The spider genus *Neon* Simon, 1876 (Araneae, Salticidae) in SE Asia, with notes on the genitalia and skin pore structures

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Summary

Two species of the genus *Neon* have been found in SE Asia: *N. minutus* Żabka and *N. sumatranus*, sp. n. Both are described here. A revised definition of the genus *Neon* is also provided, paying particular attention to the detailed structure of the genitalia. The cuticle of *Neon* species (both on carapace and on abdomen) is shown to be equipped with two kinds of pores presumably involved in the release of pheromone.

Introduction

The jumping spiders of the genus *Neon* are among the smallest members of the family Salticidae. Very little is known about the taxonomy and relationships of *Neon*, with reliable data on the genus being published in three works only: Lohmander (1945), Gertsch & Ivie (1955) and Ikeda (1995). A precise definition of the genus was provided by Gertsch & Ivie (1955). Lohmander (1945) first established a subgenus *Dicroneon* for *Neon laevis* (Simon), but he made no taxonomic proposals for the rest of the *Neon* species. Later, Gertsch & Ivie (1955) enlarged Lohmander's diagnosis and included in *Dicroneon* a new species, *Neon avalonus*, and the congeners of the *N. rayi* (Simon) species group. Correspondingly, *Neon reticulatus* (Blackwall) and its relatives were assigned by Gertsch & Ivie to another subgenus, *Neon*. The main key character difference between these subgenera is the presence (in *Neon*) or absence (in *Dicroneon*) of a conspicuous spiculate outgrowth at the base of the embolus (Figs. 13–15). The only species of *Neon* so far described from SE Asia is *N. minutus* Żabka from Vietnam (Żabka, 1985).

The aims of the present paper are: (1) to redefine the genus *Neon*, paying particular attention to the detailed structure of the genitalia; (2) to consider the affinities of *Neon* in the light of the new data; (3) to redescribe *N. minutus* and describe a new species, *N. sumatranus*, from SE Asia; and (4) to describe two kinds of skin pore structures (probably pheromone-releasing organs) found for the first time in salticids outside of the Spartaeinae.

Material and methods

This work is based mainly on material collected by Dr P. T. Lehtinen in SE Asia, and specimens borrowed from or distributed among the following museums: ISE=Zoological Museum of the Institute for Systematics and Ecology of Animals, Novosibirsk, Russia; UT=Zoological Museum, University of Turku, Turku, Finland; ZMMU=Zoological Museum of the Moscow State University, Moscow, Russia.

A definition of the genus *Neon* would be incomplete if additional material from Europe, including the type species (*N. reticulatus*), had not been used. Therefore, in Table 1 details are given of comparative material used herein for preparing a revised definition of *Neon*.

Abbreviations used in the text and figures: BH=basal haematodocha, C=cymbium, CP=carapace skin pore, d=dorsal, DH=distal haematodocha, E=embolus, F=flaps, FD=fertilisation duct, Fm=femur, ID=insemination duct, MS=median septum, Mt=metatarsus, pr=prolateral, PRR=primary receptacle, Pt=patella, rt=retrolateral, SD=spermathecal duct, SCL=spicules, SL=spiculate lobe, SmD=seminal duct, SRR=secondary receptacle, ST=subtegulum, T=tegulum, TA=terminal apophysis, v=ventral. For the leg spination the system adopted is that used by Ono (1988). The sequence of leg segments in measurement data is as follows: femur+patella+tibia+metatarsus+tarsus. All measurements are in mm.

