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Two Poorly Known Species of the Spider Genus *Xysticus* (Arachnida: Araneae: Thomisidae) in Korea

Byung-Woo Kim* and Woncheol Lee

Department of Life Science, College of Natural Sciences, Hanyang University, Seoul 133-791, Korea

Abstract: Two species of the genus *Xysticus* from Korea are revised with detailed illustrations, spination of each leg, trichobothrium patterns and SEM photographs. The female of *X. concretus* Utochkin, 1968 is described for the first time and *Xysticus lepnevae* Utochkin, 1968 from Korea represent the species' southernmost known records. The latter species is distinguished by its male palpal organs with hooked median apophysis, developed ventral tibial apophysis and expanded retrolateral tibial apopysis, two tegular sutures and by it epigynum with triangular atrium and large copulatory ducts circled, with broadly transparent membrane. Furthermore, the *Xysticus* spiders, previously misidentified in Korea as male of *X. dichotomus* Paik, 1973 and female of *X. bifurcus* Paik, 1973 are in fact the true *X. concretus*.

Key words: Taxonomy, Araneae, Thomisidae, *Xysticus*, Korea

The crab spiders of the subfamily Thomisinae comprise at least 70 genera classified into 14 genus groups (Roewer, 1955; Brignoli, 1983; Ono, 1988) and are one of the most common spider taxa distributed worldwide. Of these, the genus *Xysticus* C.L. Koch, 1835, mainly from the Holarctic region, includes a total of 373 species based on the type species, *X. audax* (Schrank, 1803) (Platnick, 2007). These taxa are characterized by the male palpal organs having generally various developed VTA and RTA groups, long embolus, and one more derivatively tegular apophyses, and female genital organs having sclerotized epgynum, short copulatory ducts, large spermathecae, and indistinctive spemathecal base (Simon, 1932; Gertsch, 1939, 1953; Schick, 1965, Levy, 1985; Ono, 1988). Though many proposals obout subgenera or subdivision have been reported with several characters (palpal organs etc.), a systematic status has not been established (Ono, 1988).

*To whom correspondence should be addressed.
Tel: 82-2-2220-1481; Fax: 82-2-2296-7158
E-mail address: bwkim00@hotmail.com

To date, about 167 species previously reported in the genus *Xysticus* were described only from male or female specimens (Levy, 1985; Platnick, 2007). In Korea, Paik (1973, 1974, 1975) described nine species including four new species and these endemic species were revised with simple descriptions based on foreign specimens (Zhang, 1987; Ono, 1988; Marusik, 1989; Marusik & Logunov, 1996). Also, although Namkung (2001, 2003) presented simple illustrations of 11 *Xysticus* species (*X. ephippiatus*, *X. croceus*, *X. insulicola*, *X. saganus*, *X. kurilensis*, *X. concretus*, *X. hedini*, *X. pseudobliteus*, *X.* sicus, *X. cristatus*, *X. atrimaculatus*), these species cannot be reliably identified from his pictorial book.

During a survey of the spider fauna of Korea, spiders of the genus *Xysticus* were collected from pitfall traps in several natural forests. In this paper, *X. concretus* and *Xysticus lepnevae* are described with the characters of male palpal organs and female genital organs. The main goal of this paper is to provide research data for future revisional studies on the Korean genus *Xysticus* spiders.

MATERIALS AND METHODS

The Korean National Park of Mt. Odaesan (KNPO) and Goseong districts are situated in three towns (Pyungchang-gun, Goseung-gun, and Hongcheon-gun), Gangwon-do. Three collection sites of KNPO (Woljeongsa temple, GPS: N 37°43'48", E 128°35'43"; Sangwonsa temple, GPS: N 37°47'00", E 128°34'10"; and Maebong mountain peak, GPS: N 37°45'34.7", E 128°42'57.4") were chosen. All of KNPO are located beside small streams, with vegetation characterized by a mixture of dead trees, giant fir trees (*Abies holophylla*) and broadleaf species (*Quercus mongolica*). At each station two pitfall traps (plastic cups, height 6.3 cm, diameter 8 cm) were set 10 m apart and filled with ethylene glycol (Greenslade & Greenslade, 1971). Specimens were preserved in 70% ethanol. Measurements of all parts were

made in millimeters unless noted otherwise and were given for one specimen of each sex. Specimens examined in this paper will be deposited in the National Institute of Biological Resources (NIBR), the collections of the Arachnological Institute of Korea (AIK) and the Laboratory of Biodiversity, Hanyang University (LBHU).

The descriptive terminology follows that of Kim & Lee (2006, 2007). Abbreviations: a, apical; AER, anterior eye row; ALE, anterior lateral eye; ALS, anterior lateral spinneret; AME, anterior median eye; ATA, apical tegular apophysis; d, dorsal; KNPO, Korean National Park of Mt. Odaesan; MTA, median tegular apophysis; PER, posterior eye row; PLE, posterior lateral eye; PLS, posterior lateral spinneret; PME, posterior median eye; PMS, posterior median spinneret; RTA, retrolateral tibial apophysis; TS, tegular apophysis; VTR, ventral tibial apophysis; I, II, III, IV, first, second, third, forth legs.

RESULTS

Order Araneae Clerck, 1757
Family Thomisidae Sundevall, 1833
***Xysticus concretus* Utochkin, 1968**
(Figures 1-9, 36-37)

X. concretus Utochkin, 1968, p. 30, figs. 53-55 (Description of male); Marusik & Logunov, 1996, p. 133, figs. 12-14 (only male and not true female);. Namkung, 2001, p. 551, fig. 42.34a-b (male), 2003, p. 554, fig. 42.34a-b (male).

X. dichotomus Paik, 1973, p. 111, figs. 3, 11 (Description of male); Ono, 1981, p. 70, fig. 10 (male), 1988, p. 100, figs. 90-91 (male); Tang & Song, 1988, p. 15, fig. 3U-V (male); Song & Zhu, 1997, p. 78, fig. 48A-B (male); Song et al., 1999, p. 501, fig. 285N (male); Kim & Gwon, 2001, p. 53, figs. 106-107 (male).

