



ORB-WEAVING SPIDERS OF BANGLADESH : GENUS NEOSCONA SIMON (ARANEAE : ARANEIDAE)

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INTRODUCTION

Members of the orb-weaving spider family Araneidae (= Argiopidae) are abundant throughout Bangladesh. Genus *Neoscona* Simon are common orb-weavers in the crop-fields and gardens but works on this spiders in Bangladesh, are poorly known (Chowdhury & Pal, 1984 ; Biswas, *et al.*, 1993; Okuma, *et al.*, 1993; Begum & Biswas, 1997). Although, several contributions are found in different countries like-India (Tikader & Bal, 1981; Tikader & Biswas, 1981; Tikader, 1982; Gajbe & Gajbe, 2000; Bhandari & Gajbe, 2001), China (Chen & Zhang, 1991; Yin, *et al.*, 1997; Song, *et al.*, 1999), Japan (Yaginuma, 1986), Australia (Davies, 1988), Philippines (Barrion & Litsinger, 1995) and USA (Barman & Levi, 1971; Levi, 1992).

Present paper contains a report of 11 (eleven) species of the genus *Neoscona* Simon of which 4 (four) species are described as new to science and other 7 (seven) species are recorded for the first time from Bangladesh.

Materials were studied in the laboratory following Berman and Levi (1971), Levi (1992), Tikader (1982, 87), Tikader and Bal (1981), Yaginuma (1986), Chen and Zhang (1991), Yin, *et al.* (1997), Barrion and Litsinger (1995) and Song, *et al.*, (1999). The identity of the species were later confirmed from the Zoological Survey of India, Kolkata.

The types are at present in the collection of the Department of Zoology, Govt. P.C. College,

Bagerhat and will be deposited to the Museum of the Department of Zoology, University of Dhaka, Bangladesh.

SYSTEMATICS

Genus : *Neoscona* Simon, 1864

1864. *Neoscona* Simon, *Hist. nat. des Araign.*, **1** : 261.
1924. *Chinestela* : Chamberlin, *Proc. U.S. natn. Mus.*, **63**(13) : 20.
1926. *Cubanella* : Franganillo, *Bolan Soc. ent. Esp.*, **9** : 69.
1940. *Neoscona* : Comstock, *The Spider Book*, : 509.
1951. *Firovixia* : Archer, *Am. Mus. Novit.*, **1487** : 34.
1960. *Neoscona* : Yaginuma, *Spiders of Japan in color* : 56-57.
1971. *Neoscona* : Levi, *Bull. Mus. Comp. Zool.*, **14**(8) : 465.
1981. *Neoscona* : Tikader & Ball, *Rec. zool. Surv. India*, Occ. pap. no. 24 :
1982. *Neoscona* : Tikader, *Fauna of India, Araneidae*, **2**(1) : 238.
1986. *Neoscona* : Yaginuma, *Spiders of Japan in color* : 395.
1988. *Neoscona* : Davies, *Mem. Qld. Mus.*, **25**(2) : 21.
1989. *Neoscona* : Koh, *Guide to Singapore Spiders* : 32.
1991. *Neoscona* : Chen & Zhang, *Fauna of Zhejiang, Araneida* : 119.
1993. *Neoscona* : Okuma, *Illustr. Monogr. Ricefield spiders Bangladesh* : 82.
1995. *Neoscona* : Barrion & Litsinger, *Riceland spiders of south and southeast Asia* : 612.
1997. *Neoscona* : Platnick, *Adv. Spider Taxonomy* : 512.
1997. *Neoscona* : Yin, *et al.*, *Fauna Sinica, Araneidae*, : 412.

1999. *Neoscona* : Song, *et al.*, *The spiders of China*, :245.
2004. *Neoscona* : Gajbe, *Rec. zool. Surv. India*, Occ. pap. no. 227: 12.
2004. *Neoscona* : Majumder, *Mem. Zool. Surv. India*, 20(2):14.
2006. *Neoscona* : Platnick, *World Spider Cat.*, version 6.5 : 612.
2009. *Neoscona* : Biswas : In Ahmed (ed.), *Flora & Fauna of Bangladesh*, Arachn., 18(1) :145.

Diagnosis : Spiders of this genus are small to medium in size. The females are usually larger than the males. Thoracic region with a longitudinal groove. Ocular quad forming a trapezium; lateral eyes close and not situated one any tubercle; anteromedian eyes largest or subequal to the posteromedians; posterolateral eyes smallest; both rows of eyes recurved. In male, coxa I ventrally provided with a hook on the distal rim ; tibia II having macrosetae (spine like) on prolateral surface.

Abdomen oval or sub-oval, triangular or sub-triangular. Epigyne tongue-like; scape completely fused to the base and provided with 1 or 2 pairs of lateral lobes; epigynal openings situated on the underneath of scape. Male palpal patella provided with 2 long, curved and strong spines; Cymbium broad and rather narrow and strip-like.

Type-species : *Neoscona anabesca* (Walckenaer).

Distribution : All over the world.

Key to the species

1. Cervical furrows deeply distinct2
 - Cervical furrows absent or weakly impressed7
2. Abdomen rhomboid or roughly triangular.....3
 - Abdomen globoid or elongately oval4
3. Abdomen rhomboid ; thoracic fovea round; each of cheliceral margins with 3 teeth (fig. 25) fang segmented; epigyne and internal genitalia as in figs 28 and 29.....*laglezei*
 - Abdomen triangular ; thoracic fovea elongate; each of cheliceral margins with 2 teeth (fig. 2); fang unsegmented; epigyne and internal genitalia as in figs. 5 and 6*bengalensis*
4. Abdomen elongately oval, with a white median longitudinal dorsal band; epigyne strongly produced and constricted at base (fig. 41) cephalic region transversely rectangular; internal genitalia as in fig. 42 *mukerjei*
 - Abdomen globoid, never with such band; epigyne not so produced and constricted; cephalic region never rectangular; internal genitalia never as above.....5
5. Abdomen dorsally decorated and without any sigilla; inner margin of chelicerae with 3 teeth6
 - Abdomen dorsally not decorated but with sigilla; inner margin of chelicerae with 2 teeth (fig. 51); epigyne and internal genitalia as in figs. 54 and 55*nautica*
6. Cephalothorax globular; sternum nearly heart shaped, medially broad; chelicerae not spined and with 2 teeth on outer margin (fig. 9); epigyne and internal genitalia as in figs. 12 and 13*elliptica*
 - Cephalothorax elongate; sternum elongate, never broad medially; chelicerae spined and with 1 tooth on outer as in fig. 20*kabiri n. sp.*
7. Abdomen globase8
 - Abdomen elongately oval9
8. Cephalothorax and abdomen with a central longitudinal band; sternum nearly rounded; inner and outer margins of chelicerae with 1 and 2 teeth (fig. 58; epigyne as in fig. 61.....*rahamani n. sp.*
 - Cephalothorax and abdomen without any such band; sternum heart shaped; inner and outer margins of chelicerae with 3 and 1 teeth (fig. 46); epigyne as in fig. 49.....*nasidae n. sp.*
9. Epigyne tongue-shaped; cheliceral margins with more teeth (fig. 63); thoracic region in male with longitudinal median fovea; internal genitalia as in fig. 67.....*theis*
 - Epigyne never tongue-shaped ; cheliceral margins with few teeth.....10
10. Cephalothorax medially with a longitudinal band; abdomen dorsally with a pair of sigilla; sternum centrally with ovoid, white marking; outer margin of chelicerae with 1 tooth (fig. 15); labium basally rounded, apically truncate (fig.16); epigyne as a fig. 18*govindai n. sp.*
 - Cephalothorax without any decoration; abdomen dorsally without any sigilla; sternum without any such marking; outer margin of chelicerae with 2 teeth (fig. 31); labium basally truncate, apically convex (fig. 32); epigyne as in fig. 34.....*molemensis*

Table-1: Measurements (mm) of leg segments of *Neoscona govindai* n. sp.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	4.10/4.10	1.00/1.00	3.00/3.00	3.00/3.00	0.80/0.80	11.90/11.90
II	2.50/2.50	0.80/0.80	2.50/2.50	2.50/2.50	0.60/0.60	8.90/8.90
III	3.00/3.00	0.50/0.50	1.20/1.20	1.40/1.40	0.80/0.80	6.90/6.90
IV	3.50/3.50	1.00/1.00	2.50/2.50	2.50/2.50	0.80/0.80	10.30/10.30

1. *Neoscona bengalensis* Tikader & Bal
(Figs. 1-6)

1981. *Neoscona bengalensis* Tikader & Bal, Rec.zool. surv. India, **24**:15.

1982. *Neoscona bengalensis* : Tikader, Fauna of India, spiders, **2**(1):246.

Material examined : 2♀ , Jhenidah, 12. V. 1992, Coll. V. Biswas ; 1♀ , Manikganj, 9. VII. 1991, Coll. V. Biswas ; 1♀ , Rajshahi, 3. III. 1992, Coll. V. Biswas.

Distribution : BANGLADESH : Jhenidah, Manikganj, Rajshahi ; INDIA (Tikader, 1982)

2. *Neoscona elliptica* Tikader & Bal
(Figs. 7-13)

1981. *Neoscona elliptica* Tikader & Bal, Rec. zool. Surv. India, **24**:24.

1982. *Neoscona elliptica* : Tikader, Fauna of India, Spiders, **2**(1):259.

1991. *Neoscona elliptica* : Yin, et al., Fauna Sinica, Spiders, : 347.

1999. *Neoscona elliptica* : Song, et al., The Spiders of China, :299.

