

WOLF SPIDERS OF BANGLADESH : GENUS *PARDOSA* C. L. KOCH (ARANEAE : LYCOSIDAE)

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INTRODUCTION

Wolf spiders play an important role in the suppression of pest insects in the fields and gardens. In Bangladesh, very few works are available on this arthropods (Chowdhury and Pal, 1984; Biswas, *et al.*, 1993; Okuma, *et al.*, 1993; Biswas, 1995; Biswas and Raychaudhuri, 1998a, '98b; Begum and Biswas, 1997) although a great number of works are carried out on different lycosids (Pocock, 1900; Gravely, 1924; Dyal, 1935; Tikader, 1970, Tikader and Biswas, 1981; Tikader and Malhotra, 1976, '80; Biswas and Biswas, 1992; Saha, *et al.*, 1994a, Tikader and Mukherjee, 1971; Patel and Reddy, 1993) in the Indian Sub-continent. Elsewhere, Tanaka (1985, '93a, '93b, '98), Fox (1935), Yaginuma (1986), Kornstedt (1981, '86, '87, '88, '93), Kaston (1948), Chen and Zhang (1991), Zhao (1993) and Yin, *et al.*, (1997a, '97b) made valuable contribution on this spiders from various parts of the world.

The present paper deals with the genus *Pardosa* C. L. Koch represented by 10 (ten) species from Bangladesh. Of these, one species namely—*P. royi* is recognised as new to science and from the others, 7 (seven) species are recorded for the first time from Bangladesh. The new species is described and illustrated.

The identity of the species were confirmed from the Zoological Survey of India, Calcutta. The types are at present in the collection of the Department of Zoology, Government P. C. College, Bagerhat, Bangladesh and will be deposited to the Museum of the Department of Zoology, University of Dhaka, Bangladesh, in due course of time.

Abbreviation used : A.D.I. = Agricultural Diploma Institute; BARI = Bangladesh Agricultural Research Institute; BRRI = Bangladesh Rice Research Institute; BAU = Bangladesh Agricultural University; RU = Rajshahi University.

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SYSTEMATICS

Genus *Pardosa* C. L. KOch, 18481848. *Pardosa* C. L. Koch, *die Arachniden*, 14 : 100.

Diagnosis : Cephalic region raised and almost entirely occupied by the 2 posterior rows of eyes. Chelicerae much smaller than most of the lycosids. Eyes in 3 rows, anterior row of eyes smaller, eyes of posterior row larger. Legs relatively long and thin and with long spines. Metatarsus IV usually as long as to longer than patella and tibia taken together. Tibia I with 3 pairs of ventral spines. Median septum or guide of epigynum almost weakly developed at the anterior end. Median apophysis placed more centrally.

Type species : *Pardosa striatipes* Koch.

Distribution : ASIA; AMERICA and EUROPE.

Key to the species

1. Outer margin of chelicerae atleast with 3 teeth, 1 of which placed distantly; sternum wide anteriorly; leg formula 4321, epigyne as in fig. 60 *sumatrana*
- Outer margin of chelicerae atleast with 2 closely placed teeth; leg formula never as above ..2
2. Outer margin of chelicerae with one tooth only 3
- Outer margin of chelicerae always with 2 teeth 4
3. Labium basally broad and flat; sternum broad anteriorly; ocular quad posteriorly much wide; epigyne as in fig. 18 *heterophthalmus*
- Labium basally bluntly pointed; sternum broad medially; ocular quad posteriorly not so wide; epigyne as in fig. 48 *shyamae*
4. Cephalothorax with deeply distinct cervical furrows 5
- Cephalothorax without any such furrows 6
5. Abdomen elongate, posteriorly pointed bluntly; sternum posteriorly never broad; maxillae and labium basally not narrowed; posterolateral spinnerets evidently long; cheliceral teeth large, not distinctly seperated *royi* n. sp.
- Abdomen oval; sternum broad posteriorly; maxillae and labium basally narrowed; posterolateral spinnerets small; cheliceral teeth large, distinctly seperated *annandalei*
6. Abdomen broad, posteriorly narrower and bluntly pointed; cephalothorax centrally with a whitish pineapple-shaped area *birmanica*
- Abdomen posteriorly never as above; cephalothorax never with whitish area 7
7. Sternum globose; abdomen centrally with an elongate oval free area; ocular quad rectangular; leg formula 4132 *songosa*
- Sternum heart-shaped; abdomen never with any such area 8

8. Sternum posteriorly broad; labium broad basally; leg formula 4123; epigyne tongue-like
 *minutus*
- Sternum anteriorly broad; labium broad medially; leg formula 4213 9
9. Ocular quad entirely blackish; cephalothorax broad at middle; sternum posteriorly abruptly narrowed; abdomen decorated as in fig. 19 *ladakhensis*
- Ocular quad longitudinally free from colouration; cephalothorax broad at base; sternum posteriorly narrowed; abdomen decorated as in fig. 32 *pusiola*

1. *Pardosa annandalei* (gravely)

(Figs. 1–6)

1924. *Lycosa annandalei* Gravely, *Rec. Indian Mus.*, 26 : 606.

Material examined : 2♀, Pirojpur, 19.VII.1991 Coll V Biswas; 1♀, Chittagong, 25.VIII.1992, Coll : V. Biswas; 2♀, Chandpur, Comilla, 07.VII.1992, Coll : V. Biswas; 1♀, BRRI, Joydevpur, Dhaka, 19.IX.1992, Coll : V. Biswas; 2♀, ADI, Faridpur, 12.V.1990 Coll : V. Biswas; 2♀, Shikerpur, Jhenidah, 18.VIII.1990 and 28.IX.1992, Coll : V. Biswas; 1♀, Batiaghata, Khulna, 12.VI.1991 and Chalna, Khulna, 9.VIII.1992, Coll : V. Biswas; 2♀, Mymenshingh, 25.VI.1991, Coll : V Biswas.