X. bifurcus Paik, 1973, p. 105, figs. 5-6 (female, misidentification).

X. atrimaculatus: Namkung, 2003, p. 559, fig. 42-39a (female, misidentification)

Specimens examined in Korea

7 males (LBHU), 11 June, 2005, 18 males (LBHU), 1 male (AIK), 22 July, 2005, 1 male, 1 female (NIBR), 56 males, 2 females (LBHU), 8 August, 2006, Maebong summit, 1 female (AIK), 9 October, 2006, Sogeumgang, Mt. Odaesan, Gangwon-do, leg. B.W. Kim.

Diagnosis

This species is similar to *X. croceus* Fox, 1937, *X. ephippiatus* Simon, 1880, *X. kurilensis* Strand, 1907 in having a male palpal organ with large developed MTA and VTA, long embolus surrounded by tutacular apophysis developed californicus type and MTA and ATA curved, distally pointed; female epigynum without atrial septum, atrium wider than long, spermathecal apophysis faint and epigynal hood and teeth absent. The males can be distinguished by the large tegular apophyses strongly sclerotized, caudal-fin shaped MTA and boomerang shaped ATA, tegular suture widely rounded, longitudinally situated at the slightly upper of MTA; and the females by spermathecae large, curved inner, adjoined to both inner parts and atrium oval, slightly two times as wide as long.

Dimensions (mm)

Male/Female: habitus length 6.9/9.9; carapace length 3.6/3.7, carapace width 3.2/3.4, carapace height 1.6/1.7; clypeal height 0.3/0.5; cheliceral length 1.1/1.3, cheliceral width 0.7/0.9, cheliceral fang length 0.4/0.5; endite length 1.0/1.1, endite width 0.4/0.4; labium length 0.7/0.8, labium width 0.5/0.6; sternum length 1.6/1.8, sternum width 1.3/1.4; AER 1.6/1.8, PER 1.9/2.1, AME 0.1/0.2, ALE 0.3/0.3, PME 0.1/0.1, PLE 0.2/0.2. Eye formula ALE > PLE > PME = AME/ALE > PLE = AME > PME. Palp 3.3/3.2 (1.1/1.0, 0.6/0.6, 0.4/0.6, 1.2/1.0). First leg 11.3/11.1 (3.3/3.4/ 1.6/1.8, 2.6/2.5, 2.6/2.3, 1.2/1.1), second leg 11.3/11.2 (3.5/3.5, 1.5/1.8, 2.5/2.5, 2.5/2.2, 1.3/1.2), third leg 7.7/7.8 (2.5/2.5, 1.1/1.3, 1.8/1.7, 1.4/1.4, 0.9/0.9), fourth leg 8.2/8.7 (2.6/2.7, 1.1/1.3, 1.9/1.9, 1.7/1.8, 0.9/1.0). Leg formula II I IV III/ II I IV III . Abdomen length 3.5/5.3, abdomen width 3.1/5.5, abdomen height 2.6/4.5.

Description

Male: medium-sized spider smaller than female. Carapace circle-shaped, slightly as long as wide, moderately narrowed in eye area, without distinctly longitudinal fovea at middle (Fig. 1). AER recurved, PER slightly straight in frontal view; ALE larger than other eyes, AME separated by three times as long as their diameter, eye ratio 59 (Fig. 2). Clypeal height three times as long as AME diameter, with long eyebrow-shaped chilum (Fig. 2). Chelicerae expanded at the outer part (lamina), without distinct condyle and marginal tooth (Fig. 3). Endites elongated rectangular, reddish brown, 2.5 times longer than wide, widest at one third part to base; labium pentagon, slightly 1.5 times longer than wide (Fig. 4). Sternum shield-shaped with many long hairs, widest at second coxae, not produced between fourth coxae, slightly 1.2 times longer than wide (Fig. 5).

Palp without claw; tibia with six trichobothria in two groups (4d-2d), tarsus without trichobothrium; femur with two spines, tibia with five (three, 1-2 on dorsal; two, 0-2-0 on prolateral), tarsus four (1-3-0 on prolateral). Legs yellowish brown; length of leg I (patella + tibia) always longer than carapace length; trochanters not notched; tibiae with six to eight trichobothria in two groups (six, 3d-3d on leg I; eight, 5d-3d on II; seven, 4d-3d on III; eight, 5d-3d on IV), metatarsi three to four in one row (four on leg I and II, three

on III and IV), tarsi three to four in one row (three on leg I and IV, four on II and III); tarsi with a pair of claws, upper claws with five to seven side teeth (five on leg I, III, IV, seven on II); tarsal organ situated close to distal end of tarsus, slightly anterior of distal trichobothrium. Leg spination: leg I femur with nine spines (three, 0-1-2 on dorsal; six, 2-4-0 on prolateral), tibia 15 (three, 1-1-1 on prolateral; nine, 2-2-3-2 on ventral; three, 1-1-1 on retrolateral), metatarsus 15 (three, 1-1-1 on prolateral; nine, 2-2-3-2 on ventral; three, 1-1-1 on retrolateral), tarsus without spine; leg II femur with four spines (2-1-1 on dorsal), tibia 15 with two small spines half as long as others on inner ventral and inner prolateral respectively (three, 1-1-1 on prolateral; eight, 2-2-4 on ventral; three, 1-1-1 on retrolateral), metatarsus 13 (three, 1-1-1 on prolateral; 10, 2-2-4-2 on ventral), tarsus without spine; leg III femur four spines (1-2-1 on dorsal), tibia 10 (four, 1-1 on prolateral and retrolateral respectively; six, 2-2-2 on ventral), metatarsus 10 (eight, 1-1-2 on prolateral and retrolateral; two, 2-0 on ventral), tarsus without spine; leg IV femur four spines (2-2 on dorsal), patella one (0-1-0, on retrolateral), tibia 10 (four, 1-1-0 on prolateral and retrolateral respectively; six, 2-2-2 on ventral), metatarsus 10 (eight, 1-1-2 on prolateral and retrolateral; two, 2-0 on ventral), tarsus without spine. Abdomen spherical, dark brown with whitish stripes, without distinct chevrons on dorsal side (Fig. 1). Cribellum absent.

Male palp (Figs. 6-9, 36): patellar apophysis absent; RTA modified sharply with rhombus-shaped VTA; tutacular apophysis developed californicus type, scooplike structure; two large tegular apophyses strongly sclerotized, caudal-fin shaped MTA and boomerang shaped ATA; distal crescent of tegulum grooved, situated at the lower of tutacular groove; tegular suture widely rounded, longitudinally situated at the slightly upper of MTA; embolus elongated, surrounded by tutacular groove; conductor absent.

