) Eye in dorsal view 1.9 times as long as temple, i.e. temple about half as long as eye and rounded (Fig. 11). Petiole 3.6 times as long as broad behind, relatively thin, i.e. its hind breadth twice as broad as its thinnest section before its middle (Fig. 56). Antenna with 22 antennomeres, first flagellomere just longer than second flagellomere (Fig. 3). Nervellus (or Cu & cu-a) of hind wing antefurcal (Fig. 49, see horizontal arrow). Propodeum rugulose between carinae and laterally (Fig. 75). Corporal colour similar to previous species. Female: 3–3.1 mm ----- *S. subglaber* sp. n.
- 20(17) Propodeum areolated, along carinae more or less rugo-rugulose (Figs. 68–70, 77–78).
- 21(22) Marginal cell of fore wing short, as long as length of pterostigma along metacarpal vein (or R1), i.e. R1 ending clearly before tip of wing; pterostigma 2.8–3 times as long as wide (Fig. 42). Antenna short, about half as long as body and with 19 antennomeres, flagellomeres short, penultimate flagellomere cubic. Propodeum with areola petiolaris, above areola propodeum striolate, areola itself at most uneven (Fig. 77). Petiole 3.3 times as long as broad behind, its hind half evenly broad. Eye in dorsal view somewhat longer than temple (Fig. 13). Body reddish yellow, three maculae of mesonotum and petiole brownish. Female and male: 4.5–5 mm ----- *S. testaceus* (Capron)
- 22(21) Marginal cell of fore wing long, at least one-fifth longer along metacarpal vein (or R1) than pterostigma, i.e. R1 approaching (Fig. 43: *S. transitus*) or reaching (Fig. 34, *S. choui*) tip of wing. Antenna long, about 0.7–0.8 times as long as body, penultimate flagellomere always longer than broad.
- 23(24) Temple in dorsal view half as long as eye and rounded, eye somewhat protruding, head in dorsal view 1.5 times as broad as long (Fig. 4). Eye in lateral view as wide as temple, eye anteriorly clearly broadening (Fig. 16, see arrows). Hind femur thin, five times as long as broad medially (Fig. 61). Along carinae of propodeum with rugae (Fig. 68). Antenna with 22–28 antennomeres. Body brownish yellow to rusty brown with more (Taiwanese specimens) or less (Chinese specimens) brown to blackish brown pattern. Female: 3–3.2 mm ----- *S. bulbus* Chen et van Achterberg
- 24(23) Temple in dorsal view as long as eye (Figs. 5, 14). Eye in lateral view at most just wider than temple (Figs. 17–18, see arrows). Hind femur 3.5–4 times as long as broad (Figs. 62, 66). Along carinae of propodeum at most with rugulae (Figs. 69, 70, 78).
- 25(26) Marginal cell of fore wing long, along metacarpal vein (or R1) 1.7 times as long as pterostigma and reaching at margin close to tip of wing (Fig. 34). Areola petiolaris extending to half of propodeum (Figs. 69, 70). Petiole 3.5 (female, Fig. 51) and four times (male) as long as broad behind. Body chestnut brown, legs, yellow. Female and male: 2–2.5mm ----- *S. choui* sp. n.
- 26(25) Marginal cell of fore wing less long, along metacarpal vein (or R1) at most one-fifth longer than pterostigma and reaching at margin in a distance from tip of wing (Fig. 43). Areola petiolaris extending to two-thirds of propodeum (Fig. 78). Petiole 3–3.2 times as long as broad behind (Fig. 59). Body yellow, dorsally brownish to brown. Female: 1.8–1.9 mm ----- *S. transitus* sp. n.

***Syntretus bulbus* Chen et van Achterberg (Figs. 4, 16, 61, 68)**

Syntretus bulbus Chen et van Achterberg, 1997: Zool. Verh. Leiden 313: 127 (in key) and 127 (description) ♀♂.

Material examined (1 ♀). — 1 ♀: Central Taiwan, Nantou Hsien, Tungpu, 1200 m, 18–21 October 1982, leg. K. C. Chou et S. C. Lin.

Female: Body 3.1 mm long. Antenna with 22 antennomeres, first flagellomere 1.3 times as long as second flagellomere. Head in dorsal view (Fig. 4) 1.5 times as broad as long, eye also 1.5 times as long as temple. Propodeum areolated, carinae strong (Fig. 68). Hind femur thin, five times as long as broad medially (Fig. 61). Pterostigma 3.3 times as long as wide. Petiole 3.6 times as long as broad behind. Body dark coloured: head rusty brown, face, ocellar field and occiput dark brownish. Mesonotum brownish black, mesopleuron dark rusty. Metasoma dark brown, petiole blackish. Legs yellow, hind coxa brownish.

Distribution: People's Republic of China, Taiwan (new to her fauna).

***Syntretus choui* sp. n. (Figs. 5, 17, 23, 29, 34, 45, 51, 62, 69, 70)**

Material examined (1 ♀ + 3 ♂♂). — Female holotype + one male paratype: Central Taiwan, Nantou Hsien, Tsuifeng, 2300 m, 3 June 1980 and leg. L. Y. Chou et C. C. Chen (holotype), 9 May 1984 and leg. K. C. Chou et C. C. Pan. — One male paratype: Central Taiwan, Nantou Hsien, Meifeng, 2150 m, 7–9 May 1981, leg. K. S. Lin et S. C. Lin. — One male (not paratype owing to its poor condition, in BP): Central Taiwan, Nantou Hsien, Tungpu, 1200 m, 23–27 July 1984, leg. K. C. Chou et C. H. Yang.

Holotype and two paratypes are deposited in the Department of Applied Zoology, Taiwan Agricultural Research Institute, Taichung, Taiwan; one male specimen in the Hungarian Natural History Museum (Department of Zoology), Budapest.

Etymology. — The new species is dedicated to the late DR. LIANG-YIH CHOU (1949–2000), braconid specialist and the collector of the holotype specimen, who has arranged (before his unexpected decease) the Taiwanese *Syntretus* material for elaboration.

Description of the female holotype. — Body 2.3 mm long. Antenna damaged, both right and left antenna with 17 antennomeres. First and second flagellomeres equal in length, i.e. three times as long as broad, further flagellomeres progressively shortening. — Head in dorsal view (Fig. 5) 1.6 times as broad as long, eye as long as temple, temple rounded, occiput weakly excavated. Ocelli small and elliptic, POL = OOL. Eye in lateral view 1.7 times as high as wide, temple beyond eye just less wide than eye and ventrally faintly narrowing (Fig. 17, see arrows). Face almost twice as wide as high, inner margin of eyes parallel. Clypeus 2.5 times as wide as high, its lower margin just convex (Fig. 23). Malar space shorter than basal width of mandible. Head polished.

Mesosoma in lateral view 1.3 times as long as high. Notaulix missing. Mesosoma polished. Propodeum areolated, areola petiolaris relatively wide, pentagonal and extending to posterior half of propodeum, close along antero-medio-longitudinal carina with rugulae, otherwise polished (Fig. 69). — Hind femur four times as long as broad medially (Fig. 62). Inner spur of hind tibia half as long as basitarsus. Hind claw long downcurved (Fig. 29).

Fore wing: Pterostigma (Fig. 34) 2.8 times as long as wide and issuing r-rs distally from its middle, r-rs shorter than half width of pterostigma, Rs3–4 reaching tip of wing; marginal cell long, along metacarpal vein 1.7 times as long as pterostigma. Basal and subbasal cells evenly setose. — Hind wing: Nervellus (or Cu & cu-a) antefurcal (Fig. 45, see arrows).

Metasoma somewhat longer than mesosoma and shorter than head and mesosoma combined. Petiole 3.5 times as long as broad behind, pair of lateropes beyond middle of petiole, petiole itself parallel-sided and broadening beyond lateropes (Fig. 51). Petiole anteriorly and along medio-longitudinal line uneven, otherwise together with further tergites polished. Ovipositor sheath somewhat shorter than hind tarsomeres 1–2 combined.

Body castaneous brown. Scape and flagellum brown; pedicel straw yellow, basally brownish. Palpi straw yellow. Tegula yellow. Legs brownish yellow, coxae and trochanters yellow. Wings feebly fumous or clearly subhyaline, pterostigma and veins brownish.

Description of two male paratypes + one male specimen. — Similar to the holotype. Body 2 (1 ♂), 2.2 (1 ♂) and 2.5 (1 ♂) mm long. Antenna somewhat shorter than body and with 19 antennomeres (1 ♂; flagellum of further two males damaged). First flagellomere a bit longer than second flagellomere, penultimate flagellomere twice as long as broad. Areola superomedia (anteriorly of areola petiolaris) missing (Fig. 70). Pterostigma 2.6 times as long as wide; marginal cell rather approaching tip of wing (2 ♂♂). Pterostigma brownish to yellow.

Host unknown.

Distribution: Taiwan.

