

The Coelotine Spiders (Araneae, Amaurobiidae) of Taiwan

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Abstract The 9 species of the Taiwanese coelotine spider genera *Coelotes* and *Paracoelotes* are reviewed. *Coelotes atratus* Wang *et al.* is newly synonymized with *C. xinhuiensis* Chen. The male of *C. xinhuiensis* is newly described. Seven new species of the genus *Coelotes* are described: *C. edentulus*, *C. ensifer*, *C. labiatus*, *C. montivagus*, *C. platnicki*, *C. tengchihensis*, and *C. yushanensis*. One new species of the genus *Paracoelotes* is described: *P. taiwanensis*.

Key words: Araneae, Amaurobiidae, *Coelotes*, *Paracoelotes*, new species, new synonymy, Taiwan.

Introduction

Through the zoological expeditions to Taiwan made by the National Science Museum, Tokyo (1989–1991), many spider specimens were obtained from various parts of the island, especially from the mountainous areas. Four papers on the Araneidae, Clubionidae and Thomisidae have been published on the basis of this material (Ono, 1992 a, b, 1994; Tanikawa & Ono, 1993).

The present paper deals with the result of a taxonomic study of the genera *Coelotes* Blackwall, 1841 and *Paracoelotes* Brignoli, 1982 of the family Amaurobiidae. Although these spiders have been regarded as agelenids in Japan, China and Korea (Nishikawa, 1974; Paik, 1978; Yaginuma, 1986; Wang *et al.*, 1990; Peng & Yin, 1998), the present authors follow the systematics in the world catalog (Platnick, 1998).

The specimens were collected mainly by sifting from dead leaves and by hand collecting under stones and rocks in forests by the second author.

Coelotine spiders are widespread throughout the Holarctic area, especially in East Asia, but their occurrence in Taiwan has never been reported. The result of this paper shows that the coelotines not only exist in Taiwan but also constitute one of the most abundant and specious components of this island arachnofauna. Eight of the nine species described here from Taiwan are new.

All measurements are in mm. Leg measurements are shown as: total length (femur, patella+tibia, metatarsus, tarsus). All scales are 0.2 mm length.

Collections Examined

AMNH	American Museum of Natural History, New York, USA. N. I. Platnick
HBI	Hunan Biological Institute, Changsha, China. X. J. Peng & C. M. Yin
HTC	Hangzhou Teachers College, Hangzhou, China. Z. F. Chen
HTU	Hebei Teachers University, Shijiazhuang, China. M. S. Zhu
MCB	Museo de Bergamo, Bergamo, Italy. P. Pantini
NSMT	National Science Museum, Tokyo, Japan. H. Ono

Genus *Coelotes* Blackwall, 1841

For the genus *Coelotes*, eight species, belonging to four different groups, are described in this paper. The species *C. ensifer* sp. nov., *C. montivagus* sp. nov., *C. tengchihensis* sp. nov., *C. yushanensis* sp. nov., and *C. xinhuiensis* Chen, 1984 resemble each other, and several similar species are also distributed in mainland China, Japan, and Korea. The species *Coelotes atratus* Wang *et al.*, 1990 proved to be a junior synonym of *C. xinhuiensis* which is widespread in southern China (Chen, 1984; Wang *et al.*, 1990), Hong Kong, and Taiwan. The species *C. edentulus* sp. nov. has a quite different female genitalia from all other coelotines; unfortunately only females are available. The species *C. labiatus* sp. nov. resembles several species described from China. The species *C. platnicki* sp. nov. is very distinctive in both the male and female genitalia and no similar species have yet been found.

Coelotes edentulus sp. nov.

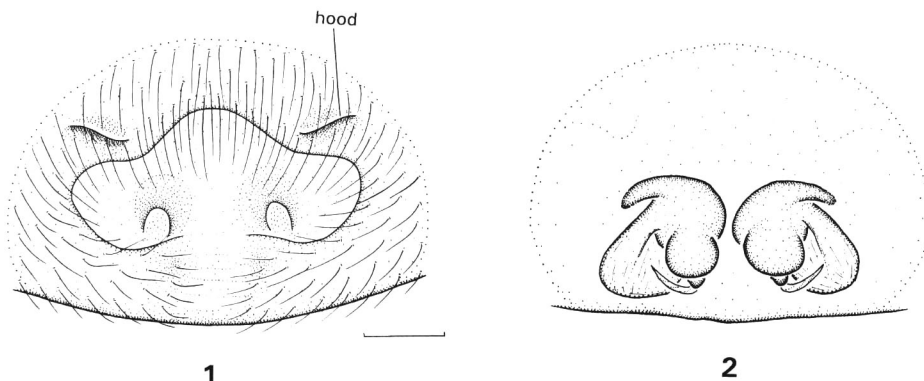
(Figs. 1–2)

Type. Female holotype from Tienkung-miao, near Tali, 50 m alt., Ilan Hsien, Taiwan (March 17, 1991; H. Ono; NSMT, NSMT–Ar.3427), and 1 female paratype from Tatchia, 2100 m alt., Nantou Hsien, Taiwan (March 5, 1991; H. Ono; NSMT, NSMT–Ar.3438), deposited in NSMT.

Etymology. The specific name is from Latin meaning toothless and refers to the absence of epigynal teeth.

Diagnosis. This species can be distinguished from all other coelotines by the absence of epigynal teeth, the pair of hoods situated anterior of atrium, the widely separated and posteriorly situated copulatory openings (Fig. 1), and the indistinct stalks of spermathecae (Fig. 2).

Female. Total length 7.94. Carapace 3.23 long, 2.25 wide. Cheliceral promargin with 5–6 teeth, retromargin 5. Eye sizes and interdistances: AME 0.10, ALE 0.17, PME 0.15, PLE 0.17, AME–AME 0.10, AME–ALE 0.04, PME–PME 0.11, PME–PLE 0.14, AME–ALE 0.06, AME–PME 0.12. Leg measurements: I: 11.9 (3.08, 4.14, 2.85, 1.80); II: 10.2 (2.82, 3.43, 2.46, 1.48); III: 9.75 (2.61, 3.09, 2.56, 1.49); IV: 13.0 (3.44, 4.39, 3.66, 1.49). Epigynal teeth absent; atrium big, shallow,



Figs. 1–2. *Coelotes edentulus* Wang & Ono, sp. nov. — 1, Female genitalia, ventral view; 2, same, dorsal view.

with broad posterior median sclerite; hoods (Fig. 1) apparent and situated anterior of atrium; copulatory openings situated near posterior atrial margin, widely separated; copulatory ducts short, broad; spermathecal heads small; spermathecal stalks indistinct; spermathecal bases small (Figs. 1–2).

Male. Unknown.

Other material examined. None.

Distribution. Northern and central Taiwan (Ilan, Nantou).