Female: medium-sized spider 1.4 times longer than male. Carapace triangular shaped, slightly as long as wide, moderately narrowed in eye area, without distinctly longitudinal fovea at middle (Fig. 10). AER recurved, PER slightly straight in frontal view; ALE larger than other eyes, AME separated by three times as long as their diameter, eye ratio 62 (Fig. 11). Clypeal height 2.5 times as long as AME diameter, with long eyebrow-shaped chilum (Fig. 11). Chelicerae expanded at the outer part, without distinct condyle and marginal tooth (Fig. 12). Endites elognated rectangular, reddish brown, 2.8 times longer than wide, widest at one third part to base; labium pentagon, slightly 1.3 times longer than wide (Fig. 13). Sternum shield-shaped with many long hairs, widest at second coxae, not produced between fourth coxae, slightly 1.3 times longer than wide (Fig. 14).

Palp with three-toothed claw; tibia with seven trichobothria in two groups (4d-3d), tarsus without trichobothrium; femur with two spines, patella four (three, 2-0-1 on dorsal; one, 0-1-0 on prolateral), tibia with eight (three, 1-0-2 on dorsal; three, 0-1-2 on prolateral; two, 0-1-1 on retrolateral), tarsus seven (one, 1-0-0 on dorsal; five, 3-2-0 on prolateral; one, 1-0-0 on retrolateral). Legs yellowish brown; length of leg I (patella + tibia) always longer than carapace length; trochanters not notched; tibiae with seven to eleven trichobothria in two groups (eight, 5d-3d on leg I and III; seven, 4d-3d on II; eleven, 6d-5d on IV), metatarsi four to five in one row (four on leg I, III and IV, five on II), tarsi three to four in one row (four on leg I, II, and III; three on IV); tarsi with a pair of claws, upper claws with four side teeth; tarsal organ situated close to distal end of tarsus, slightly anterior of distal trichobothrium. Leg spination: leg I femur with three spines (0-2-1-0 on prolateral), tibia 10 (1-3-4-2 on ventral), metatarsus 16 (three, 1-1-1 on prolateral; ten, 2-2-4-2 on ventral; three, 1-1-1 on retrolateral), tarsus without spine; leg II femur with one spine (0-1-0 on dorsal), tibia 10 (2-2-4-2 on ventral), metatarsus 16 (three, 1-1-1 on prolateral; 10, 2-2-4-2 on ventral; three 1-1-1 on retrolateral), tarsus without spine; leg III femur one spine (1-0 on dorsal), tibia eight (two, 1-1-0 on dorsal; two, 1-1-0 on prolateral; four, 1-2-1 on ventral), metatarsus 10 (three, 1-1-1 on prolateral; four, 0-2-2 on ventral; three, 1-0-1-1 on retrolateral), tarsus without spine; leg IV femur one spine (0-1-0 on dorsal), tibia 10 (four, 1-1-0 on dorsal and prolateral; three, 1-1-1 on ventral; three, 1-2-0 on retrolateral), metatarsus nine (three, 1-1-1 on prolateral; four, 0-2-2 on ventral; two, 1-1-0 on retrolateral), tarsus without spine. Abdomen spherical, dark brown with whitish stripes, without distinct chevrons on dorsal side (Fig. 10). Cribellum absent.

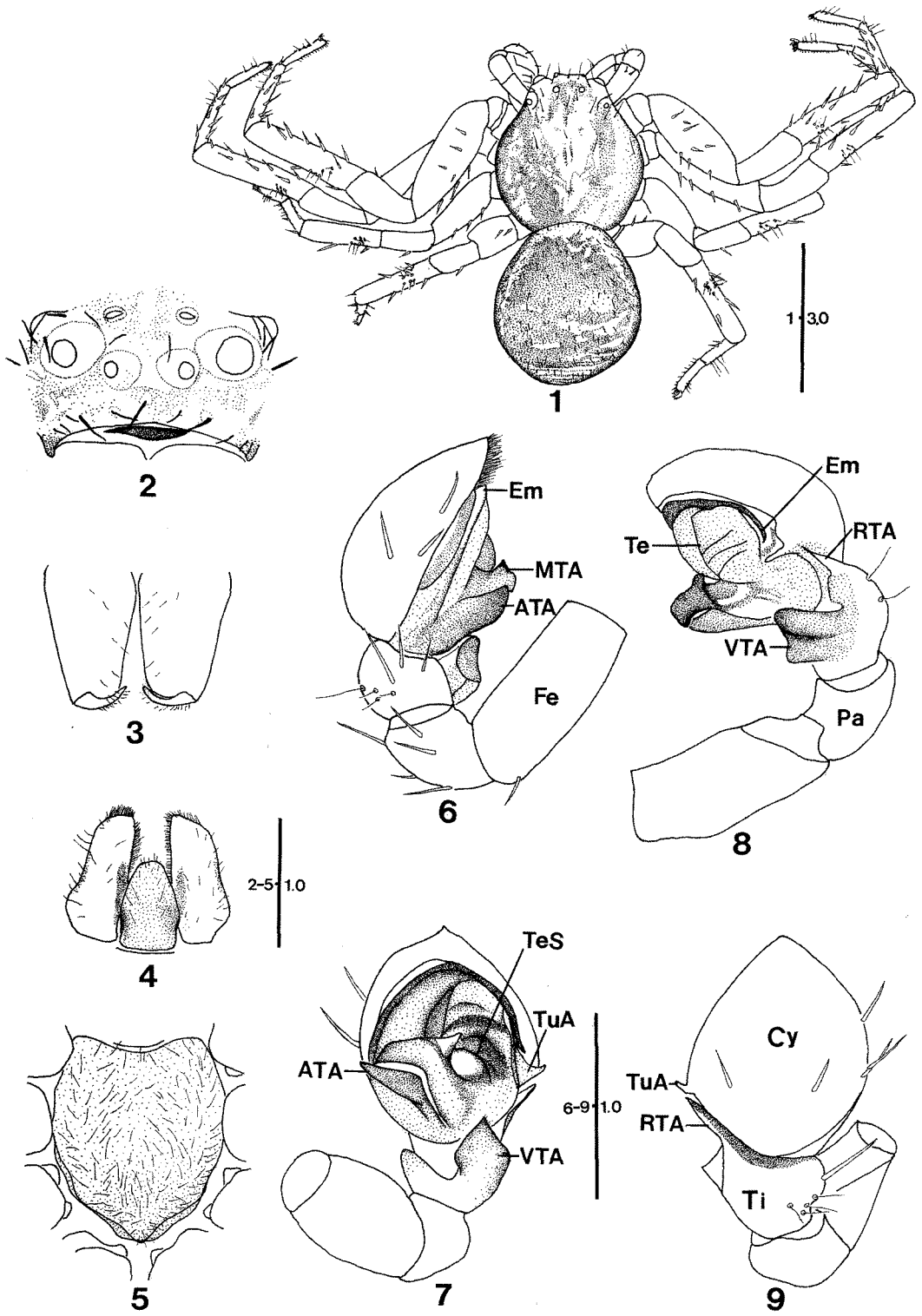
Female epigynum (Figs. 15-17, 37): epigynal plate oval, convex, sclerotized; spermathecal apophysis faint; epigynal hood and teeth absent; atrium oval, slightly two times as wide as long (length 0.2 mm, width 0.4 mm); genital opening deep, situated at lateral margin of atrium; atrial septum absent; copulatory ducts very short and vague; spermathecae large, curved inner, adjointed to both inner parts; spermathecal head and base indistinct; fertilization ducts small, cylindrical, arising from posterior spermathecae.