Taxonomy. — The new species, *Syntretus choui*, is nearest to *S. varus* sp. n. and *S. bulbosus* Chen et van Achterberg, 1997 (China), the specific distinction between *S. choui* and *S. varus* see at *S. varus* p.52; the distinction between *S. choui* and *S. bulbosus* is disclosed below:

- 1 (2) Eye in dorsal view 1.4–1.6 times as long as temple (Fig. 553 in Chen & van Achterberg 1997). Hind femur 5–6 times as long as broad (Fig. 550 l.c.). Carinae of propodeum relatively strong and along them uneven to rugulose(-rugose) (Fig. 557 l.c. and Fig. 68). Female antenna with 22–28 antennomeres. first flagellomere 1.2 times as long as second flagellomere. Dark coloured, hind coxa brownish. Female: 2.8–3 mm-----*S. bulbosus* Chen et Van Achterberg
- 2 (1) Eye in dorsal view as long as temple (♀, Fig. 5) or just shorter (♂). Hind femur 4.5 times as long as broad. Carinae of propodeum relatively less strong and along them surface smooth except medio-longitudinal fore carina, along it rugulose (Figs. 69–70). Male antenna with 19 antennomeres, flagellomeres 1–2 equal in length (female antenna damaged: with 17 antennomeres), female first flagellomere a bit longer than her second flagellomere. Dark coloured, hind coxa yellow, basally brownish. Female and male: 2–2.5 mm.----- *S. choui* sp. n.

With the help of Belokobylskij's key (2000b) *S. choui* runs to *S. signatus* Belokobylskij and *S. areolatus* Belokobylskij, the three species are distinguished as follows:

- 1 (4) Mandible with pointed tooth.
- 2 (3) Pronotum with pronope. Metacarp 1–1.2 times as long as pterostigma (Fig. 237: 18 in Belokobylskij 2000b). Hind femur 4.5–4.6 times as long as broad (Fig. 237: 16 l.c.). Pterostigma brown, basally yellow. Female: 2.1–2.6 mm----- *S. areolatus* Belokobylskij
- 3 (2) Pronotum without pronope. Metacarp 1.7 times as long as pterostigma (Fig. 34). Hind femur four times as long as broad (Fig. 62). Pterostigma brownish to yellow. Female: 2.3 mm, male: 2–2.5 mm -----
----- *S. choui* sp. n.
- 4 (1) Mandible with obtuse small tooth. Pronotum without pronope. Metacarp as long as pterostigma (Fig. 237: 5 l.c.). Hind femur 4.8 times as long as broad (Fig. 237: 17 l.c.). Female: 2 mm-----
----- *S. signatus* Belokobylskij

***Syntretus extensus* sp. n. (Figs. 6, 19, 24, 30, 35, 46, 52, 63, 80)**

Material examined (1 ♀). — Female holotype: Central Taiwan, Nantou Hsien, Tsuifeng, taken with Malaise trap, 2300 m, September 1984, leg. T. Lin et K. C. Chou.

Holotype is deposited in the Department of Applied Zoology, Taiwan Agricultural Research Institute, Taichung, Taiwan.

Etymology. — The species name "extensus" refers to the unusually long pterostigma.

Description of the female holotype. — Body 5 mm long. Antenna about as long as body and with 32 antennomeres. First flagellomere 1.3 times as long as second flagellomere and three times as long as broad apically (Fig. 80), further flagellomeres progressively attenuating so that penultimate flagellomere 2.2 times as long as broad. — Head in dorsal view (Fig. 6) subcubic, 1.5 times as broad as long, eye as long as temple, temple hardly rounded, occiput weakly excavated. Ocelli middle-sized and elliptic, POL = OOL. Eye in lateral view 1.7 times as high as wide, temple somewhat wider than eye and evenly wide beyond eye (Fig. 19, see arrows). Face somewhat wider than high. Clypeus hardly twice as wide as high, its lower margin convex (Fig. 24). Malar space as long as basal width of mandible. Head polished, face dispersely and very finely hairpunctured.

Mesosoma in lateral view 1.5 times as long as high. Notaulix missing. Propodeum smooth and polished. — Hind femur long, five times as long as broad, dorso-medially with a faint indentation (Fig. 63, see arrow). Inner spur of hind tibia just half as long as basitarsus. Hind claw less downcurved, basal lobe less large (Fig. 30).

Fore wing (left pair of wings missing): Pterostigma (Fig. 35) long, four times as long as wide and issuing r-rs clearly distally from its middle, r-rs distinctly longer than half width of pterostigma, Rs3–4 reaching tip of wing. Basal and subbasal cells evenly setose. — Hind wing: Nervellus (or Cu & cu-a) antefurcal (Fig. 46, see arrows).

Metasoma somewhat longer than mesosoma. Petiole 2.8 times as long as broad behind, fore part of petiole dorsally somewhat flattened, pair of lateropes slightly beyond middle of petiole, beyond laterope petiole broadening (Fig. 52). Petiole and tergites polished. Ovipositor sheath as long as middle basitarsus.

Ground colour of body reddish yellow. Scape and pedicel reddish yellow, flagellomeres 1–2 darkening reddish yellow to brownish, rest of flagellum brown. Frons, vertex and pronotum medially brown; mesonotum, scutellum, propodeum and tergites black. Palpi and tegula straw yellow. Legs reddish yellow, coxae rather yellowish. Wings hyaline, pterostigma and veins yellow.

Male and host unknown.

Distribution: Taiwan.

Taxonomy. — The new species, *Syntretus extensus*, is nearest to *S. secutensus* sp. n. and *S. makarovi* Belokobylskij, 1996 (Russian Far East), the three species are distinguished by the following features keyed:

- 1 (2) Flagellomeres 3—10–12 cubic, i.e. as long as broad (Fig. 77 in Belokobylskij 1996), antenna with 29 antennomeres. Petiole twice as long as broad behind (Fig. 83 l.c.). Hind femur four times as long as broad (Fig. 80 l.c.). In dorsal view eye somewhat longer than temple (Fig. 76 l.c.). Head and mesosoma yellow with much light brown or reddish yellow pattern, petiole and tergites black, legs yellow. Female: 3.4 mm ----- *S. makarovi* Belokobylskij
- 2 (1) Flagellomeres 3—10–12 at least 1.5–1.6 times as long as broad, antenna with more than 30 antennomeres (Figs. 80, 84). Petiole 2.8–3 times as long as broad behind (Figs. 52, 55). Hind femur five times as long as broad.

- 3 (4) Head in dorsal view subcubic, 1.5 times as broad as long, eye as long as temple, temple hardly rounded (Fig. 6). Hind claw less downcurved (Fig. 30). Petiole broadening beyond its middle (Fig. 52). Antenna with 32 antennomeres. Mesosoma dorsally and tergites black. Female: 5 mm -----*S. extensus* sp. n.
- 4 (3) Head in dorsal view transverse, 1.7 times as broad as long, eye 1.2 times as long as temple, temple rounded (Fig. 10). Hind claw more downcurved (Fig. 31). Petiole broadening from its middle (Fig. 55). Antenna with 37 antennomeres. Mesosoma dorsally and tergites brownish to blackish brown. Female: 5.5 mm -----*S. secutensus* sp. n.

***Syntretus glaber* Chen et van Achterberg, male new (Figs. 1, 7, 36, 47, 71)**

Syntretus glaber Chen et van Achterberg, 1997: Zool. Verh. Leiden 313: 126 (in key) and 128 (description) ♀.

Material examined (3 ♀ + 1 ♂). — Two females and one male: Central Taiwan, Nantou Hsien, Tungpu, 1200 m, 1 ♀: 19–23 July 1982 leg. L. Y. Chou et T. Lin and 1 ♀ (in BP) + 1 ♂: 18–21 October 1982 leg. K. C. Chou et S. C. Lin. — One female: Central Taiwan, Nantou Hsien, Meifeng, 2150 m, 19–21 April 1983, leg. K. C. Chou et S. P. Huang.

Female: Body 3–4 mm long. Antenna with 26–28 antennomeres. Head in dorsal view (Fig. 7) 1.55–1.65 times as broad as long. Pterostigma (Fig. 36) 3.1–3.4 times as long as wide, Rs3–4 feebly curved. Petiole 2.7–2.8 times as long as broad behind.

Male: Similar to the female. Body 3–3.2 mm long. Antenna with 23 antennomeres, first flagellomere 1.25 times as long as second flagellomere and 3–3.2 times as long as broad apically (Fig. 1). Head in dorsal view 1.6 times as broad as long. Pterostigma 2.85 times as long as wide and issuing r-rs less distally from its middle. Petiole somewhat thick, 2.6 times as long as broad behind. Colour of body darker than that of female: Head reddish yellow, vertex and occiput with faint brownish tint. Mesosoma black, pronotum and prosternum reddish yellow. Metasoma blackish to black, second tergite yellowish brown. Legs yellow.

Distribution: People's Republic of China, Taiwan (new to her fauna).

Syntretus lyctaea Cole (Figs. 8, 37, 53, 72)

Syntretus lyctaea Cole, 1959: Ent. m. Mag. 95: 18 (description) ♀.

Material examined (1 ♀). — One female: Central Taiwan, Nantou Hsien, Tungpu, 1200 m, 28 April – 2 May 1981, leg. T. Lin et C. J. Lee.

Female: Body 3.2–3.5 mm long. Antenna with 29 antennomeres, first flagellomere 1.3 times as long as second flagellomere. Head in dorsal view (Fig. 8) 1.6 times as broad as long, eye 1.3 times as long as temple. Propodeum on its hind third with a pair of carinae somewhat diverging anteriorly, medially and laterally rugo-rugulose, otherwise polished (Fig. 72). Pterostigma three times as long as wide and issuing r-rs distally from its middle (Fig. 37). Petiole 2.9 times as long as broad behind (Fig. 53).