Distribution : BANGLADESH : Chittagong, Comilla, Dhaka, Faridpur, Jhenidah, Khulna, Mymenshingh, Pirojpur; MYANMAR; INDIA (Tikader and Malhotra, 1980).

2. *Pardosa birmanica* Simon

(Figs. 7–13)

1884. *Pardosa birmanica* Simon, *Ann. Mus. civ. stor. nat. Genova*, 20 : 333.

Material examined : 2♀, Barisal, 8.V.1990, Coll : V. Biswas; 20, 10, BARI, Jessore, 15.IX.1990, Coll : V. Biswas; 1♀, Jhenidah, 19.IX.1991, Coll : V. Biswas; 1♀, ADI, Faridpur, 18.XI.1991, Coll : V. Biswas; 1♀, 1♂, Mymenshingh, 19.IV.1992, Coll : V. Biswas.

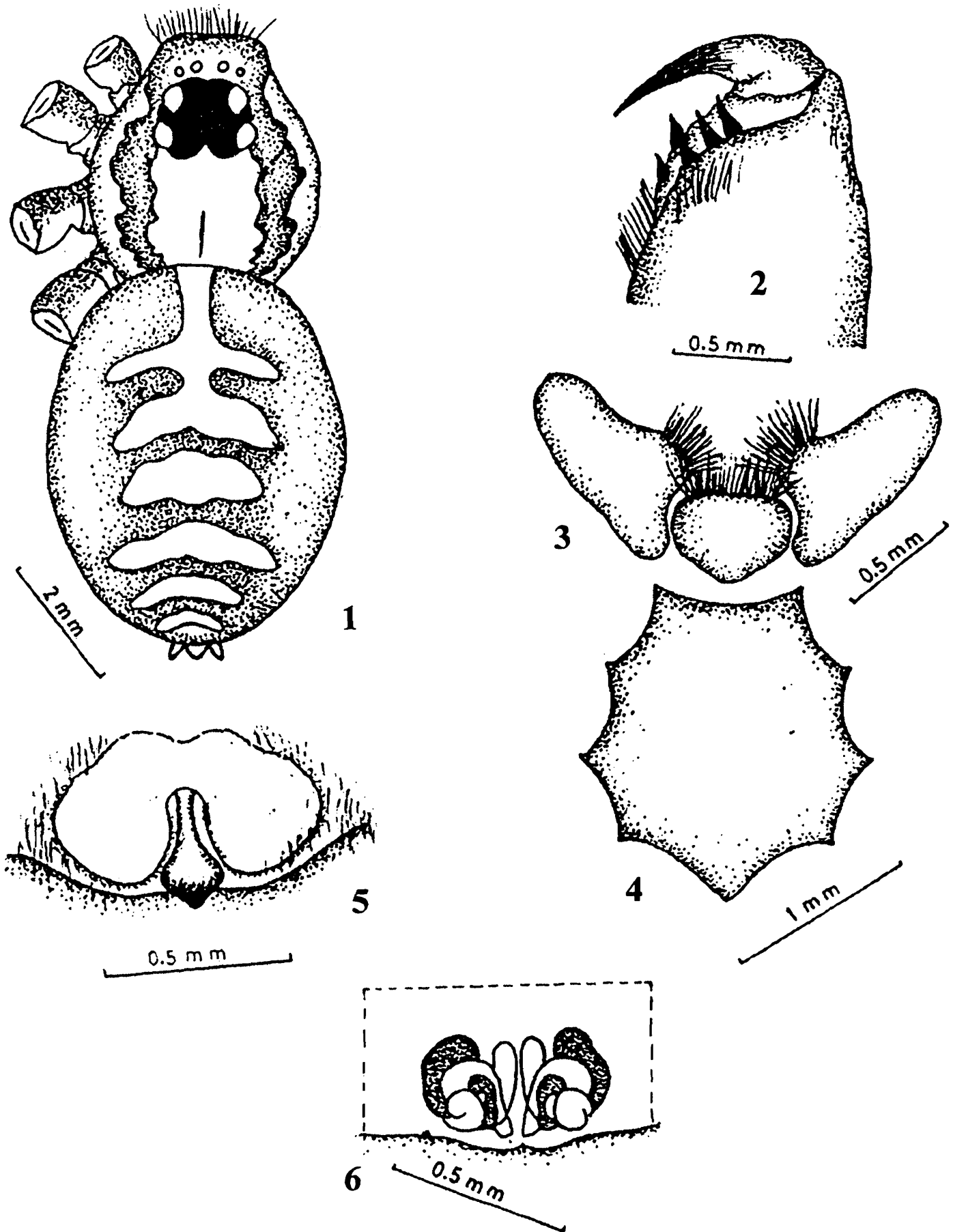
Distribution : BANGLADESH : Barisal, Faridpur, Jhenidah, Jessore, Mymenshingh; MYANMAR; INDIA; PAKISTAN (Tikader and Malhotra, 1980).