Distribution

Korea (Mt. Odaesan, Mt. Kayasan, Mt. Sopaiksan, Mt. Jirisan, Mt. Seolaksan, Mt. Sorisan), China, Japan, and Russia.

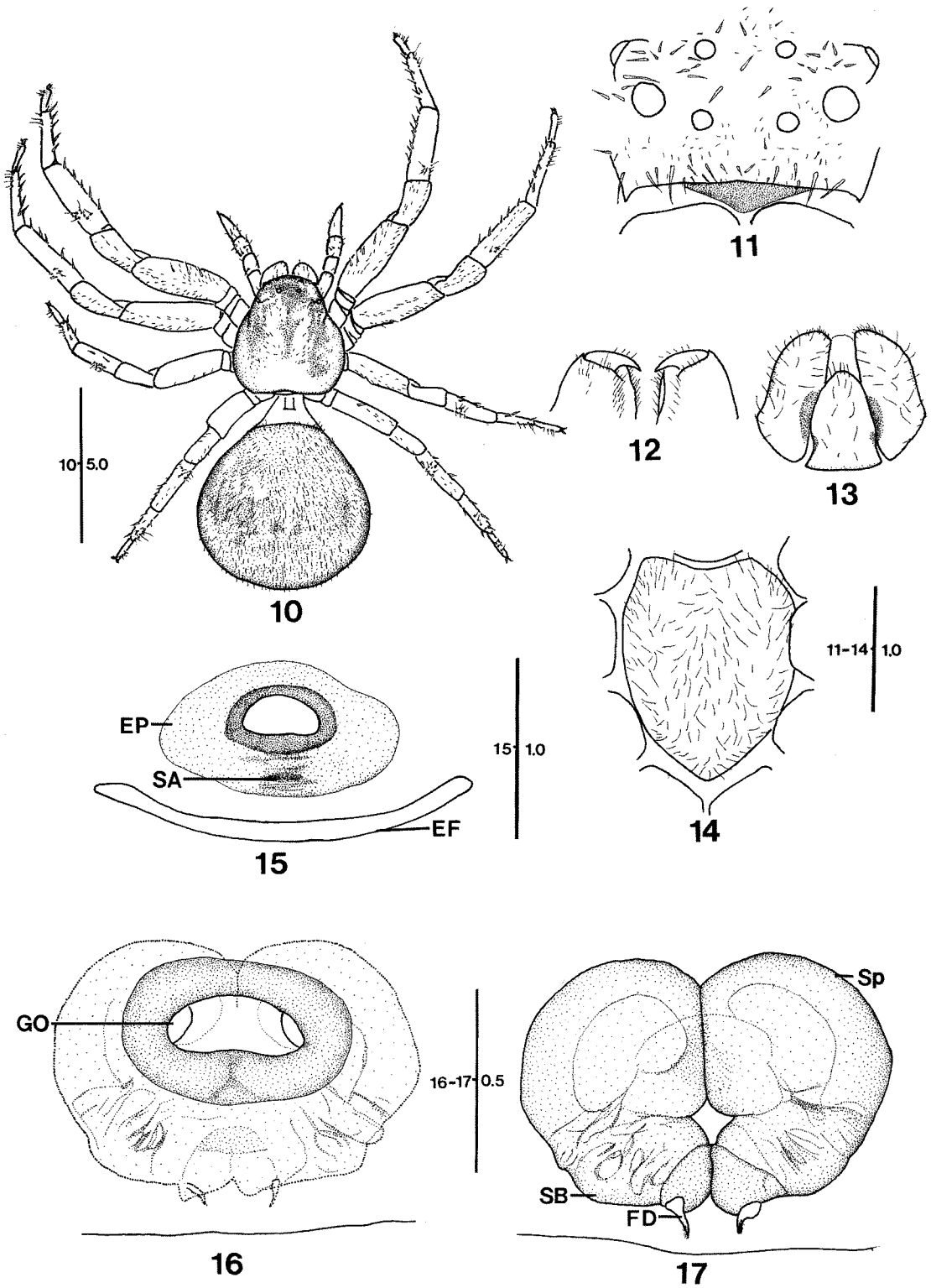
Remarks

These specimens have different spination in male tibia I with 15 spines [17 (Ono 1988), 18 (Paik 1973)]; tibia II



Figs. 1-9. *Xysticus concretus* Utochkin, 1968 from Korea, male. 1. Habitus, dorsal view. 2. Eye area and clypeus, front view. 3. Chelicerae, posterior view. 4. Endite and labium, ventral view. 5. Sternum, ventral view. 6-9. Palp, left part, prolateral view (6), ventral view (7), retrolateral view (8), dorsal view (9). Note: ATA, apical tegular apophysis; Cy, cybium; Em, embolus; Fe, femur; MTA, median tegular apophysis; Pa, patella; RTA, retrolateral tibial apophysis; Te, tegulum; TeS, tegular suture; Ti, tibia; TuA, tutaculum apophysis; VTA, ventral tibial apophysis.

with 15 spines [16 (Ono, 1988), 18 (Paik, 1973); female tibia III eight [nine (Paik, 1973)]; tibia IV 10 [seven (Paik, 1973)]; metatarsus IV nine [seven (Paik, 1973)]. These specimens were found wandering on the ground among stones and leaf litter.