Male: unknown.

Distribution: England, Hungary, Lithuania, European part of Russia (Ural Mts), Taiwan (new to her fauna).

***Syntretus parvicornis* (Ruthe) (Figs. 2, 9, 38, 54, 73, 74, 83)**

Microctonus parvicornis Ruthe, 1862: in H. Reinhard 1862: Berl. ent. Zschr. 6: 323 ♂, type locality: "bei Berlin"

(Germany), male holotype in The Natural History Museum, London (3.c.731); not examined. — Shenefeldt 1969: 131 (literature up to 1946). Tobias 1986: 246 (in key).

Material examined (27 ♀ + 8 ♂). — Five females and one male: Central Taiwan, Nantou Hsien, Meifeng, 2150 m, 1 ♀: 2–4 June 1980 leg. L. Y. Chou et C. C. Chen, 1 ♀: 5–9 October 1980 leg. C. C. Chen et C. C. Chien, 1 ♀: 15 July 1982 leg. S. C. Lin et C. N. Lin, 2 ♀: 19–21 April 1983 leg. K. C. Chou et S. P. Huang, 1 ♂: 22–26 June 1983 leg. K. S. Lin et S. C. Lin. — Two females and one male: Central Taiwan, Hwalien Hsien, Tayuling, 2560 m, 6–9 September 1983 leg. L. Y. Chou et K. C. Chou. — Six females and four males: Central Taiwan, Nantou Hsien, Tsuifeng, 2300 m, 1 ♂: 3 June 1980 leg. L. Y. Chou et C. C. Chen, 1 ♀: 8 May 1981 leg. K. S. Lin et S. C. Lin, 1 ♀: 25–27 June 1981 leg. K. S. Lin et W. S. Tang, 1 ♀: 1–3 September 1982 taken with Malaise trap leg. L. Y. Chou et K. C. Chou, 1 ♀: July 1984 leg. K. S. Lin et K. C. Chou, 1 ♂: August 1984 leg. K. S. Lin et K. C. Chou, 1 ♀: 15–16 August 1984 leg. K. C. Chou, 1 ♀: September 1984 leg. K. S. Lin et K. C. Chou, 2 ♂ (1 ♂ in BP): 12–14 September 1984 leg. K. S. Lin et S. C. Lin. — Twelve females and one male (six females in BP): Central Taiwan, Nantou Hsien, Tungpu, 1200 m, 1 ♀: 28 April – 2 May 1981 leg. T. Lin et C. J. Lee, 6 ♀ (4 ♀ in BP): 18–23 November 1981 leg. T. Lin et W. S. Tang, 2 ♀: 18–21 October 1982 leg. K. C. Chou et S. C. Lin, 2 ♀ (1 ♀ in BP): 22–25 November 1982 leg. K. C. Chou et S. P. Huang, 1 ♀ (in BP): 13–16 December 1982 leg. K. C. Chou et C. C. Pan, 1 ♀: 10–14 January 1983 leg. K. C. Chou et S. P. Huang. — One male: Central Taiwan, Taichung Hsien, Kukuan, 730 m, 14–17 October 1980, leg. K. S. Lin et C. H. Wang. — One male: Central Taiwan, Nantou Hsien, Wushe, 1150 m, 7 May 1984, leg. K. C. Chou et C. C. Pan.

Female: Body 1.9–3 mm long (1.9: 5 ♀, 2: 1 ♀, 2.1: 2 ♀, 2.2: 2 ♀, 2.3: 3 ♀, 2.4: 2 ♀, 2.5: 3 ♀, 2.6: 3 ♀, 2.8: 1 ♀, 2.9: 1 ♀, 3: 4 ♀). Antenna somewhat shorter than to as long as body and with 17–25 antennomeres (17: 2 ♀, 18: 7 ♀, 20: 1 ♀, 22: 4 ♀, 23: 5 ♀, 24: 7 ♀, 25: 1 ♀). First flagellomere 2.5–3 times as long as broad (Figs. 2, 83). Head in dorsal view (Fig. 9) 1.5–1.6 times as broad as long, eye as long as temple (exceptionally slightly longer). Propodeum polished (Fig. 73), exceptionally medio-anteriorly uneven to rugulose (Fig. 74). Hind femur 4–4.2 times as long as broad. Pterostigma of fore wing 2.8–3.1 (exceptionally 3.3–3.4) times as long as wide, issuing r-rs clearly distally from its middle (Fig. 38). Nervellus (or Cu & cu-a) of hind wing antefurcal. Petiole 3–3.3 times as long as broad behind, broadening from its middle and relatively less broadening posteriorly (Fig. 54). Ground colour of body reddish yellow or yellow, dorsally dark colour variable brownish to dark brown.

Male: Similar to the female. Body 1.5–2.9 mm long (1.5: 1 ♂, 1.8: 1 ♂, 2: 1 ♂, 2.1: 1 ♂, 2.2: 2 ♂, 2.9: 2 ♂). Antenna shorter than body and with 15–21 antennomeres (15: 1 ♂, 16: 1 ♂, 17: 2 ♂, 18: 2 ♂, 19: 1 ♂, 21: 1 ♂). Pterostigma 2.8–3 times as long as wide. Dark colour of body more to much more extended.

Distribution: Palaearctic Region, Taiwan (new to her fauna).

Syntretus secutensus sp. n. ♀ (Figs. 10, 20, 31, 39, 48, 55, 64, 84)

Material examined (1 ♀). — Female holotype: Central Taiwan, Nantou Hsien, Meifeng, 2130 m, 2–4 June 1980, leg. L. Y. Chou et C. C. Chen. — Holotype is deposited in the Department of Applied Zoology, Taiwan Agricultural Research Institute, Taichung, Taiwan.

Etymology. — The species name "secutensus" is the abbreviated form of secundoextensus indicating its close relation to *S. extensus* sp. n.

Description of the female holotype. — Body 5.5 mm long. Antenna about as long as body and with 37 antennomeres; first flagellomere 1.6 times as long as second flagellomere and 2.7 times as long as broad apically, its apical end obliquely truncate (Fig. 84); further flagellomeres progressively shortening and slightly attenuating

so that penultimate flagellomere 2.2 times as long as broad. — Head in dorsal view (Fig. 9) transverse, 1.7 times as broad as long, eye 1.2 times as long as temple, temple rounded, occiput weakly excavated. Ocelli relatively large, elliptic, POL = OOL. Eye in lateral view 1.8 times as high as wide, temple a bit wider than eye and ventrally indistinctly narrowing (Fig. 20, see arrows). Face 1.4 times as wide as high. Intertentorial line three times as long as tentorio-ocular line. Clypeus 2.5 times as wide as high, its lower margin just convex (cf. Fig. 23). Malar space somewhat longer than basal width of mandible. Maxillar palp longer than height of head. Head polished, face finely hairpunctured.

Mesosoma in lateral view 1.4 times as long as high. Notaulix missing. Mesosoma polished. — Hind femur five times as long as broad medially (Fig. 64). Inner spur of hind tibia shorter than half basitarsus. Hind claw downcurved as in Fig. 31.

Fore wing: Pterostigma long (Fig. 39), 4.1 times as long as wide and issuing r-rs distally from its middle, r-rs somewhat oblique and longer than half width of pterostigma, Rs3–4 reaching tip of wing and very faintly sinuate. Basal and subbasal cells evenly setose. — Hind wing: Nervellus (or Cu & cu-a) antefurcal (Fig. 48, see arrows).

Metasoma about as long as head and mesosoma combined. Petiole (Fig. 55) 3.1 times as long as broad behind, fore part of petiole dorsally somewhat flattened, pair of lateropes at middle of petiole, beyond lateropes petiole progressively broadening. Petiole and tergites polished. Ovipositor sheath short, one-fourth shorter than hind basitarsus.

Ground colour of body yellow; vertex, mesosoma, propodeum brown to blackish brown, scutellum brownish yellow; petiole black, tergites dark brown. Palpi and tegula straw yellow. Scape and pedicel reddish yellow, flagellum dark brown. Wings hyaline, pterostigma and veins brownish yellow.

Male and host unknown.

Distribution: Taiwan.

Taxonomy. — The new species, *Syntretus secutensus*, is nearest to *S. extensus* sp. n. and *S. makarovi* Belokobylskij, their distinction see at *S. extensus* s. n., p.45 and in key-couplets 4 (9) — 10 (11) p.40 – 41.

***Syntretus subglaber* sp. n. ♀ (Figs. 3, 11, 21, 25, 32, 40, 49, 56, 65, 75)**

Material examined (2 ♀). — Female holotype and one female paratype: Central Taiwan, Nantou Hsien, Tungpu, 1200 m, 13–16 December 1982 leg. K. C. Chou et C. C. Pan (holotype) and 18–23 November 1981 leg. T. Lin et W. S. Tang (paratype). — Holotype and paratype are deposited in the Department of Applied Zoology, Taiwan Agricultural Research Institute, Taichung, Taiwan.

Etymology. — The species name "subglaber" indicates that the new species is nearest to *S. glaber* Chen et Van Achterberg.