3. *Pardosa heterophthalmus* (Simon)

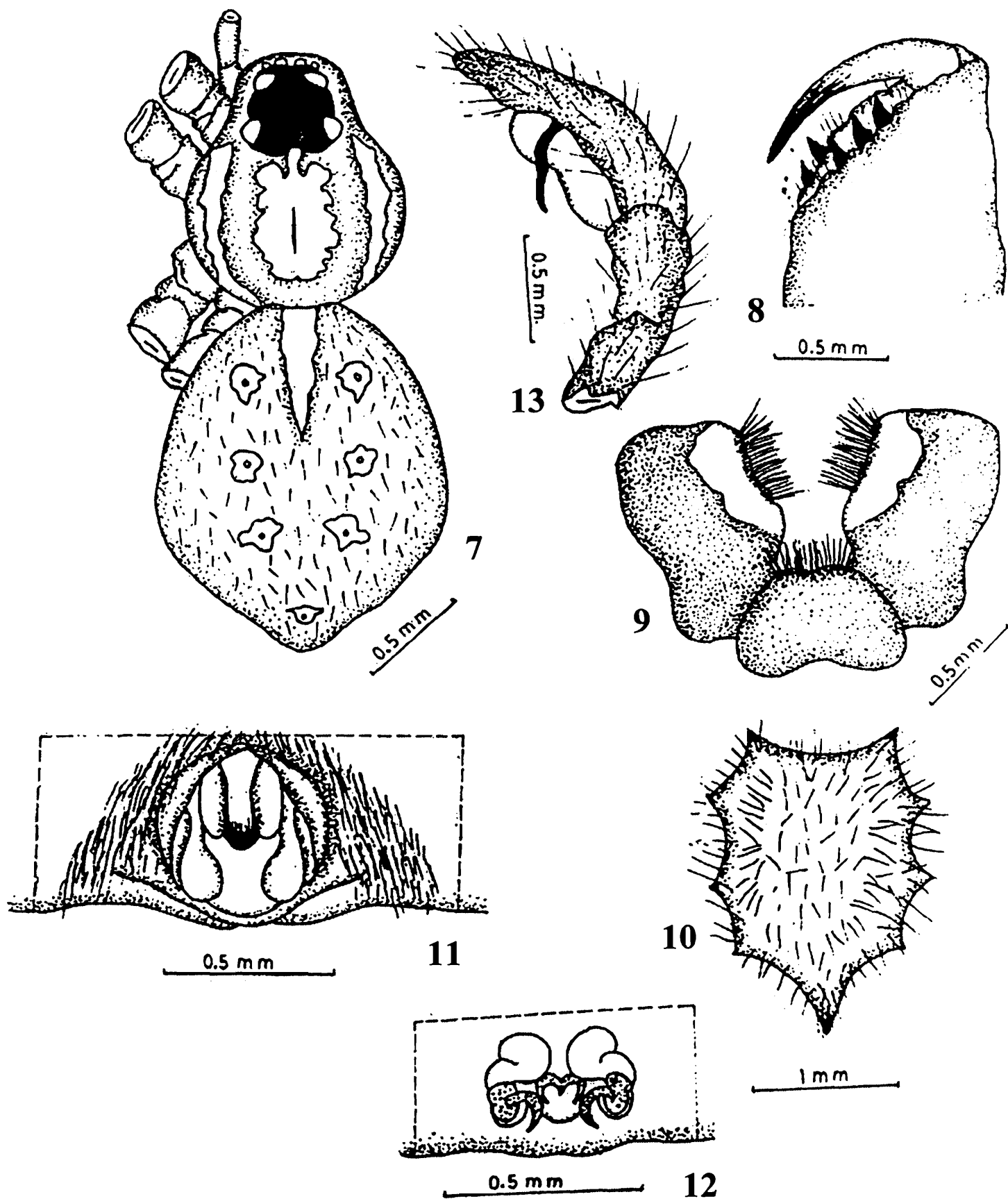
(Figs. 14–18)

1898. *Acroniops heterophthalmus* Simon, *Hist. nat. des. Araignes*, 2 : 362.