***Coelotes ensifer* sp. nov.**

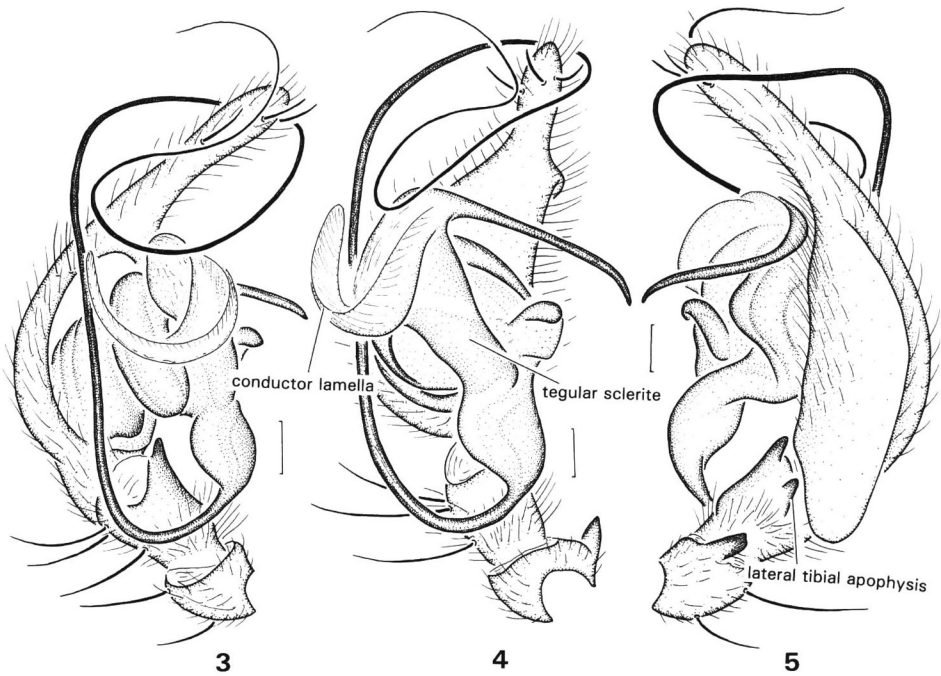
(Figs. 3–7)

Types. Male holotype and female allotype from Tienchih to Mt. Nengkao, 2860 m alt., Nantou Hsien, Taiwan (October 26, 1989; H. Ono; NSMT, NSMT–Ar.3425), deposited in NSMT.

Etymology. The specific name is from Latin meaning sword-bearing and refers to the shape of conductor of male palp.

Diagnosis. This species is similar to *C. xinhuiensis* but can be distinguished by the absence of tegular sclerite apophysis, the long and slender conductor, the short and blunt patellar apophysis of males (Figs. 3–5) and the position of copulatory openings and shape of spermathecae of females (Figs. 6–7).

Male. Total length 3.91. Carapace 2.91 long, 2.04 wide. Cheliceral promargin with 3 teeth, retromargin 3–4. Eye sizes and interdistances: AME 0.07, ALE 0.15, PME 0.12, PLE 0.15, AME–AME 0.07, AME–ALE 0.04, PME–PME 0.10, PME–PLE 0.12, ALE–PLE 0.06, AME–PME 0.10. Leg measurements: I: 8.02 (2.15, 2.97, 1.79, 1.11); II: 7.53 (2.13, 2.54, 1.70, 1.16); III: 7.04 (2.00, 2.16, 1.85, 1.03); IV: 9.29 (2.44, 2.98, 2.53, 1.34). Palpal patellar apophysis short, blunt, dorsally pointed; retro-

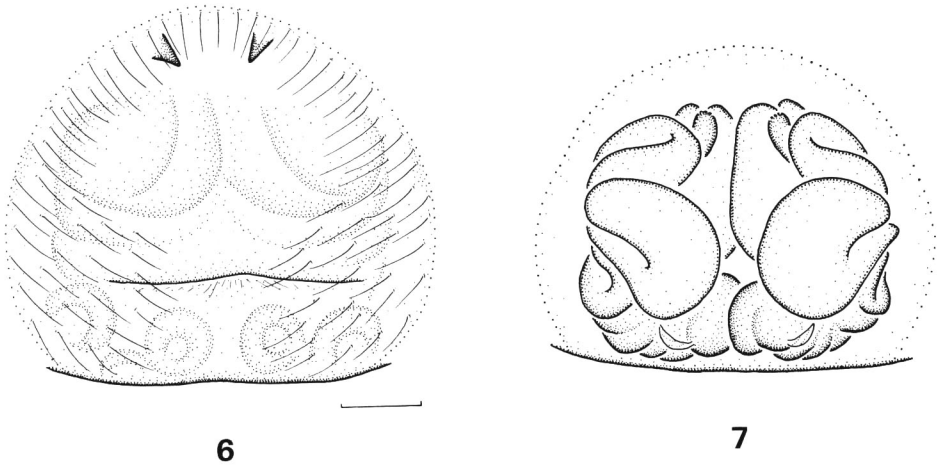


Figs. 3–5. *Coelotes ensifer* Wang & Ono, sp. nov. — 3, Male palp, prolateral view; 4, same, ventral view; 5, same, retrolateral view.

lateral tibial apophysis normal, with distal end stretched beyond tibia; lateral tibial apophysis (Fig. 5) apparent, with sharp end; lateral cymbial furrow deep, with dorsal edge strongly concave, distal edge strongly expanded beyond cymbium; conductor long, slender; conductor lamella (Figs. 3–4) strongly elongated; conductor dorsal apophysis absent; median apophysis short, with no sharp distal end; embolus extremely long, retrolateral origin (Figs. 3–5).

Female. Total length 6.28. Carapace 2.96 long, 2.02 wide. Cheliceral promargin with 3–4 teeth, retromargin 3–4. Eye sizes and interdistances: AME 0.07, ALE 0.18, PME 0.13, PLE 0.18, AME–AME 0.08, AME–ALE 0.06, PME–PME 0.13, PME–PLE 0.15, ALE–PLE 0.08. AME–PME 0.12. Leg measurements: I: 7.22 (2.15, 2.60, 1.40, 1.07); II: 6.32 (1.80, 2.23, 1.39, 0.90); III: 6.17 (1.76, 2.03, 1.52, 0.86); IV: 8.31 (2.25, 2.75, 2.21, 1.10). Epigynal teeth short, close together, anteriorly situated; atrium reduced to atrial slit, situated closer to epigastric furrow than to epigynal teeth; spermathecal heads small; spermathecal stalks long, convoluted, with posterior part strongly expanded; spermathecal bases situated close together (Figs. 6–7).

Other material examined. **Taiwan:** Nantou Hsien, Hsin-jenkang to Tsuifeng, 2300 m alt., October 23, 1989, 1 female (H. Ono, NSMT, NSMT–Ar.3432); Nantou Hsien, Tienchih, Mt. Nengkao, 2860 m alt., October 26, 1989, 1 male (H. Ono,



Figs. 6–7. *Coelotes ensifer* Wang & Ono, sp. nov. — 6, Female genitalia, ventral view; 7, same, dorsal view.

NSMT, NSMT–Ar.3448).

Distribution. Central Taiwan (Nantou).

***Coelotes labiatus* sp. nov.**

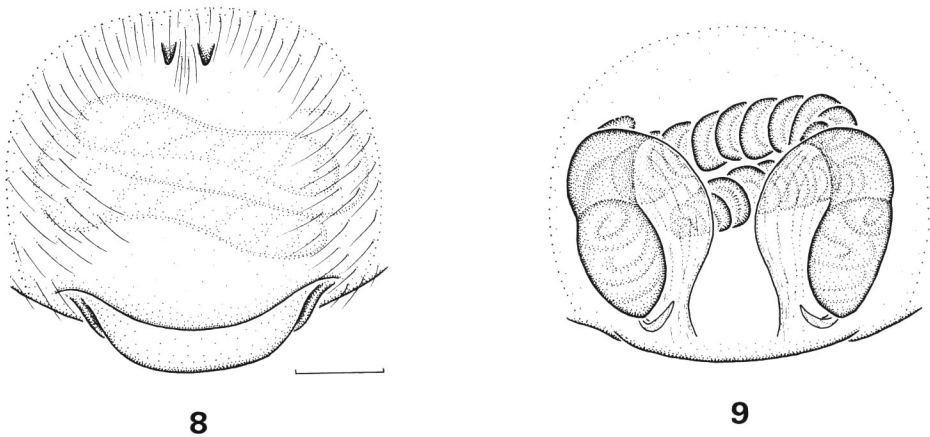
(Figs. 8–9)

Types. Female holotype from Tatchia, 2100 m alt., Nantou Hsien, Taiwan (March 5, 1991; H. Ono; NSMT, NSMT–Ar.3436), and 1 female paratype from Mt. Hohuan-shan, Shenmu, 2180 m alt., Nantou Hsien, Taiwan (March 12, 1991; H. Ono; NSMT, NSMT–Ar.3444), deposited in NSMT.