Description of the female holotype. — Body 3.1 mm long. Antenna about as long as body and with 22 antennomeres. First flagellomere somewhat longer than second flagellomere and three times as long as broad apically (Fig. 3), further flagellomeres progressively attenuating so that penultimate flagellomere 3.2 times as long as broad. — Head in dorsal view (Fig. 11) less transverse, 1.6 times as broad as long, eye 1.9 times as long as temple, temple rounded, occiput weakly excavated. Ocelli middle-sized, elliptic, OOL 1.5 times as long as POL. Eye in lateral view 1.4 times as high as wide and 1.35 times as wide as temple, temple ventrally slightly narrowing (Fig. 21). Face 1.4 times as wide as high, inner margin of eyes diverging ventrally. Clypeus 1.9 times as wide as high, its lower margin truncate (Fig. 25). Intertentorial line 3.3 times as long as tentorio-ocular line. Malar space as long as basal width of mandible. Head polished.

Mesosoma in lateral view 1.35 times as long as high. Notaulix missing. Mesosoma polished. Propodeum posteriorly with a pair of carinae, its hind declivous part rugulose-subrugulose, its fore horizontal part polished (Fig. 75). — Hind femur 3.8 times as long as broad medially (Fig. 65). Inner spur of hind tibia shorter than half of hind basitarsus. Hind claw downcurved as in Fig. 32.

Fore wing: Pterostigma (Fig. 40) 2.8 times as long as wide and issuing r-rs somewhat distally from its middle, r-rs shorter than half width of pterostigma, Rs3–4 arched and reaching tip of wing. Basal and subbasal cells evenly setose. — Hind wing: Nervellus (Cu & cu-a) antefurcal (Fig. 49, see arrows).

Metasoma about as long as head and mesosoma combined. Petiole 3.6 times as long as broad behind, relatively thin, i.e. its hind width twice as broad as its thinnest section before its middle (Fig. 56). Pair of lateropes beyond middle of petiole (right laterope or spiracle on a spineform tubercle: a teratorologic product?). Petiole and tergite polished. Ovipositor sheath as long as hind tarsomeres 1–2 + half of third tarsomere.

Ground colour of body reddish yellow. Ocellar field, mesonotum, scutellum, propodeum, metapleuron, petiole dark brown; tergites 2–3 brown, tergite 3 blackish. Scape, pedicel and flagellomeres 1–3 reddish yellow, flagellomeres 4–5 darkening and rest of flagellum brown. Palpi, tegula and legs yellow. Wings subhyaline, pterostigma and veins yellow.

Description of the female paratype. — Similar to the holotype. Body 3 mm long. Pterostigma three times as long as wide. Paratype damaged: right flagellum missing, fore left leg from femur together with middle left leg missing, hind leg and metasoma glued separately on the card.

Male and host unknown.

Distribution: Taiwan.

Taxonomy. — The new species, *Syntretus subglaber*, is nearest to *S. glaber* Chen et van Achterberg, 1997 (China), their specific distinction is presented in the subsequent key:

- 1 (2) Propodeum polished, at least and exceptionally medially rugulose-subrugulose (Fig. 71). Eye in dorsal view less long, 1.2–1.3 times as long as temple (Fig. 7). Pterostigma 3.4–3.6 times as long as wide (Fig. 36). Antenna with 22 antennomeres. Female: 3.2–3.5 mm ----- *S. glaber* Chen et van Achterberg
- 2 (1) Propodeum posteriorly with a pair of carinae and its hind declivous part rugulose-subrugulose, its fore horizontal part polished (Fig. 75). Eye in dorsal view long, 1.7 times as long as temple (Fig. 11). Pterostigma 2.8 times as long as wide (Fig. 40). Antenna with (23–)26–28 antennomeres. Female: 3.1 mm ----- *S. subglaber* sp. n.

With the help of Belokobylskij's key (2000b) *S. subglaber* runs to *S. lyctae* Cole, the two species are clearly distinct by the features keyed:

- 1 (2) Eye in dorsal view 1.3 times as long as temple (Fig. 8). Petiole more broadening posteriorly (Fig. 53). Antenna with (23–)28–30 antennomeres. Propodeum as in Fig. 72, along carina at most rugulose. Female: (2.8–)3.2–3.5 mm ----- *S. lyctae* Cole
- 2 (1) Eye in dorsal view 1.9 times as long as temple (Fig. 11). Petiole less broadening posteriorly (Fig. 56). Antenna with 22 antennomeres. Propodeum as in Fig. 75, along carina transversely rugo-rugulose. Female: 3–3.1 mm ----- *S. subglaber* sp. n.

***Syntretus temporalis* sp. n. ♀ (Figs. 12, 22, 26, 41, 50, 57, 76, 81, 82)**

Material examined (4 ♀). — Female holotype and one female paratype (in BP): Central Taiwan, Nantou Hsien, Tungpu, 1200 m, 22–25 November 1982 leg. K. C. Chou et S. P. Huang (holotype) and 19–23 July 1982 leg. L. Y. Chou et T. Lin (paratype, in BP). — One female paratype: Central Taiwan, Nantou Hsien, Tsuifeng, 2300 m, 1–3 August 1981, leg. T. Lin et W. S. Tang. — One female paratype: Central Taiwan, Hwalian Hsien, Tayuling, 2560 m, 6–9 September 1983, leg. L. Y. Chou et K. C. Chou.

Holotype and two paratypes are deposited in the Department of Applied Zoology, Taiwan Agricultural Research Institute, Taichung, Taiwan and one paratype in the Hungarian Natural History Museum, Department of Zoology), Budapest, Hym. Typ. No. 7880.

Etymology. — The species name "temporalis" refers to the temple equal in length with eye in dorsal view.

Description of the female holotype. — Body 3.2 mm long. Antenna about one-fifth shorter than body and with 23 antennomeres (left antenna damaged: with 22 antennomeres, i.e. ultimate flagellomere missing). First flagellomere slightly longer than second flagellomere and 2.3 times as long as broad apically (Fig. 81); further flagellomeres progressively attenuating, i.e. flagellomeres 2–10 1.6–1.7 times as long as broad, penultimate flagellomere twice as long as broad. — Head in dorsal view (Fig. 12) subcubic, 1.57 times as broad as long, eye as long as temple, temple rounded, occiput weakly excavated. Ocelli middle sized and elliptic, POL somewhat longer than OOL. Eye in lateral view twice as high as wide, temple beyond eye somewhat wider than eye and ventrally indistinctly narrowing (Fig. 22, see arrows). Face almost as high as wide. Intertentorial line three times as long as tentorio-ocular line. Clypeus 2.3 times as wide as high, its lower margin truncate (Fig. 26). Malar space somewhat longer than basal width of mandible. Head polished, face indistinctly hairpunctured.

Mesosoma in lateral view 1.5 times as long as high. Notaulix missing. Pronotum, mesonotum, scutellum, mesopleuron and metapleuron polished; fore and hind margin of mesopleuron finely crenulated. Propodeum polished, its hind margin with rugulae; above lunule with a pair of circular impressions (Fig. 76). — Hind femur 3.8 times as long as broad medially. Inner spur of hind tibia almost half as long as basitarsus.

Fore wing: Pterostigma (Fig. 41) 2.8 times as long as wide, issuing r-rs only somewhat distally from its middle, r-rs half as long as width of pterostigma, Rs3–4 approaching tip of wing and indistinctly sinuate. Basal and subbasal cells evenly setose. — Hind wing: Nervellus (or Cu & cu-a) antefurcal (Fig. 50, see arrows).

Metasoma about as long as mesosoma. Petiole 2.8 times as long as broad behind, clearly broadening posteriorly, i.e. one-third broader behind than basally, pair of lateropes behind middle of petiole (Fig. 57). Fore half of petiole transversely uneven, its hind broadening half together with further tergites polished. Ovipositor sheath in lateral view as long as hind tarsomeres 1–2.

Body dark coloured. Scape and pedicel brown, flagellum distally darkening brown. Head reddish yellow; frons, vertex and occiput dark brownish; palpi pale. Mesosoma and tergites black, sternites with rusty tint. Tegula blackish. Legs reddish yellow, middle coxa anteriorly and hind coxa entirely blackish. Tarsi brownish darkening. Wings hyaline, pterostigma and veins opaque yellowish brownish.

Description of the three paratypes. — Similar to the holotype. Body 3.2 mm long. Antenna with 26 (2 ♀) and 27 (1 ♀) antennomeres, flagellomeres 2–10 1.7–1.8 times (Fig. 82) and penultimate flagellomere 2.4–2.6 times as long as broad. Eye in lateral view 1.8 times as high as wide (Fig. 22). Pterostigma 3–3.3 times as long as wide. Pair of circular impressions above lunule of propodeum less distinct. Fore half of petiole also polished. Mesosoma reddish yellow, only dorsally (i.e. mesonotum, scutellum, propodeum, metapleuron) black.

Male and host unknown.

Distribution: Taiwan.

Taxonomy. — The new species, *Syntretus temporalis*, is nearest to *S. parvicornis* (Ruthe), their specific distinctions are disclosed in key-couplets 5 (6) — 7 (8) p.40.

***Syntretus testaceus* (Capron) (Figs. 13, 42, 58, 77)**

Microctonus testaceus Capron, 1887: 82 (in key) and 85 (description) ♀♂, type locality: "at Shiere, near Guildford" (England), deposition of the type series (1 ♀ + 4 ♂) unknown, perhaps in The Natural History Museum, London or in Hope Department, University Museum, Oxford (England). — Shenefelt 1969: 132 (literature up to 1938). Tobias 1986: 246 (in key).