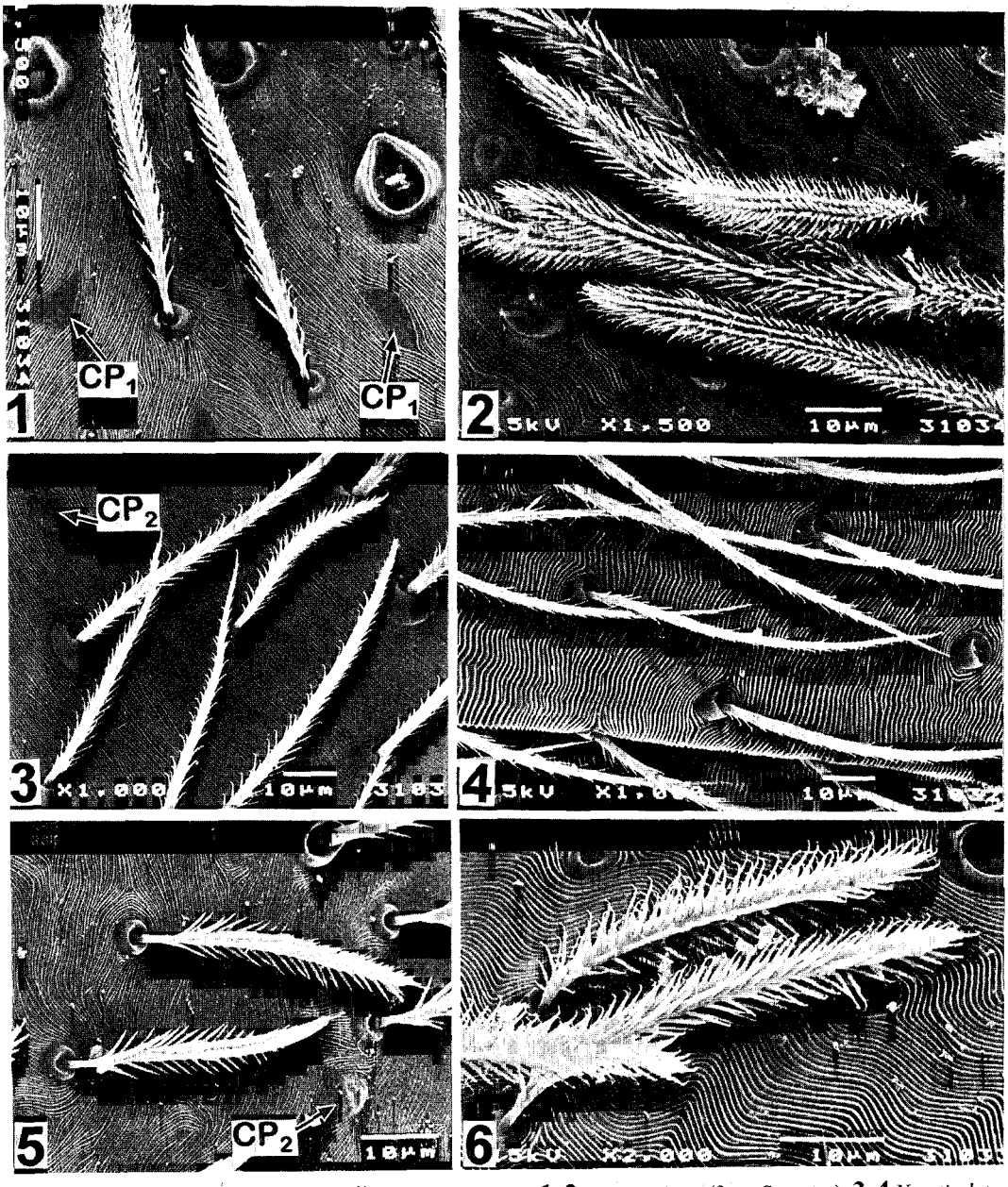
Genus *Neon* Simon, 1876

Type species: *Salticus reticulatus* Blackwall, 1853, by subsequent designation by Simon (1876).

Definition: Small unidentate spiders ranging from about 1.4 to 3.0 mm in length. Sexual dimorphism poorly marked, but males often darker or more colourful/contrasting, e.g. in *N. laevis*. *Carapace*: moderately high (Fig. 48); fovea present, but inconspicuous, like a slight point or line; carapace usually light coloured (yellow to brownish-yellow), with rather large black areas around eyes (Figs. 37, 45); eye field transverse-rectangular, with width 1.2–1.5 times greater than length; quadrangle length 57–69% of carapace length; PME about half-way between ALE and PLE; carapace sparsely covered with pinnate scales as in Figs. 1, 3, 5; carapace skin pores (CP) of two kinds present (Figs. 1, 3, 5, 7–9) (for more details see "Notes" below). *Eyes*: large and prominent, AME largest (Figs. 37, 45). *Clypeus*: low, slightly sloping backwards; height 25–30% of AME diameter; usually hairless. *Chelicerae*: small and vertical; promargin with 2 small teeth; retromargin with 1 small or medium tooth (Fig. 29). *Maxillae*: rectangular, longer than wide. *Labium*: small, elongated, rounded anteriorly. *Sternum*: suboval (more or less drop-shaped), widest side directed anteriorly. *Abdomen*: suboval, 1.1–1.5 times longer than wide; dorsum usually without scutum; dorsal colour markings sometimes species-specific (e.g. Fig. 45); abdomen, like carapace, sparsely covered with pinnate scales as in Figs. 2, 4, 6; abdominal skin pores present (Figs. 10–12) (for more details see "Notes" below). *Legs*: moderately short, normal; usually yellow with brownish/greyish rings, the first pair slightly heavier and darker; trichobothrial base as in Fig. 19; few leg spines, but those present usually strong and long (Fig. 38); legs I show consistent spination type in most/all species: Tb v 2-2-2ap; Mt v 2-2ap. *Leg formula*: usually IV, I, III, II in both sexes. *Female palp*: normal shape; spineless and without apical claws.

Male palp: Relatively large for the size of the spiders; tibial apophysis always present, wide and short in subgenus *Neon* (Fig. 34) and relatively long and thin in *Dicroneon* (Fig. 44); embolus originating at various points on prolateral side of bulb; its base rather wide and heavy (Fig. 16), but terminal part rather thin (Fig. 18), sometimes thread-like and coiled more than two revolutions (e.g. in *N. rayi* and *N. pixii*, see Gertsch & Ivie, 1955: figs. 22, 24); the members of the subgenus *Neon* have the embolic base equipped with a finely spiculate lobe (Figs. 13–15, 18: SL) which is unique to *Neon*; however, the members of *Dicroneon* possess only single spicules which may represent an undeveloped or reduced spiculate lobe (Figs. 16, 17: SCL), thus indicating an affinity to *Neon*; tegulum rather large (Figs. 20–22); basal haematodocha and subtegulum well developed (Fig. 20); distal haematodocha present, but only as a narrow membranous area between the tegulum and embolic division (Figs. 14, 20–22: DH); embolic division consists of two sclerites: the embolus with spiculate lobe (Figs. 13–15, 20–22: E and SL) and an unknown elongated sclerite situated prolaterally to the embolus (Figs. 20–22: TA?); the position and shape of this sclerite suggest that it is either the terminal apophysis or the lamella (*sensu* Merrett, 1963); it is also possible that this sclerite is of a complex nature and includes both the latter sclerites. Hereinafter I treat this sclerite as the terminal apophysis while recognising its uncertain origin (Figs. 14, 18, 20–22).

Female genitalia: The epigyne consists of two atria (in which lie the copulatory pores), usually separated by a median septum (Figs. 24, 26); flaps usually present (Figs. 26, 27), but often invisible under low magnifications. The spermathecae consist of insemination ducts and primary and secondary receptacles; insemination ducts tube-like, short (Figs. 30, 31) or rather long (Fig.

