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Studies on Korean Chironomidae (Diptera) III. Description of Two Unrecorded Species from Korea and Three New Species

Ree, Han-Il and *Kim, Myung-Suk

(Department of Parasitology, College of Medicine, Yonsei University, Seoul 120-749, Korea;
*Department of Biology, Soonchunhyang University, Chung-Nam, Korea)

한국산 깔따구과(파리목)에 관한 연구 3. 한국 미기록 2종 및 3신종의 기재

이 한 일 · *김 명 숙

(연세대학교 의과대학 기생충학교실 · *순천향대학 생물학과)

적 요

충남 아산군을 중심으로 깔따구 성충을 채집 조사한 결과 총 15속 21종이 동정되었는데 그중에서 한국 미기록 2종과 3신종을 확인하였다. 한국 미기록 종은 *Polypedilum masudai*(국명 : 마쓰다무늬깔따구, 신칭)와 *Pentapedilum uncinatum*(국명 : 갈고리오각깔따구, 신칭)이고 3신종을 *Pentapedilum pseudotritum*(국명 : 옆구리띠오각깔따구), *Cladotanytarsus sinjongensis*(국명 : 신정눈장부깔따구)및 *Rheotanytarsus dogoensis*(국명 : 도고유장부깔따구)로 명명한다. 이로써, 한국산 깔따구류는 총 22속 36종이 된다.

Key words: taxonomy, Chironomidae, new species, Korea

INTRODUCTION

As part of the taxnomic studies on Korean Chironomidae, adult specimens which were collected mostly by light traps and by sweeping in Asan-gun area of Chungchong-namdo were slide-mounted with phenol balsam for permanent preparation and identified by observing hypopygium and some other characters under the high magnification (=400×). Among 21 species identified, two are unrecorded from Korea and three are new species. All measurements were given by Average±S.D. (Minimum—Maximum). The length of the wing which was measured from tip to acrista represents the size of

the body. Two unrecorded species from Korea are also fully described and illustrated, not only as the previous worker's descriptions and illustrations were not detail enough, but as there is a possibility that Korean one(s) would be different species. As 31 species, 19 genera has been recorded in Korea so far (Ree, 1987) and the present paper adds two unrecorded and three new species (of three unrecorded genera), the Korean fauna of Chironomidae is made up of 36 species, 22 genera.

DESCRIPTION

Polypedilum masudai (Tokunaga, 1938) 마스다무늬깔따구(신칭) (Fig. 1)

Chironomus (Polypedilum) masudai Tokunaga, 1938 (p. 331, figs. 11, 12).

Material examined: 27 ♂♂, Sinjong-ho, Asan-gun, Chungchong-namdo, 4 X 1984, M.S. Kim; 1 ♂, Gagok-ri, Dogo-myon,Asan-gun,Chungchong-namdo, 26 IX 1984, M.S.Kim; 1 ♂, Ubnai-ri, Sinchang-myon, Asan-gun, Chungchong-namdo, 25 IX 1984, M.S. Kim.

Diagnosis: Small, light brown species; wing length 1.5-1.7 mm. Wing membrane with 9 dark cloudy markings. Legs pale,with dark rings at pre-apical tarsus I and at middle of tarsi II-IV. Appendage 1 of hypopygium broad and flat, pubescent, with 3 long setae. LR 1.78±0.03 (1.76–180).

Description (male, n=10): HEAD: Brown in ground color. Eye black, bare, dorsally well produced. No frontal tubercle. Vertex with 7 pairs of setae in single row. Antenna yellowish brown; 13 segmented; AR 1.65±0.07 (1.55–1.78). Palp pale brown, 4 segmented; length (μm) of I-IV segments: 35±3.3 (29-38), 99±6.2 (88-105), 121±11.9 (100–127), 152±10.0 (138–166). THORAX: Brown in ground color. Pronotum pale brown, narrowed medially, not reaching up to front margin of scutum (surpassed by anterior end of scutum). Scutum brown, with inconspicuous stripes. Scutellum pale brown. Postnotum dark brown. Halter pale with slightly darker tip. WING (fig. 1, A): Veins and acrista pale, with hairs only on R, R_1 and R_{4+5}. Membrane bare, with 9 dark cloudy patches: 3 in cell R_5, 2 in cell M, 2 in cell Cu and 3 in cell An. R_{2+3} ending near to tip of R_1. R_{4+5} well beyond above tip of Cu_1. fCu well beyond r-m. Cu_1 almost straight. An scarcely reaching fCu. Anal lobe moderately developed. Squama fringed. LEGS (Fig. 1, B): Coxa and trochanter brown. Femur brown, with distal half pale. Tibia and tarsal segments all pale, with dark ring at pre-apical part of tarsus I and at middle of tarsi II-IV. Tibial combs narrowly, but clearly separated, one with a long spur and the other unarmed.

Table 1. Measurements (in μm) of leg segments of male *Polypedilum masudai* (Tokunaga, 1938).

	Fore leg	Mid leg	Hind leg
Femur	647±23.6 (621-681)	743±17.0 (718-767)	795±29.3 (758-839)
Tibia	463±15.1 (441-474)	627±17.0 (600-651)	724±18.9 (701-758)
Tarsus I	822±36.9 (777-852)	403±11.3 (393-426)	502±12.3 (487-513)
Tarsus II	554± 4.7 (547-559)	223±13.2 (218-241)	300± 4.7 (294-306)
Tarsus III	410±15.1 (388-426)	157±12.3 (133-170)	241± 8.5 (232-252)
Tarsus IV	298±10.4 (284-310)	93± 6.6 (85-104)	127±10.4 (114-139)
Tarsus V	143± 4.7 (137-149)	67± 3.8 (61- 74)	75± 4.7 (71- 82)
Leg Ratio	1.78±0.03 (1.76-1.80)	0.64±0.01 (0.62-0.66)	0.70±0.01 (0.69-0.71)

Average ± S.D. (Min.-Max.); n=7

Relative length of leg segments as in Table 1. ABDOMEN: uniformly brown. HYPOPYGIUM (Fig. 1, C): Anal point long, slender, parallelsided. Gonostylus pale, not slender, tapered apically, with one apical and 6-7 inter-lateral setae. Appendage 1 large, broad, flat, pubescent, with 3 long setae. Appendage 2 well beyond gonocoxite, with 15-19 long, recurved setage at distal half.