Material examined : 1♀ , Chittagong, 12. IX. 1991, Coll. V. Biswas ; 1♀ , ADI, Faridpur, 12. XI. 1992, Coll. V. Biswas ; 2♀ , Jhenidah, 18. V. 1990, Coll. V. Biswas ; 1♀ , Mymensingh, 5. VII. 1992, Coll. V. Biswas ; 1♀ , Rajshahi, 3. III. 1992, Coll. V. Biswas.

General : Cephalothorax reddish-brown ; legs brown with dark brown spines ; abdomen brown with white patches. Total body length 12.60 mm. Carapace 4.80 mm long, 4.20 mm wide ; abdomen 7.80 mm long and 6.00 mm wide.

Distribution : BANGLADESH : Chittagong, Faridpur, Jhenidah, Mymensingh, Rajshahi;

INDIA ; CHINA (TiKader, 1982 ; Yin, et. al, 1997 ; Song, et. al., 1999).

3. *Neoscona govindai* n. sp.
(Figs. 14-18)

General : Cephalothorax brownish-yellow ; legs yellow. Abdomen brownish with longitudinal white band. Total body length (holotype) 7.00mm. Carapace 3.00mm long and 2.80mm wide. Abdomen 4.00mm long and 3.00mm wide.

Cephalothorax : Elongately oval, posteriorly broad, anteriorly narrowing, longer than wide, dorsal ridge dark-brown; cephalic region slightly raised; ocular area brown. Eyes similar, lateral eyes forming a protuberance anterolaterally; anterior row strongly recurved while posterior row weakly so; ocular quad rectangular, wider than long. Chelicerae brown, broad medially; each of inner and outer margins with 2 and 1 tooth respectively (fig. 15). Maxillae yellow-brown, broad, longer than wide, scopulate near base (fig-16). Labium brown, wider than long, scopulate anteriorly (fig. 16). Sternum brown, nearly heart-shaped anteriorly broad, medially with a white, oval, patch, posteriorly produced and pointed (fig.19). Legs long and slender; leg formula 1423 and the measurements (in mm) as in Table-1.

Abdomen : Broad, oval, medially wide and narrowing at both ends, clothed with fine hairs; dorsum with yellow-brown and white longitudinal band, this on either side with 2 dark brown spots; epigyne as in fig. 18.

Holotype : Female in spirit.

Male : Unknown.

Type-locality : Jhenidah, Bangladesh.

Table-2 : Measurements (in mm) of 1eg segments of *Neoscona kabiri* n. sp.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	2.00/2.00	0.50/0.50	1.00/1.00	2.00/2.00	0.90/0.90	6.40/6.40
II	2.00/2.00	0.80/0.80	1.70/1.70	1.70/1.70	0.90/0.90	7.10/7.10
III	1.50/1.50	0.30/0.30	0.80/0.80	1.00/1.00	0.80/0.80	4.40/4.40
IV	2.10/2.10	0.80/0.80	1.90/1.90	1.50/1.50	0.90/0.90	7.20/7.20

Etymology : The species has been named after Shri Govinda Lal Ghosh, BCIC Dhaka, Bangladesh, who use to inspire the first author throughout the course of this study.

Remarks : None of the other congeners of *Neoscona* (Tikader, 1982 ; Tikader & Bal, 1981 ; Zhao, 1993 ; Yaginuma, 1986 ; Yin, *et al.*, 1997 ; Song, *et al.*, 1999 ; Barrion & Litsinger, 1995 ; Shinkai & Takano, 1984 ; Davies, 1988) appear close to the present species *N. govindai* n. sp., excepting *N. elliptica* Tikader & Bal (Tikader, 1982 ; Tikader & Ba1,1981). The species stands distinct in not having produced cephalic region, cervical furrows, fovea, irregularly distributed scally reticulation and too many sigilla over the abdomen and bluntly conical epigynum. The species is therefore, described as new to science.

4. *Neoscona kabiri* n. sp.
(Fig. 19-23)

General : Cephalothorax brown ; legs yellowish-brown ; abdomen yellowish, dorsally with brown bands. Total body length 7.40mm; carapace 3.20mm long and 3.00mm wide ; abdomen 4.20mm long and 4.00mm wide.

Cephalothorax : Elongately ovoid, posteriorly broad, anteriorly narrowing, longer than wide, clothed with fine spines; dorsum centrally with an elevated longitudinal ridge extending almost upto the entire length ; cervical furrows and radii distinct ; cephalic region dark brown, raised. Eyes pearly-white ; anterior row of eyes more recurved than posterior row; antero-median eyes widely seperated and slightly larger than posteromedians; lateral eyes close ; ocular quad anteriorly wide and posteriorly narrowed. Chelicerae brown, strong, broad basally, clothed with strong spines; each of inner and outer

margins with 3 and 1 tooth respectively (fig. 20). Maxillae yellow brown, broad, medially wide and scopulate anteriorly (fig.21), Labium yellow-brown, medially board and anteriorly scopulate (fig.21). Sternum long, cylindrical, posteriorly narrowed and pointed (fig. 22). Legs long and slender, clothed with hairs and strong spines.; leg formula 4213 and the measurements (in mm) as in Table-2.

Abdomen : Broad, rounded, longer than wide, clothed with fine hairs and pubescence ; dorsum with both longitudinal and transverse blackish brown bands ; epigyne produced, medially concave (fig.23).

Material examined : Type-data : Holotype : 0 in spirit, will be deposited in the museum of the Department of Zoology, University of Dhaka, Bangladesh.

Type-locality : districts Comilla and Jessore, dated 12.VII.1992 and 28.Ix.1993, Coll. V. Biswas.

Paratype : 10, Jessore, 28.Ix,1993, Coll. V. Biswas.

Distribution : BANGLADESH : Comilla and Jessore.

Etymology : The species has been named after Professor S.M.H. Kabir, Department of Zoology, University of Dhaka, Bangladesh.

Remarks : Comparison with congeners (Tikader & Bal, 1981; Tikader, 1982; Shinkai & Takano, 1984; Yin, *et al.*, 1997; Chen & Zhang, 1991; Yaginuma, 1986; Kaston, 1948; Song, *et al.*, 1999; Barrion & Litsinger, 1995; Bernan & Levi, 1971; Levi, 1992) of *Neoscona* the present species shows a similarity in the general appearance with that of *N. scylla* (Karsh) (Chen & Zhang, 1991 ; Yin, *et al.*, 1997; Song, *et al.*, 1999). But the epigynum

appears much different. The closest ally of the species appears to be *N. mukerjei* Tikader (Tikader, 1982) but stands distinct in having a long cephalothoracic band medially, deeply distinct cervical furrows, globose subtriangular abdomen which is anteriorly truncate, epigynum short, constricted at basal 1/3rd pointed distally. These sufficiently justify its erection as a new species.

5. *Neoscona lagiizei* (Simon)
(Figs. 24-29)

Material examined : 20, Bagerhat, 12.VIII.1993, Coll. V. Biswas; 10, Barisal, 19. V. 1992, Coll. V. Biswas; 20, Noakhali, 12.IX.1994, Coll. V. Biswas; 10, Dhaka, 16.IX. 1994, Coll. V. Biswas; 10, Manikganj, 18. XI.1993, Coll. V. Biswas.

General : Cephalothorax yellowish; legs yellowish with blackish colour; abdomen greyish yellow with white hairs. Total body length 8.50mm. Carapace 3.10mm long and 2.60mm wide; abdomen 6.20mm long and 4.85 mm wide.

Distribution : BANGLADESH: Bagerhat, Barisal, Noakhali, Dhaka, Manikganj; AUSTRALIA; BURMA; INDIA; INDONESIA; SRILANKA (Tikader, 1982).

6. *Neoscona molemensis* Tikader & Bal
(Figs. 30-36)

1981. *Neoscona molemensis* Tikader & Bal, *Rec. zool. surv.* India, occ, pap. No. 24:22.

1982. *Neoscona molemensis* : Tikader, Fauna of India, Spiders 2(1):257.

1995. *Neoscona molemensis* : Barrion & Litsinger, Riceland spiders of South and S. Asia, :627.

1997. *Neoscona molemensis* : Platnick, Adv. Spider Taxonomy, :523.

Material examined : 20, Barisal, 28.VII, 1992, Coll. V. Biswas; 20, Pabna, 12.VIII.1993, Coll. V. Biswas; 10, Narayanganj, 12.III.1991, Coll. V. Biswas; 20, Rajshahi, 18.III.1992, Coll. V. Biswas.

General : Cephalothorax and abdomen brown; legs orange brown. Total body length 5.90 mm. Carapace 2.20 mm long, 1.90 mm wide; abdomen 3.70 mm long and 3.20 mm wide.

Distribution : BANGLADESH: Barisal, Pabna, Narayanganj, Rajshahi; INDIA; INDONESIA; PHILIPPINES (Platnick, 1997).

7. *Neoscona mukerjei* Tikader
(Figs. 37-44)

1980. *Neoscona mukerjei* Tikader, *Proc. Indian Acad. Sci.*, 89(3):247.

1981. *Neoscona mukerjei* : Tikader & Bal, *Rec. zool. Surv.* India, Occ. pap. 24:17.

1982. *Neoscona mukerjei* : Tikader, Fauna of India, Spiders, 2(1):248.

1992. *Neoscona mukerjei* : Biswas & Biswas, Fauna of West Bengal, Spiders:467.

Material examined: 10, ADI, Faridpur, 24.X.1991, Coll. V. Biswas; 20, BARI, Jessore, 21.II.1991, Coll. V. Biswas; 20, Manikganj, 12. III. 1990, Coll. V. Biswas; 20, Mymwensingh, 18. IX. 1992, Coll. V. Biswas; 20, Moulvibazar, Sylhet, 29. XII.1993, Coll. V. Biswas.