Etymology. The specific name is from Latin labiate and refers to the lip-shaped anterior atrial margin.

Diagnosis. This species is similar to *C. wenzhouensis* Chen, 1984 but can be distinguished by the less apparent spermathecal heads and transversely arranged convoluted spermathecal diverticula (Fig. 9).

Female. Total length 7.31. Carapace 3.36 long, 2.20 wide. Cheliceral promargin with 3 teeth, retromargin 2. Eye sizes and interdistances: AME 0.09, ALE 0.18, PME 0.15, PLE 0.16, AME–AME 0.08, AME–ALE 0.07, PME–PME 0.07, PME–PLE 0.18, ALE–PLE 0.06, AME–PME 0.12. Leg measurements: I: 7.61 (2.21, 2.70, 1.59, 1.11); II: 6.75 (2.00, 2.31, 1.43, 1.01); III: 6.30 (1.77, 1.98, 1.65, 0.90); IV: 8.49 (2.37, 2.80, 2.22, 1.10). Epigynal teeth short, very close together, anteriorly situated; atrium situated posteriorly near epigastric furrow, with anterior atrial margin expanded into lip-shaped septum; copulatory ducts apparent, slightly sclerotized, arising posteriorly; spermathecal heads small; spermathecal stalks indistinct; pair of long,



Figs. 8–9. *Coelotes labiatus* Wang & Ono, sp. nov. — 8, Female genitalia, ventral view; 9, same, dorsal view.

highly convoluted, transversely situated diverticula arise anteriorly on spermathecae (Figs. 8–9).

Male. Unknown.

Other material examined. None.

Distribution. Central Taiwan (Nantou).

***Coelotes montivagus* sp. nov.**

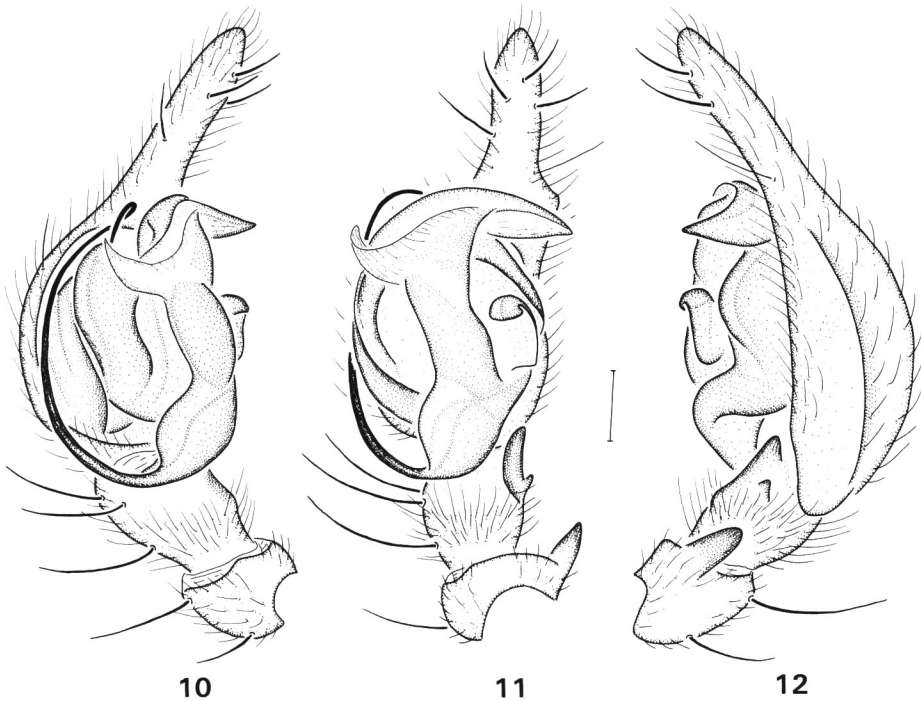
(Figs. 10–14)

Types. Male holotype from Anma-shanchuang, 2000–2300 m alt., Taichung Hsien, Taiwan (February 28, 1991; H. Ono; NSMT, NSMT–Ar. 3433), and female allotype from Anma-shanchuang, 2230 m alt., Taichung Hsien, Taiwan (March 2, 1991; H. Ono; NSMT, NSMT–Ar. 3428), deposited in NSMT.

Etymology. The specific name is from Latin and means wandering in the mountains.

Diagnosis. This species is similar to *C. yushanensis* but can be distinguished by the anteriorly expanded spermathecal stalks of females (Fig. 14). The males can be distinguished from all other similar species by the short and broad conductor, the moderately developed conductor lamella, and the moderately elongated embolus (Figs. 10–12).

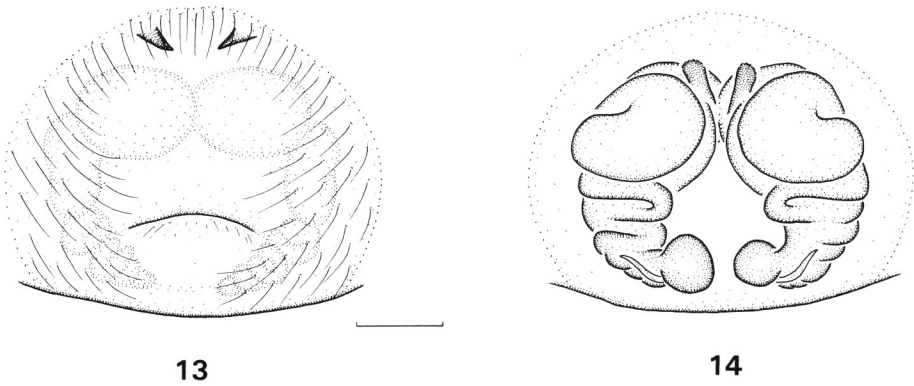
Male. Total length 4.88. Carapace 2.61 long, 1.89 wide. Cheliceral promargin with 4 teeth, retromargin 4. Eye sizes and interdistances: AME 0.08, ALE 0.16, PME 0.14, PLE 0.16, AME–AME 0.06, AME–ALE 0.04, PME–PME 0.07, PME–PLE 0.08, ALE–PLE 0.04, AME–PME 0.11. Leg measurements: I: 8.61 (2.07, 3.20, 2.11, 1.23); II: 7.31 (2.05, 2.32, 1.76, 1.18); III: 7.08 (2.03, 2.29, 1.77, 0.99); IV: 9.93



Figs. 10–12. *Coelotes montivagus* Wang & Ono, sp. nov. — 10, Male palp, prolateral view; 11, same, ventral view; 12, same, retrolateral view.

(2.52, 3.30, 2.79, 1.32). Palpal patellar apophysis relatively short and strong; retrolateral tibial apophysis normal, with distal end extended beyond tibia; lateral tibial apophysis apparent, sharply pointed; lateral cymbial furrow moderately deep, with dorsal edge moderately concave, distal edge slightly stretched beyond cymbium; conductor short, broad; conductor lamella moderately developed; conductor dorsal apophysis absent; median apophysis normal, with distal end not strongly pointed; embolus moderately long, basal origin (Figs. 10–12).