Material examined (2 ♀). — Two females (one female in BP): Central Taiwan, Nantou Hsien, Tungpu, 1200 m, 20–22 June 1980, leg. C. C. Chen.

Female: Body 4.5–5 mm long. Antenna short, about half as long as body and with 19 antennomeres, first flagellomere just longer than second flagellomere. Head in dorsal view (Fig. 13) 1.6 times as broad as long, eye somewhat longer than temple, latter rounded. Propodeum with areola petiolaris on its hind two-thirds, above areola striolate and rugulose, otherwise propodeum polished (Fig. 77). Hind femur 4.6–5 times as long as broad. Pterostigma (Fig. 42) 2.8–3 times as long as wide, marginal cell short, along metacarpal vein (or R1) as long as pterostigma. Petiole 3.3 times as long as broad behind (Fig. 58). Body reddish yellow with rather effaced three brownish maculae on mesonotum, petiole faintly brownish.

Male: known, hitherto not captured in Taiwan.

Distribution: western Palaearctic Region, Taiwan (new to her fauna).

***Syntretus transitus* sp. n. (Figs. 14, 18, 27, 33, 43, 59, 78)**

Material examined (2 ♀). — Female holotype and one female paratype: Central Taiwan, Nantou Hsien, Tungpu, 1200 m, 16–20 April 1984, leg. K. C. Chou et C. H. Yung. — Holotype and paratype are deposited in the Department of Applied Zoology, Taiwan Agricultural Research Institute, Taichung, Taiwan.

Etymology. — The species name "transitus" indicates its deceptive similarity to *S. parvicornis*.

Description of the female holotype. — Body 1.8 mm long. Antenna as long as body and with 17 antennomeres. First flagellomere as long as second flagellomere and both flagellomeres three times as long as broad apically, further flagellomeres progressively shortening so that penultimate flagellomere twice as long as broad. — Head in dorsal view (Fig. 14) subcubic, 1.5 times as broad as long, eye as long as temple, temple rounded, occiput weakly excavated. Ocelli small and elliptic, POL somewhat shorter than OOL. Eye in lateral view somewhat less high, 1.6 times as high as wide, temple beyond eye just a bit wider than eye and evenly wide (Fig. 18, see arrows). Face 1.7 times as wide as high, inner margin of eyes parallel. Clypeus 2.5 times as wide as high, its lower margin truncate (Fig. 27). Malar space a bit shorter than basal width of mandible. Head polished, face very finely hairpunctate.

Mesosoma in lateral view 1.4 times as long as high. Notaulix missing. Mesosoma polished. Propodeum areolated, areola petiolaris extending to two-thirds of propodeum, along medio-longitudo-anterior carina rugulose, along other carinae almost indistinctly uneven, otherwise propodeum polished (Fig. 78). — Hind femur 3.6 times as long as broad medially (Fig. 66). Inner spur of hind tibia half as long as basitarsus. Hind claw long downcurved (Fig. 33).

Fore wing: Pterostigma (Fig. 43) 3.1 times as long as wide and issuing r-rs distally from its middle, r-rs somewhat shorter than half width of pterostigma, marginal cell less long: along first section of metacarpal vein (or R1) 1.25 times as long as pterostigma, metacarpal vein (or R1-2) approaching tip of wing (Fig. 43). Basal and subbasal cells evenly setose. — Hind wing: Nervellus (or Cu & cu-a) antefurcal (cf. Fig. 46).

Metasoma as long as mesosoma. Petiole (Fig. 59) 3.2 times as long as broad behind, pair of lateropes large and clearly beyond middle of petiole, petiole itself relatively less broadening beyond lateropes, on its anterior two-thirds uneven, otherwise together with further tergites polished. Ovipositor sheath as long as hind tarsomeres 1-2 combined.

Body yellow. Scape and pedicel yellow, flagellomeres darkening yellow, rest of flagellum greyish brown. Vertex brownish; mesonotum, scutellum, metanotum, propodeum and metapleuron brownish to brown. Petiole brown, tergites 2-3 brownish, rest of tergites blackish brown. Palpi straw yellow. Tegula straw yellow. Legs yellow. Wings hyaline, pterostigma and veins yellow.

Description of the female paratype. — Similar to the female holotype. Body 1.9 mm long. Head in dorsal view 1.55 times as broad as long. Pterostigma 3.2 times as long as wide. Hind femur 3.8 times as long as broad. Petiole three times as long as broad behind. Tegula yellow, hind tergites dark brown.

Male and host unknown.

Distribution: Taiwan.

Taxonomy. — The new species, *Syntretus transitus*, is nearest to *S. choui* sp. n. and *S. parvicornis* (Ruthe, 1862) (Europe, Taiwan), the distinction from *S. choui* is disclosed in key-couplets 25(26)–26(25) p.42, the specific difference between *S. transitus* and *S. parvicornis* is presented in the subsequent key:

- 1 (2) Propodeum not areolated (Figs. 73–74), polished. Pterostigma 3.4–3.6 times as long as wide, marginal cell or vein R1–2 reaching tip of wing (Fig. 38). Hind femur 4.5–5 times as long as broad. Female and male: 1.5–3 mm ----- *S. parvicornis* (Ruthe)
- 2 (1) Propodeum areolated, along carinae closely uneven to rugulose (Fig. 78). Pterostigma 3–3.1 times as long as wide, marginal cell or vein R1–2 approaching tip of wing (Fig. 43). Hind femur 3.6–3.8 times as long as broad (Fig. 66). Female and male: 1.8–1.9 mm ----- *S. transitus* sp. n.

***Syntretus varus* sp. n. (Figs. 15, 28, 44, 60, 67, 79)**

Material examined (1 ♀). — Female holotype: Central Taiwan, Nantou Hsien, Tungpu, 1200 m, 18–23 November 1981, leg. T. Lin et W. S. Tang. — Holotype is deposited in the Department of Applied Zoology, Taiwan Agricultural Research Institute, Taichung, Taiwan.

Etymology. — The species name "varus" refers to the subtle deviation from its nearest species, *S. choui* sp. n.

Description of the female holotype. — Body 2.3 mm long. Antenna nearly as long as body and with 17 antennomeres. First flagellomere a bit longer than second flagellomere, first flagellomere four times as long as broad, second flagellomere apically broadening and 2.8 times as long as broad apically, further flagellomeres progressively shortening and attenuating so that penultimate flagellomere twice as long as broad. — Head in dorsal view (Fig. 15) subcubic, 1.5 times as broad as long, temple long and rounded, 1.3 times as long as eye, POL = OOL. Eye in lateral view 1.7 times as high as wide, temple a bit wider than eye. Face just twice as wide as high. Intertentorial line three times as long as tentorio-ocular line. Clypeus twice as wide as high, its lower margin convex (Fig. 28). Malar space just shorter than basal width of mandible.

Mesosoma in lateral view 1.5 times as long as high. Notaulix missing. Pronotum medially rugose, otherwise polished. Propodeum also polished, basally with a pair of short carinae, its hind margin with short rugulae (Fig. 79). — Hind femur 3.8 times as long as broad medially (Fig. 67). Inner spur of hind tibia half as long as basitarsus.

Fore wing: Pterostigma 2.8 times as long as wide, r-rs a bit shorter than half width of pterostigma, R1–2 approaching tip of wing (Fig. 44). Basal and subbasal cells evenly setose. — Hind wing: Nervellus (or Cu & cu-a) antefurcal and hardly distinct.

Metasoma about as long as mesosoma. Petiole three times as long as broad behind, pair of lateropes beyond middle of petiole, petiole itself gradually broadening beyond lateropes (Fig. 60), together with further tergites polished. Ovipositor sheath as long as hind tarsomeres 1–2 combined.

Head dark rusty brown, meso- and metasoma blackish brown. Antenna faintly darkening brown distally. Palpi greyish yellow, mandible yellow. Tegula and legs reddish yellow. Wings subhyaline, i.e. faintly brownish fumous. Pterostigma and veins opaque yellow.

Male and host unknown.

Distribution: Taiwan.

Taxonomy. — The new species, *Syntretus varus*, is nearest to *S. choui* sp. n. viewing their dark corporal colour as well as their corporal size, the specific distinction between them is summarized in the subsequent key:

- 1 (2) Temple in dorsal view 1.3 times as long as eye, head in dorsal view subcubic, i.e. 1.5 times as broad as long (Fig. 15). Propodeum smooth and polished (Fig. 79). Marginal cell of fore wing somewhat less long, metacarpal vein (R1–2) approaching tip of wing (Fig. 44). Female: 2.3 mm----- *S. varus* sp. n.
- 2 (1) Temple in dorsal view as long as eye, head in dorsal view rather transverse, i.e. 1.6 times as broad as long (Fig. 5). Propodeum areolated (Figs. 69–70). Marginal cell of fore wing long, metacarpal vein (R1–2) reaching tip of wing (Fig. 34). Female and male: 2–2.5 mm----- *S. choui* sp. n.

***S. varus* sp. n. is related to *S. parvicornis* (Ruthe), the two species are separated by the key as follows:**

- 1 (2) Eye in dorsal view as long as temple (or slightly longer) (Fig. 9). Hind femur 4–4.2 times as long as broad. Petiole somewhat broad (54). Body reddish yellow or yellow, dorsally with variable dark colour. Female: 1.9–3 mm----- *S. parvicornis* (Ruthe)
- 2 (1) Temple in dorsal view 1.3 times as long as eye (Fig. 15). Hind femur 3.8 times as long as broad (Fig. 67). Petiole somewhat less broad (Fig. 60). Body rusty to blackish brown. Female: 2.3 mm----- *S. varus* sp. n.