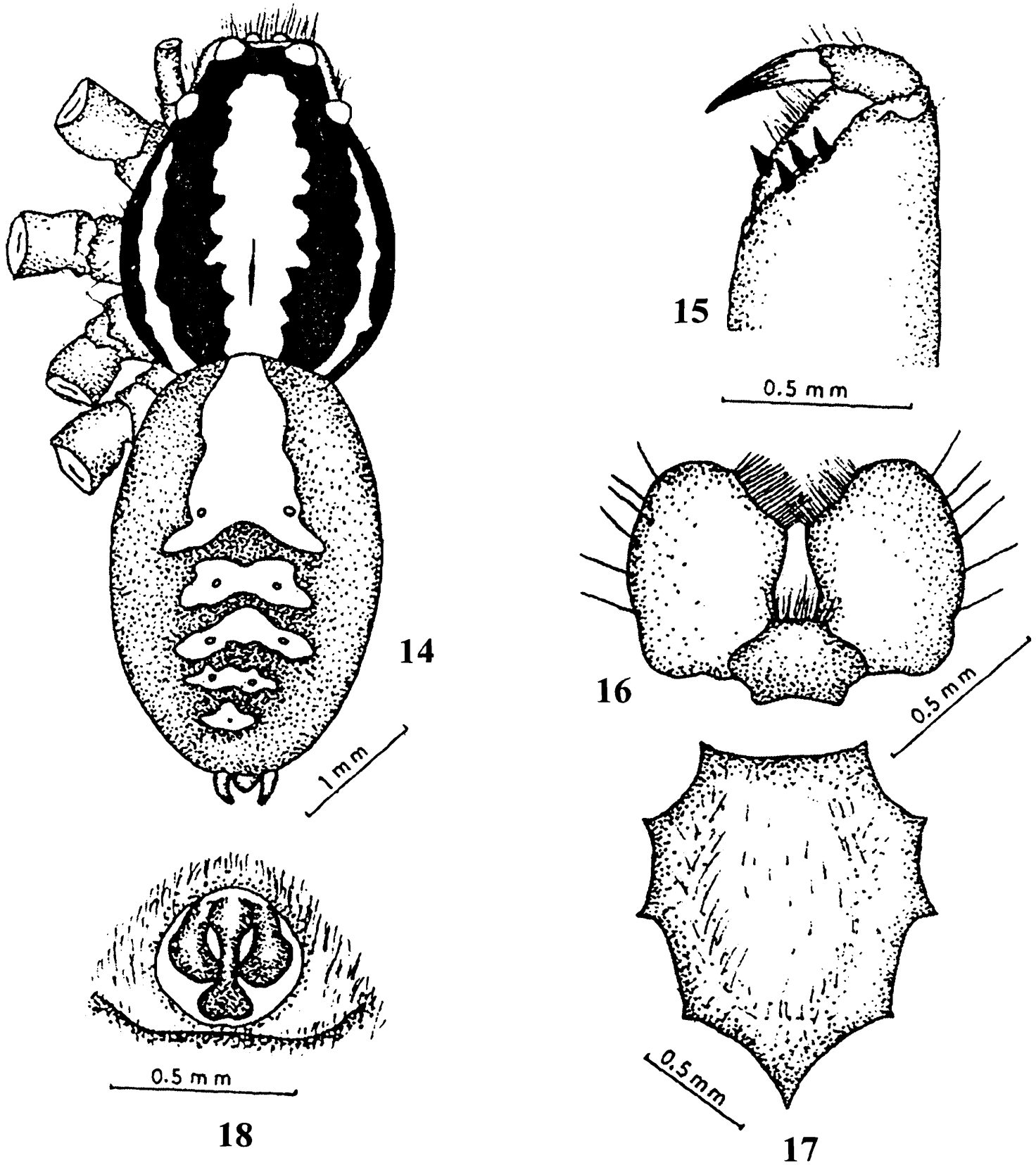
Material examined : 1♀, Dasani, Bagerhat, 19.III.1992, Coll : V Biswas; 2♀, Potia Chittagong, 12.III.1991, Coll : V. Biswas; 2♀, Comilla, 19.V.1991, Coll : V Biswas; 1♀, BARI, Joydevpur, Dhaka, 18.VIII.1992, Coll : V Biswas; 2♀, ADI, Faridpur, 3.IX.1992, Coll V Biswas;



Figs. 1-6 : *Pardosa annandalei* (gravely) : 1. Whole body (dorsal view); 2. Chelicerae; 3. Maxillae and Labium; 4. Sternum; 5. Epigynum and 6. Internal genitalia.



Figs. 7-13 : *Pardosa birmanica* Simon : 7. Whole body (dorsal view); 8. Chelicerae; 9. Maxillae and Labium; 10. Sternum; 11. Epigynum; 12. Internal genitalia and 13. Male palp.



Figs. 14-18 : *Pardosa heterophthalmus* (Simon) : 14. Whole body (dorsal view); 15. Chelicerae; 16. Maxillae and Labium; 17. Sternum and 18. Epigynum.

2♀, Bagharpara, Jessore, 19.VIII.1991, Coll V Biswas; 2♀, Khalishpur, Khulna, 18.V.1991, Coll V. Biswas; 2♀, BAU, Mymensingh, 18.V.1992, Coll : V Biswas; 1♀, Harinarayanpur, Kustia, 11.IX.91 2♀, Digha, Rajshahi, 4.III.1992, Coll : V Biswas; 2♀, Rangpur, 15.III.1992, Coll : V. Biswas; 2♀, Nazirpur, Pirojpur, 11.V.1992, Coll V Biswas.

Distribution : BANGLADESH : Bagerhat, Chittagong, Comilla, Dhaka, Faridpur, Jessore, Khulna, Kustia, Mymensingh, Pirojpur, Rajshahi, Rangpur; INDIA; JAVA (Tikader and Malhotra, 1980).

4. *Pardosa ladakhensis* Tikader

(Figs. 19–25)

1976. *Pardosa ladakhensis* Tikader, *J. Bombay nat. Hist. Soc.*, 74(1) : 144.

Material examined : 1♂, Bagerhat, 19.V.1992, Coll : V Biswas; 2♀, 1♂, Chalna, Khulna, 18.VII.1990, Coll : V Biswas; 2♀, Jhenidah, 22.IX.1992, Coll : V Biswas.

Distribution : BANGLADESH : Bagerhat, Jhenidah, Khuna; INDIA (Tikader and Malhotra, 1980).

5. *Pardosa minutus* Tikader & Malhotra

(Figs. 26–31)

1976. *Pardosa minutus* Tikader & Malhotra, *Proc. Indian Acad. Sci.*, 83(3) : 126-128.

Material examined : 1♀, Barisal, 9.XII.1991, Coll : V Biswas; 2♀ ADI, Faridpur, 11.IX.1991, Coll : V Biswas; 2♀, Chalna, Khulna, 9.X.1990, Coll V Biswas; 2♀, Pabna, 11.V.1992, Coll V Biswas; 3♀, Digha, Rajshahi, 5.III.1992, Coll V Biswas.

Distribution BANGLADESH : Barisal, Faridpur, Khulna, Pabna, Rajshahi; INDIA (Tikader and Malhotra, 1980).