Female. Total length 6.91. Carapace 2.90 long, 1.94 wide. Cheliceral promargin with 4–5 teeth, retromargin 3–5. Eye sizes and interdistances: AME 0.09, ALE 0.16, PME 0.13, PLE 0.16, AME–AME 0.06, AME–ALE 0.05, PME–PME 0.10, PME–PLE 0.14, ALE–PLE 0.08, AME–PME 0.14. Leg measurements: I: 7.85 (2.25, 2.68, 1.75, 1.17); II: 6.79 (2.01, 2.27, 1.53, 0.98); III: 6.54 (1.82, 2.14, 1.66, 0.92); IV: 8.68 (2.53, 2.75, 2.33, 1.07). Epigynal teeth short, close together, anteriorly situated; atrium reduced to atrial slit situated closer to epigastric furrow than to epigynal teeth; spermathecal heads apparent; spermathecal stalks long, convoluted, with anterior part strongly expanded; spermathecal bases small, slightly separated (Figs. 13–14).



Figs. 13–14. *Coelotes montivagus* Wang & Ono, sp. nov. — 13, Female genitalia, ventral view; 14, same, dorsal view.

Other material examined. **Taiwan:** Nantou Hsien, between Hsin-jenkang and Tsui-feng, 2300 m alt., October 23, 1989, 2 females (H. Ono, NSMT, NSMT–Ar.3431); Nantou Hsien, Tayuling to Lishan, 2540 m alt., March 14, 1991, 1 female (H. Ono, NSMT, NSMT–Ar.3443); Taichung Hsien, Mt. Hsiao-hsueh-shan, 2600 m alt., October 18, 1989, 1 female (H. Ono, NSMT, NSMT–Ar.3446); Taichung Hsien, Mt. Hsiao-hsueh-shan, 2600 m alt., October 18, 1989, 3 females (H. Ono, NSMT, NSMT–Ar.3449); Taichung Hsien, Anma-shanchuang, 2250 m alt., March 1, 1991, 1 male (H. Ono, NSMT, NSMT–Ar.3434); Taichung Hsien, Anma-shanchuang, 2230 m alt., October 20, 1989, 1 male (H. Ono, NSMT, NSMT–Ar.3447).

Distribution. Central Taiwan (Taichung, Nantou).

***Coelotes platnicki* sp. nov.**

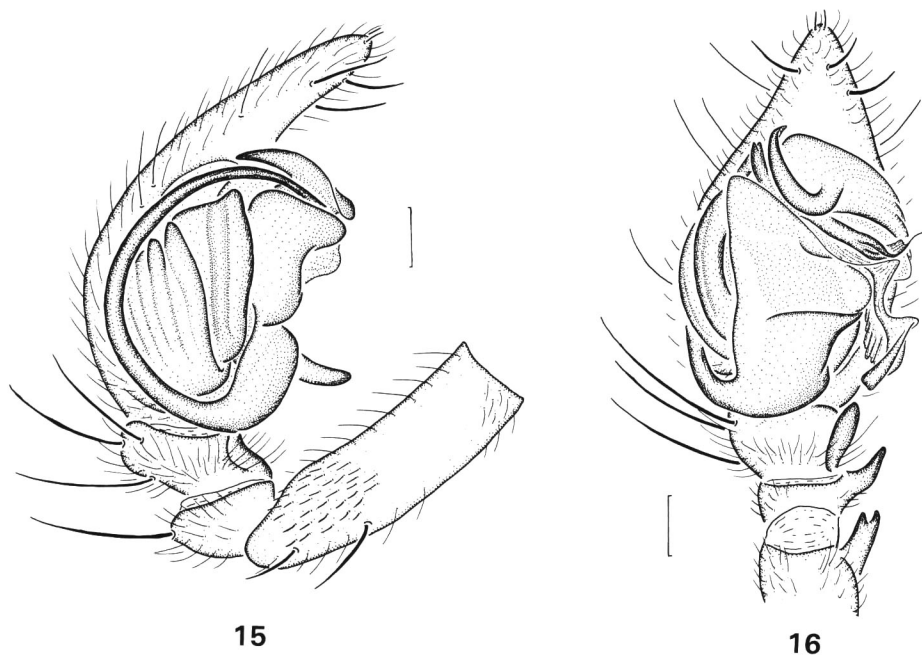
(Figs. 15–19)

Types. Male holotype and female allotype from Mt. Tengchih, 1550–1800 m alt., Paoshan-tsun, Taoyuan-hsiang, Kaohsiung Hsien, Taiwan (November 1, 1989; H. Ono; NSMT, NSMT–Ar.3421), deposited in NSMT.

Etymology. The specific name is a patronym in honor of Prof. N. I. Platnick of the AMNH.

Diagnosis. This species can be distinguished from all other coelotines by the large and complex conductor, the presence of a conductor ventral apophysis situated on the dorsal edge of the conductor groove, the strong embolus, the presence of femoral apophysis of males (Figs. 15–17) and the absence of epigynal teeth, the posteriorly situated atrium, and the large membranous copulatory ducts of females (Figs. 18–19).

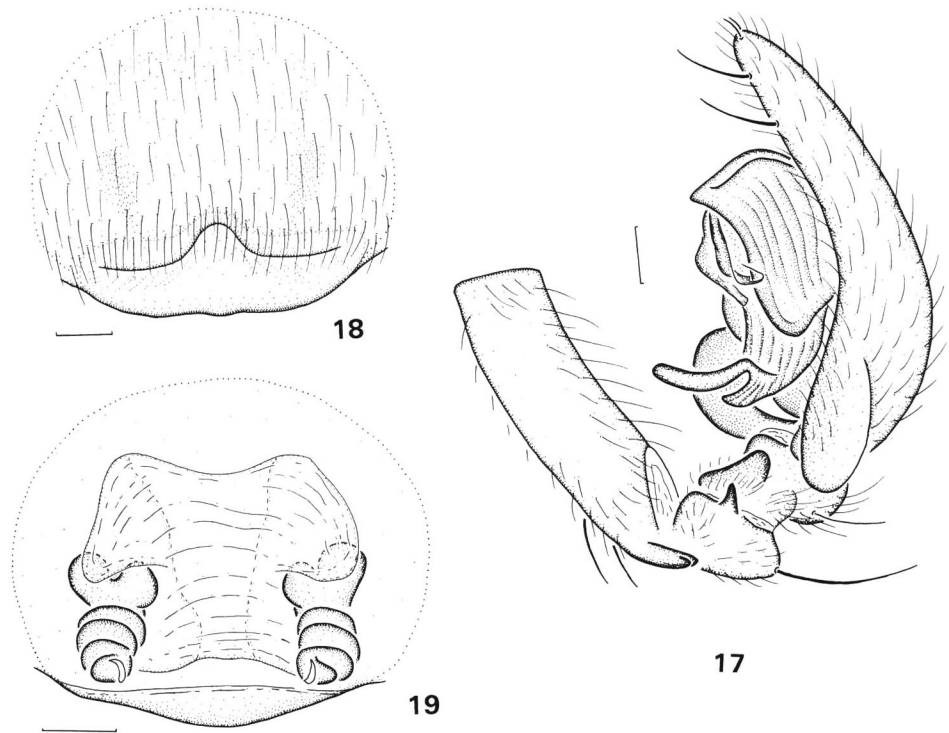
Male. Total length 6.73. Carapace 3.85 long, 2.42 wide. Cheliceral promargin



Figs. 15–16. *Coelotes platnicki* Wang & Ono, sp. nov. — 15, Male palp, prolateral view; 16, same, ventral view.

with 3 teeth, retromargin 4. Eye sizes and interdistances: AME 0.08, ALE 0.17, PME 0.15, PLE 0.21, AME–AME 0.11, AME–ALE 0.09, PME–PME 0.10, PME–PLE 0.16, ALE–PLE 0.06, AME–PME 0.14. Leg measurements: I: 10.8 (3.01, 3.70, 2.56, 1.48); II: 9.46 (2.70, 3.03, 2.34, 1.39); III: 8.67 (2.48, 2.74, 2.34, 1.11); IV: 11.8 (3.12, 3.87, 3.38, 1.40). Palpal femur bearing unique bifid apophysis (Figs. 16–17) on distal end, numerous short spines (Fig. 15) on prolateral surface; patellar apophysis short, ventrally curved; retrolateral tibial apophysis as long as tibia, with distal end not stretched beyond tibia; lateral tibial apophysis not apparent; lateral cymbial furrow short; conductor large, complex, strongly modified; conductor lamella less developed; conductor dorsal apophysis absent; median apophysis absent; embolus strong, moderately long, basal origin, with end modified (Figs. 15–17).