General : Cephalothorax and legs orange-brown; abdomen brown with black and yellow patches. Total body length (female) 9.50 mm. Carapace 4.00 mm long, 3.35 mm wide; abdomen 5.50 mm long and 6.00 mm wide. Total body length (male) 8.00 mm. Carapace 3.00 mm long, 3.10 mm wide; abdomen 5.00 mm long and 5.10 mm wide.

Distribution: BANGLADESH: Faridpur, Jessore, Manikganj, Mymensingh, Noakhali, Sylhet; INDIA.

8. *Neoscona nasidae* n. sp.
(Figs. 45-49)

General : Cephalothorax and legs brown; abdomen yellowish brown with white patches. Total body length (holotype) 9.00 mm. Carapace 3.90 mm long and 3.40 mm wide. Abdomen 5.10 mm long and 4.80 mm wide.

Cephalothorax : Elongately oval, posteriorly broad and anteriorly narrow, longer than wide, clothed with long spine-like hairs; cephalic region slightly raised; ocular area brownish. Eyes similar; both row of eyes recurved, anteromedian eyes widely separated, posteromedians close; lateral eyes closed; ocular quad anteriorly wide

Table-3 : Measurements (in mm) of leg segments of *Neoscona nasidae* n. sp.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	4.00/4.00	1.00/1.00	3.00/3.00	3.00/3.00	0.80/0.80	11.80/11.80
II	2.50/2.50	0.80/0.80	2.50/2.50	2.50/2.50	0.60/0.60	8.90/8.90
III	3.00/3.00	0.50/0.50	1.20/1.20	1.40/1.40	0.80/0.80	6.90/6.90
IV	3.50/3.50	1.00/1.00	2.50/2.50	2.50/2.50	0.80/0.80	10.30/10.30

and posteriorly narrowed. Chelicerae brown, each of inner and outer margins with 3 and 1 teeth respectively (fig. 51). Maxillae brown, leaf-like, longer than wide and anteriorly scopulate (fig-52). Labium wider than long, anteriorly produced and without scopulae (fig. 52). Sternum brown, heart-shaped, clothed with sharp spines, anteriorly wide and posteriorly pointed (fig-53). Legs long and slender, clothed with hairs and spines; leg formula 1423 and the measurements (in mm) as in Table-3. Male unknown.

Abdomen : Globose, medially broad, narrowed at both ends, clothed with spines and hairs; dorsum decorated with irregular white patches; ventrally pale. Epigyne as in fig. 49.

Holotype : Female in spirit.

Male : Unknown.

Type-locality : BANGLADESH : Faridpur and Potuakhali.

Etymology : The species has been named after Professor Dr. Nasida Banu, Department of Zoology, University of Dhaka, Bangladesh.

Remarks : None of the congeners (Tikader, 1982; Yin, *et. al.*, 1997; Yaginuma, 1986; Chen & Zhang, 1991; Shinkai & Takano, 1984; Kaston, 1948; Comstock, 1995; Levi & Levi, 1968; Berman & Levi, 1971; Levi, 1992; Davies, 1938; Zhao, 1993; Barrion & Litsinger, 1995; Song, *et. al.*, 1999) of *Neoscona* seem to possess strongly globose abdomen and the typical epigynum. And therefore, the species is considered as new to science.

9. *Neoscona nautica* (Koch)

(Figs. 50-55)

1875. *Epeira nautica* Koch, *Aegypt. Abyssin Arachn. Jickeli*, :17.

1877. *Epeira pullata* : Thorell, *Annali. Mus. civ. Genova*, **10** :385.

1885. *Epeira volucripes* : Keyserling, *Verh. zool. bot. Ges. Wein*, **34**:528.

1900. *Araneus nauticus* : Pocock, *Fauna Brit. India, Arachn.*, :228.

1904. *Neoscona volucripes* : F.O.P Cambridge, *Biologia cent. am.*, **2**:473.

1907. *Araneus nauticus* : Simon, *Annali. Mus. civ. Genova*, **43**:290.

1930. *Neoscona nautica* : Petrunkevitch, *Trans. Conn. Acad. Arts. Sci.*, **30**:320.

1960. *Neoscona nautica* : Yaginuma, *Spiders of Japan in color*, :56.

1971. *Neoscona nautica* : Levi, *Bull. Mus. Comp. Zool. Harv.*, **141**(8):489.

1981. *Neoscona nautica* : Tikader & Bal, *Rec. Zool. Surv. India, Occ. pap.* **24**:12.

1982. *Neoscona nautica* : Tikader, *Fauna of India, Araneidea*, **2**(1):242.

1986. *Neoscona nautica* : Yaginuma, *Spiders of Japan in color*, :105.

1989. *Neoscona nautica* : Koh, *Guide to Singapore Spiders* : 38.

1991. *Neoscona nautica* : Chen & Zhang, *Fauna of Zhejiang, Araneida* :115.

1993. *Neoscona nautica* : Zhao, *Spiders in the cotton fields in China* :253.

1995. *Neoscona nautica* : Barrion & Litsinger, *Riceland spiders of South and Southeast Asia* :629.

1997. *Neoscona nautica* : Platnick, *Adv. in Spider Taxonomy* :

1997. *Neoscona nautica* : Yin, *et al.*, *Fauna Sinica, Araneidae* :

1999. *Neoscona nautica* : Song, *et al.*, *The Spiders of China*, :

2004. *Neoscona nautica* : Majumder, *Mem. Zool. Surv. India*, **20**(2):9.

Table-4 : Measurements (in mm) of leg segments of *Neoscona rahamani* n. sp.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	4.00/4.00	1.00/1.00	3.00/3.00	3.00/3.00	0.80/0.80	11.80/11.80
II	2.50/2.50	0.80/0.80	2.50/2.50	2.50/2.50	0.60/0.60	8.90/8.90
III	3.00/3.00	0.50/0.50	1.20/1.20	1.40/1.40	0.80/0.80	6.90/6.90
IV	3.50/3.50	1.00/1.00	2.50/2.50	2.50/2.50	0.80/0.80	10.30/10.30

Material examined : 10, Bagerhat, 12. V. 1990 Coll V. Biswas; 10, BRRI, Joydevpur, Gazipur, 18. VIII. 1992 Coll V. Biswas; 20, Jhenidah, 10. VII. 1991 Coll V. Biswas; 10, Manikganj 5. V. 1992 Coll V. Biswas; 20, Mymensingh, 23. IX. 1992 Coll V. Biswas; 20, Rangpur, 18. V. 1993 Coll V. Biswas; 10, Japhlong, Sylhet, 2. XII. 1993 Coll V. Biswas.

General : Cephalothorax and legs yellowish-brown; abdomen greenish with whitish hairs. Total body length 10.80 mm. Carapace 4.30 mm long, 3.70 mm wide; abdomen 6.50 mm long and 6.00 mm wide.

Distribution : BANGLADESH : Bagerhat, Gazipur, Jhenidah, Manikganj, Mymensingh, Rangpur, Sylhet; USA (Cambridge, 1904; Comstock, 1965; Levi, 1977); BURMA (Thorell, 1877); CHINA (Chen & Zhang, 1991; Zhao, 1993); INDIA; Biswas & Biswas, 1990; Pocock, 1900; Tikader, 1982); JAPAN (Shinkai & Takano, 1984; Yaginuma, 1986); SINGAPORE (Koh, 1989).

10. *Neoscona rahamani* n. sp.
(Figs. 56-61)

General : Cephalothorax and legs brown. Abdomen yellow-brown. Total body length 10.20 mm. Carapace 4.20 mm long and 3.30 mm wide. Abdomen 6.00 mm long and 5.60 mm wide.

Cephalothorax : Elongately oval, posteriorly broad and anteriorly narrow, clothed with fine pubescence and hairs; medially with a long fovea; radiating striae distinct; laterally with brown longitudinal bands. Ocular area blackish; anterior row of eyes strongly recurved while posterior row nearly straight; posteromedian eyes encircled with black band, these smaller than anteromedians; lateral eyes close; ocular quad posteriorly narrowed. Chelicerae brown, strong, clothed with spines, inner margin with 1 long,

strong tooth and outer margin with 2 teeth (fig.58). Maxillae medially wide, longer than wide and anteriorly scopulate (fig.59). Labium roughly triangular, anteriorly convex and scopulate (fig.59). Sternum nearly rounded, posteriorly pointed, anterior margin concave (fig.60). Legs long and slender; leg formula 1423 and the measurements (in mm) as in Table-4. Male unknown.

Abdomen : Globose, medially broad, anteriorly with a hump, wider than long, clothed with hairs, dorsum posteriorly decorated with few brown patches; epigyne as in fig. 61.

Holotype : Female in spirit.

Male : Unknown.

Type-locality : BANGLADESH : Jessore and Jhenidah.

Etymology : The species has been named after professor Dr. M. Fazlur Rahman. Department of Zoology, Dhaka University, Bangladesh.

Remarks : None of the congeners (Tikader, 1982; Yin, *et al.*, 1997; Yaginuma, 1986; Chen & Zhang, 1991; Shinkai & Takano, 1984; Kaston, 1948; Comstock, 1965; Levi & Levi, 1968; Berman & Levi, 1971; Levi, 1992; Davies, 1988; Zhao, 1993; Barrion & Litsinger, 1995; Song, *et al.*, 1999) of *Neoscona* seem to possess strongly globose abdomen and the typical epigynum. Therefore, the species is considered as new to science.

11. *Neoscona theis* (Walckenaer)
(Figs. 62-69)

1841. *Epeira theis* Walckenaer, *Hist. Nat. Ins. Apt.*, 2:53.

1847. *Epeira mangareva* : Walckenaer, *Hist. Nat. Ins. Apt.*, 4:469.

1869. *Epeira braminica* : Stoliczka, *J. Asiat. Soc. Beng.*, 38(2):238.