6. *Pardosa pusiola* (Thorell)

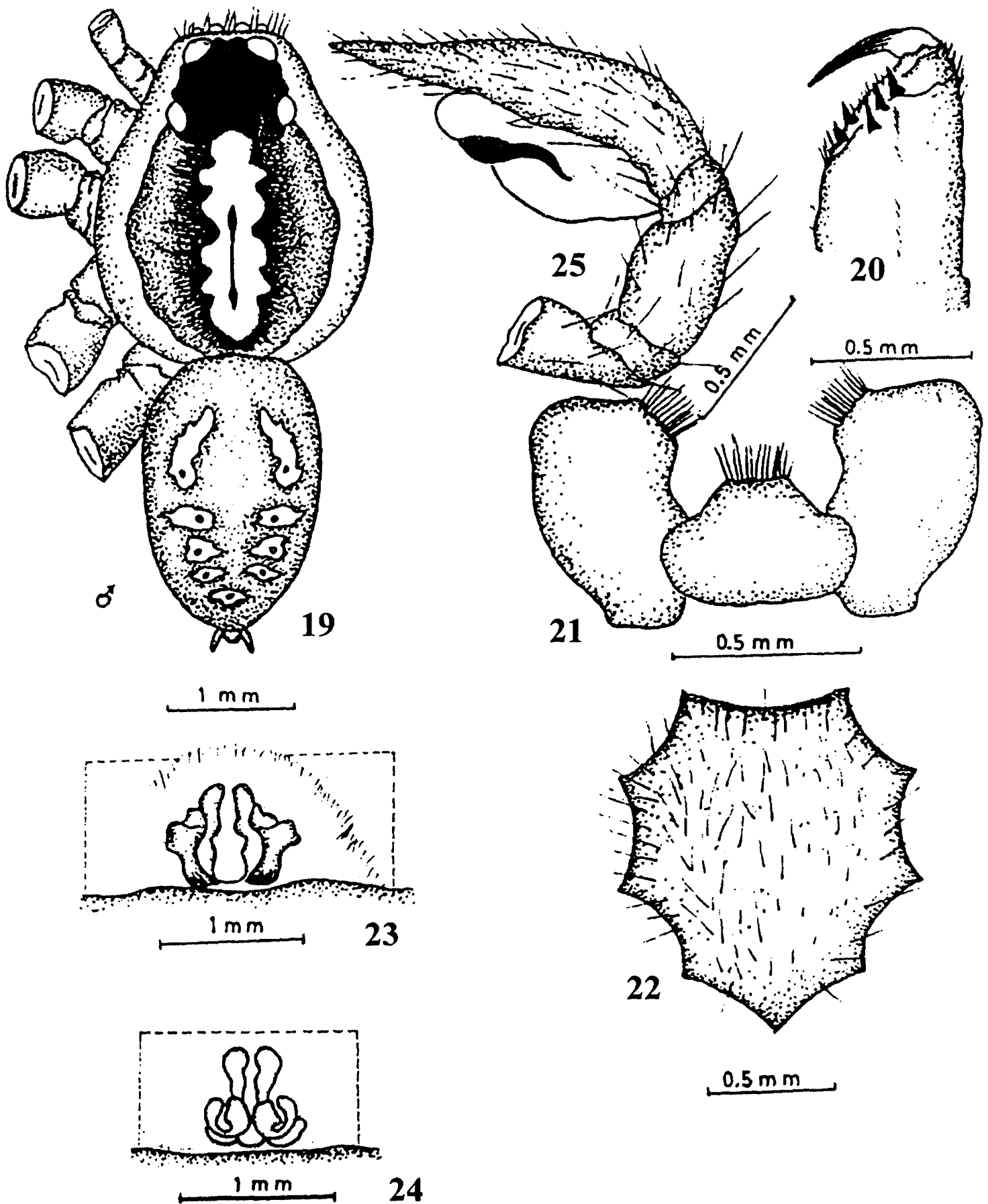
(Figs. 32–37)

1891. *Lycosa pusiola* Thorell, *Sr. Ak. Handl.*, 24(2) : 65.