CHECKLIST OF THE *SYNTRETUS* SPECIES OF THE EAST PALAEARCTIC AND ORIENTAL REGIONS

- abbreviator* Belokobylskij, 2000 — Russia (Primorski Territory)
amba Belokobylskij, 1993 — Russia (Primorski Territory)
amoenus Belokobylskij, 1993 — Vietnam (Gia Lai-Con Tum)
areolatus Belokobylskij, 2000 — Russia (Primorski Territory)
bulbus Chen et van Achterberg, 1997 — China (Guizhou)
combinator Belokobylskij, 2000 — Russia (Primorski Territory)

conterminus (Nees, 1834) (*Perilitus*) — Palaearctic Region
 = *cultus* Marshall, 1887
 = *vernalis* (Wesmael, 1835) (*Perilitus*)
 ?= *politus* (Ruthe, 1856) (*Microctonus*)
choui sp. n. — Taiwan
daghestanicus Tobias, 1976 — Russia (Daghestan, Primorski Territory), Moldavia
 = *microphthalmus* Tobias, 1986
elegans (Ruthe, 1856) (*Microctonus*) — Palaearctic Region
 = *transsylvanicus* (Zilahi-Kiss, 1927) (*Perilitus*)
excavatus Belokobylskij, 2000 — Russia (Primorski Territory)
extensus sp. n. — Taiwan
glaber Chen et van Achterberg, 1997 — China (Zhejiang)
grodekovi Belokobylskij, 2000 — Russia (Primorski Territory)
hirtus Belokobylskij, 1996 — Russia (Primorski Territory), China (Guizhou)
 = *setosus* Chen et van Achterberg, 1997
komarovi Belokobylskij, 1996 — Russia (Primorski Territory)
kui Belokobylskij, 2000 — Korea
lyctaea Cole, 1959 — Palaearctic Region
makarovi Belokobylskij, 1996 — Russia (Primorski Territory)
miscellus Belokobylskij, 1996 — Russia (Primorski Territory)
parvicornis (Ruthe, 1862) (*Microctonus*) — Palaearctic Region
planifacies Belokobylskij, 1993 — Russia (Primorski Territory)
sculptor Belokobylskij et Ku, 1998 — Korea, Russia (Primorski Territory)
secutensus sp. n. — Taiwan
splendidus (Marshall, 1887)* (*Microctonus*) — Europe, Russia
subglaber sp. n. — Taiwan
temporalis sp. n. — Taiwan
testaceus (Capron, 1887) (*Microctonus*) — Palaearctic Region
 = *niger* Tobias, 1976
transitus sp. n. — Taiwan
varus sp. n. — Taiwan
venus Chen et van Achterberg, 1997 — China (Hainan)

* The name *S. splendidus* was placed in synonymy by Belokobylskij (2000b) with *S. parvicornis* (Ruthe). An examination of the female paralectotype of *S. splendidus* (housed in the Hungarian Natural History Museum) clearly revealed that it differs in a few clear-cut specific features from *S. parvicornis*.

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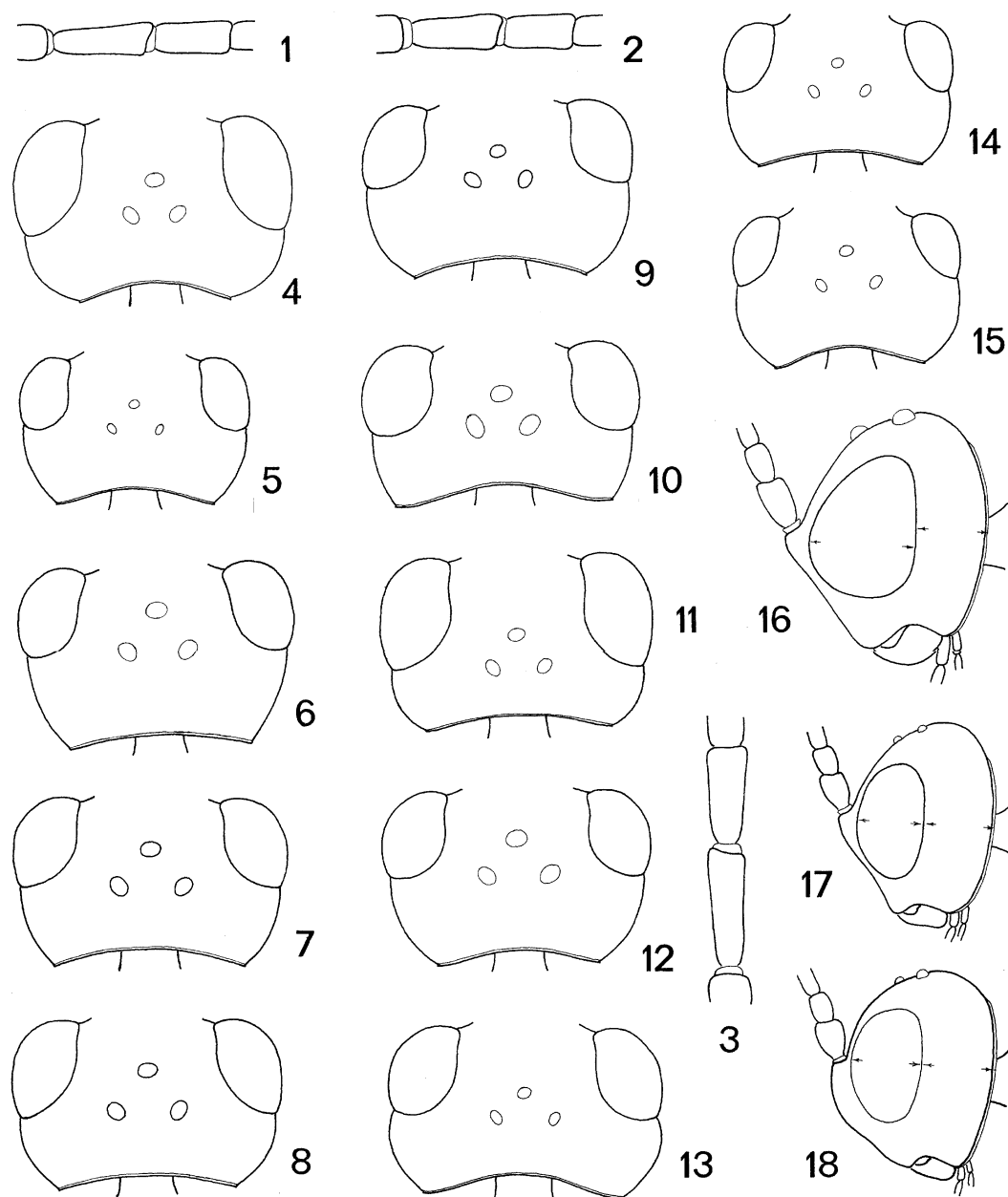
Originally he has undertaken to prepare the figures accompanied the text written by me, however, his early and unawaited decease fatefully altered his intention.

My sincere thank should go to DR. CHYI-CHEN HO (Taichung) who has taken the trouble to settle the problem arisen during the preparation of the figures in this paper as well as to promote the publication of the present article.