1877. *Epeira theisis* : Thorell, *Annali. Mus. civ. Genova*, **10** : 390.
1897. *Epeira obscura* : Rainbow, *Mem. Aust. Mus.*, **3**(2) : 116.
1904. *Neoscona theisi* : F.O.P Cambridge, *Biologia cent. am.*, **2** : 470.
1911. *Araneus theisi* : Merian, *Zool. Jb. (Syst.)*, **31**(2) : 213.
1939. *Araneus theisi* : Saito, *Saito Ho-onkai Mus. Res. Bull.* **18** : 22.
1960. *Araneus theisi* : Chrysanthus, *Nova Guinea (Zool.)*, **10** : 39.
1975. *Araneus theisi* : Patel, 'Vidya' *J. Gujrat Univ.*, **18**(1) : 158.
1981. *Neoscona theis* : Tikader & Bal, *Rec. zool. Surv. India, Occ. Pap.* **24** : 32.
1982. *Neoscona theis* : Tikader, *Fauna of India, Araneidea*, **2**(1) : 269.
1986. *Neoscona theisi* : Yaginuma, *Spiders of Japan in color*, : 104.
1988. *Neoscona theisi* : Davies, *Mem. Qld. Mus.*, **25**(2) : 301.
1991. *Neoscona theisi* : Chen & Zhang, *Fauna of Zhejiang, Araneida* : 118.
1993. *Neoscona theisi* : Okuma, *et al.*, *Illustr. Monogr. Rice-field Spiders of Bangladesh* : 17.
1995. *Neoscona theisi* : Barrion & Litsinger, *Riceland spiders of South and Southeast Asia* : 625.
1997. *Neoscona theisi* : Platnick, *Adv. in Spider Taxonomy* : 524.
1997. *Neoscona theisi* : Yin, *et al.*, *Fauna Sinica, Araneidae* : 375.
1999. *Neoscona theisi* : Song, *et al.*, *The Spiders of China*, : 301.
2004. *Neoscona theis* : Gajbe, *Rec. zool. Surv. India, Occ. Pap.* **227** : 55.
2005. *Neoscona theis* : Majumder, *Mem. Zool. Surv. India*, **20**(3) : 11.
2006. *Neoscona theisi* : Platnick, *World Spider Cat.*, version 6.5 : 1250.
2009. *Neoscona theis* : Biswas : In Ahmed (ed.), *Flora & Fauna of Bangladesh, Arachn.*, **18**(1) : 175.

Material examined : 2♀ , Barisal, 12. IX. 1991, Coll. V. Biswas; 2♀ , ADI, Faridpur, 9. IV. 1992, Coll. V. Biswas; 1♂ , 1♀ , BARI, Jessore, 1-5. V. 1992, Coll. V. Biswas; 4♀ , Jhenidah, 2. VII. 1992, Coll. V. Biswas; 2♀ , BARI, Joydevpur, 12. X. 1992, Coll. V. Biswas; 1♀ , Manikganj, 18. V. 1991, Coll. V. Biswas; 2♀ , Narayanganj, 3. VII. 1993, Coll. V. Biswas; 1♀ , Rangpur, 25. VIII. 1993, Coll. V. Biswas.

General : Cephalothorax and legs yellow-brown; abdomen yellowish with chalk-white band. Total body length (female) 12.00 mm. Carapace 4.00 mm long, 3.40 mm wide; abdomen 8.00 mm long and 5.85 wide. Total body length (male) 8.00 mm. Carapace 3.80 mm long, 1.90 mm wide; abdomen 4.50 mm long and 3.00 mm wide.

Distribution : BANGLADESH; Barisal, Faridpur, Jessore, Jhenidah, Joydevpur, Manikganj, Narayanganj, Rangpur; CHINA; INDIA; JAPAN; PHILIPPINES (Platnick, 1997).