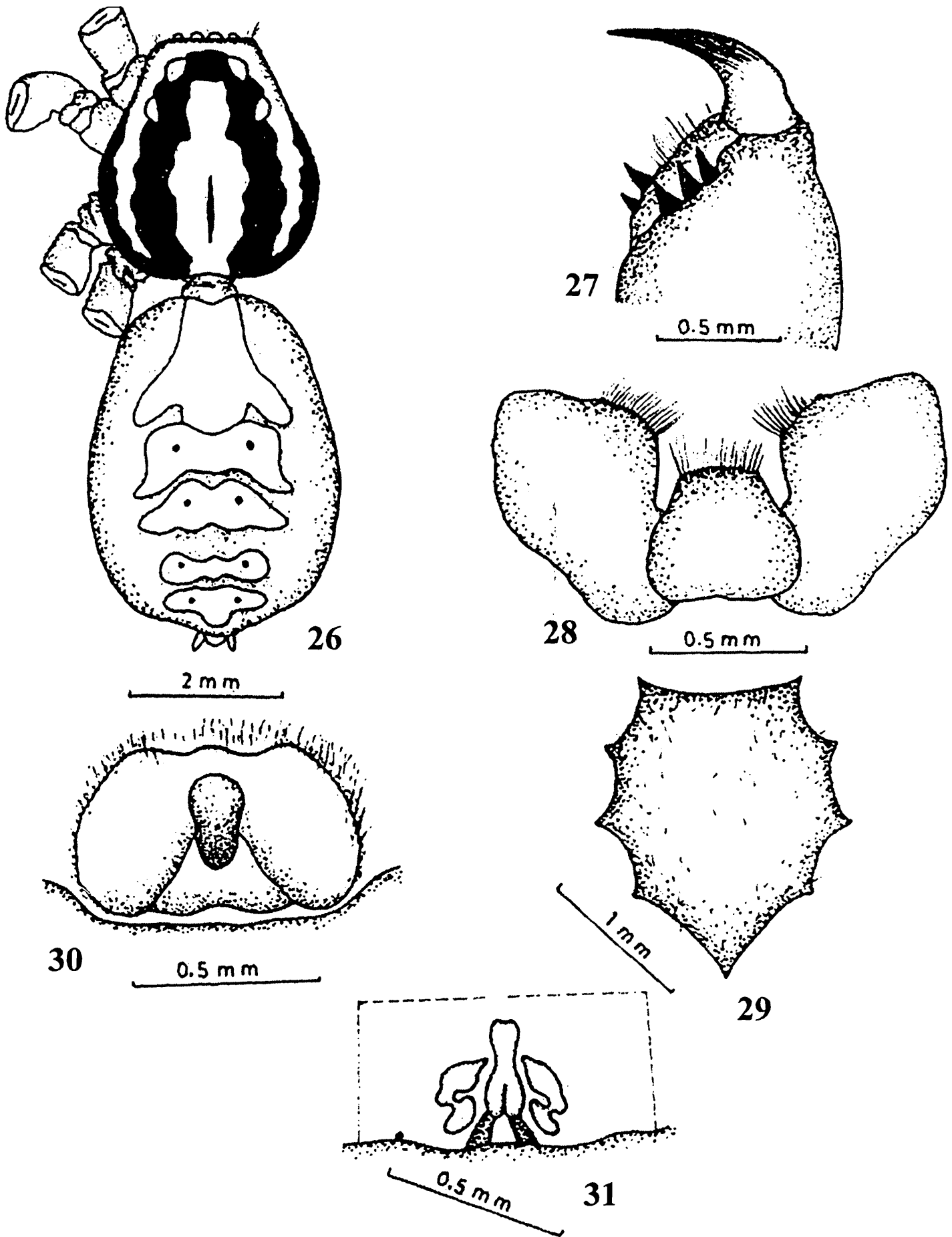
1905. *Pardosa pusiola* : Simon, *Arack. de Java. Mt. Mus. Humburg*, 22 : 51-73.

Material examined : 1♀, Bogra, 18.V.1992, Coll : V Biswas; 2♀, Munsiganj, 11.IX.1990, Coll V. Biswas; 1♀, Narayanganj, 12.VI.92, Coll : V Biswas; 2♀, Potuakhali, 3.X.1992, Coll V Biswas.

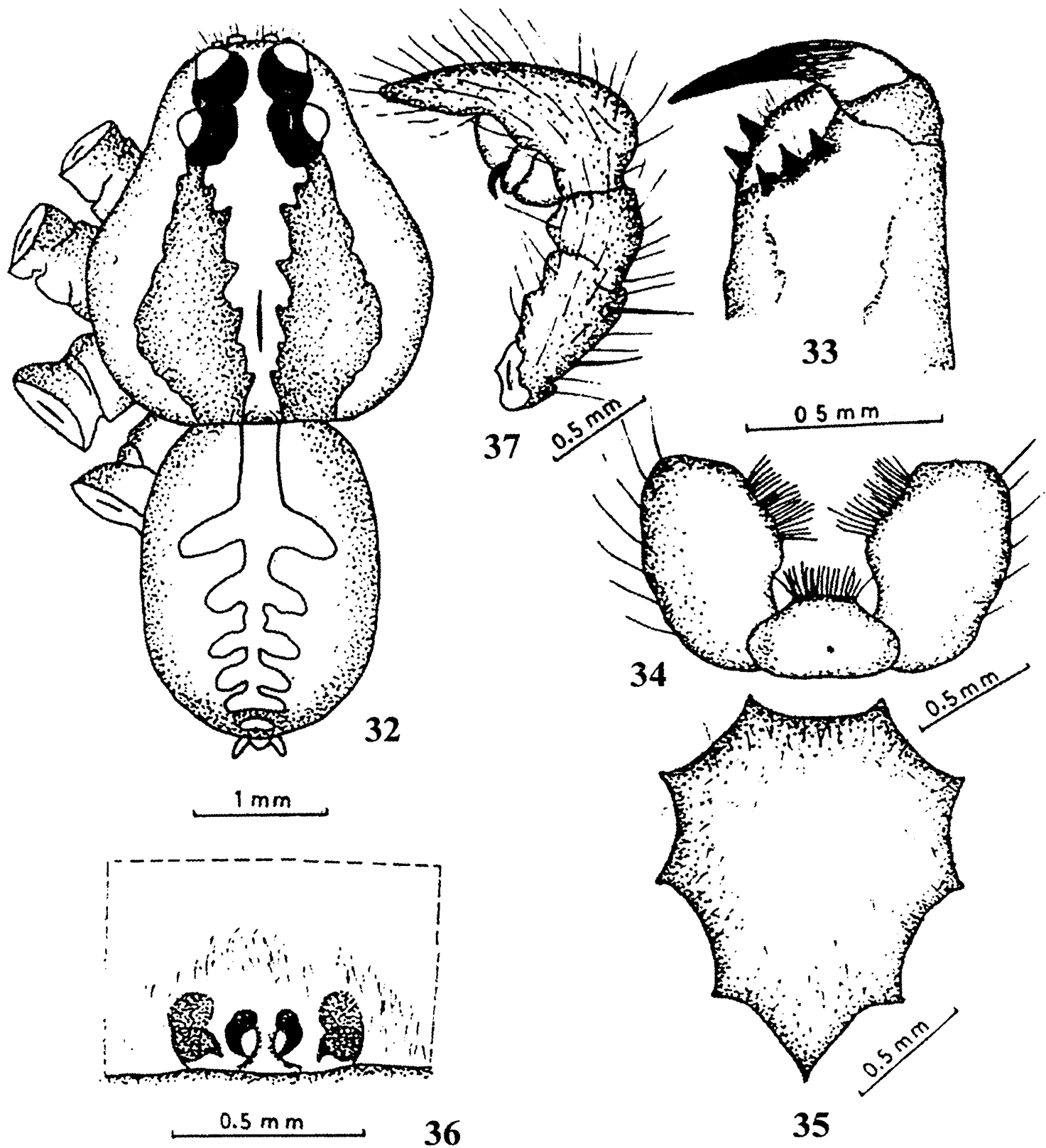
Distribution : BANGLADESH : Bogra, Munshiganj, Narayanganj, Potuakhali; BORNEO; INDIA; INDONESIA; JAVA; SUMATRA (Tikader and Malhotra, 1980).