Female. Total length 7.71. Carapace 3.73 long, 2.27 wide. Cheliceral promargin with 3 teeth, retromargin 4. Eye sizes and interdistances: AME 0.08, ALE 0.15, PME 0.16, PLE 0.18, AME–AME 0.13, AME–ALE 0.10, PME–PME 0.13, PME–PLE 0.18, ALE–PLE 0.06, AME–PME 0.14. Leg measurements: I: 9.34 (2.60, 3.19, 2.18, 1.37); II: 7.97 (2.27, 2.64, 1.92, 1.14); III: 7.33 (2.01, 2.38, 1.89, 1.03); IV: 10.7 (2.85, 3.43, 2.78, 1.21). Epigynal teeth absent; atrium reduced to small opening, situated posteriorly near epigastric furrow; copulatory duct broad, membranous; spermathecal heads apparent; spermathecae convoluted, widely separated, with no distinct



Figs. 17–19. *Coelotes platnicki* Wang & Ono, sp. nov. — 17, Male palp, retrolateral view; 18, Female genitalia, ventral view; 19, same, dorsal view.

stalks (Figs. 18–19).

Other material examined. **Taiwan:** Kaohsiung Hsien, Taoyuan-hsiang, Paoshan-tsun, Mt. Tengchih, 1550–1800 m alt., November 1, 1989, 5 males and 7 females (H. Ono, NSMT, NSMT–Ar.3421); Kaohsiung Hsien, Taoyuan-hsiang, Paoshan-tsun, Mt. Tengchih, 1550 m alt., November 1, 1989, 1 m (H. Ono, NSMT, NSMT–Ar.3430).

Distribution. Southern Taiwan (Kaohsiung).

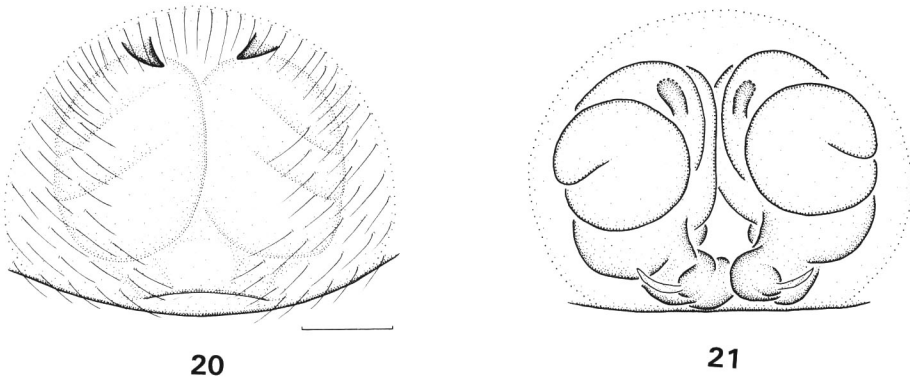
***Coelotes tengchihensis* sp. nov.**

(Figs. 20–21)

Type. Female holotype from Mt. Tengchih, 1804 m alt., Paoshan-tsun, Taoyuan-hsiang, Kaohsiung Hsien, Taiwan (November 1, 1989; H. Ono; NSMT, NSMT–Ar.3442), deposited in NSMT.

Etymology. The specific name refers to the type locality.

Diagnosis. This species resembles *C. montivagus* but can be distinguished by the posterior position of atrial slit, and the shape of spermathecal stalks (Figs. 20–



Figs. 20–21. *Coelotes tengchihensis* Wang & Ono, sp. nov. — 20, Female genitalia, ventral view; 21, same, dorsal view.

21).

Female. Total length 6.67. Carapace 2.74 long, 1.67 wide. Cheliceral promargin with 5–6 teeth, retromargin 4–5. Eye sizes and interdistances: AME 0.06, ALE 0.12, PME 0.10, PLE 0.12, AME–AME 0.08, AME–ALE 0.07, PME–PME 0.09, PME–PLE 0.12, ALE–PLE 0.06, AME–PME 0.11. Leg measurements: I: 8.57 (2.36, 2.99, 1.95, 1.27); II: 7.54 (2.17, 2.49, 1.70, 1.18); III: 6.9 (1.92, 2.15, 1.80, 1.03); IV: 9.66 (2.67, 3.24, 2.54, 1.21). Epigynal teeth short, close together, anteriorly situated; atrium reduced to atrial slit, situated posteriorly near epigastric furrow; spermathecal heads apparent; spermathecal stalks long, convoluted, with middle part strongly expanded; spermathecal bases small, close together (Figs. 20–21).

Male. Unknown.

Other material examined. None.

Distribution. Southern Taiwan (Kaohsiung).

Coelotes xinhuiensis Chen, 1984

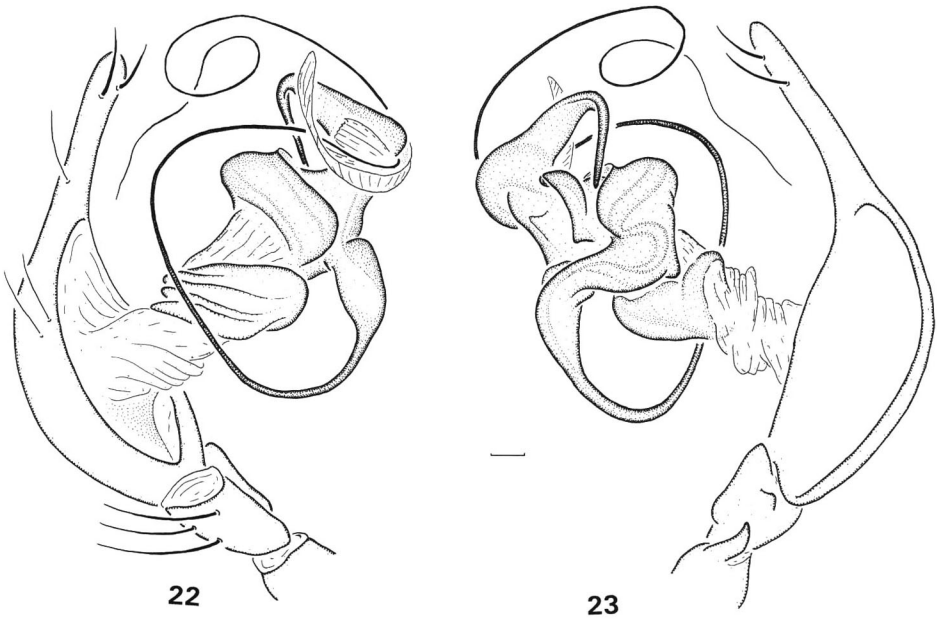
(Figs. 22–28)

Coelotes xinhuiensis Chen, 1984: 3, f. 9–10 (female holotype and 1 female paratype from Xinhui, Guangdong, China, in HTC, examined).

Coelotes atratus Wang *et al.*, 1990: 227, f. 115–116 (female holotype from Damingshan, Guangxi, China, in HBI, examined). NEW SYNONYMY.

Diagnosis. This species resembles *C. songminjiae* Paik & Yaginuma (in Paik, Yaginuma & Namkung, 1969; Paik, 1971) but can be distinguished by the presence of a small apophysis on the retrolateral side of tegular sclerite of males (Figs. 24–26) and the distinct shape of epigynal ducts of females (Fig. 28).