Figs. 10-17. *Xysticus concretus* Utochkin, 1968 from Korea, female. 10. Habitus, dorsal view. 11. Eye area and clypeus, front view. 12. Chelicerae, posterior view. 13. Endite and labium, ventral view. 14. Sternum, ventral view. 15. Epigynum, ventral view. 16-17. Genitalia, dorsal view (16), ventral (17). Note: EP, epigynal plate; EF, epigynal furrow; FD, fertilization duct; GO, genital opening; SA, spermathecal apophysis; SB, spermathecal base; Sp, spermatheca.

Xysticus lepnevae Utochkin, 1968
(Figures 18-35, 38-47)

X. lepnevae Utochkin, 1968, p. 36, figs. 81-82 (Description of female): Ono et al., 1990, p. 10, figs. 13-16 (female and male).

Specimens examined in Korea

1 male (NIBR), 1 female (NIBR), 32 males (LBHU), 2 females (LBHU), 11 June, 2006, Temple Sanwonsa, 21 males (LBHU), 3 females (LBHU), 11 June, 2005, 2 males (AIK), 2 females (AIK), 347 males (LBHU), 20 females (LBHU), 8 August, 2005, 4 males (LBHU), 1 female (LBHU), 8 August, 2006, 5 females (LBHU), 6 September, 2006, 21 female (LBHU), 16, September, 2006, Maebong summit, Mt. Odaesan, Gangwon-do, leg. B.W. Kim; 22 males (LBHU), 2 females (LBHU), 6 June, 2006, Goseong district, Gangwong-do, leg. T. S. Kwon.

Dimensions (mm)

Male/Female: habitus length 5.4/5.9; carapace length 2.4/2.4, carapace width 2.2/2.3, carapace height 1.3/1.1; clypeal height 0.3/0.3; cheliceral length 0.9/1.0, cheliceral width 0.5/0.6, cheliceral fang length 0.3/0.3; endite length 0.6/0.7, endite width 0.3/0.3; labium length 0.5/0.5, labium width 0.3/0.4; sternum length 1.1/1.3, sternum width 1.0/1.1; AER 1.0/1.1, PER 1.3/1.4, AME 0.1/0.1, ALE 0.2/0.3, PME 0.1/0.2, PLE 0.1/0.3. Eye formula ALE > PLE = PME = AME/ALE = PLE > PME > AME. Palp 2.1/2.4 (0.7/0.7, 0.3/0.5, 0.3/0.4, 0.8/0.8). First leg 8.2/7.7 (2.4/2.3, 1.0/1.1, 1.8/1.7, 1.9/1.6, 1.1/1.0), second leg 8.4/7.9 (2.5/2.4, 1.0/1.2, 1.9/1.8, 1.9/1.6, 1.1/0.9), third leg 6.1/5.6 (1.9/1.8, 0.8/0.9, 1.4/1.2, 1.2/1.0, 0.8/0.7), fourth leg 6.6/6.2 (2.0/1.9, 0.8/0.9, 1.5/1.4, 1.4/1.1, 0.9/0.9). Leg formula II I IV III/ II I IV III . Abdomen length 2.5/3.2, abdomen width 2.3/3.0, abdomen height 2.2/2.7.

Diagnosis

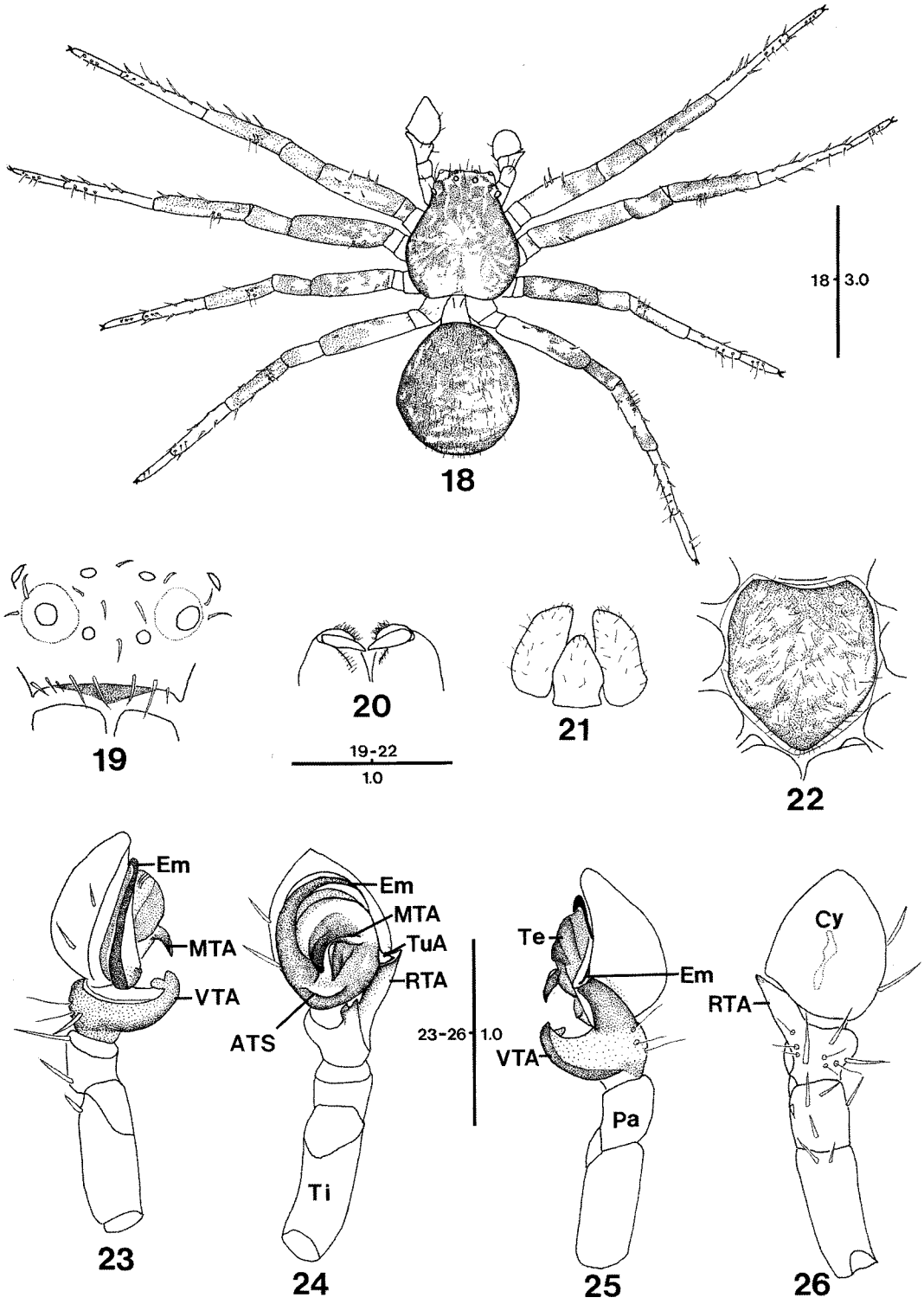
This species is similar to *X. transversomaculatus* Boesenberg & Strand, 1906, *X. tristrami* (O.P. -Cambridge, 1872) and *X. edax* (O.P. -Cambridge, 1872) in having a male palpal organ with long embolus surrounded by tutacular apophysis developed californicus type, one tegular apophysis at the meddle, large VTA and RTA and female epigynum without atrial septum, atrium longer than wide, circular spermathcal apophysis. The males can be distinguished by the MTA strongly hooked to the base, median TS situated at the slightly upper of MTA and apical TS at the base; and females by the atrium hut-shaped, spermathecae largely spherical, curved inner, border on both inner parts.