Figs. 19-25 : *Pardosa ladakhensis* Tikader : 19. Whole body (dorsal view); 20. Chelicerae; 21. Maxillae and Labium; 22. Sternum; 23. Epigynum; 24. Internal genitalia and 25. Male palp.



Figs. 26-31 : *Pardosa minutus* Tikader & Malhotra : 26. Whole body (dorsal view); 27. Chelicerae; 28. Maxillae and Labium; 29. Sternum; 30. Epigynum and 31. Internal genitalia.



Figs. 32-37 : *Pardosa pusiola* (Thorell) : 32. Whole body (dorsal view); 33. Chelicerae; 34. Maxillae and Labium; 35. Sternum; 36. Epigynum and 37. Male palp.

7. *Pardosa royi* n. sp.

(Figs. 38–43)

General : Female : Cephalothorax brownish; legs brown with black spots; abdomen brownish with white spots. Total body length (Holotype) 6.30 mm. Carapace length 3.00 mm; carapace width 2.50 mm; abdominal length 3.30 mm; abdominal width 2.60 mm.

Cephalothorax : Broad, longer than wide, wider at base, narrowing anteriorly, clothed with marginal band of pubescence. Anterior row of eyes straight, similar, shorter than 2nd row; eyes of 2nd and 3rd rows similar; 3rd row of eyes distantly placed; ocular area raised, narrowing anteriorly, somewhat rectangular; base of 2nd and 3rd row of eyes connected. Cephalic region raised, 2 black cervical furrows extend from the centre of thorax upto the anterolateral margins. Chelicerae brown, strong, longer than wide, inner margin with 3 and outer margin with 2 closely placed teeth (Fig. 39). Maxillae brown, longer than wide, anteriorly broad and scopulate (Fig. 40). Labium brown, broad, longer than wide, basally constricted, vase-shaped, anteriorly scopulate (Fig. 40). Sternum pale brown, elongate, nearly oval, broad below the middle, pointed posteriorly, anteriorly flat, clothed with few spines and hairs (Fig. 41). Legs long, slender, clothed with hairs and spines; leg formula 4231 and measurements (in mm) as in Table 1.

Table-1 : Length of legs of female (♀) holotype of *Pardosa royi* n. sp.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	1.3/1.3	0.6/0.6	1.6/1.6	1.9/1.9	1.4/1.3	6.9/6.8
II	1.8/1.8	0.8/0.8	1.8/1.8	2.0/2.0	1.4/1.4	7.8/7.8
III	1.6/1.6	0.7/0.7	1.7/1.7	1.8/1.8	1.2/1.2	7.0/7.0
IV	1.9/1.9	0.9/0.9	2.0/2.0	2.1/2.1	1.6/1.6	8.5/8.5

Abdomen : Longer than wide, posteriorly wide and bluntly pointed, covered with hairs and spines; ventrally pale, with few brownish markings; anterolateral spinnerets elongate; epigyne and internal genitalia as in figs. 42 and 43.

Male : Unknown.