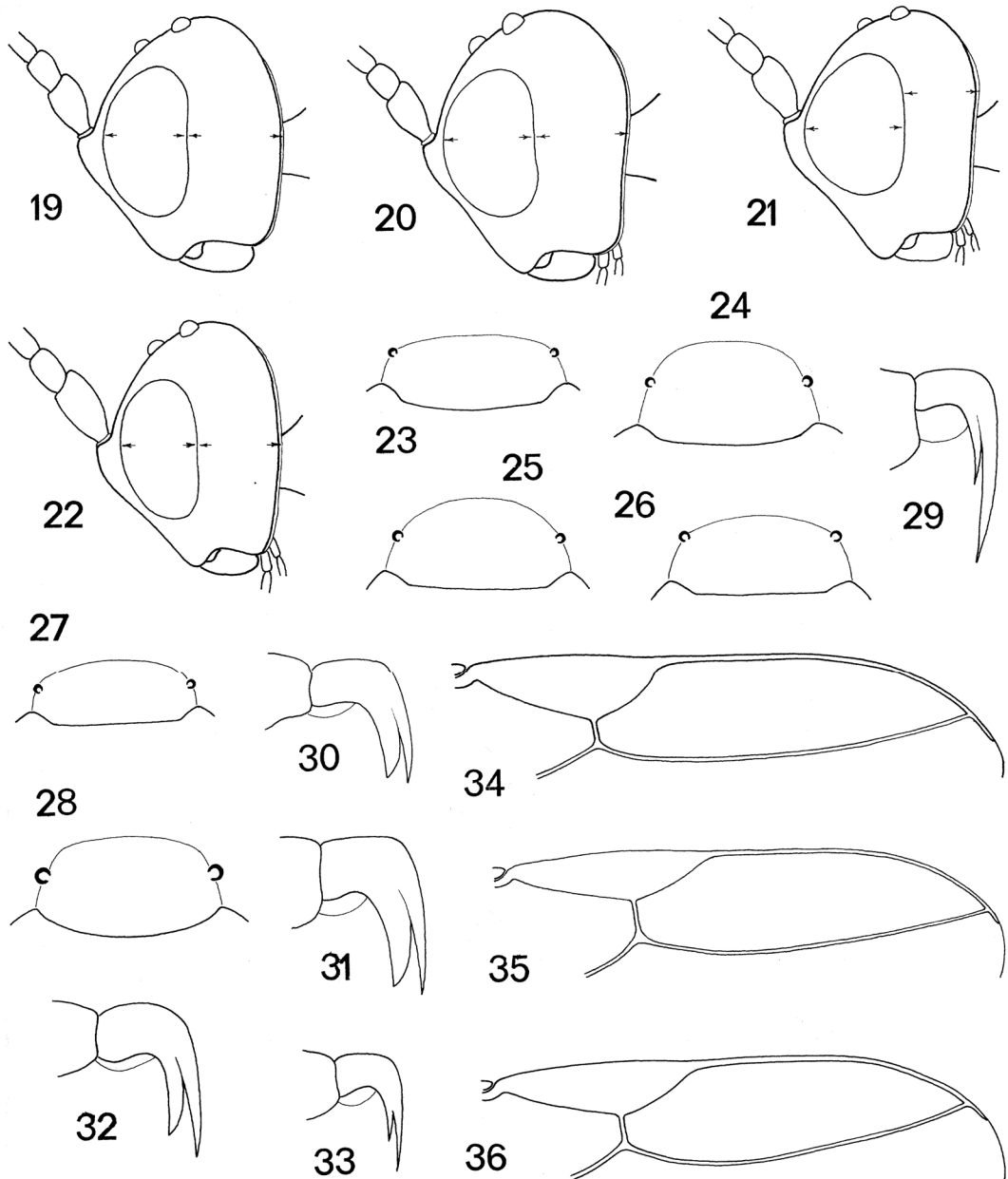
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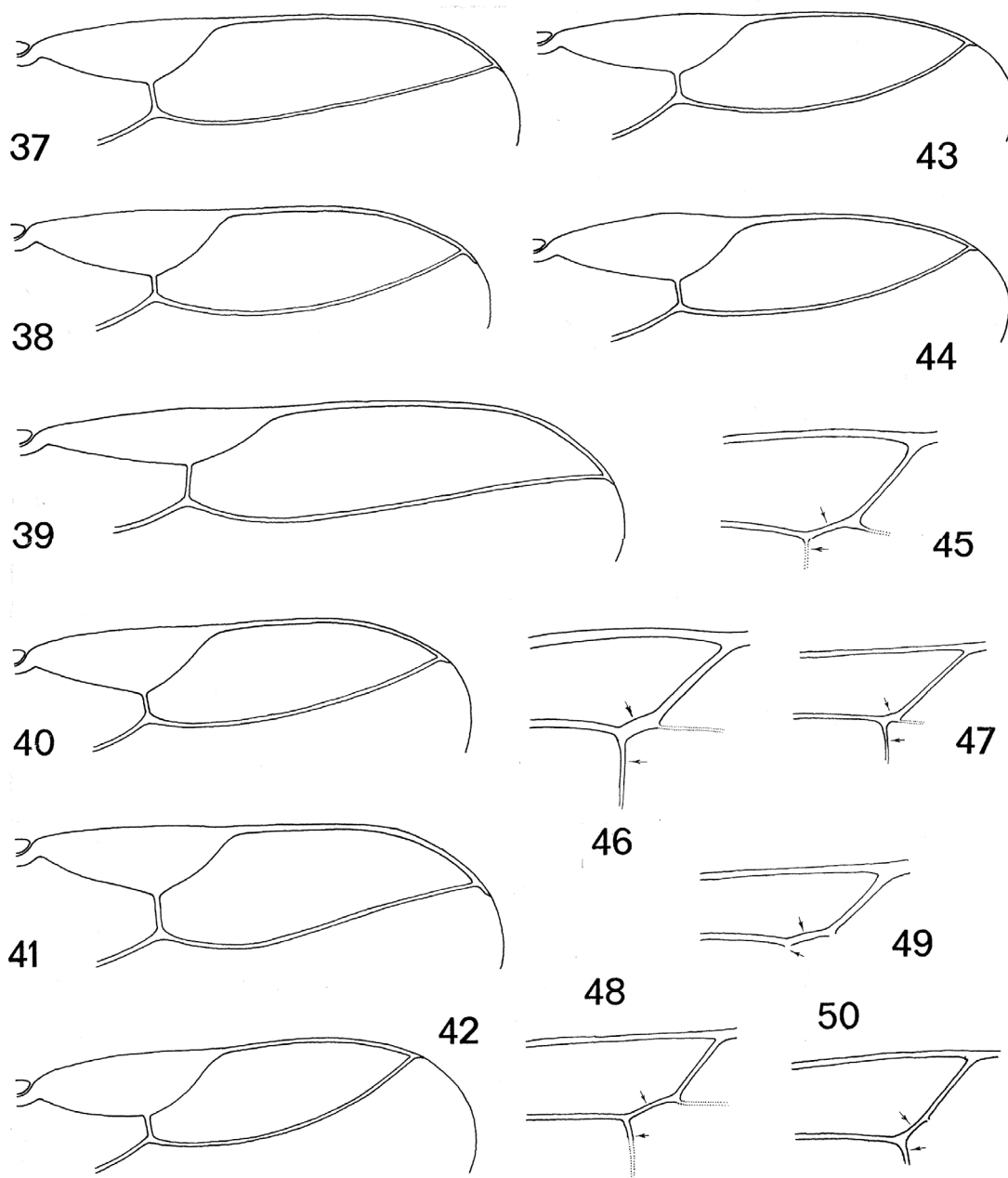
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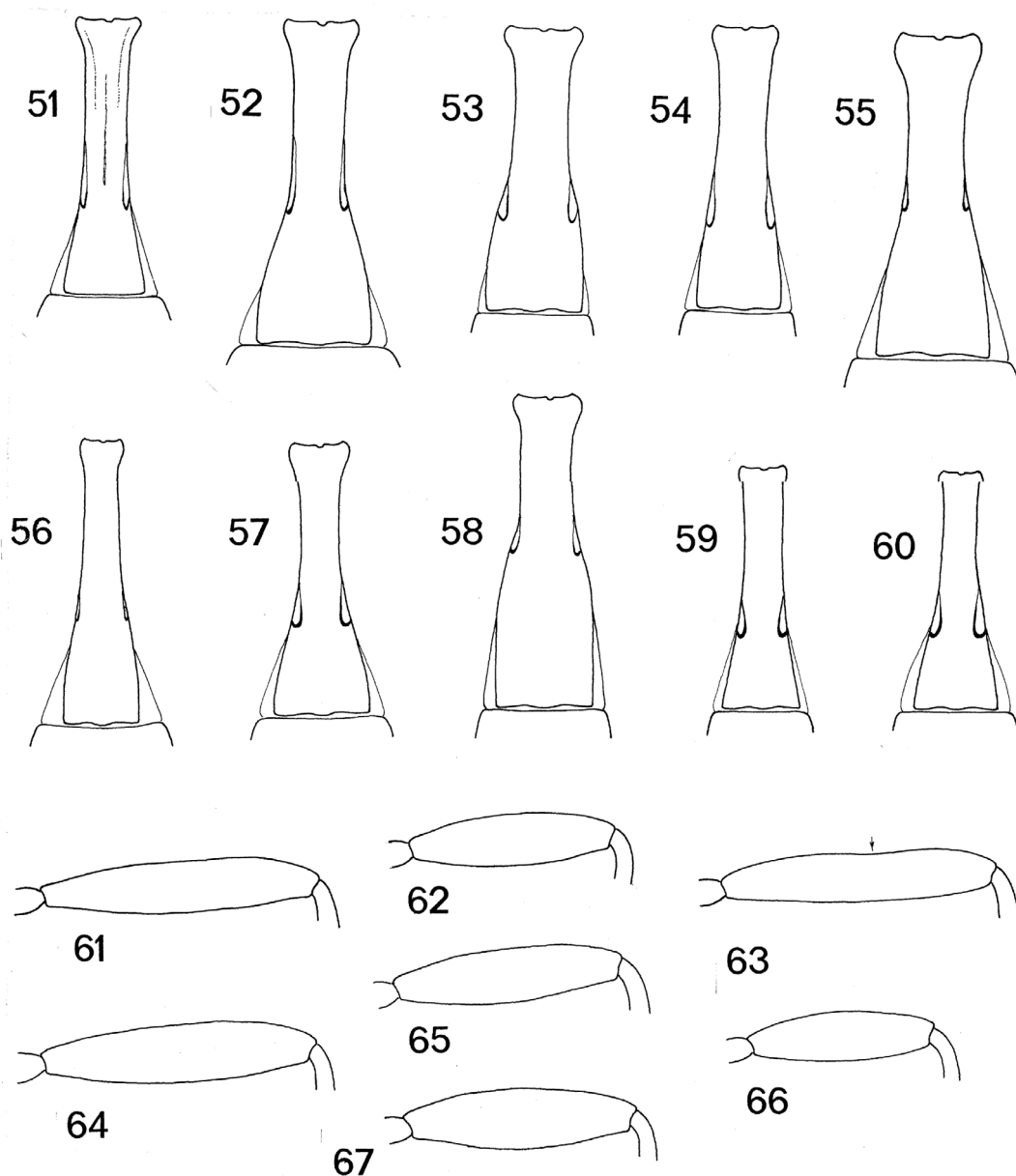
Figs 1-18. *Syntretus* species: 1-3 flagellomeres 1-2: 1 = *S. glaber* Chen et Van Achterberg, 2 = *S. parvicornis* (Ruthe), 3 = *S. subglaber* sp. n. — 4-15 head in dorsal view: 4 = *S. bulbus* Chen et van Achterberg, 5 = *S. choui* sp. n., 6 = *S. extensus* sp. n., 7 = *S. glaber* Chen et Achterberg, 8 = *S. lyctaea* Cole, 9 = *S. parvicornis* (Ruthe), 10 = *S. secutens* sp. n., 11 = *S. subglaber* sp. n., 12 = *S. temporalis* sp. n., 13 = *S. testaceus* (Capron), 14 = *S. transitus* sp. n., 15 = *S. varus* sp. n. — 16-18 head in lateral view: 16 = *S. bulbus* Chen et van Achterberg, 17 = *S. choui* sp. n., 18 = *S. transitus* sp. n.