Description

Male: medium-sized spider smaller than female. Carapace triangular-shaped, slightly as long as wide, moderately narrowed in eye area, without distinctly longitudinal fovea at middle (Fig. 18). AER recurved, PER slightly straight in frontal view; ALE larger than other eyes, AME separated by three times as long as their diameter, eye ratio 59 (Fig. 19). Clypeal height three times as long as AME diameter, with long eyebrow-shaped chilum (Fig. 19). Chelicerae expanded at the outer part (lamina), without distinct condyle and marginal tooth (Fig. 20). Endites elongated rectangular, reddish brown, two times longer than wide, widest at one third part to base; labium pentagon, slightly 1.7 times longer than wide (Fig. 21). Sternum shield-shaped with many long hairs, widest at second coxae, not produced between fourth coxae, slightly 1.1 times longer than wide (Fig. 22).

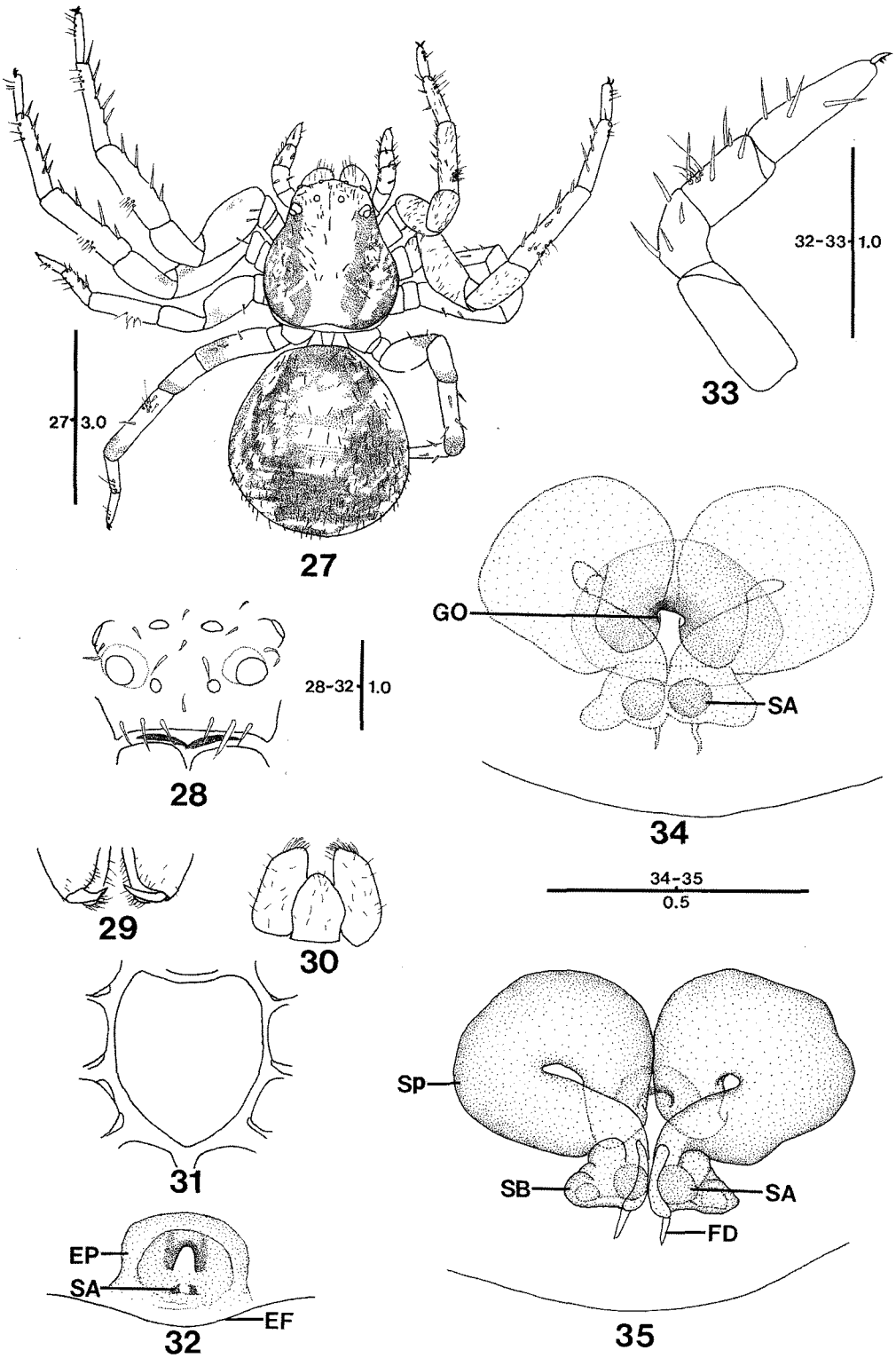
Palp (Figs. 23-26) without claw; tibia with six trichobothria in two groups (3d-3d), tarsus without trichobothrium; femur with two spines, tibia with five (three, 1-2 on dorsal; two, 0-1-0 on prolateral and retrolateral respectively), tarsus two (0-2-0 on prolateral). Legs yellowish brown; length of leg I (patella + tibia) always longer than carapace length; trochanters not notched; tibiae with four to five trichobothria in two groups (five, 3d-2d on leg I, III and IV; four, 2d-2d on II), metatarsi three to three one row, tarsi two to three in one row (three on leg I, II and III; two on IV); tarsi with a pair of claws, upper claws with four side teeth; tarsal organ situated close to distal end of tarsus, slightly anterior of distal trichobothrium. Leg spination: leg I femur with six spines (three, 0-1-2 on dorsal; three, 0-2-1 on prolateral), tibia nine (two, 1-0-1 on prolateral; six, 2-1-2-1 on ventral; one, 1-0-0 on retrolateral), metatarsus 14 (six, 1-1-1 on prolateral and retrolateral respectively; eight, 2-2-2-2 on ventral), tarsus without spine; leg II femur with five spines (1-2-1-1 on dorsal), tibia 13 (three, 1-1-1-0 on prolateral; eight, 2-2-2-2 on ventral; two, 1-0-1 on retrolateral), metatarsus 13 with half as long as others on inner ventral (six, 1-1-0-1 on prolateral and retrolateral respectively; seven, 1-2-2-2 on ventral), tarsus without spine; leg III femur four spines (0-2-1-1 on dorsal), tibia 10 (four, 1-1-0 on prolateral and retrolateral respectively; six, 2-2-2 on ventral), metatarsus 10 (eight, 1-1-2 on prolateral and retrolateral respectively; two, 2-0 on ventral), tarsus without spine; leg IV femur four spines (0-2-1-1 on dorsal), tibia 10 (two, 1-1-0 on dorsal; six, 2-2-0-2 on ventral; two, 1-0-1-0 on retrolateral), metatarsus 10 (eight, 1-1-2 on prolateral and retrolateral respectively; two, 0-2-0 on ventral), tarsus without spine. Abdomen spherical, with irregularly scattered whitish yellow spots, without distinct chevrons on dorsal side (Fig. 18). Cribellum absent.