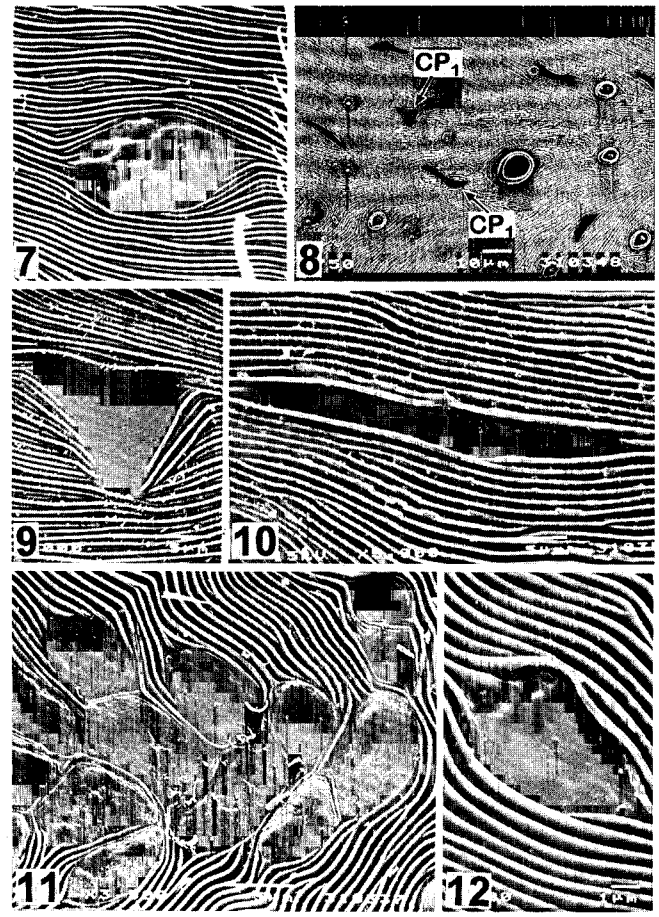


Figs. 1–6: Pinnate scales on carapace (1, 3, 5) and abdomen (2, 4, 6) of *Neon*. **1, 2** *N. sumatranus* (from Sumatra); **3, 4** *N. reticulatus* (from Finland); **5, 6** *N. minutus* (from Taiwan).

47); primary receptacle easily recognisable by presence of the fertilisation duct and numerous spicules inside it (Figs. 30–32; PRR); the secondary receptacle lacks the fertilisation duct and looks like either a large rounded sac (Figs. 28, 33, 40), that is typical for the subgenus *Neon*, or an elongated sac often connected with the PRR by a separate spermathecal duct (Figs. 31, 47: SD and SRR), typical of *Dicroneon*.

Diagnosis and affinities: The affinities of *Neon* have not been accurately ascertained so far. Nevertheless, among described salticid genera, *Neon* appears to be most closely related to the S. American *Neonella* Gertsch, 1936 (*sensu* Galiano, 1988). Both genera share the following characters: cheliceral promargin with two small teeth, retromargin with one small tooth; fourth leg longest; few spines on legs (femora and patellae completely lack spines), but those present long and strong; embolus either with a spicular lobe (in *Neon*), or with small spicules (in *Neonella* and the subgenus *Dicroneon*); primary and secondary receptacles present. However, *Neon* can be easily separated from *Neonella* by the longer and thread-like embolus, absence of scuta, and presence of the median septum of the epigyne.

Neither *Neon* nor *Neonella* belong to the Chalcoscirteae group, as was assumed by Gertsch & Ivie (1955). This group was created by Simon (1903) to include four genera: *Neon*, *Jollas*, *Chalcoscirtus* and *Semiopyla*. Later, Petrunkevitch (1928) in his "Systema Aranearum" created the subfamily Sitticinae by adding *Attulus*, *Sitticus* and *Yllenus* to Simon's Chalcoscirteae. However, both Simon's and Petrunkevitch's groupings turned out to be wrong. Of the above mentioned genera *Chalcoscirtus* undoubtedly belongs to the Euophryinae (*sensu* Prószyński, 1976). *Semiopyla* and *Jollas* show rather peculiar genital features (see Galiano, 1985; Prószyński, 1987: 58) and are probably not related to *Neon* (the only similarity with *Neon* seems to be their small size). *Yllenus* most probably should be placed somewhere near *Menemerus* and *Plexippus* (Logunov, personal data). So, only *Neon*, *Attulus* and *Sitticus* could remain as probably being related. This is the grouping that was proposed by Prószyński (1976) as the subfamily Sitticinae, as Prószyński united *Neon* and *Sitticus* (*s. lat.*, i.e. *Attulus*+*Sitticus*). Prószyński's assumption is thought to be correct, as both genera show clearly the



Figs. 7–12: Skin pore structures of *Neon*. **7** *N. reticulatus* (from Finland), carapace pore; **8–10** *N. sumatranus* (from Sumatra), carapace (8, 9) and abdominal (10) pores; **11** *N. minutus* (from Taiwan), abdominal grouped (11) and single (12) pores.

Species name	Localities
Neon (Dicroneon) laevis (Simon, 1871) (Figs. 24, 30)	KIRGHIZSTAN: 1♂ (ISE), Dzhalalabad Area, Sary-Chelek Reservation, 4 km NW of Arkit, Tumaniak River, 20 June 1992 (A. A. Feodorov & A. A. Zyuzin). KAZAKHSTAN: 1♀ (ISE), Almaty env., Aksai Canyon, 1300 m elev., 28 August 1983 (Y. M. Marusik). TAJIKISTAN: 2♀ (ISE), Gissarskiy Mt. Range, Kondara Canyon, 10 July 1988 (S. V. Ovtchinnikov).
Neon (Dicroneon) rayi (Simon, 1875)	GEORGIA: 2♂ 1♀ (ISE), Vashlovan Reserve, 500–580 m elev., 7–9 May 1983 (S. I. Golovatch). RUSSIA: 2♀ (ZMMU), Daghestan, 2–4 km NE of Sergokala, 7–9 June 1982 (S. I. Golovatch).
Neon (Neon) reticulatus (Blackwall, 1853) (Figs. 3, 4, 7, 13, 14, 20–22, 26, 28)	GEORGIA: 1♂ (ZMMU), Surami (=Rikoti) Pass, 1000 m elev., *Fagus* & *Alnus* forest, 14 April–17 May 1983 (S. I. Golovatch). FINLAND: 4♀ (UT), Lembax, 9 July 1968 (P. T. Lehtinen); 2♂ 1♀ (UT), Nauno Lökholm, 10 May –12 July 1969 (E. Nylund & P. T. Lehtinen); 1♂ (UT), Turku, Kärsämäki, Pomponrahka, April–July 1967 (M. Saaristo). RUSSIA: 1♀ (ZMMU), Komi ASSR, ~60 km SE of Syktyvkar, 20 June 1988 (K. G. Mikhailov).
Neon (Neon) robustus Lohmander, 1945 (Fig. 27)	FINLAND: 3♂ 2♀ (UT), Turku, Kärsämäki, Pomponrahka, 25 May–8 June 1971 (I. Oksala).
Neon (Neon) valentulus Falconer, 1912 (Figs. 15, 18)	FINLAND: 2♂ 2♀ (UT), Turku, Kärsämäki, Pomoponrahka, 30 July 1971 (I. Oksala); 1♂ 2♀ (UT), same locality, April–July 1967 (M. Saaristo).