Distribution: Japan (Kyoto), Korea.

Remarks: This is the first report since Tokunaga (1938) described briefly with simple illustration as a new species in Japan. The Korean specimens are well coincided with Tokunaga's description, but slightly differs in AR and LR, which are 1.65 ± 0.07 (1.55–1.78) and 1.78±0.63 (1.78–1.80)

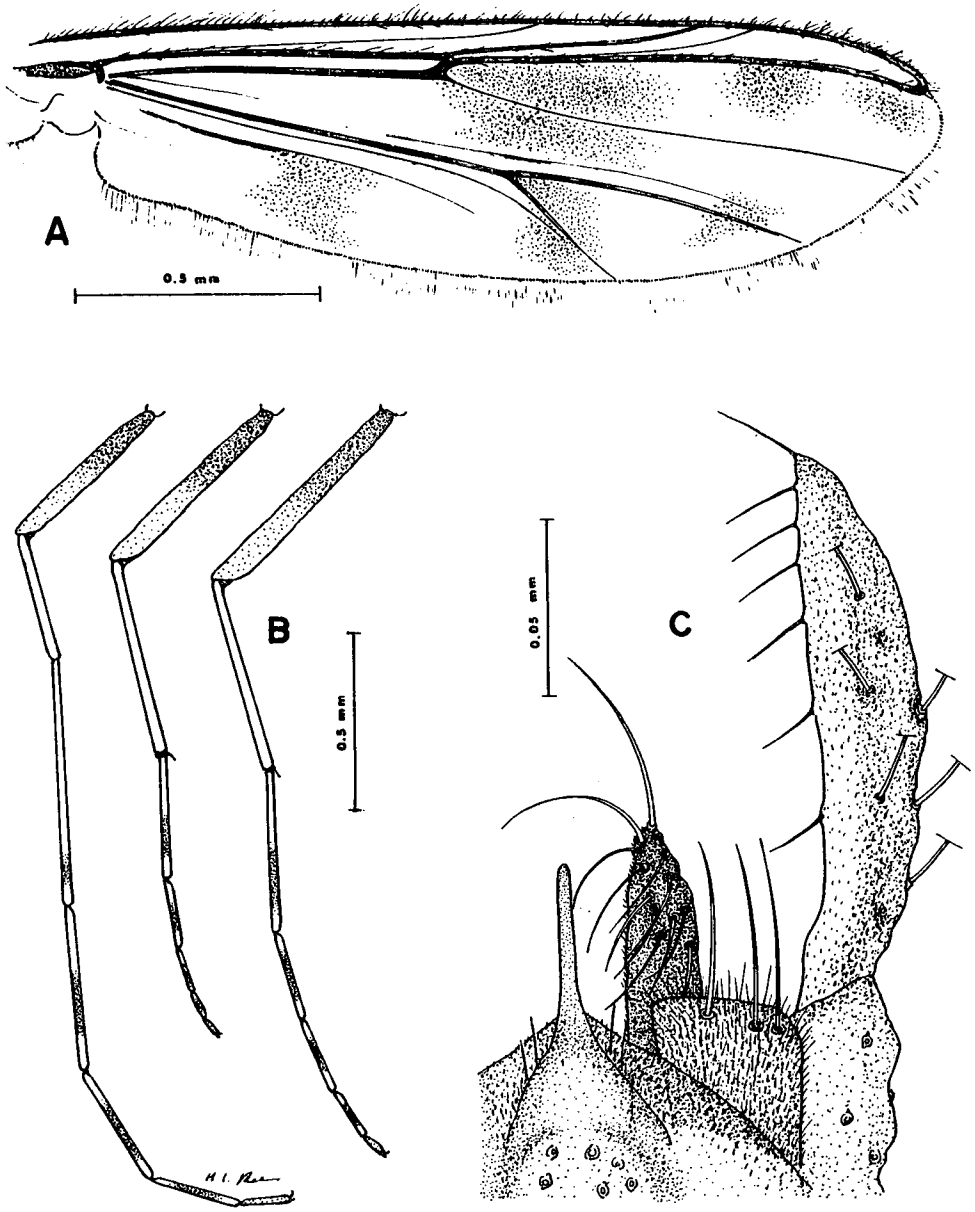

Fig. 1. Male of *Polypedilum masudai* (Tokunaga, 1938). A, wing; B, front, middle and hind legs, from left; C, hypopigium.

respectively in the author's specimens, whereas 1.5 and 1.86 respectively in Tokunaga's. This species was collected only in autumn (October in Japan, and September and October in Korea).

Pentapedilum uncinatum Goetghebuer, 1921 갈고리오각깔따구(신칭) (Fig. 2)

Pentapedilum uncinatum Goetghebuer, 1921 (p. 110, fig. 215), 1928 (p. 102, fig, 153), 1937 (p. 80, fig, 215); Edwards, 1929 (p. 376); Pinder, 1978 (p. 134, fig. 166, B).

Chironomus (Pentapedilum) uncinatum: Coe, 1950 (p. 194).

Material examined: 1 ♂, Gagok-ri, Dogo-myon, Asan-gun, Chungchong-namdo, 30 IX 1984, M.S. Kim: 10 ♂♂, Sinjong-ho, Asan-gun, CHungchong-namdo, 4 X 1984, M.S. Kim.

Diagnosis: Small, brown species; Wing length 1.5 mm. AR 1.4. LR 2.1. Vein R_{2-3} reduced (not distingishable). Appendage 1 of hypopygium hooked at apex, with a long lateral seta bearing at 1/3 from tip.