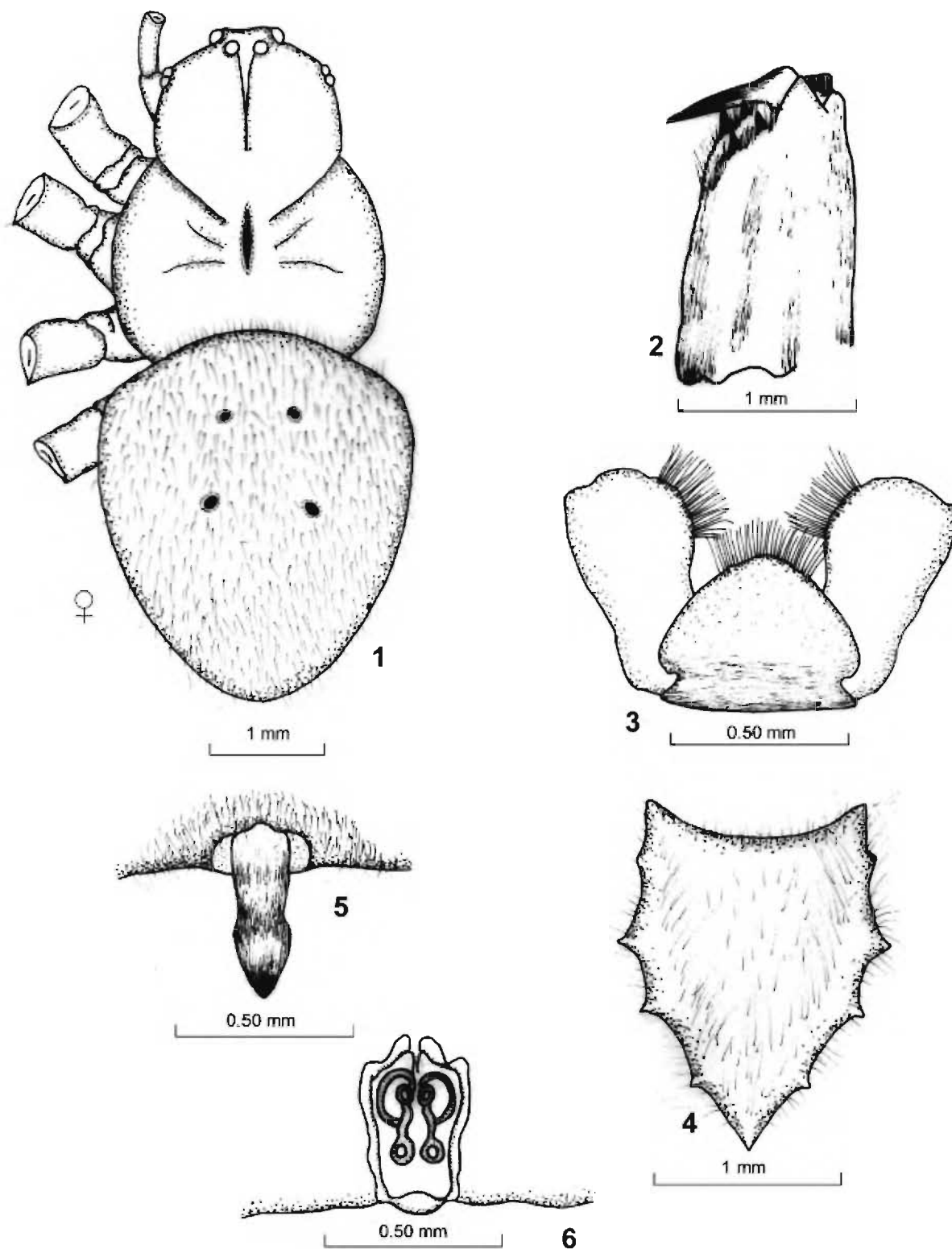
ACKNOWLEDGEMENTS

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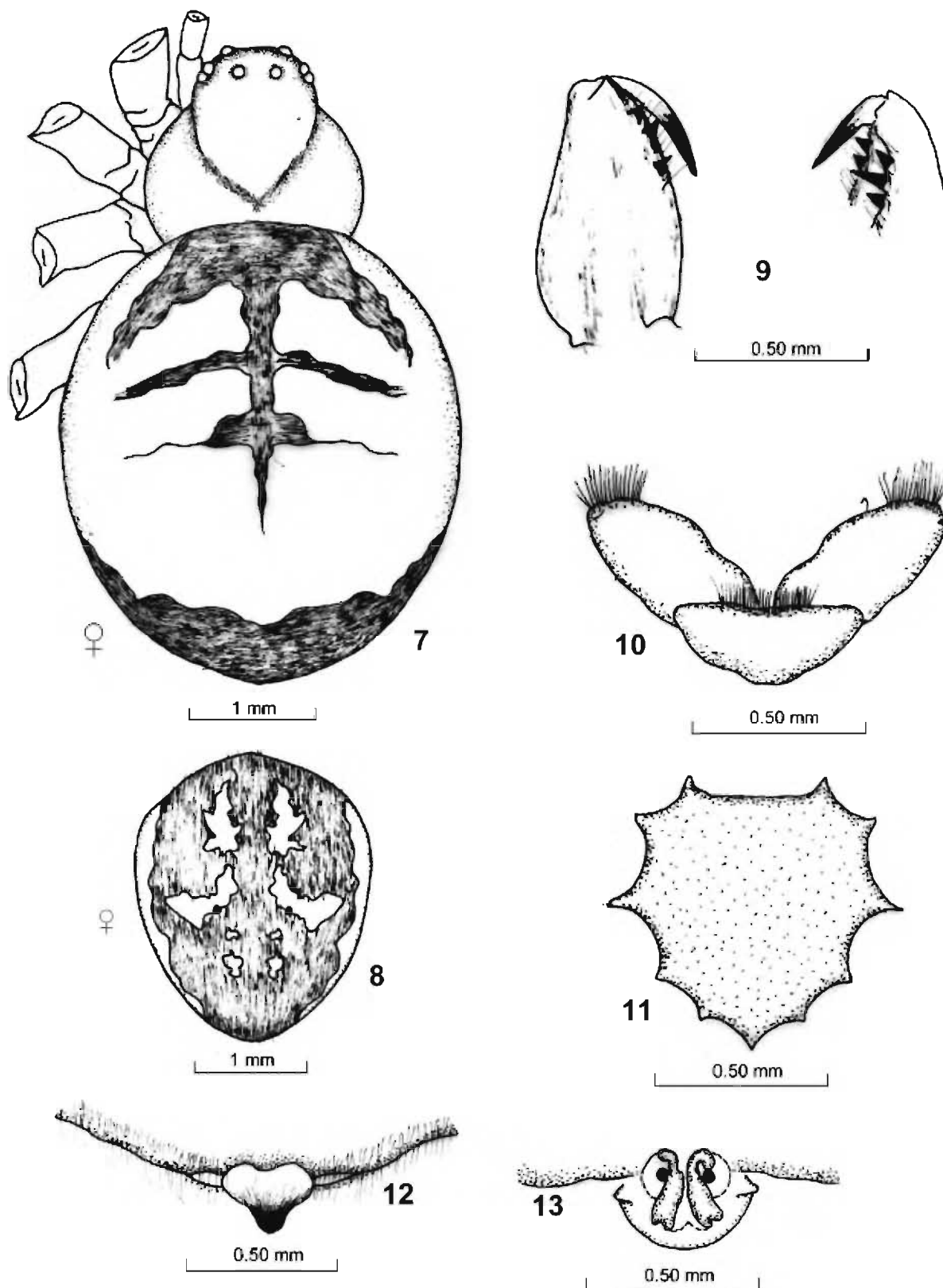
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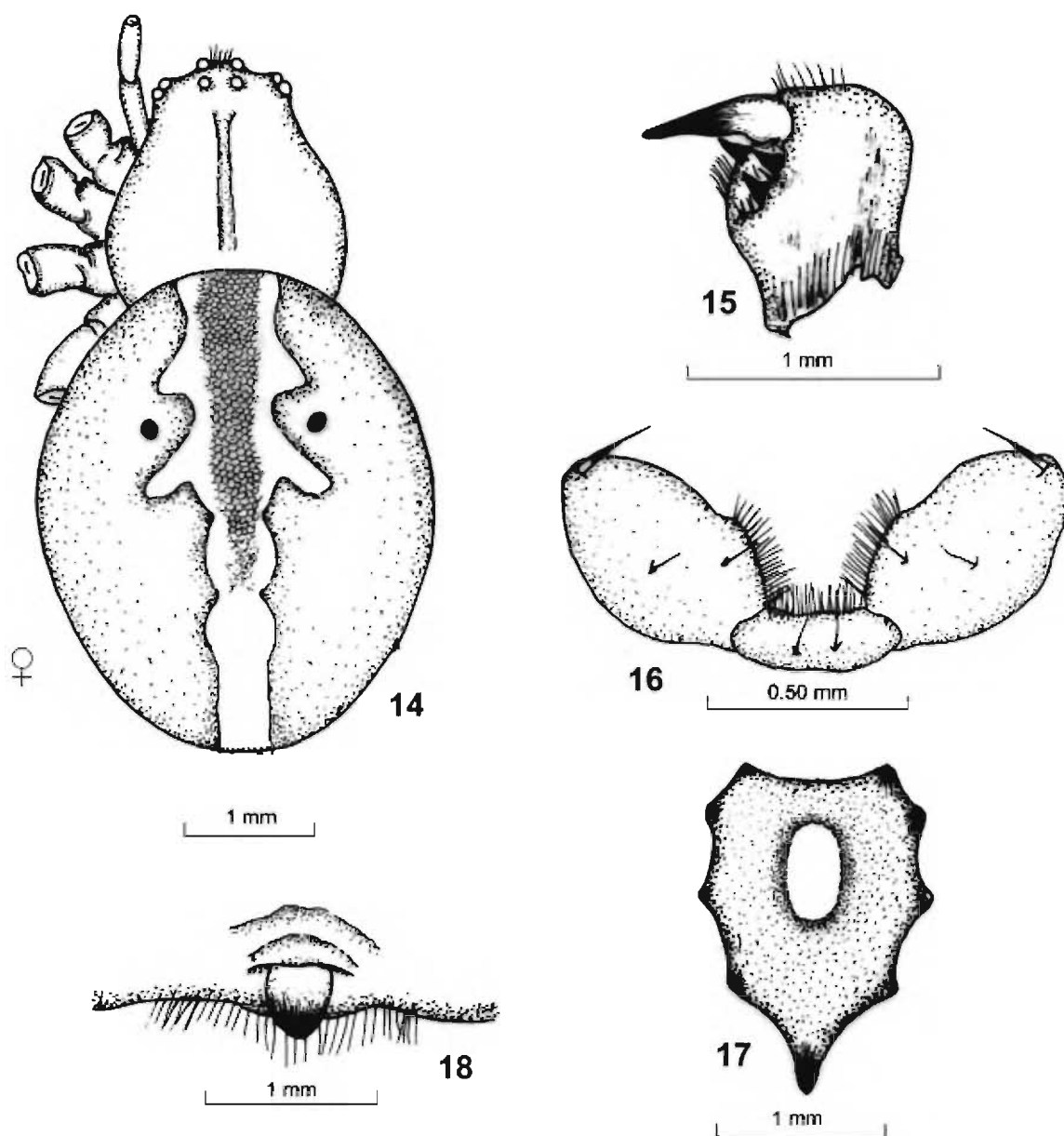
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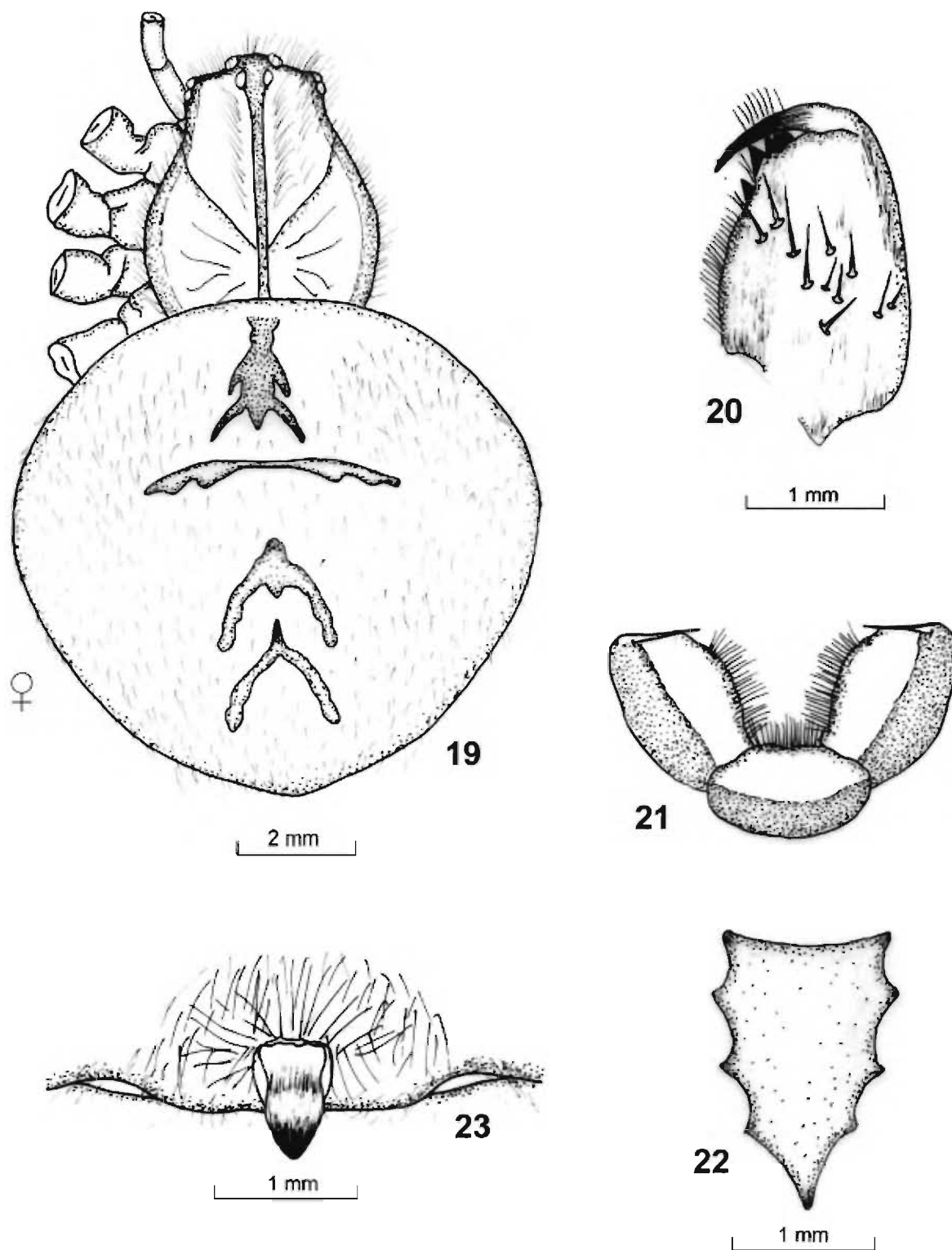
Figs. 1-6 : *Neoscona bengalensis* Tikader & Bal 1. Whole body (dorsal view); 2. Chelicerae; 3. Maxillae and Labium; 4. Sternum; 5. Epigynum; 6. Internal genitalia.