Male. Total length 7.13 (all the measurements below are based on the male of NSMT, NSMT–Ar.3442). Carapace 3.56 long, 2.60 wide. Cheliceral promargin with

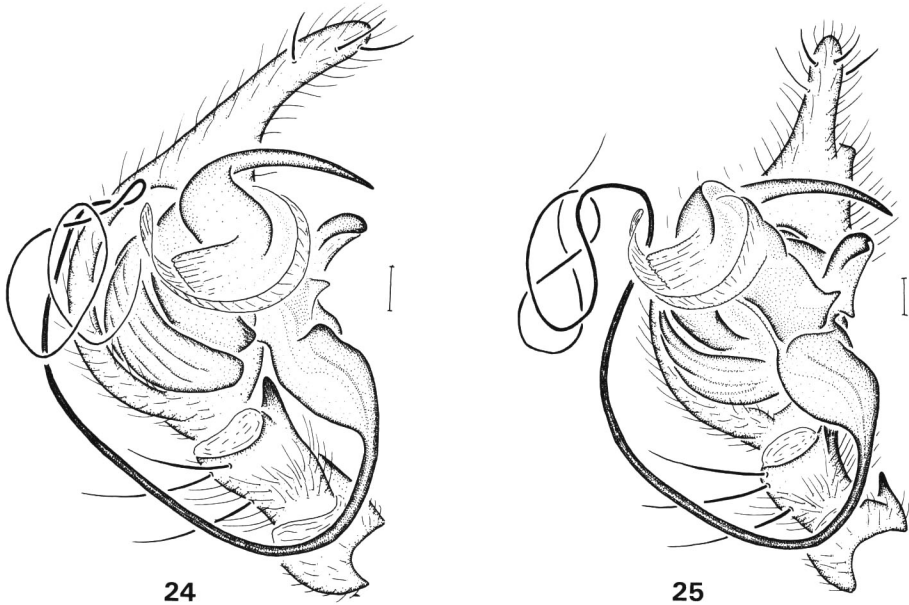


Figs. 22–23. *Coelotes xinhuiensis* Chen, 1984. — 22, Male palp, expanded, prolateral view; 23, same, retrolateral view.

3 teeth, retromargin 3. Eye sizes and interdistances: AME 0.16, ALE 0.20, PME 0.17, PLE 0.20, AME–AME 0.11, AME–ALE 0.05, PME–PME 0.12, PME–PLE 0.19, ALE–PLE 0.07, AME–PME 0.18. Leg measurements: I: 12.3 (3.30, 4.35, 3.09, 1.56); II: 10.37 (2.80, 3.67, 2.66, 1.24); III: 9.26 (2.54, 3.06, 2.63, 1.03); IV: 12.9 (3.50, 4.24, 3.63, 1.54). Patellar apophysis relatively slender, with distal end slightly narrowed, ventrally curved; retrolateral tibial apophysis normal, with distal end extended beyond tibia; lateral tibial apophysis apparent, with sharp end; lateral cymbial furrow deep, with dorsal edge strongly concave, distal edge strongly stretched beyond cymbium; tegular sclerite with small apophysis on retrolateral side; conductor long, slender, ventrally curved; conductor lamella strongly elongated; conductor dorsal apophysis absent; median apophysis long, with sharp distal end; embolus extremely long, retrolateral origin (Figs. 22–26).

Female. Described by Chen (1984) and Wang *et al.* (1990). Epigynal teeth short, close together, anteriorly situated; atrium reduced to atrial slit slightly closer to epigynal teeth than to epigastric furrow; spermathecal heads small; spermathecal stalks long, convoluted, with posterior part strongly expanded; spermathecal bases small, separated (Figs. 27–28).

Material examined. CHINA: **Guangdong**: Xinhui, November 27, 1981, female holotype and 1 female paratype (Z. H. Zhang, HTC); Guangzhou, campus of

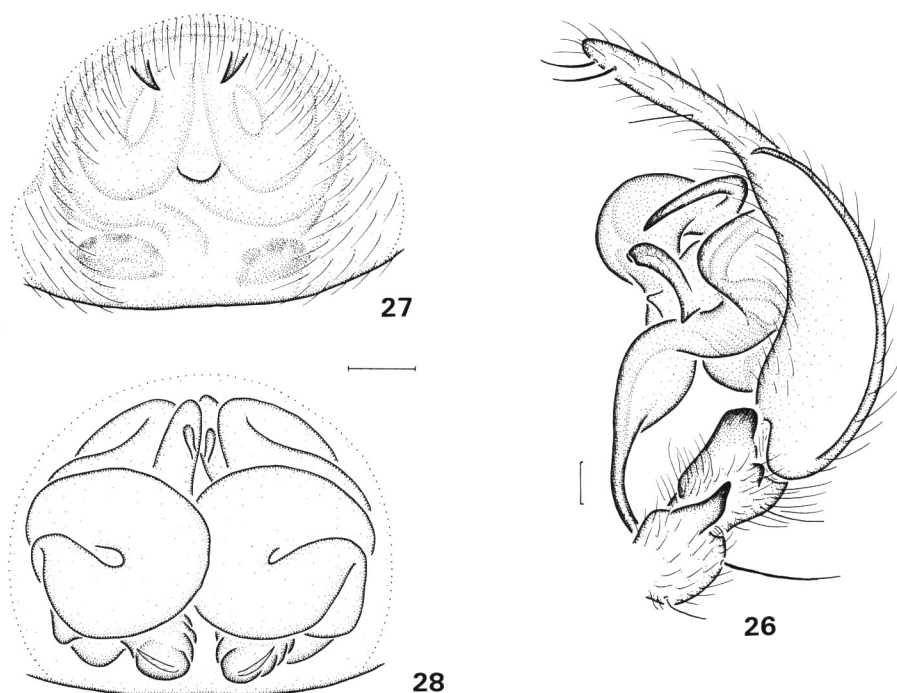


Figs. 24–25. *Coelotes xinhuiensis* Chen, 1984. — 24, Male palp, prolateral view; 25, same, ventral view.

the Southern China Teachers University, August 29, 1997, later molted to adult, 1 male (X. P. Wang, AMNH). **Guangxi:** Damingshan, August 10, 1982, female holotype of *Coelotes atratus* (J. F. Wang, HBI). **Hong Kong:** Tianpingshan, October 14, 1997, later molted to adults, 1 male and 3 females (X. P. Wang, 1 male and 2 female in HTU; 1 female in MCB). **Taiwan:** Taipei, Quan In-shua, March 26, 1961, 1 female (E. Schlinger, AMNH); Nantou Hsien, Tatachia, 2480 m alt., March 4, 1991, 1 female (H. Ono, NSMT, NSMT–Ar.3424); Taichung Hsien, Mt. Chuanhsing-shan, 1590 m alt., March 2, 1991, 1 female (H. Ono, NSMT, NSMT–Ar.3445); Kaohsiung Hsien, Taoyuan-hsiang, Paoshan-tsun, Mt. Tengchih, 1804 m alt., November 1, 1989, 1 male (H. Ono, NSMT, NSMT–Ar.3442); Taipei Hsien, Wulai, 300–400 m alt., November 27, 1989, 1 male (H. Ono, NSMT, NSMT–Ar.3452).

Synonymy. The species *C. atratus* Wang *et al.* proved to be a junior synonym of *C. xinhuiensis* Chen because both of them possess identical genitalic morphology. For the species *C. xinhuiensis*, the original illustrations (Chen, 1984) ignored the epigynal teeth and also gave no enough details on the spermathecal morphology. This may be the reason Wang *et al.* (1990) mentioned *C. songminjiae* Paik & Yaginuma rather than *C. xinhuiensis* as the closest species of *C. atratus*. Geographically, the type localities of *C. xinhuiensis* and *C. atratus* are close together.

Distribution. Widespread in Taiwan, Hong Kong, and southern mainland China.