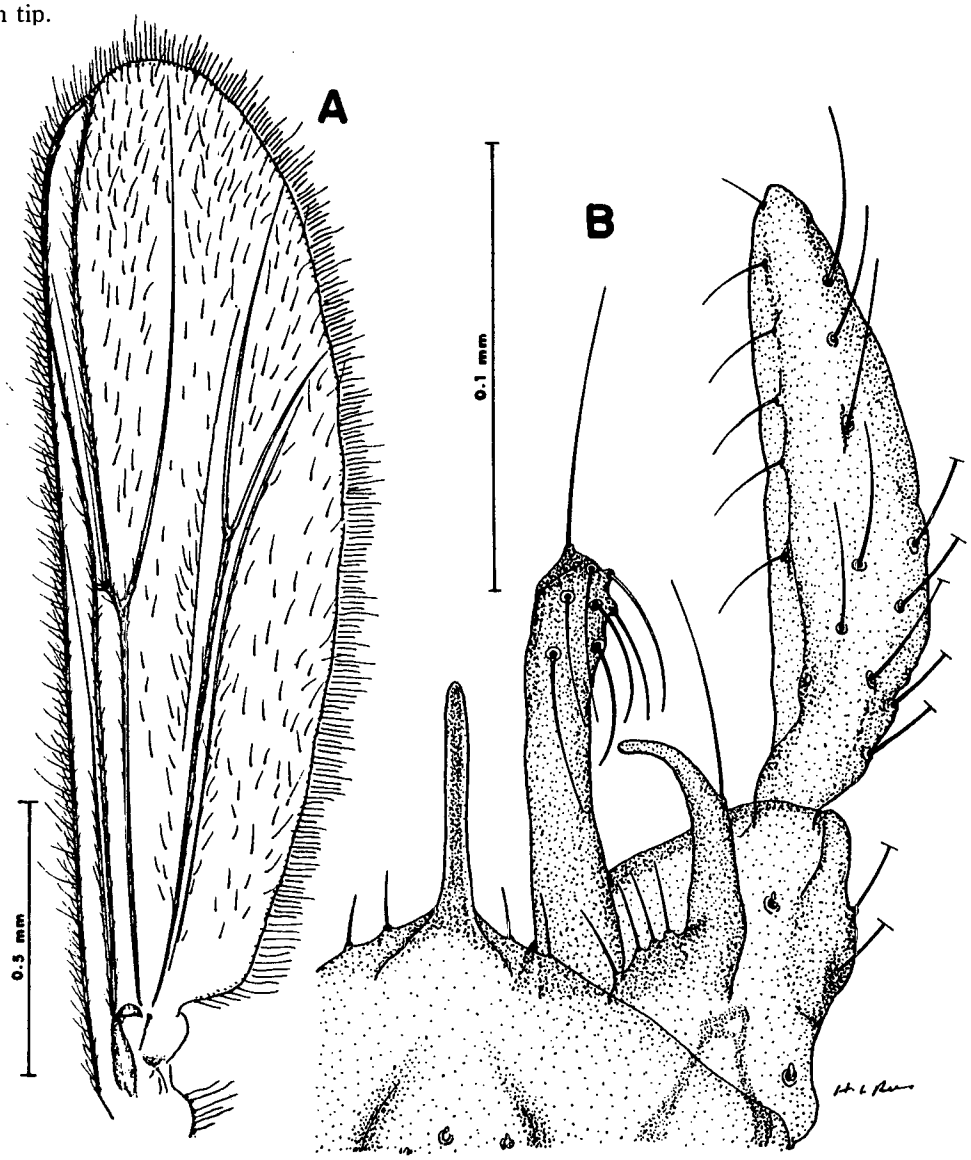

Fig. 2. Male of *Pentapedilum uncinatum* Goetghebuer, 1921. A, wing; B, hypopigium.

Description (male, n=10): HEAD: Brown in ground color. Eye black, bare, well produced dorsally. Antenna dark brown; pedicel bare; 13 segmented, 1st and 2nd segments fused; AR 1.41±0.06 (1.30-1.49). Clypeus somewhat rectangular, with about 22 long setae. Vertex with 6-9 parirs of long setae in single row. Palp pale dark brown, 4 segmented; relative length (μm): 40±4.3 (35-48), 98±10.5 (78-114), 111±11.9 (89-125), 185±20.0 (146-204). THROAX: Brown in ground color. Pronotum reduced, not reaching up to front margin of scutum, bare. Scutum yellow brown; central stripe not clear, lateral stripe dark with not well defined margin. Scutellum yellow brown, with 10-11 setae in single row. Postnotum dark brown. Halter pale dark brown. WING (Fig. 2, A): Length (mm) 1.53±0.09 (1.33-1.68). Most surface covered with macrotrichia. All veins yellowish, with hairs except distal half of subcost, basal part of M and Cu. R_{2+3} reduced (undistingishable). R_{4+5} well beyond tip of Cu_1. r-m moderately developed. Squama fringed. LEGS: Densely hairy, with very long hairs (about 265 μm) on femur and tibia of mid and hind legs. All segments yellowish pale brown, except distal half of femur, tibia and front tarsal segments which slightly darker. Tibial combs separated, a comb with a very long spur (33-34 μm) and the other one unarmed. Relative length of leg segments as in Table 2. ABDOMEN: Uniformly yellow brown. HYPOPYGIUM (Fig. 2, B): Anal point long, slender, parallel-sided, pointed at tip. Gonostylus moderately tapered at tip with one apical and 5-6 inter-lateral setae which are rather short (24-31 μm). Appendage 1 hooked at apex, with a long lateral seta bearing at about 1/3 from tip. Appendage 2 beyond gonocoxite with one long apical seta and 7-8 recurved setae.

Distribution: England, Belgium, France, Korea.