Table 1: Comparative material of Palaearctic *Neon* species.

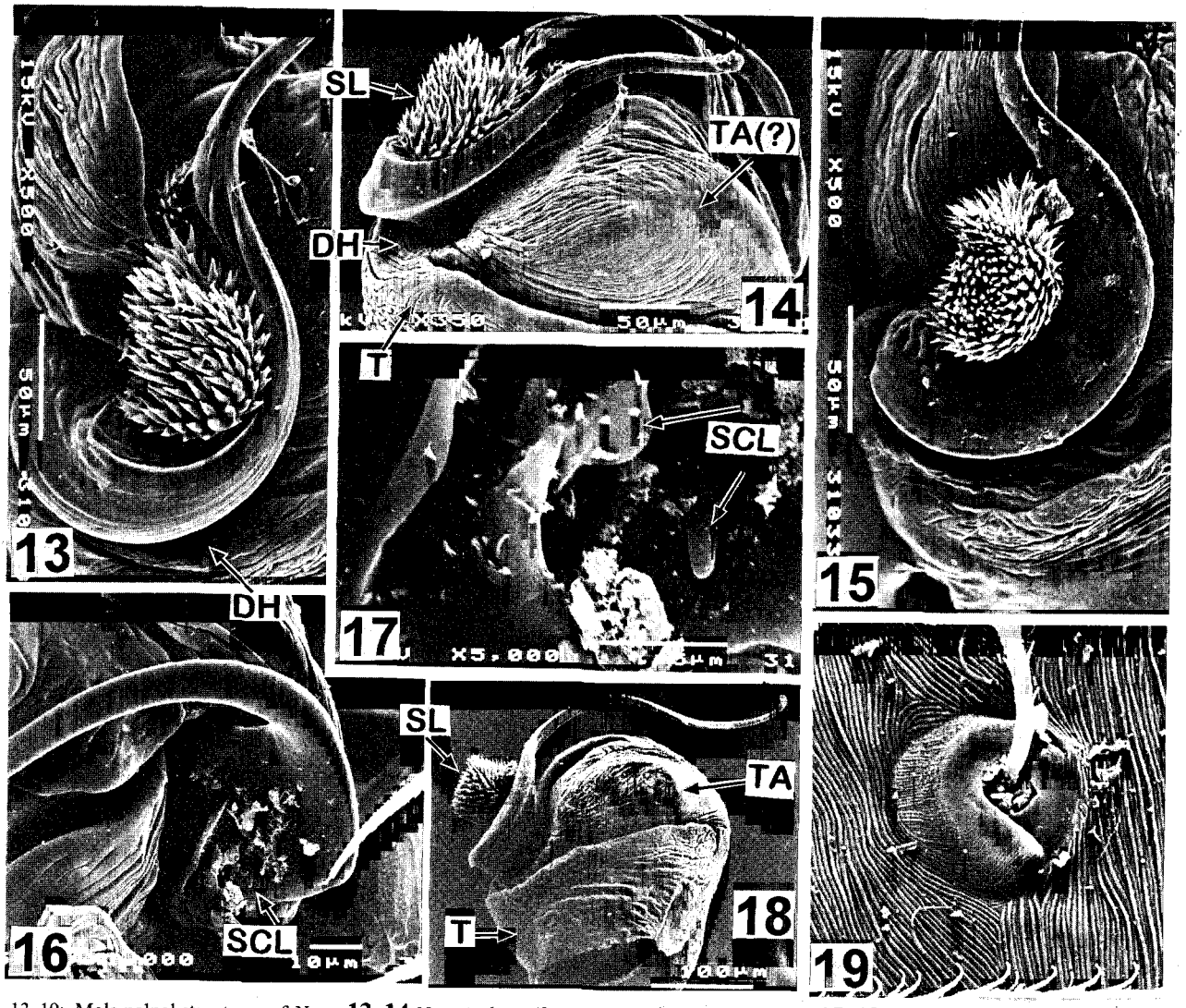
same structure of the spermathecae, i.e. presence of well marked primary and secondary receptacles. However, the fine structure of the palpus in *Sitticus* (especially its precise sclerite composition) has not yet been studied and hence the problem of uniting *Neon*, *Neonella* and *Sittĭcus* into a single group at a tribal or subfamilial level seems to need further investigation.

At present, 18 species have been included in *Neon* (see Prószyński, 1990; Ikeda, 1995; current data). Two subgenera have been recognised: *Neon* and *Dicroneon* (Lohmander, 1945; Gertsch & Ivie, 1955), differing in presence/absence of the spiculate lobe of the embolus and features of the spermathecae (cf. Figs. 28 and 30). The two *Neon* species reported from SE Asia belong to different subgenera (see below).