Male palp (Figs. 23-26): patellar apophysis absent; RTA modified sharply and VTA bifurcated, largely expanded to the ventral; tutacular apophysis developed californicus type, scooplike structure; one tegular apophyses strongly sclerotized on the middle, MTA hooked to the base; distal crescent of tegulum convexly grooved, situated at the lower of tutacular groove; two tegular sutures widely rounded, median TS situated at the slightly upper of MTA and apical TS at the base; embolus roundly elongated, surrounded by tutacular groove; conductor absent.



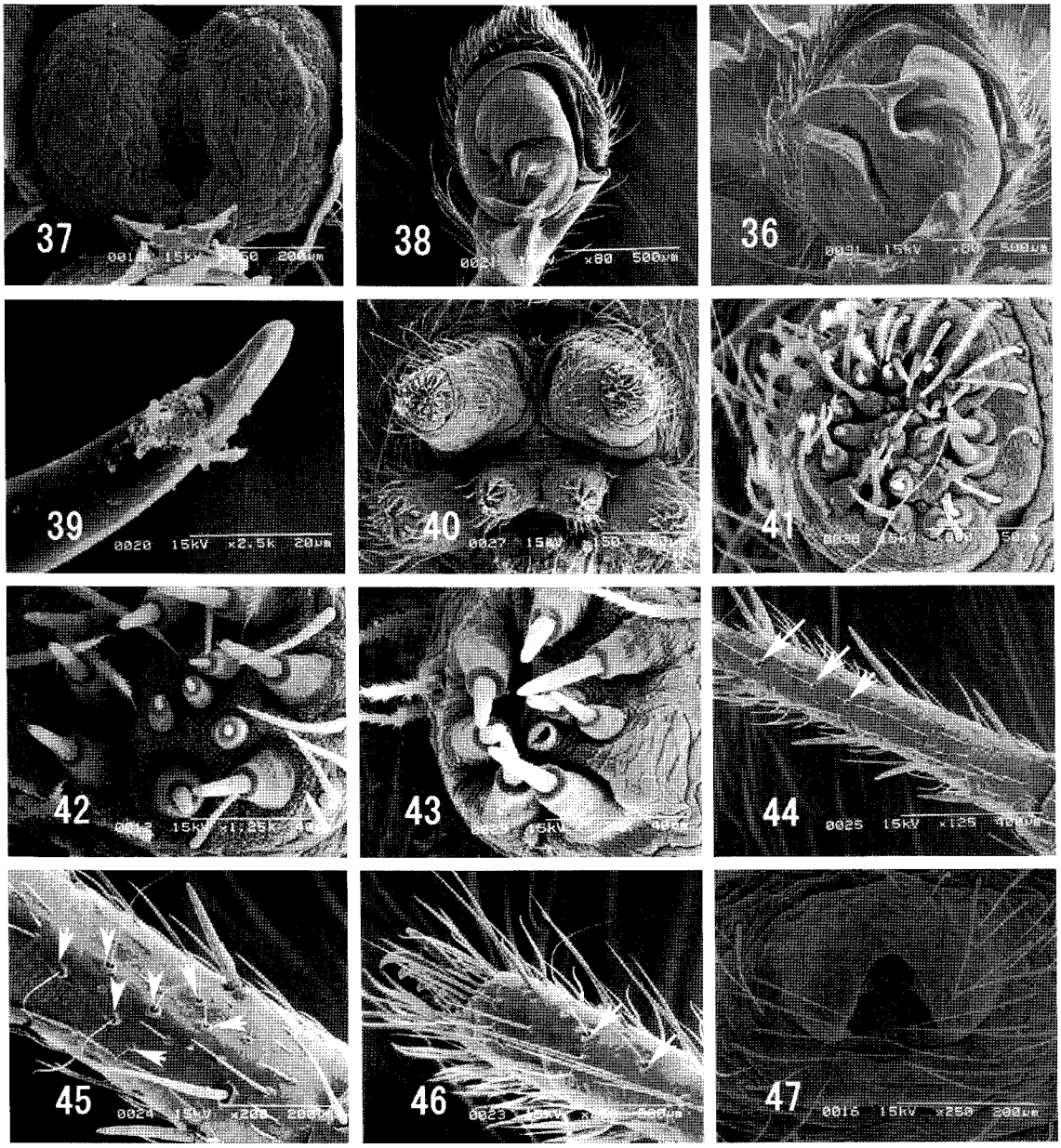
Figs. 18-26. *Xysticus lepnevae* Utochkin, 1968 from Korea, male. 18. Habitus, dorsal view. 19. Eye area and clypeus, front view. 20. Chelicerae, posterior view. 21. Endite and labium, ventral view. 22. Sternum, ventral view. 23-26. Palp, left part, prolateral view (23), ventral view (24), retrolateral view (25), dorsal view (26). Note: ATA, apical tegular apophysis; ATS, apical tegular suture; Cy, cybium; Em, embolus; Fe, femur; MTA, median tegular apophysis; MTS, median tegular suture; Pa, patella; RTA, retrolateral tibial apophysis; Te, tegulum; TeS, tegular suture; TuA, tutaculum apophysis; VTA, ventral tibial apophysis.