Remarks: This is the first report of the collection at outside of Europe. The Korean species is similar in all structural respects to *P. uncinatum* and treated here as the same species. However, it differs in several important characters: (1) body color rather light brown, not dark (almost black) as in Edwards' description, (2) brown scutal stripes without well defined margin, but not fused, (3) shorter AR (1.4) and longer LR (2.1), whereas 1.75 and 1.3-1.6 respectively in Goetghebuer's description, and (4) much smaller size of the body (wing length 1.33-1.68 mm, whereas 2.5-3 mm in Coe's specimens). The further studies are required to confirm whether Korean species is realy *P. uncinatum*.

Pentapedilum pseudotritum, n. sp. 옆구리띠오각깔따구 (Fig. 3)

Material Examined: Holotype: 1♂ (R-S-2791, slide mounted), Ubnai-ri, Shinchang-myon, Asan-gun, Chungchong-namdo, 1 X 1984, M.S. Kim. Paratypes: 14♂♂, Sinjong Lake, Asan-gun, Chungchong-

Table 2. Measurements (in μm) of leg segments of male *Polypedilum uncinatum* Goetghebuer, 1921.

	Fore leg	Mid leg	Hind leg
Femur	696±50 (641-744)	759±44 (663-805)	810±58 (680-874)
Tibia	415±32 (372-449)	629±47 (521-693)	722±55 (616-824)
Tarsus I	872±45 (794-914)	382±17 (349-406)	490±39 (426-526)
Tarsus II	509±24 (456-525)	224±14 (200-241)	286±17 (250-311)
Tarsus III	387±15 (361-402)	168±13 (146-189)	260±17 (211-277)
Tarsus IV	267±14 (245-284)	113± 9 (95-122)	166±23 (118-189)
Tarsus V	121±14 (93-136)	69± 7 (53- 78)	84±10 (60- 95)
Leg Ratio	2.06±0.10 (1.93-2.18)	0.60±0.03 (0.57-0.64)	0.67±0.04 (0.60-0.71)

Average ± S.D. (Min.-Max.); n=10

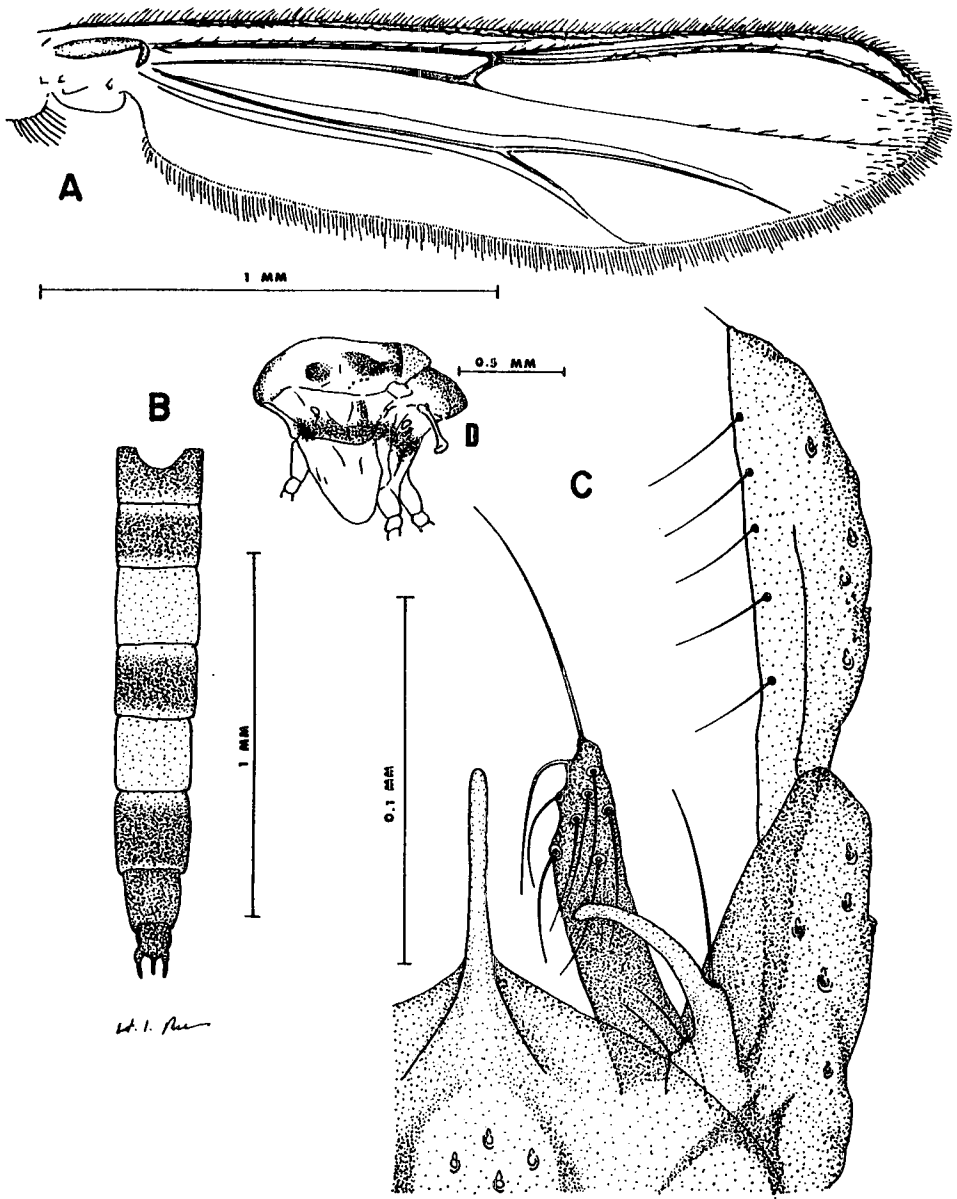

Fig. 3. Male of *Pentapedilum pseudotritum*,n. sp. A, wing; B, abdomen; C, hypopigium; D, thorax.

namdo, 4 X 1984, M.S. Kim; 2♂♂, Sabkyochon reservoir, Asan-gun, Chungchong-namdo, 13 X 1984, H.I. Ree; 14♂♂, Sinjong Lake, Asan-gun, Chungchong-namdo, 25 IX 1984, M.S. Kim; 1♂, Dogo-myon, Asan-gun, Chungchong-namdo, 30 IX 1984, M.S. Kim.