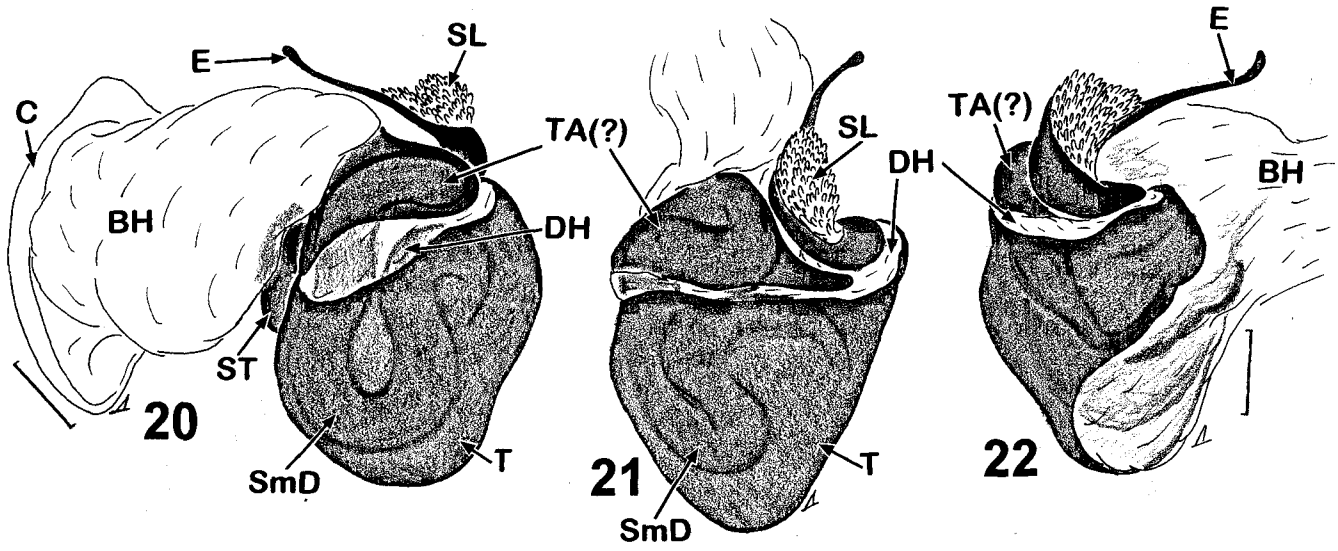
Distribution: The genus *Neon* seems to be restricted to the Holarctic and Oriental Regions. *Neon nigriceps* Bryant, described from Cuba, doubtless belongs to another genus (see Gertsch & Ivie, 1955).

Habitat: *Neon* species are typical residents of the litter in various types of forests.

Notes: During an SEM survey of the structure of pinnate scales in *Neon*, I found undescribed pore structures situated anteriorly on the dorsal surface of both the carapace (Figs. 1, 3, 5, 7–9) and abdomen (Figs. 10–12). These pores usually do not constitute separate fields, but sometimes may form small groups (Fig. 11). Two kinds of skin pores were found: CP_1 occurred only on the carapace of *N. sumatranus* (Figs. 1, 8, 9) and CP_2 was found both on the carapace and abdomen of various species (Figs. 3, 5, 7, 10–12). Pores of the first kind (CP_1) take the form of a triangular or elongate depression (Fig. 8), in the centre of which a pustule is situated (Fig. 9). The bottom of the CP_1 is also wrinkled (pleated) like the surrounding skin surface. Pores of the second kind (CP_2) differ in general appearance and look like a rounded or elongated, smooth cuticular patch with a pustule in its centre (Figs. 7, 10, 12). They may be single (Fig. 12) or situated in small groups (Fig. 11), with both isolated and grouped patches sometimes being found in the same species, e.g. in *N. minutus*. Skin pores of the second type are very



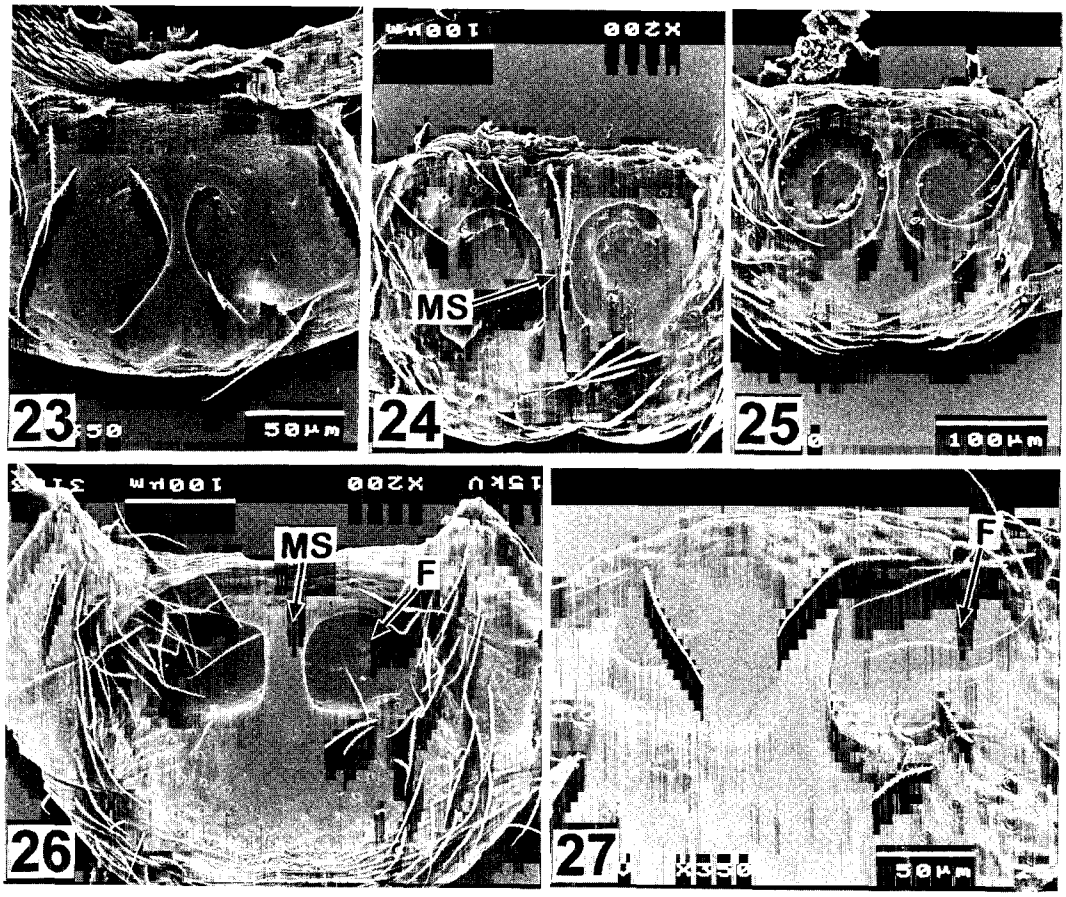
Figs. 13–19: Male palpal structures of *Neon*. **13, 14** *N. reticulatus* (from Finland), embolic division; **15, 18** *N. valentulus* (from Finland), embolic division (15) and palpal bulb (18); **16, 17** *N. sumatranus* (from Sumatra), embolic base with spicules; **19** *N. minutus* (from Taiwan), trichobothrial base.