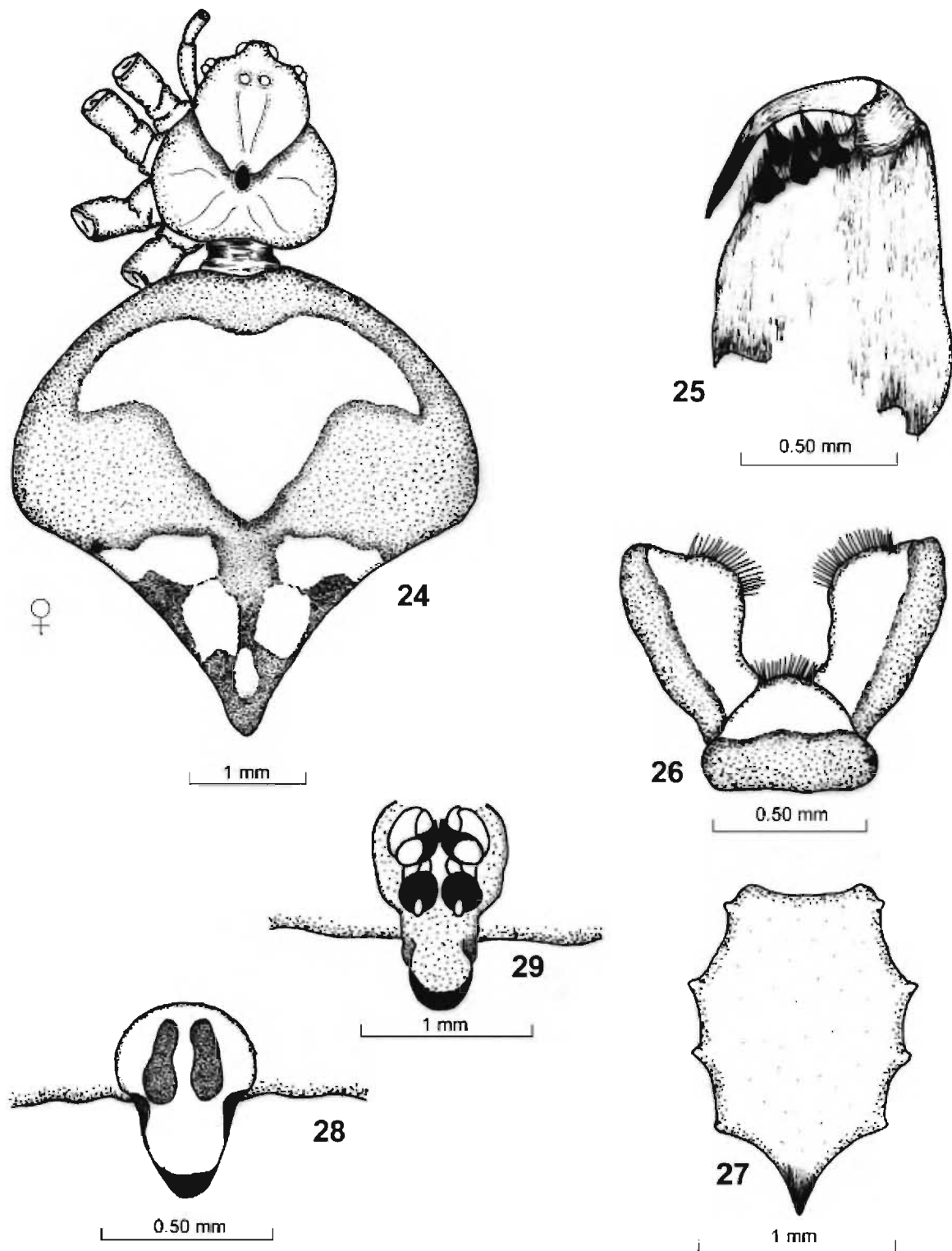
Figs. 7-13 : *Neoscona elliptica* Tikader & Bal 7. Whole body (dorsal view); 8. Abdomen of another one; 9. Chelicerae; 10. Maxillae and Labium; 11. Sternum; 12. Epigynum; 13. Internal genitalia.



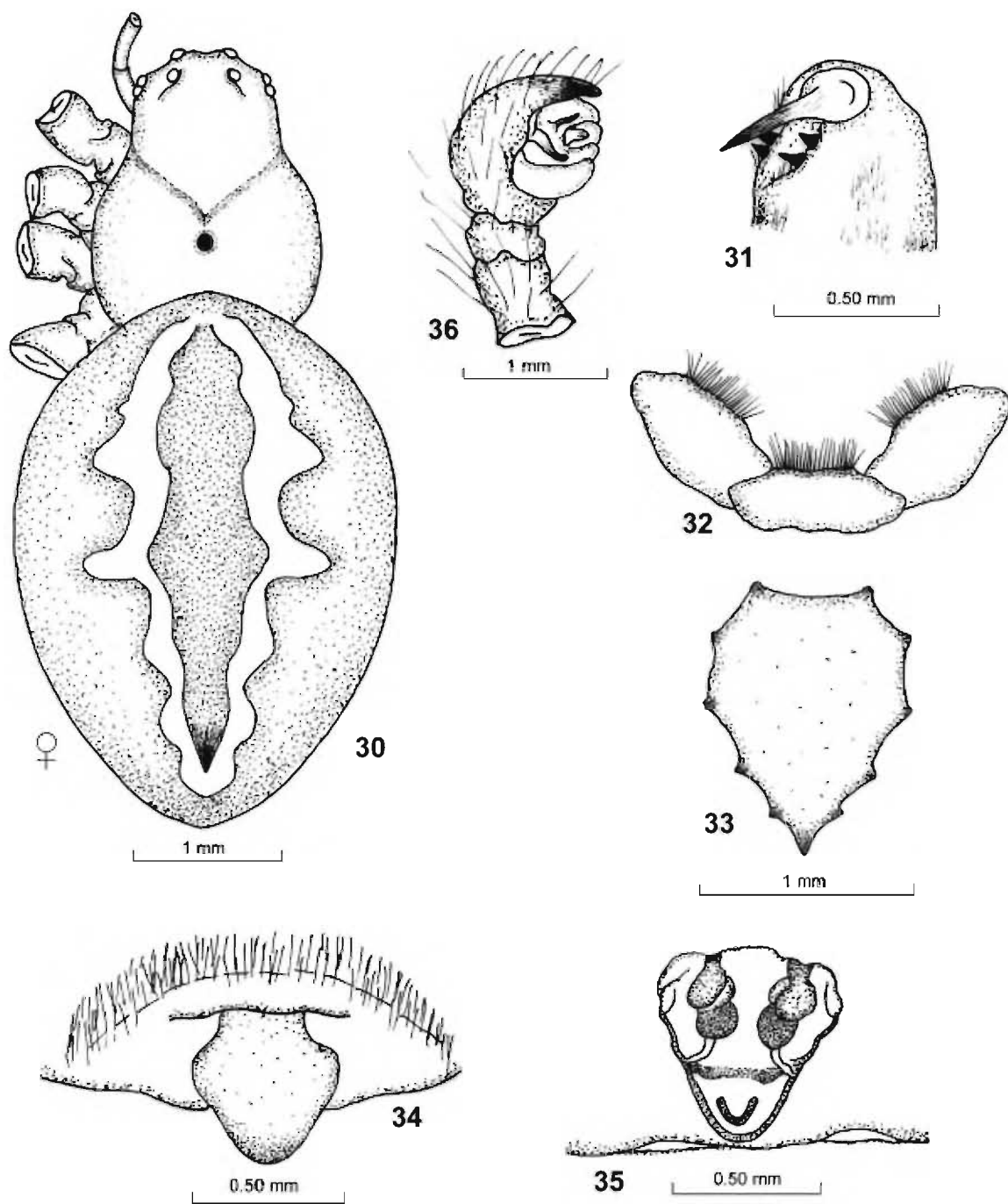
Figs. 14-18 : *Neoscona govindai* n. sp. 14. Whole body (dorsal view); 15. Chelicerae; 16. Maxillae and Labium; 17. Sternum; 18. Epigynum.