Diagnosis: Small, yellowish brown species; wing length 1.57±0.08 mm (1.48-1.70 mm). A longitudinal dark band from anterior anepisternum through epimeron of thorax. Tergite I, II, IV, VI, VII and VIII completely/mostly dark brown; tergite II and V pale. Appendage 1 of hypopygium with a long leateral seta bearing at 2/3 from tip.

Description (male, n = 10): HEAD: Yellowish brown in ground color. Eye black, bare, dorsally pro-

Table 3. Measurements (in μm) of leg segments of *Pentapedilum pseudotritum*,n. sp. male.

	Fore leg	Mid leg	Hind leg
Femur	705±32 (652-752)	792±30 (724-824)	830±32 (770-871)
Tibia	508±28 (456-545)	679±35 (609-743)	744±41 (663-800)
Tarsus I	866±41 (788-933)	359±14 (323-371)	514±22 (474-552)
Tarsus II	513±24 (474-553)	204±11 (189-215)	287±14 (266-305)
Tarsus III	388±13 (364-406)	152± 9 (140-163)	252±13 (238-270)
Tarsus IV	293±10 (284-312)	99± 5 (95-106)	150± 8 (143-164)
Tarsus V	133±12 (133-143)	69± 6 (62- 79)	84± 7 (76- 95)
Leg Ratio	1.71±0.05 (1.63-1.80)	0.53±0.01 (0.50-0.54)	0.69±0.02 (0.67-0.71)

Average ± S.D. (Max.-Min.); n=10

duced. Antenna 13 segmented; pedicel yellowish brown, flagellum dark brown; AR 1.41±0.04 (1.34-1.49). Clypeus rectangular, with 18-22 long setae. Vertex yellowish brown, with 10 pairs of long setae arranged in single row along the near margin of dorsal projection of eye. Palp pale brown, 4 segmented: 34±4.5μ (26-39μ), 74±5.2 (68-82), 98±9.1 (78-109), 128±10.7 (112-143); relative ratio of segments 1:2.2:2.9:3.8. THORAX (Fig. 3, D): Pronotum pale brown, bare. Scutum yellowish brown; scutal stripes inconspicuous with two dark markings, one at anterior and the other (larger one) at posterior ends of each lateral stripe. Scutellum brown, with 6 setae in single row. Postnotum dark brown. Halter pale. A longitudinal dark brown band present from anterior anepisternum through epimeron. WING (Fig. 3, A): Wing length 1.57±0.08 mm (1.48-1.70). Wing membrane unmarked, with macrotrichia only at apex, elsewhere completely bare. Veins pale, with hairs on Costa, R, R_1, R_{4+5} and distal part of M. Acrista yellowish, with one bristle. R_{2+3} ending near to R_1. R_{4+5} well beyond tip of Cu_1, ending above tip of M. r-m oblique, not pigmented. fCu well beyond r-m. Cu_2 abruptly bent at tip.

An reaching fCu. Anal lobe moderately developed. Squama fringed. LEGS: All segments greenish yellow with slightly darker tips (tarsus IV and V). Tibial combs separated, one with a long spur and the other unarmed. Relative length of leg segments as in Table 3. ABDOMEN (Fig. 3, B): Tergites I, VII and VIII completely dark brown, tergites II, IV and VI dark brown with apical and basal narrow pale bands, margins of which not clearly defined; tergites III and V pale. HYPOPYGIUM (Fig. 3, C): Tergite IX smoothly rounded distally. Anal point long, narrow, parallelsided. Gonostylus modelately tapered at tip, with one apical and 5-7 inter-lateral setae. Appendage 1 hooked apically, with a long lateral seta bearing at about 2/3 from tip (0.63±0.06 from tip) with a variation of 0.53–0.71. Appendage 2 as long as gonocoxite, with one long apical and 10-11 recurved setae.

Remarks: This species is similar to *P. tritum* (Walker, 1856) *and to P. stratiotale* (Kieffer, 1913) but differs from them by abdominal bands, pale knob of halters, macrotrichia at apex of wing only, shorter AR (1.3-1.5), and a long lateral seta of appendage 1 bearing at 2/3 from tip.

Cladotanytarsus sinjongensis,n. sp. 신정눈장부깔따구 (Fig. 4)

Material Examined: Holotype: 1♂ (R-S-2964, slide mounted), Sinjong Lake, Asan-gun, Chungchongnamdo, 25 IX 1984, M.S. Kim. Paratypes: 10♂♂, same data as holotype; 13♂♂, Sinjong Lake, Asangun, Chungchong-namdo, 4 X 1984, M.S. Kim.

Diagnosis: Small, yellowish light green species. Wing length (mm) 1.2±0.04 (1.2-1.3). Scutal stripes