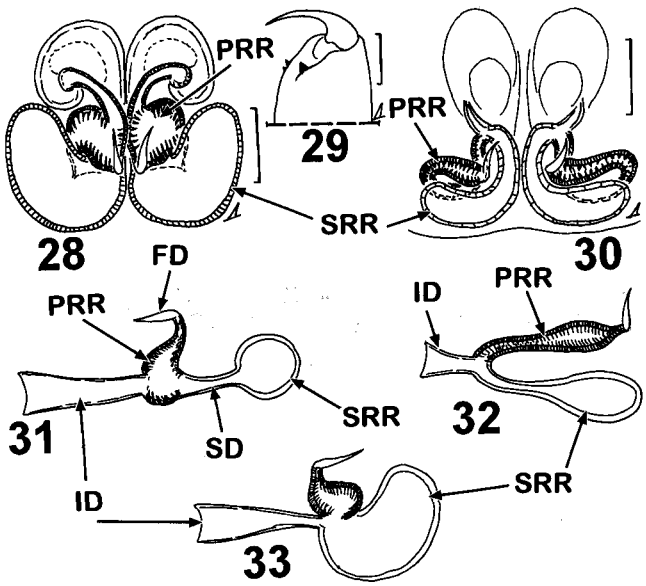
Figs. 20–22: Expanded male palp of *Neon reticulatus* (from the Caucasus). **20** Lateral view; **21** Ventro-mesal view; **22** Mesal view. Scale lines = 0.1 mm.

similar to the pustuliform organs described in *Cyrba* (Wanless, 1984) or to the presumably pheromone-emitting structures in wolf spiders (Kronestedt, 1986). Usually, each species possesses pores of either the first or the second kind, but *N. sumatranus* possesses both types: CP_1 on the carapace (Fig. 9) and CP_2 on the abdomen (Fig. 10). The function of the pore structures in *Neon* is unknown, but a pheromone-releasing one is most probable.

The occurrence of the skin pores in *Neon* suggests that pore structures could be more widespread among jumping spiders than previously thought, and most probably they cannot be considered a good synapomorphy for the Spartaeinae and *Cocalodes* group only (see Wanless, 1984).



Figs. 23–27: Epigynes of *Neon* species. **23** *N. sumatranus* (from Sumatra); **24** *N. laevis* (from Finland); **25** *N. minutus* (from Taiwan); **26** *N. reticulatus* (from Finland); **27** *N. robustus* (from Finland).



Figs. 28–33: Female genitalia and chelicerae of *Neon*. **28** *N. reticulatus* (from Finland); **29** *N. minutus* (from Taiwan); **30** *N. laevis* (from Kirghizstan); **31–33** Diagrammatic figures of spread spermathecae in the subgenera *Dicroneon* (31, 32) and *Neon* (33). Scale lines=0.1 mm.

Survey of SE Asian species

***Neon* (*Neon*) *minutus* Żabka, 1985** (Figs. 5, 6, 11, 12, 19, 25, 29, 34–41)

Neon minutus Żabka, 1985: 420–421, figs. 372–377 (male holotype and female allotype from UT examined).

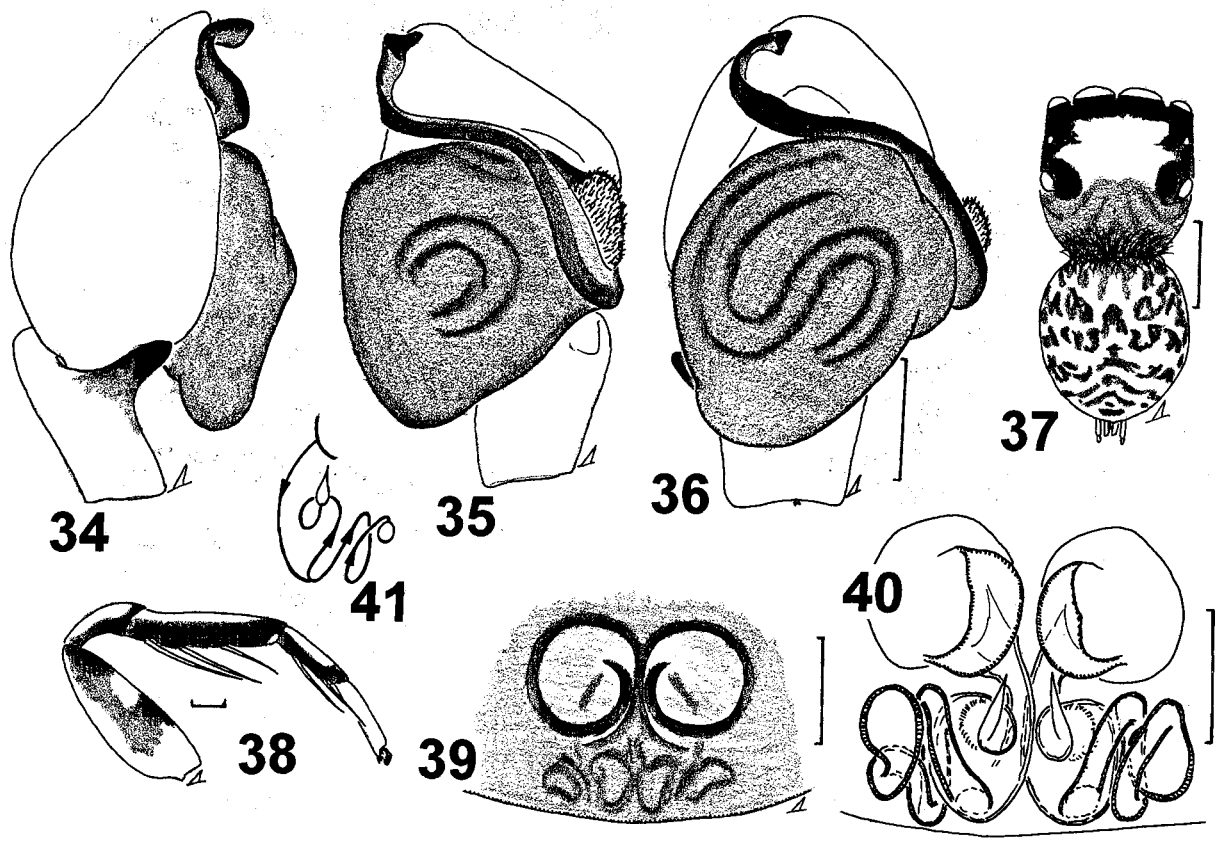
Material examined: VIETNAM: 1♂ 1♀ (UT, holotype and allotype), Quang Ninh, Ha Long, brook valley in jungle slope, 30 m elev., 11 October 1978 (P. T. Lehtinen). TAIWAN: 1♀ (UT), 1♀ (ISE), Nanton Co., Alishan Mt., Wushe, dry litter in fern bush, 5 November 1987 (P. T. Lehtinen); 2♀, 2 juv. (UT), Nanton Co., Wushe W Wanda River, 1700 m elev., wet moss at base of roadside cutting, 5 November 1987 (P. T. Lehtinen).