Female: medium-sized spider 1.1 times longer than male. Carapace triangular shaped, slightly as long as wide, moderately narrowed in eye area, without distinctly longitudinal fovea at middle (Fig. 27). AER recurved, PER slightly straight in frontal view; ALE larger than other eyes, AME separated by three times as long as their diameter, eye



Figs. 27-35. *Xysticus lepnevae* Utochkin, 1968, female. 27. Habitus, dorsal view. 28. Eye area and clypeus, front view. 29. Chelicerae, posterior view. 30. Endite and labium, ventral view. 31. Sternum, ventral view. 32. Epigynum, ventral view. 33. Palp, left part, prolateral view. 34-35. Genitalia, dorsal view (34), ventral (35). Note: EP, epigynal plate; EF, epigynal furrow; FD, fertilization duct; GO, genital opening; SA, spermathecal apophysis; SB, spermathecal base; Sp, spermatheca.

ratio 61 (Fig. 28). Clypeal height three times as long as AME diameter, with long eyebrow-shaped chilum (Fig. 28). Chelicerae expanded at the outer part, without distinct condyle and marginal tooth (Fig. 29). Endites elognated rectangular, reddish brown, 2.3 times longer than wide, widest at one third part to base; labium pentagon, slightly



Figs. 36-47. SEM photographs of *Xysticus* spp. from Korea. 36-37. *Xysticus concretus* Utochkin, 1968, male palp (36), female genitalia (37). 38-47. *Xysticus lepnevae* Utochkin, 1968. 38-39. Male palp, ventral view (38), embolus tip (39). 40-43. Male spinnerets, ventral view (40), anterior lateral spinneret (41), posterior median spinneret (42), posterior lateral spinneret (43). 44-46. Tricobothium, male left 4th leg, tibia (44), metatarus (45), tarsus (46). 47. Female, epigynum, ventral view.

1.3 times longer than wide (Fig. 30). Sternum shield-shaped with many long hairs, widest at second coxae, not produced between fourth coxae, slightly 1.2 times longer than wide (Fig. 31).

Palp (Fig. 33) with two-toothed claw; tibia with six trichobothria in two groups (3d-3d), tarsus without trichobothrium; femur with two spines (0-0-2 on dorsal), patella seven (1-0-2 on dorsal; three, 1-1-1 on prolateral; one, 0-1 on retrolateral), tibia with seven (1-1-2 on dorsal; four, 1-1 on prolateral and retrolateral), tarsus six (two, 1-0-0 on dorsal and retrolateral respectively; four, 2-2-0 on prolateral). Legs yellowish brown; length of leg I (patella + tibia) always longer than carapace length; trochanters not notched; tibiae with five to six trichobothria in two groups (six, 3d-3d on leg I; five, 3d-2d on II; six, 4d-2d on III; five, 3d-2d on IV), metatarsi three to four in one row (four on leg I, three on II, III and IV), tarsi two to three in one row (three on leg I, II, and IV, two on III); tarsi with a pair of claws, upper claws with four to five side teeth (four on leg I, III and IV, five on II); tarsal organ situated close to distal end of tarsus, slightly anterior of distal trichobothrium. Leg spination: leg I femur with three spines (one, 0-0-1 on dorsal; three, 0-2-1 on prolateral), tibia nine (2-2-3-2 on ventral), metatarsus 11 (two, 0-1-1 on prolateral; seven, 3-

0-4 on ventral; two, 1-1-0 on retrolateral), tarsus without spine; leg II femur with one spine (0-1-0 on dorsal), tibia eight (one, 0-1 on dorsal; seven, 1-2-2-2 on ventral), metatarsus 13 (three, 1-1-1 on prolateral; seven, 1-2-2-2 on ventral; three, 1-1-1 on retrolateral), tarsus without spine; leg III femur one spine (0-1-0 on dorsal), tibia six (two, 1-1-0 on dorsal; four, 1-2-1 on ventral), metatarsus 10 (six, 1-1-1 on prolateral and retrolateral; four, 0-2-2 on ventral), tarsus without spine; leg IV femur one spine (0-1-0 on dorsal), tibia five (two, 1-1-0 on dorsal; three, 1-1-1 on ventral), metatarsus six (three, 1-1-1 on prolateral; three, 0-2-1 on ventral), tarsus without spine. Abdomen spherical, with irregularly scattered whitish yellow spots, without distinct chevrons on dorsal side (Fig. 27) and tracheal spiracle on the front of anterior spinnerets. Cribellum absent.

Female epigynum (Figs. 32, 34-35, 47): epigynal plate oval, convex, sclerotized; spermathecal apophysis circular; epigynal hood and teeth absent; atrium hut-shaped, slightly 1.3 times as long as wide (length 0.14 mm, width 0.11 mm); genital opening deep, situated at lateral margin of atrium; atrial septum absent; copulatory ducts very short and vague; spermathecae large, curved inner, border on both inner parts; spermathecal head and base indistinct; fertilization ducts small, cylindrical, arising from posterior spermathecae.

Distribution

Korea (Mt. Odaesan), and Russia (Khabarovsk and Maritime Territories, and Sakhalin).

Remarks

These specimens were found wandering on the ground among stones and leaf litter.

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