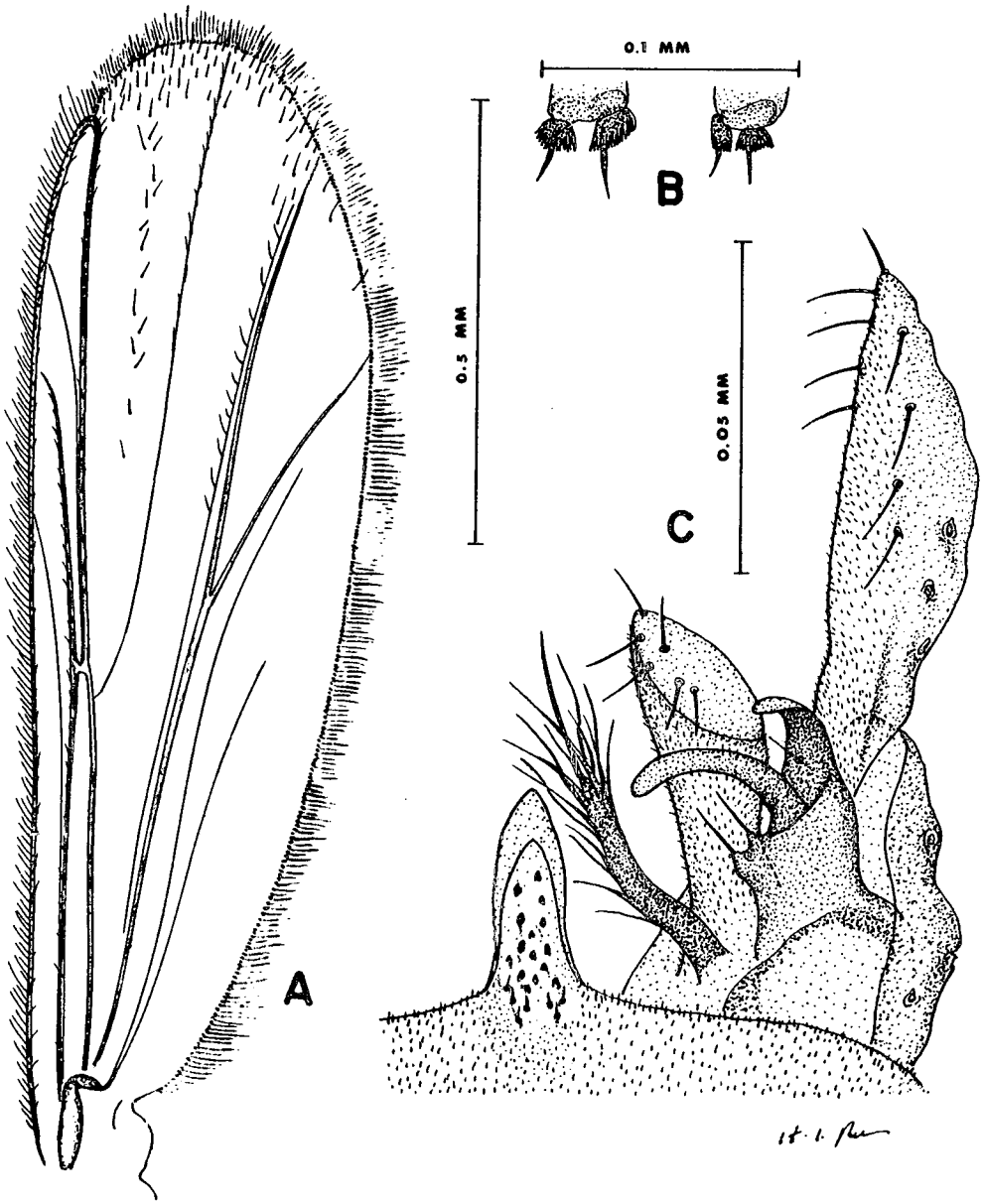

Fig. 4. Male of *Cladotanytarsus sinjongensis*,n. sp. A, wing; B, combs of hind and middle tibiae, from left; C, hypopigium.

indistinguishable. LR 2.5-2.6. Appendage 2a long, slender, with simple hairs (not branched). Appendge 1 with three small setae.

Description (male, n = 10): HEAD: Greenish yellow in ground color. Eye black, bare, not produced dorsally, widely separated each other. Frontal tubercles present (15-16 μ long x 6-6.5 μ wide). Antenna 13 segmented; AR 0.98 ± 0.05 (0.91-1.05); pedicel and flagellum yellowish brown. Vertex with 10-11 pairs of setae in single row (except one or two). Clypeus with 12 long setae. Palp greenish pale, 5 segmented (the 1st segment not well defined): 31 ± 2 μ (29-31), 29 ± 4 (24-32), 89 ± 12 (76-105), 100 ± 9 (91-114), 151 ± 20 (129-169). THORAX: Ground color greenish pale yellow, except yellow brown

Table 4. Measurements (in μm) of leg segments of *Cladotanytarsus sinjongensis*,n. sp. male.

	Fore leg	Mid leg	Hind leg
Femur	559±55 (474-625)	557±18 (545-182)	589±21 (563-606)
Tibia	274±14 (251-284)	449±16 (436-474)	584±21 (560-608)
Tarsus I	686±32 (633-720)	269±10 (253-275)	389±22 (360-417)
Tarsus II	339±21 (322-369)	130±10 (116-142)	221±16 (199-237)
Tarsus III	256±23 (237-293)	80± 9 (66- 85)	213±13 (204-237)
Tarsus IV	208±18 (189-227)	57± 6 (49- 66)	137±12 (118-152)
Tarsus V	45± 3 (40- 47)	50± 5 (44-57)	77±10 (59- 85)
Leg Ratio	2.52±0.04 (2.47-2.57)	0.60±0.02 (0.58-0.62)	0.66±0.03 (0.62-0.69)

Average ± S.D. (Max.-Min.); n=5

postnotum. Pronotum reduced, not reaching up to front margin of scutum. Scutal stripes inconspicuous. Halter pale. WING (Fig. 4, A): Length (mm) 1.2±0.04 (1.2-1.3). Membrane bare except at tip and middle of cell R_5 (arranged in single row); no hairs (or at most 3) in cell Cu_1. Veins and acrista pale, hairy only on Costa, R_1, R_{4+5}, distal half of M and Cu_1. R_5 slightly beyond above tip of Cu_1. R_{2+3} faint, closer to R_{4+5}, ending at about middle of R_1 and R_{4+5}. r-m short, oblique. Cu_1 and Cu_2 almost straight. fCu beyond r-m. An not reaching to fCu. Anal lobe not developed. Squama bare. LEGS: All segments uniformly light green. Tibial combs (Fig. 4, B) clearly separated, each with an equally long spur. Pulvilli absent. Relative length (in μm) of leg segments as in Table 4. ABDOMEN: Uniformly light green. HYPOPYGIUM (Fig. 4, C): Gonostylus rather short (slightly longer than gonocoxite), moderately narrowed distally, rounded at apex, with one apical seta and 5 inter-lateral setae. Anal point short (7-9 μ), slightly broadened in distal half and tip tapered, with irregular row of dots. Appendage 1 with thin, membranous distal half, bented upward at tip; two inter-lateral setae at middle, and one short seta at middle of membranous distal half (rarely absent). Appendage 1a very long (16.9-27.1 μ), well beyond tip of appendage 1. Appendage 2 well beyond gonocoxite, with 6 comparatively short setae at disc-shaped apex. Appendage 2a long (35-38 μm), slightly curved, with numerous simple hairs.