Diagnosis: This species differs from all other known species of *Neon* in having the strongest and thickest embolus and the longest SD. See also comments under "Diagnosis" of *N. sumatranus*.

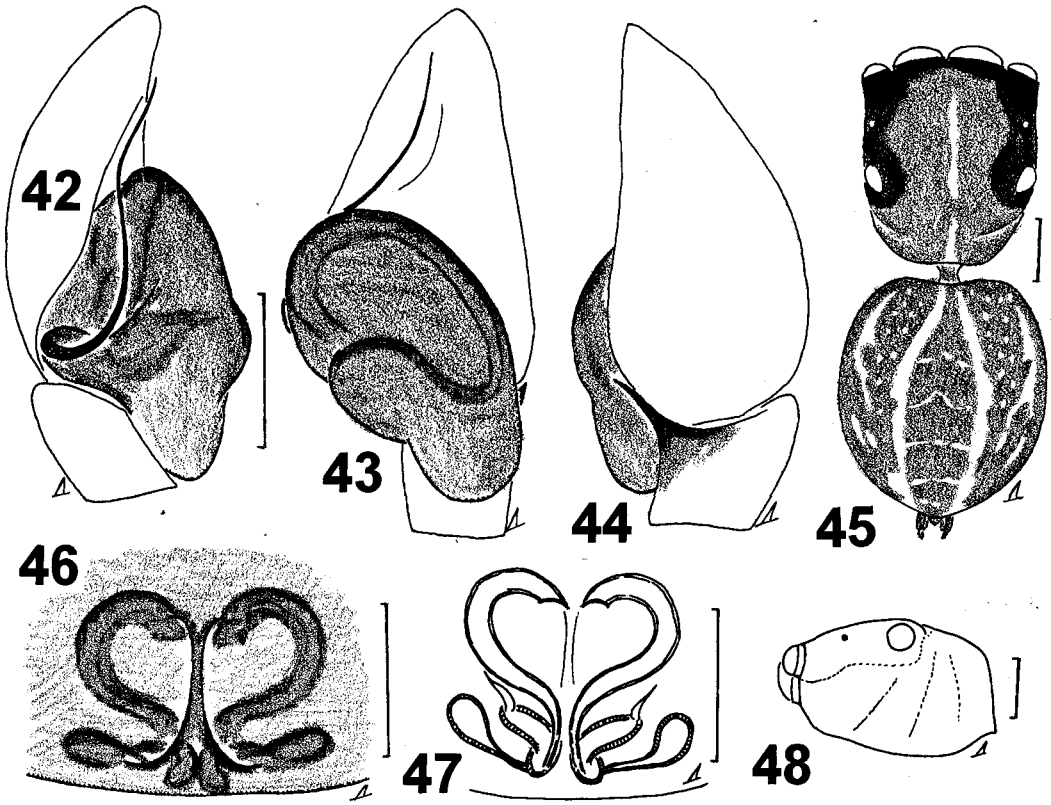
Distribution: Vietnam, Taiwan and Japan (Honshu, Kyushu) (Żabka, 1985; Ikeda, 1995; current data).

Description: *Male* (holotype): Carapace 0.96 long, 0.77 wide, 0.51 high at PLE. Ocular area 0.66 long, 0.77 wide anteriorly and 0.80 wide posteriorly. Diameter of AME 0.23. Abdomen 0.96 long, 0.74 wide. Cheliceral length 0.24. Clypeal height 0.06. Length of leg segments: I 0.56+0.29+0.39+0.29+0.23; II-III absent in holotype; IV 0.57+0.25+0.37+0.40+0.26. Leg spination: I: Tb v 2-2-2ap; Mt v 2-2ap. Other legs absent or spines destroyed. Holotype badly damaged and faded, but its coloration seems to be the same as described for females. Palpal structure as in Figs. 34–36.