Figs. 26–28. *Coelotes xinhuiensis* Chen, 1984. — 26, Male palp, retrolateral view; 27, Female genitalia, ventral view; 28, same, dorsal view.

Coelotes yushanensis sp. nov.

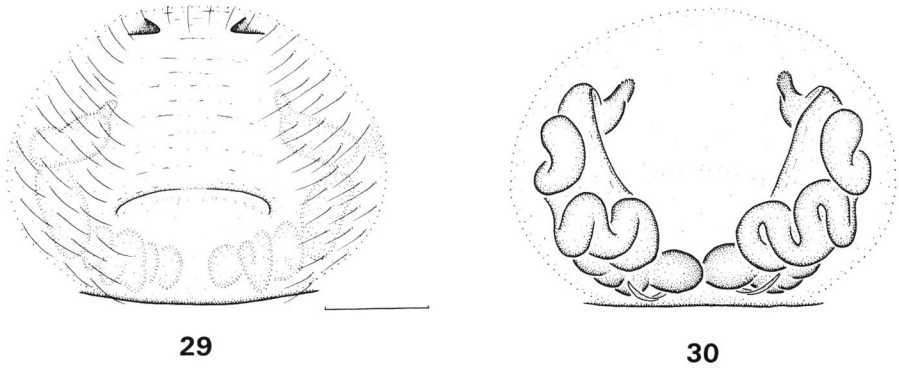
(Figs. 29–30)

Types. Female holotype and female paratype from Tatachia, 2100 m alt., Nantou Hsien, Taiwan (March 6, 1991; H. Ono; NSMT, NSMT–Ar.3426), deposited in NSMT.

Etymology. The specific name refers to the highest mountain in Taiwan, Mt. Yu-shan (3997 m above the sea level). Tatachia, the type locality of this new species, is located at the foot of the mountain.

Diagnosis. The epigynum of this species resembles that of *C. montivagus* but can be distinguished by the distinct shape and the widely separated spermathecae (Fig. 30).

Female. Total length 5.22. Carapace 2.38 long, 1.64 wide. Cheliceral promargin with 5 teeth, retromargin 5. Eye sizes and interdistances: AME 0.07, ALE 0.13, PME 0.12, PLE 0.12, AME–AME 0.05, AME–ALE 0.04, PME–PME 0.08, PME–PLE 0.08, ALE–PLE 0.05, AME–PME 0.10. Leg measurements: I: 6.88 (2.00, 2.34, 1.51, 1.03); II: 5.99 (1.72, 1.99, 1.36, 0.92); III: 5.53 (1.66, 1.70, 1.41, 0.67); IV: 7.68



Figs. 29–30. *Coelotes yushanensis* Wang & Ono, sp. nov. — 29, Female genitalia, ventral view; 30, same, dorsal view.

(2.15, 2.53, 2.07, 0.93). Epigynal teeth short, close together, anteriorly situated; atrium reduced to atrial slit, situated closer to epigastric furrow than to epigynal teeth; spermathecal heads apparent; spermathecal stalks long, convoluted, widely separated, not strongly expanded; spermathecal bases small, situated close together (Figs. 29–30).

Male. Unknown.

Other material examined. None.

Distribution. Central Taiwan (Nantou).

Genus *Paracoelotes* Brignoli, 1982

Only one species of the genus *Paracoelotes* is known from Taiwan: *P. taiwanensis* sp. nov., which is very different from all other paracoelotines in both male and female genitalic morphology. The species *P. taiwanensis* is described in the genus *Paracoelotes* because of the long, broad conductor and the absence of conductor dorsal apophysis of males and the presence of large atrium, the apparent septum, and the broad, membranous copulatory ducts of females.

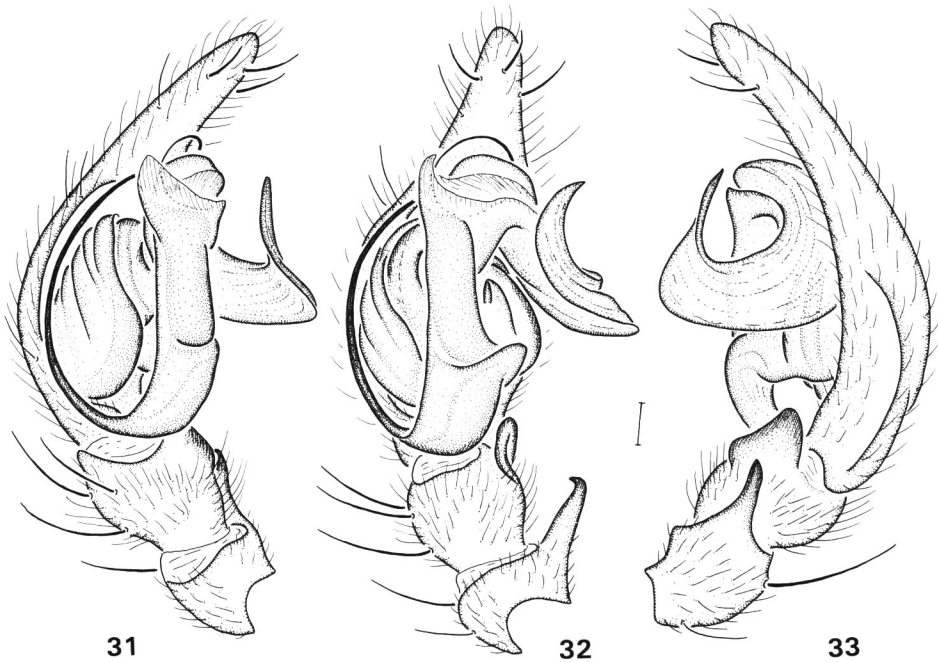
Paracoelotes taiwanensis sp. nov.

(Figs. 31–36)

Types. Male holotype and female allotype, from Tatachia, 2650 m alt., Nantou Hsien, Taiwan (March 4, 1991; H. Ono; NSMT, NSMT–Ar.3422), deposited in NSMT.

Etymology. The specific name is derived from the type locality.

Diagnosis. This species can be distinguished from all other *Paracoelotes* by the relatively broad conductor, the relatively reduced median apophysis, the absence

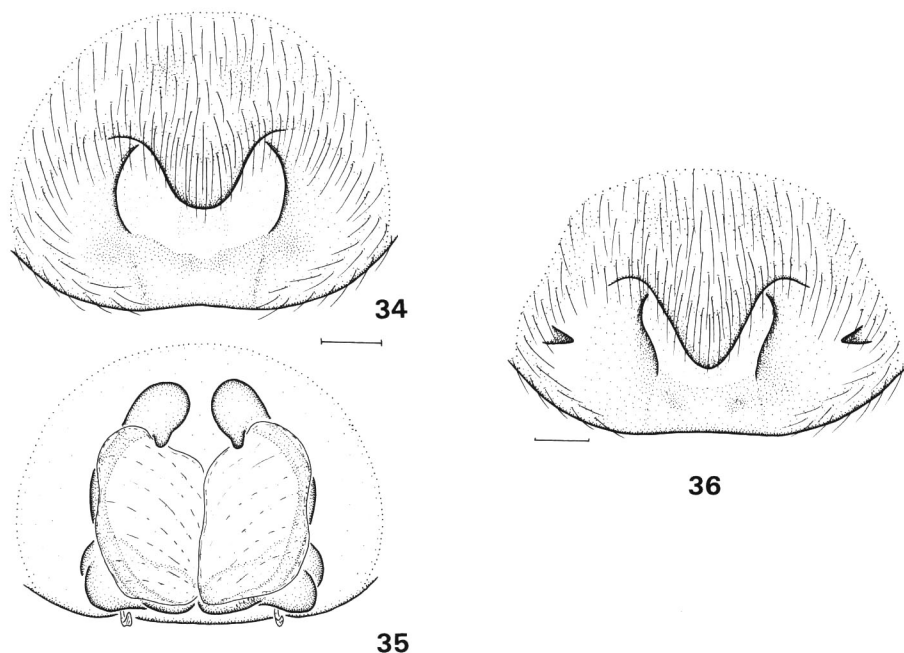


Figs. 31–33. *Paracoelotes taiwanensis* Wang & Ono, sp. nov. — 31, Male palp, prolateral view; 32, same, ventral view; 33, same, retrolateral view.

of the lateral tibial apophysis, and the relatively long patellar apophysis of males (Figs. 31–33) and the reduced epigynal teeth and anteriorly situated spermathecal heads of females (Figs. 34–36).