Remarks: This species is very similar to *C. vanderwulp* (Edwards, 1929) in most characters, including body color and hypopygium, but differs in the following characters: (1) hairs of appendage 2a all simple, whereas branched in *vanderwulp* (Pinder, 1978: fig. 173, B), (2) scutal stripes lacking (not distinguishable at least), whereas well separated, blackish (or reddish in some areas) stripes in *vanderwulp*, and (3) LR 2.47-2.57, whereas 2.2 in *vanderwulp*. The hypopygium of this new species is more similar to *C. atridorsum* (Kieffer, 1924) which is a dark brown species with 1.85 of LR.

Rheotanytarsus dogoensis,n. sp. 도고유장부깔따구 (Fig. 5)

Material examined: Holotype: 1♂ (R-S-3181, slide mounted), Gagok-ri, Dogo-myon, Asan-gun, Chungchong-namdo, 30 IX 1984, M.S. Kim. Paratypes: 37♂♂, same data as holotype; 19♂♂, same collection site as holotype, 30 IX 1984, M.S. Kim.

Diagnosis: Small, yellowish brown species. Wing length 0.62±0.03 mm. Tergites I-VI with dark apical narrow band. Appendage 1 elliptic, membranous, with 5 short setae.

Description (male, n=10); HEAD: Eye black, bare, with well developed dorsal projection. Antenna 13 segmented; pedicel yellowish brown, flagellum and plume pale dark brown; AR 0.86±0.05

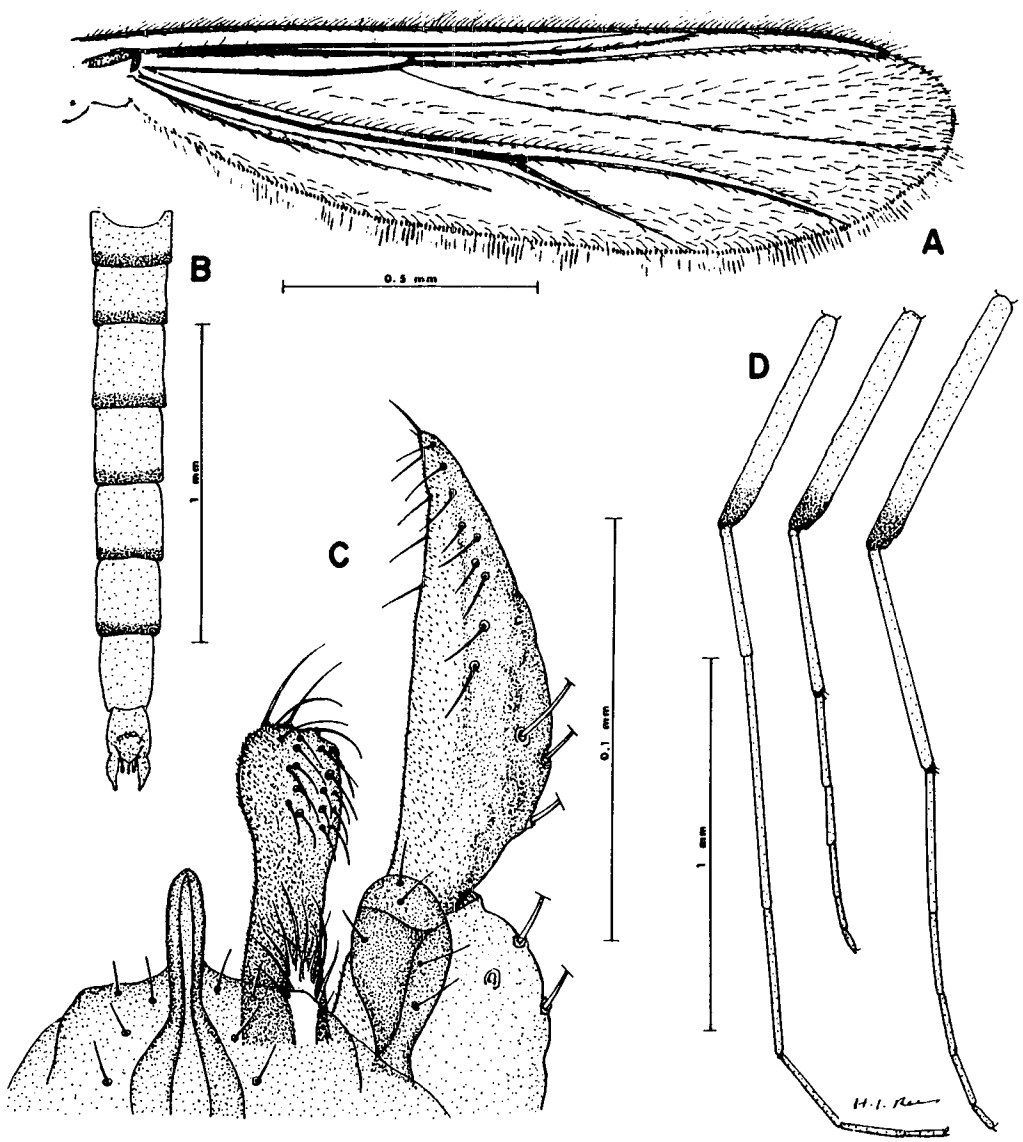

Fig. 5. Male of *Rheotanytarsus dogoensis*, n. sp. A, wing; B, abdomen; C, hypopigium; D, front, middle and hind legs, from left.