Female (from Taiwan): Carapace 1.08 long, 0.88 wide, 0.57 high at PLE. Ocular area 0.76 long, 0.89 wide anteriorly and 0.90 wide posteriorly. Diameter of AME 0.24. Abdomen 0.96 long, 0.81 wide. Cheliceral length 0.26. Clypeal height 0.07. Length of leg segments:



Figs. 34–41: *Neon minutus* (male holotype from Vietnam; female from Taiwan). **34** Male palp, lateral view; **35** Ditto, ventro-mesal view; **36** Ditto, ventral view; **37** Female body coloration; **38** Female first leg, prolateral view; **39** Epigyne; **40** Spermathecae; **41** Schematic course of spermathecal channels. Scale lines=0.1 mm (34–36, 38–40), 0.5 mm (37).



Figs: 42–48: *Neon sumatranus*, sp. n. (paratypes from Sumatra). **42** Male palp, mesal view; **43** Ditto, ventral view; **44** Ditto, lateral view; **45** Female body coloration; **46** Epigyne; **47** Spermathecae; **48** Female carapace, lateral view. Scale lines=0.1 mm (42–44, 46–47), 0.25 mm (45, 48).

I 0.59+0.27+0.43+0.30+0.23; II 0.51+0.26+0.33+0.26+0.24; III 0.59+0.23+0.34+0.34+0.24; IV 0.66+0.29+0.44+0.46+0.29. Leg spination: I: Tb v 2-2-2ap; Mt v 2-2ap. II: Tb pr 0-1, v 1-1-1; Mt v 2-2ap. III: Tb pr 0-1; Mt 6ap. IV: Mt 6ap. Coloration: Carapace yellow, tinged with brown and sparsely covered with light hairs. Eye field yellow, but black around eyes (Fig. 37). Clypeus yellow to greyish-yellow. Sternum, maxillae, labium and chelicerae yellow. Abdomen yellow, with greyish markings on dorsum (Fig. 37); venter yellow. Book-lung covers and spinnerets yellow to greyish-yellow. Legs and pedipalps yellow, with greyish rings, but leg I prolaterally with black longitudinal stripe (Fig. 38). Epigyne and spermathecae as in Figs. 39, 40.

***Neon (Dicroneon) sumatranus*, sp. n.** (Figs. 1, 2, 8–10, 16, 17, 23, 42–48)

Type material: Holotype ♂ (UT), Indonesia, Sumatra Utara Distr., Tapanuli Utara, Aok Natolu, in thicket jungle litter, 24 September 1978 (P. T. Lehtinen). Paratypes: INDONESIA: 3♀ (UT), together with holotype; 1♂ (UT), 1♂ (ISE), Sumatra Utara Distr., Sinalungun, Sinarpalatuk, Bangun Dolok, 23 September 1978 (P. T. Lehtinen); 1♀ (UT), Sumatra Utara Deli, Servang, Dulok Merawan, fern bush in rubber plantation, 22 September 1978 (P. T. Lehtinen). PAPUA NEW GUINEA: 1♀ (UT), Milne Bay, Goodenough I, Bolu Bolu, high grass and bush, 1 March 1974 (P. T. Lehtinen). MALAYSIA: 1♀ (ISE), Sabah, Sandakan d., jungle slope within town, 6 November 1979 (P. T. Lehtinen); 3♂ (UT), Sabah, Sandakan d., Till Hill, litter of secondary forest, 5 November 1979 (P. T. Lehtinen).

Etymology: The specific epithet refers to the type locality.

Diagnosis: The striped coloration of this species (Fig. 45) differs from that of all other known *Neon* species. From the other SE Asian species, *N. minutus*, the new species is separated by absence of the spiculate lobe at the base of the embolus and by the shape of the tegulum, as well as by the female genitalia structure.

Distribution: Indonesia, Malaysia and Papua New Guinea.

Description: *Male* (paratype from Malaysia): Carapace 0.77 long, 0.63 wide, 0.40 high at PLE. Ocular area 0.46 long, 0.69 wide anteriorly and 0.61 wide posteriorly. Diameter of AME 0.20. Abdomen 0.64 long, 0.58 wide. Cheliceral length 0.19. Clypeal height 0.06. Length of leg segments: I 0.39+0.20+0.21+0.17+0.16; II 0.33+0.16+0.17+0.16+0.16; III 0.39+0.18+0.21+0.17+0.19; IV 0.36+0.17+0.24+0.23+0.21. Leg spination: I: Tb v 2-2-2ap; Mt v 2-2ap. II: Tb v 1-0; Mt v 2-2ap. III: Tb pr 0-1; Mt v 1-2ap, pr and rt 2ap. IV: Mt 6ap. Coloration: Carapace yellow-brownish, sparsely covered with light hairs, with thin median longitudinal yellow stripe. Black around eyes. Clypeus and "cheeks" yellow-brownish, hairless. Sternum completely yellow or slightly tinged with brown. Maxillae and labium as sternum, but their apexes white. Chelicerae yellow to brownish-yellow. Abdomen yellow-brownish to yellow; dorsum with 2 longitudinal median yellow stripes and a pair of stripes on sides; venter greyish-yellow to yellow.

Book-lung covers and spinnerets greyish-yellow to grey. Abdomen anteriorly with a bunch of dark long hairs. All legs yellow with pale brownish rings. Palpal structure as in Figs. 42–44.

Female (paratype from Sumatra): Carapace 0.89 long, 0.74 wide, 0.51 high at PLE. Ocular area 0.61 long, 0.74 wide anteriorly and 0.74 wide posteriorly. Diameter of AME 0.24. Abdomen 0.93 long, 0.80 wide. Cheliceral length 0.23. Clypeal height 0.06. Length of leg segments: I 0.49+0.24+0.31+0.20+0.20; II 0.43+0.19+0.24+0.20+0.17; III 0.47+0.23+0.24+0.27+0.20; IV 0.51+0.21+0.31+0.33+0.21. Leg spination: I: Tb v 2-2-2ap; Mt v 2-2ap. II: Tb pr 0-1-0, v 1-1; Mt v 2-2ap. III: Tb pr 0-1; Mt v 1-2ap; pr and rt 2ap. IV: Mt 6ap. Coloration as in male, but lighter (Fig. 45). Pedipalps yellowish-brown, but tarsi light yellow in their distal halves. Epigyne and spermathecae as in Figs. 46, 47.

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