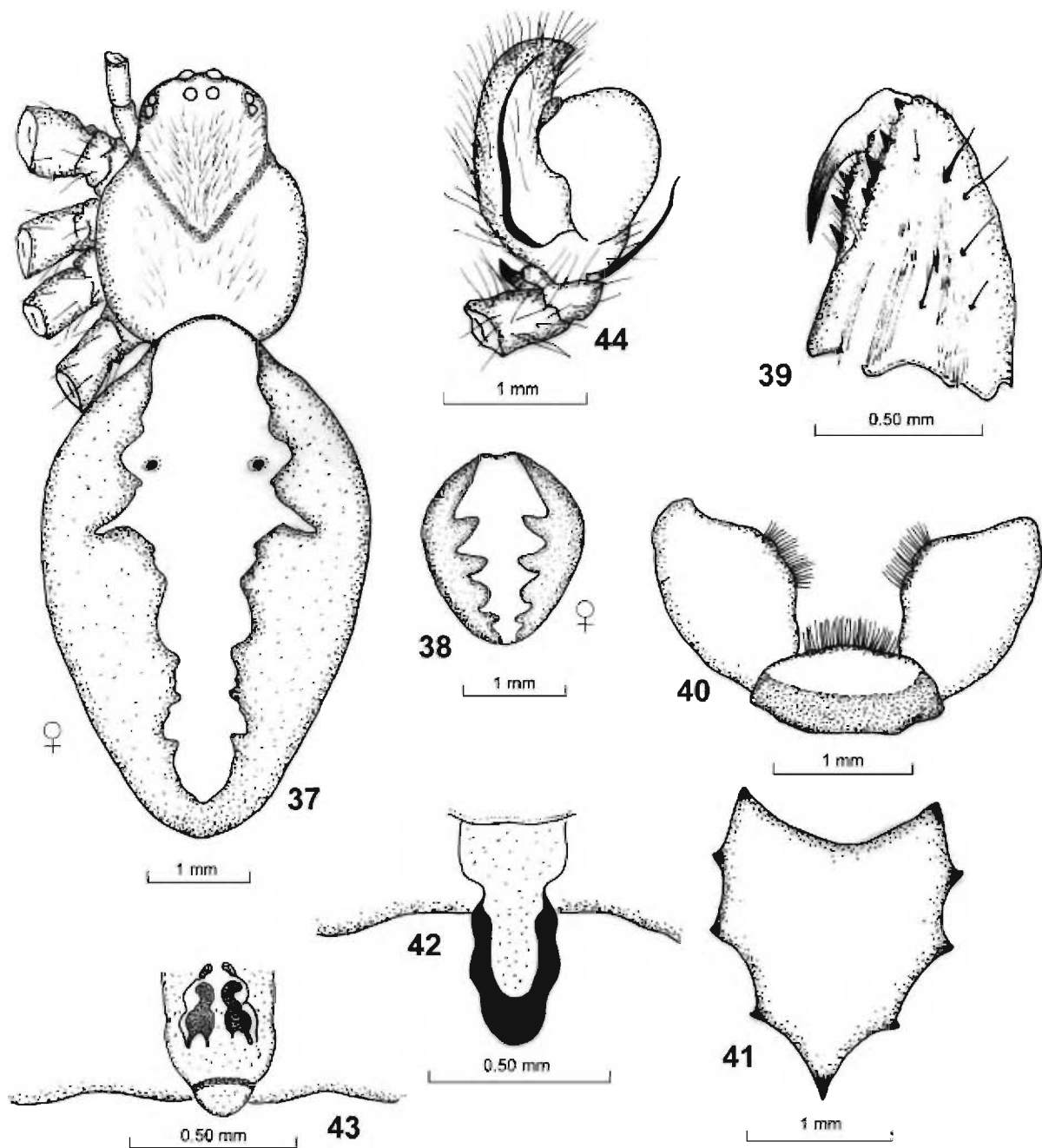
Figs. 19-23 : *Neoscona kabiri* n. sp.19. Whole body (dorsal view); 20. Chelicerae; 21. Maxillae and Labium; 22. Sternum; 23. Epigynum.



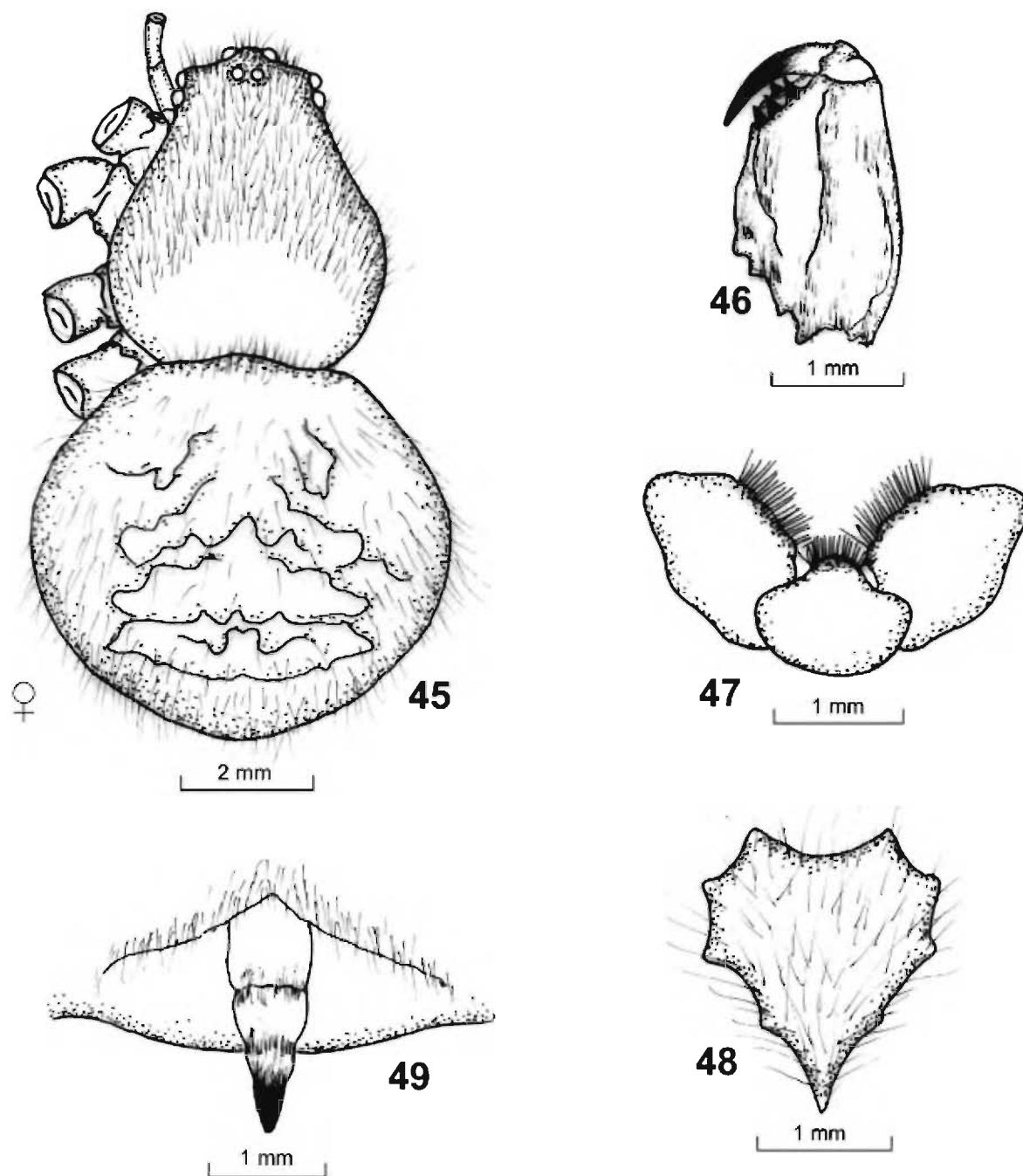
Figs. 24-29: *Neoscona leglaizei* (Simon) 24. Whole body (dorsal view); 25. Chelicerae; 26. Maxillae and Labium; 27. Sternum; 28. Epigynum; 29. Internal genitalia.



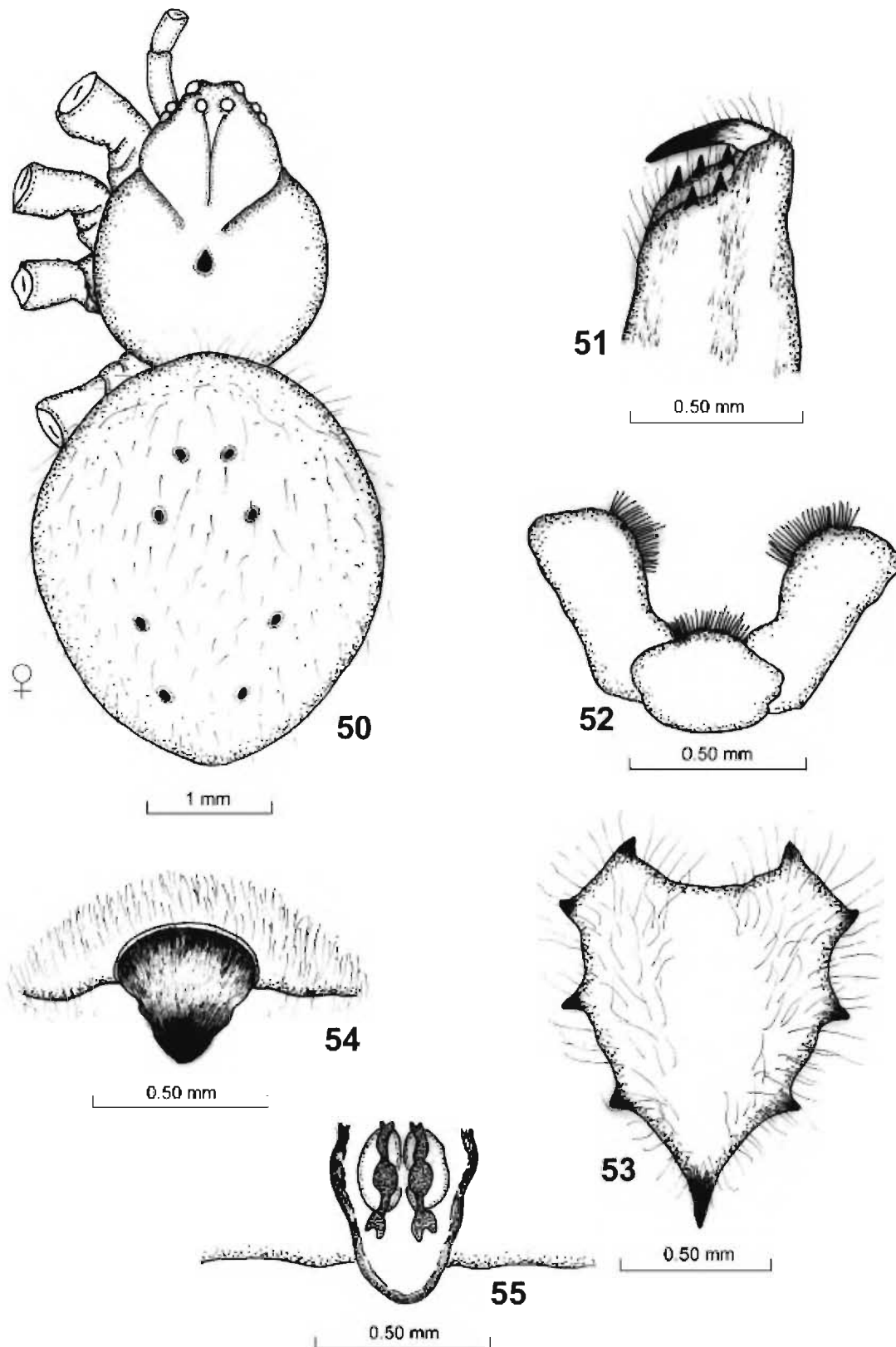
Figs. 30-36 : *Neoscona molemensis* Tikader & Bal; 30. Whole body (dorsal view); 31. Chelicerae; 32. Maxillae and Labium; 33. Sternum; 34. Epigynum; 35. Internal genitalia; 36. Male palp.