(0.77-0.93). Vertex with 7 pairs of setae in single row. Clypeus somewhat oval form, with 18-19 long setae. Palp pale brown, 5 segmented (the first segment not clearly defined at basal portion); legnth of I-V segments in μm: 32±6 (24-41), 32±5 (26-43), 107±6 (95-113), 106±9 (95-119), 147±14 (131-167). THORAX: Ground color yellowish brown. Pronotum reduced, not reaching up to the front margin of scutum. Scutum yellowish brown; lateral stripes dark brown, and only posterior end of central stripes dark brown which fused with lateral ones; margin of stripes not clearly difined. Scutellum yellowish brown. Postnotum dark brown. Halter pale. WING (Fig. 5, A): Most of wing surface covered with macrotrichia (not so densely). Veins pale, hairy except subcosta and basal M. Acrista dark, with 2 hairs. Costa not produced. R_{4+5} ending beyond above tip of Cu_1 and proximal to tip of M. R_{2+3} faint and very closed to R_1. r-m short and almost horizontal. fCu beyond r-m. An not reaching to fCu. Cu_1

Table 5. Measurements (in μm) of leg segments of *Rheotanytarsus dogoensis*,n. sp. male.

	Fore leg	Mid leg	Hind leg
Femur	720±46 (639-783)	713±47 (639-780)	807±44 (738-852)
Tibia	407±20 (366-435)	548±29 (505-597)	726±37 (663-773)
Tarsus I	844±49 (782-922)	314±18 (294-234)	471±17 (445-492)
Tarsus II	424±27 (369-464)	177± 9 (156-189)	277±15 (256-298)
Tarsus III	321±18 (270-336)	132± 8 (114-142)	234±11 (208-246)
Tarsus IV	231±13 (201-246)	87± 8 (76-102)	144± 9 (123-160)
Tarsus V	109± 7 (95-121)	70± 5 (62- 76)	91± 6 (87-100)
Leg Ratio	2.09±0.06 (1.99-2.22)	0.57±0.02 (0.54-0.60)	0.65±0.02 (0.62-0.67)

Average ± S.D. (Min.-Max.); n=10

and Cu_2 almost straight. Anal lobe not developed. Squama bare. LEGS (Fig. 5, D): All segments yellowish brown except dark tip of femurs; tibia and tarsi I-V of front leg slightly darker than the other legs'. Tibial combs clearly separated, each bearing a long spur. Relative length of leg segments as in Table 5. ABDOMEN (Fig. 5, B): All segments yellowish brown, each with apical dark band except tergites VII and VIII. HYPOPIGIUM (Fig. 5, C): 9th tergite slightly produced each distal side. Anal point rather short, swellened distally and smoothly rounded at tip. Gonostylus abruptly narrowed distally, with one apical and 4-5 inter-lateral rather short setae (13-18 μ). Appendage 1 elliptic, thin (membranous), with 5 short setae. Appendage 1a absent. Appendage 2 clavate form, much longer than gonocoxite, with recurved setae. Appendage 2a rather short and broad (8 μ wide × 20 μ long), with simple hairs.

Remarks: This species is similar to *R. aestuarius* (Tokunaga, 1938) in many characters, but differs in 13 antennal segments (14 in *aestuarius*), appendage 2a with simple hairs (without flat hyaline hairs), and gonostylus sharply pointed at tip, but not very narrowed on caudal part.

ABSTRACT

As part of taxonomic studies on Korean Chironomidae, the adult midges collected in mostly Asan-gun area of Chungchong-namdo were slide-mounted for permanent preparation and 21 species were identified, of which two species (*Polypedilum masudai* and *Pentapedilum uncinatum*) are the first findings in Korea and three species are found to be new. They are named *Pentapedilum pseudotritum*,n. sp., *Cladotanytarsus sinjongensis*, n. sp. and *Rheotanytarsus dogoensis*,n. sp. As a result, the Korean fauna of chironomidae consists of 36 species, 22 genera.

REFERENCES

Coe, R.L., 1950. Family Chironomidae. Handbk Ident. Br. Insects, 9: 121-206.

Edwards, F.W., 1929. British non-biting midges (Diptera, Chironomidae). Trans. R. ent. Soc. Lond., **77:** 279-430.

Goetghebuer, M., 1921. Chironomides de Belgique et spécialement de la zone des Flandres. Mém. Mus. r. Hist. nat. Belg., **8:** 1-211.

Goetghebuer, M., 1928. Dipteres (Nématocères). III. Chironomidae. Faune Fr., 18: 1-174.

Goetghebuer, M., 1937. Tendipedidae (Chrionomidae). b) Subfamilie Tendipedinae. A. Die Imagines. In: Lindner, E. (ed.), Die Fliegen der Paraearktischen Region, 13b: 1-138.

Kieffer, J.J., 1913. Nouveaux Chironomides (Tendipédides) d'Allemagne. Bull. Soc. Hist. nat. Metz, **28:** 7-35.

Kieffer, J.J., 1924. Chironomides nouveaux ou rares de l'Europe centrale. Bull. Soc. Hist. nat. Metz, **30:** 11-110.

Pinder, L.C.V., 1978. A key to adult males of British Chironomidae. Freshwater Biol. Ass. Sci. Pub., 37: 1-159.

Ree, H.I., 1987. On the Korean names of non-biting midges (Diptera: chironomidae). Kor. J. Syst. Zool., **3,** 1: 91-93.

Tokunaga, M., 1938. Chironomidae from Japan, X. New of little known midges, with description of the metamorphoses of several species. Phillip. J. Scie., **65,** 4: 314-383.

Walker, F., 1856. Insecta Britannica, 3: 162, 342.

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