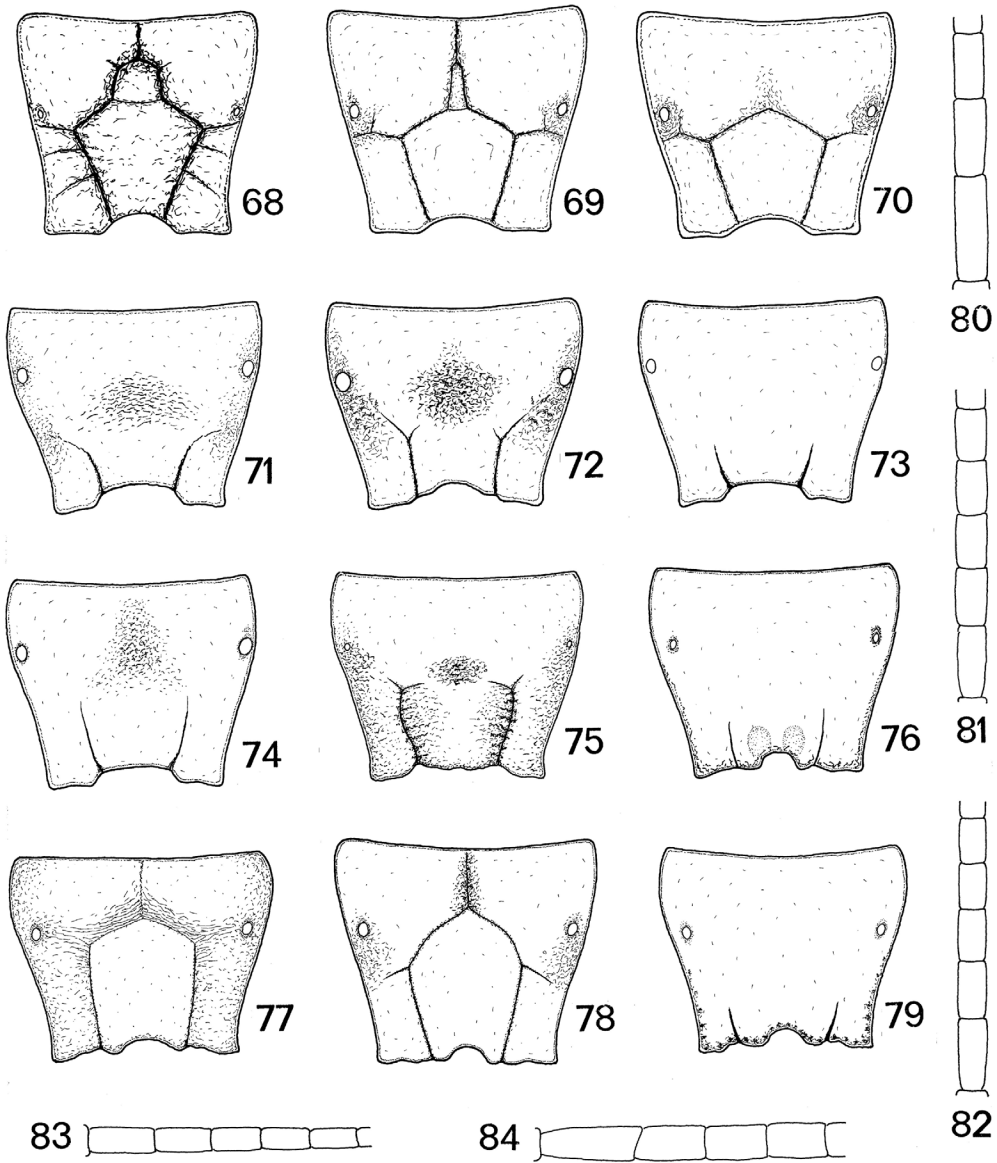
Figs 19–36. *Syntretus* species: head in lateral view 19–22: 19 = *S. extensus* sp. n., 20 = *S. secutensus* sp. n., 21 = *S. subglaber* sp. n., 22 = *S. temporalis* sp. n. — clypeus 23–28: 23 = *S. choui* sp. n., 24 = *S. extensus* sp. n., 25 = *S. subglaber* sp. n., 26 = *S. temporalis* (Capron), 27 = *S. transitus* sp. n., 28 = *S. varus* sp. n. — hind claw 29–33: 29 = *S. choui* sp. n., 30 = *S. extensus* sp. n., 31 = *S. secutensus* sp. n., 32 = *S. subglaber* sp. n., 33 = *S. transitus* sp. n. — distal part of right fore wing 34–36: 34 = *S. choui* sp. n., 35 = *S. extensus* sp. n., 36 = *S. glaber* Chen et van Achterberg



Figs 37-50. *Syntretus* species: distal part of right fore wing 37-44: 37 = *S. lyctaea* Cole, 38 = *S. parvicornis* (Ruthe), 39 = *S. secutensus* sp. n., 40 = *S. subglaber* sp. n., 41 = *S. temporalis* sp. n., 42 = *S. testaceus* (Capron), 43 = *S. transitus* sp. n., 44 = *S. varus* sp. n. — proximal part of right hind wing 45-50: 45 = *S. choui* sp. n., 46 = *S. extensus* sp. n., 47 = *S. glaber* Chen et van Achterberg, 48 = *S. secutensus* sp. n., 49 = *S. subglaber* sp. n., 50 = *S. temporalis* sp. n.



Figs 51–67. *Syntretus* species: petiole 51–60: 51 = *S. choui* sp. n., 52 = *S. extensus* sp. n., 53 = *S. lyctaea* Cole, 54 = *S. parvicornis* (Ruthe), 55 = *S. secutensus* sp. n., 56 = *S. subglaber* sp. n., 57 = *S. temporalis* sp. n., 58 = *S. testaceus* (Capron), 59 = *S. transitus* sp. n., 60 = *S. varus* sp. n. — hind femur 61–67: 61 = *S. bulbosus* Chen et van Achterberg, 62 = *S. choui* sp. n., 63 = *S. extensus* sp. n., 64 = *S. secutensus* sp. n., 65 = *S. subglaber* sp. n., 66 = *S. transitus* sp. n., 67 = *S. varus* sp. n.



Figs 68–84. *Syntretus* species: propodeum 68–79: 68 = *S. bulbus* Chen et Van Achterberg, 69–70 = *S. choui* sp. n.: 69 female and 70 male, 71 = *S. glaber* Chen et Van Achterberg, 72 = *S. lyctaea* Cole, 73–74 = *S. parvicornis* (Ruthe), 75 = *S. subglaber* sp. n., 76 = *S. temporalis* sp. n., 77 = *S. testaceus* (Capron), 78 = *S. transitus* sp. n., 79 = *S. varus* sp. n. — Proximal flagellomeres 80–84: 80 = *S. extensus* sp. n. (flagellomeres 1–3), 81–82 = *S. temporalis* sp. n. (flagellomeres 1–5): 81 holotype and 82 paratype, 83 = *S. parvicornis* (Ruthe) (flagellomeres 1–5), 84 = *S. secutensus* sp. n. (flagellomeres 1–4).

臺灣的 *Syntretus* 屬瓢蟲繭蜂 (膜翅目：小繭蜂科：瓢蟲繭蜂亞科)¹

Jenő Papp²

摘 要

Papp, J.。2004。臺灣的 *Syntretus* 屬瓢蟲繭蜂 (膜翅目：小繭蜂科：瓢蟲繭蜂亞科)。中華農業研究 53:39-62。

本文為對臺灣 *Syntretus* 屬種類的第一篇檢視報導，共檢視了 12 種，其中 *S. choui*、*S. extensus*、*S. secutensus*、*S. subglaber*、*S. temporalis*、*S. transitus* 及 *S. varus* 等 7 種為新種，其餘的 5 種為臺灣的新記錄種。對新種有詳細的描述，對已知種類也添加了分類註解。文中製作有此 12 種的分種索引，配以 84 幅鑑識用原圖。另外也將舊北區及東方區的 *Syntretus* 種類編纂成名錄。

關鍵詞：小繭蜂科、*Syntretus* 屬、新種、新記錄、分種索引、台灣、名錄。

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