Male. Total length 8.05. Carapace 4.30 long, 2.92 wide. Cheliceral promargin with 3 teeth, retromargin 3. Eye sizes and interdistances: AME 0.14, ALE 0.21, PME 0.21, PLE 0.22, AME–AME 0.09, AME–ALE 0.07, PME–PME 0.12, PME–PLE 0.17, ALE–PLE 0.07, AME–PME 0.19. Leg measurements: I: 12.6 (3.27, 4.30, 3.04, 2.03); II: 11.3 (3.08, 3.75, 2.63, 1.84); III: 10.36 (2.74, 3.12, 2.76, 1.74); IV: 13.7 (3.46, 4.28, 3.99, 1.98). Palpal patellar apophysis relatively long, with distal end slightly curved; retrolateral tibial apophysis normal, with distal end stretched beyond tibia; lateral tibial apophysis reduced; lateral cymbial furrow of normal length, with dorsal edge deeply concave; conductor broad, with relatively sharp distal end; conductor dorsal apophysis absent; median apophysis less developed, with distal end not sharply pointed; embolus long (relative to other *Paracoelotes*), basal origin (Figs. 31–33).

Female. Total length 10.2. Carapace 4.03 long, 2.71 wide. Cheliceral promargin with 3 teeth, retromargin 3. Eye sizes and interdistances: AME 0.14, ALE 0.21, PME 0.19, PLE 0.21, AME–AME 0.13, AME–ALE 0.07, PME–PME 0.12,



Figs. 34–36. *Paracoelotes taiwanensis* Wang & Ono, sp. nov. — 34, Female genitalia (NSMT–Ar.3422, allotype), ventral view; 35, same, dorsal view; 36, female genitalia (NSMT–Ar.3439), ventral view.

PME–PLE 0.20, ALE–PLE 0.08, AME–PME 0.19. Leg measurements: I: 10.5 (2.94, 3.58, 2.32, 1.62); II: 9.10 (2.63, 3.00, 2.09, 1.38); III: 8.37 (2.34, 2.64, 2.17, 1.22); IV: 11.5 (3.04, 3.69, 3.12, 1.62). Epigynal teeth small, very small or absent; atrium large; septum apparent, broad; copulatory ducts broad, membranous; spermathecal heads apparent, anteriorly situated, leading to spermathecal bases medially (Figs. 34–36).

Other material examined. **Taiwan:** Nantou Hsien, Tatachia, 2480 m alt., March 4, 1991, 1 male and 1 female (H. Ono, NSMT, NSMT–Ar.3423); Nantou Hsien, Tatachia, 2600 m alt., March 2, 1991, 1 male (H. Ono, NSMT, NSMT–Ar.3429); Nantou Hsien, Tatachia, 2100 m alt., March 5, 1991, 1 male (H. Ono, NSMT, NSMT–Ar.3435); Nantou Hsien, Tatachia, 2100 m alt., March 5, 1991, 1 female (H. Ono, NSMT, NSMT–Ar.3437); Hualien Hsien, Hungyeh-wenchuan, 240–300 m alt., March 20, 1991, 1 female (H. Ono, NSMT, NSMT–Ar.3439); Taichung Hsien, Shenmu, Mt. Hsiao-hsueh-shan, 2440 m alt., March 1, 1991, 1 female (H. Ono, NSMT, NSMT–Ar.3440); Nantou Hsien, Tatachia, 2100 m alt., March 5, 1991, 1 female (H. Ono, NSMT, NSMT–Ar.3441); Nantou Hsien, Lushan-wenchuan, October 28, 1989, 1 female (H. Ono, NSMT, NSMT–Ar.3450); Nantou Hsien, NW of Mt. Nengkao, Yunhai, 2360 m alt., October 27, 1989, 2 males (H. Ono, NSMT, NSMT–

Ar.3451).

Variations. The epigynum may vary within species. The epigynal teeth are absent in NSMT–Ar.3422 (Fig. 34), Ar.3423, Ar.3437, Ar.3450 from Nantou, present but very small in Ar.3441 from Nantou and in Ar.3440 from Taichung, or small but apparent in Ar.3439 (Fig. 36) from Hualien. The size and shape of atrium differ slightly among specimens, especially the position of atrial lateral margins. The septum may also vary in its width and length. All the above specimens are regarded as one species because of their constant morphology of the copulatory ducts and spermathecae (Fig. 35).

Distribution. Central Taiwan (Nantou, Hualien, Taichung).

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References

- Chen, Z. F., 1984. Five new species of the genus *Coelotes* (Agelenidae) from China. *J. Hangzhou Normal Coll.*, (Nat. Sci.), **1**: 1–7.
- Nishikawa, Y., 1974. Japanese spiders of the genus *Coelotes* (Araneae: Agelenidae). *Fac. Let. Rev. Otemon Gakuin Univ.*, (8): 174–182.
- Ono, H., 1992 a. Occurrence of the genus *Xysticus* (Araneae, Thomisidae) in Taiwan. *Bull. natn. Sci. Mus., Tokyo*, (A), **18**: 35–40.
- Ono, H., 1992 b. Two new species of the families Araneidae and Clubionidae (Arachnida, Araneae) from Taiwan. *Bull. natn. Sci. Mus., Tokyo*, (A), **18**: 121–126.
- Ono, H., 1994. Spiders of the genus *Clubiona* from Taiwan (Araneae: Clubionidae). *Acta arachn., Tokyo*, **43**: 71–85.
- Paik, K. Y., 1971. Supplemental description of *Coelotes songminjae*. *Educ. J. Teach. Coll. Kyungpook natn. Univ.*, **13**: 171–175.
- Paik, K. Y., 1978. Araneae. Illustrated Flora & Fauna of Korea, **21**: 1–546. Taegu.

- Paik, K. Y., Yaginuma, T. & J. Namkung, 1969. Results of the speleological survey in South Korea 1966. 19. Cave dwelling spiders from the southern part of Korea. *Bull. natn. Sci. Mus. Tokyo*, **12**: 795–844.
- Peng, X. J. & C. M. Yin, 1998. Four new species of the genus *Coelotes* (Araneae, Agelenidae) from China. *Bull. Br. arachnol. Soc.*, **11**: 26–28.
- Platnick, N. I., 1998. Advances in Spider Taxonomy 1992–1995, With Redescriptions 1940–1980. 976 pp. New York Entomological Society and the American Museum of Natural History.
- Tanikawa, A. & H. Ono, 1993. Spiders of the genus *Cyclosa* (Araneae, Araneidae) from Taiwan. *Bull. natn. Sci. Mus., Tokyo*, (A) **19**: 51–64.
- Wang, J. F., C. M. Yin, X. J. Peng & L. P. Xie, 1990. New species of the spiders of the genus *Coelotes* from China (Araneae: Agelenidae). In *Spiders in China: One Hundred New and Newly Recorded Species of the Families Araneidae and Agelenidae*, pp. 172–253. Hunan Normal Univ. Press.
- Yaginuma, T., 1986. *Spiders of Japan in Color*, New Edition. xxiv+305 pp, 64 pls. Hoikusha, Osaka.