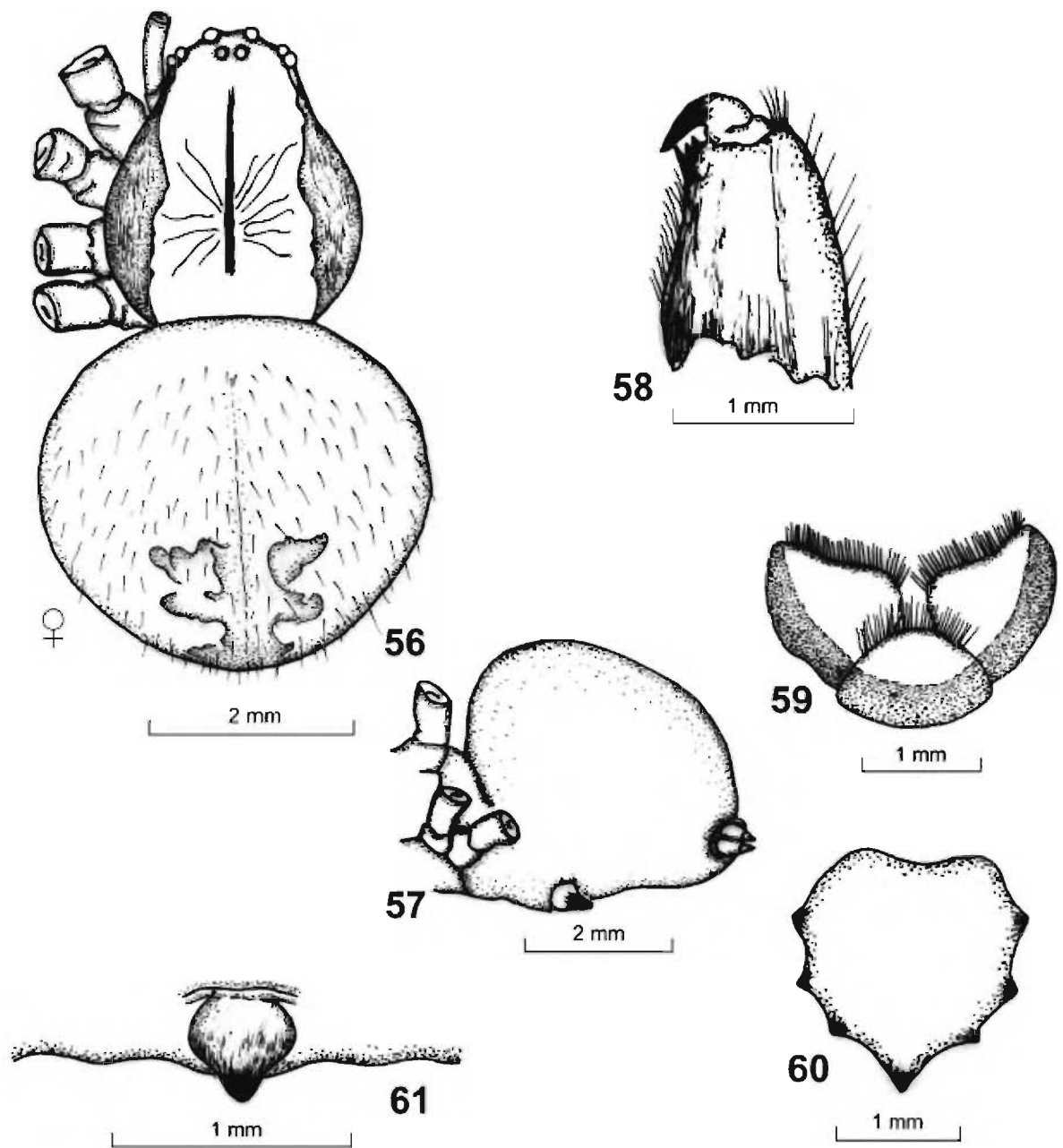
Figs. 37-44 : *Neoscona mukerjei* Tikader; 37. Whole body (dorsal view); 38. Abdomen (variation); 39. Chelicerae; 40. Maxillae and Labium; 41. Sternum; 42. Epigynum; 43. Internal genitalia; 44. Male palp.



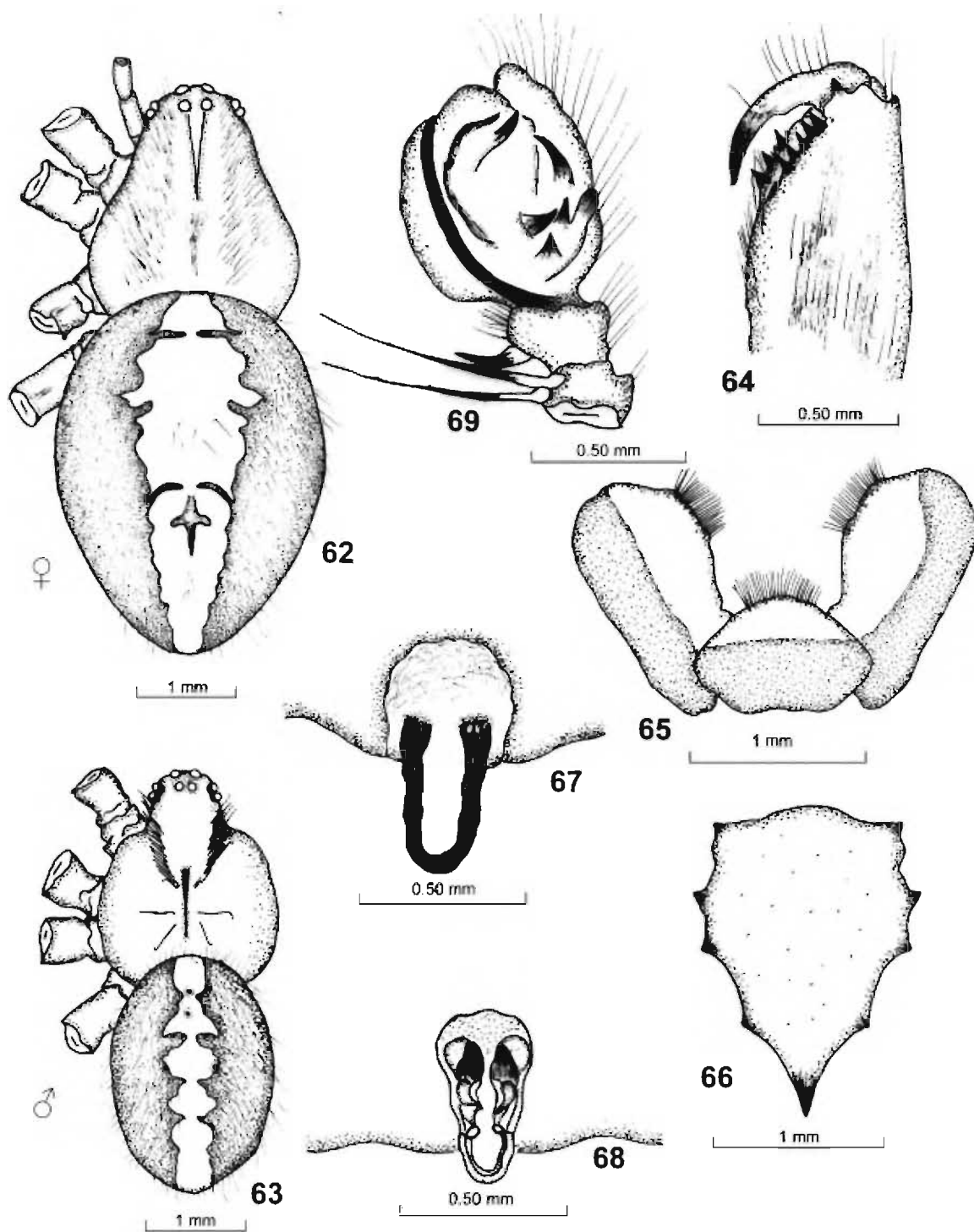
Figs. 45-49 : *Neoscona nashidae* n. sp. 45. Whole body (dorsal view); 46. Chelicerae; 47. Maxillae and Labium; 48. Sternum; 49. Epigynum.



Figs. 50-55 : *Neoscona nautica* (Koch) 50. Whole body (dorsal view); 51. Chelicerae; 52. Maxillae and Labium; 53. Sternum; 54. Epigynum; 55. Internal genitalia.



Figs. 56-61 : *Neoscona rahamani* n. sp. 56. Whole body (dorsal view); 57. Abdomen (lateral view); 58. Chelicerae; 59. Maxillae and Labium; 60. Sternum; 61. Epigynum.



Figs. 62-69: *Neoscona theis* Walckenaer 62. Whole body (dorsal view); 63. Whole body (male); 64. Chelicerae; 65. Maxillae and Labium; 66. Sternum; 67. Epigynum; 68. Internal genitalia; 69. Male palp.