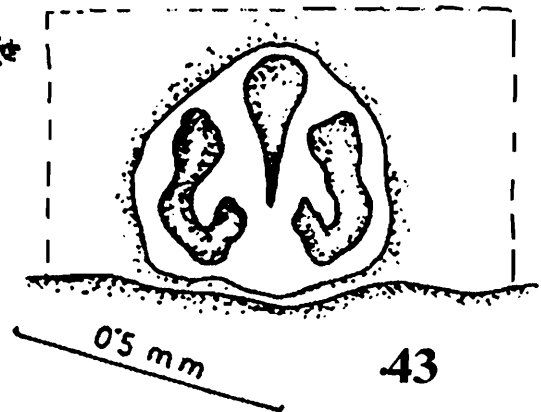
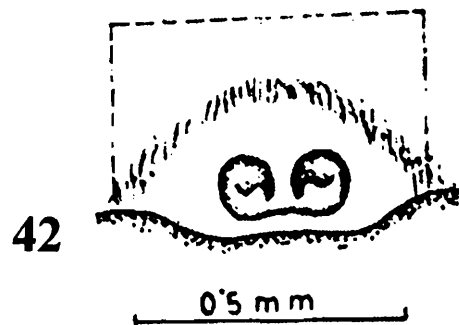
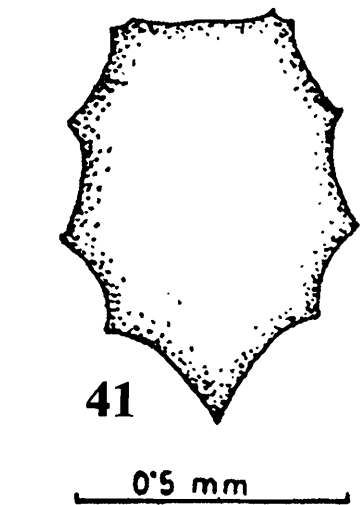
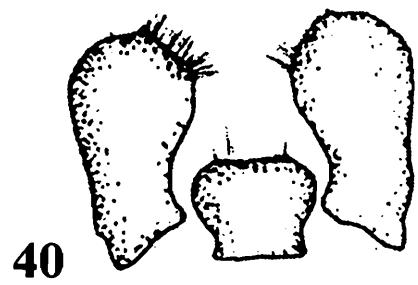
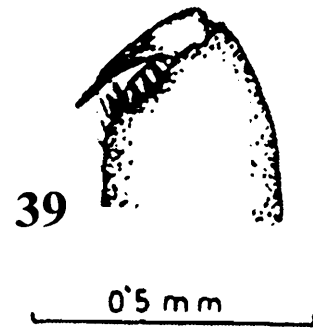
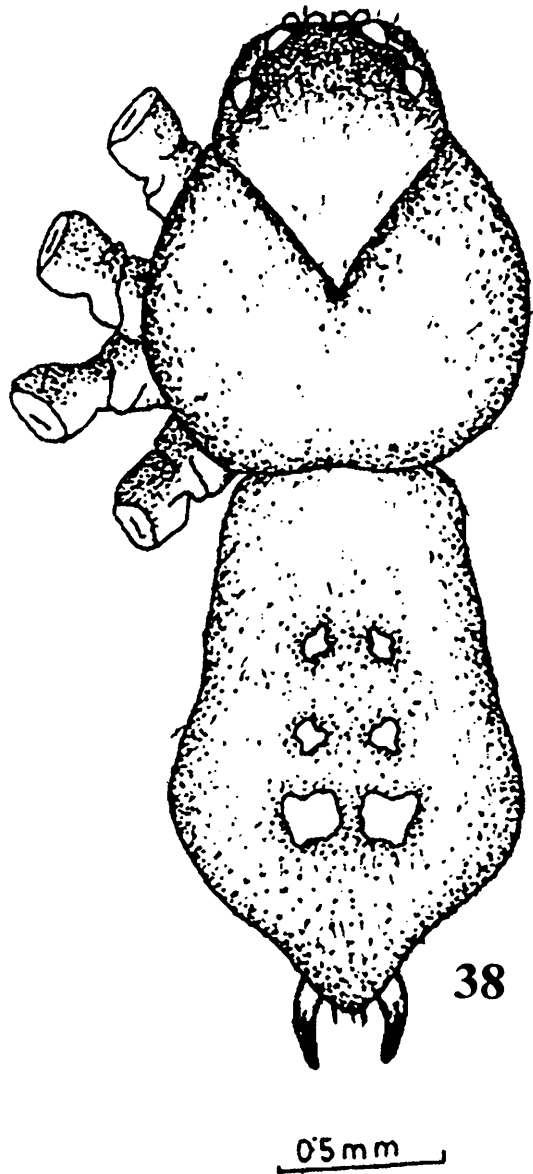
Holotype : Female in spirit.

Paratypes : 2♀, Bagerhat, 18.XI.1992, Coll : V Biswas.

Etymology : The species is named after the famous scientist Acharya Profulla Chandra Roy.

Distribution : BANGLADESH : Bagerhat and Pirojpur, date 25.VIII.1992 and 18.XI.1992, Coll : V. Biswas.

Diagnosis : The epigynum of the present species does not relate to any of the Indian congeners (Tikader and Malhotra, 1980) and the other species known from elsewhere (Tongiorgi, 1966a, b;



Figs. 38-43 : *Pardosa royi* n. sp. : 38. Whole body (dorsal view); 39. Chelicerae; 40. Maxillae and Labium; 41. Sternum; 42. Epigynum and 43. Internal genitalia.

Kronstedt 1981, '86, '88, '93; Tanaka, 1985, '93a, b, '98; Chen and Zhang, 1991; Zhao, 1993; Koh, 1989; Yaginuma, 1986; Kaston 1948; Dondale and Redner, 1990; Shinkai and Takano, 1984; Yin, *et. al.*, 1997a, b).

Therefore, the species is described as new to science.

8. *Pardosa shyamae* (Tikader)

(Figs. 44–49)

1970. *Lycosa shyamae* Tikader, *Rec. zool. Surv. India*, 64(4) : 67.

1976. *Pardosa shyamae* : Tikader & Malhotra, *Proc. Indian Acad. Sci.*, 83(3) : 123.

Material examined : 1♀, Bagerhat, 9.IX.1992, Coll : V Biswas; 2♀, BRRI, Joydevpur, Dhaka, 3.V.1992, Coll : V Biswas; 2♀, Jhenidah, 12.III.1991, Coll : V Biswas; 2♀, Khulna, 18.V.1990, Coll : V. Biswas; 1♀, Shirajganj, Pabna, 10.X.1992, Coll : V Biswas; 3♀, Digha, Rajshahi, 3.III.1992, Coll : V. Biswas; 1♀, Srimongal, Sylhet, 12.X.1992, Coll : V. Biswas.

Distribution : BANGLADESH : Bagerhat, Dhaka, Jhenidah, Khulna, Pabna, Rajshahi, Sylhet; INDIA (Tikader and Malhotra, 1980).

9. *Pardosa songosa* Tikader & Malhotra

(Figs. 50–55)

1976. *Pardosa songosa* Tikader & Malhotra, *Proc. Indian Acad. Sci.*, 83(3) : 128.

Material examined : 2♀, Kochua, Bagerhat, 8.V.1990, Coll : V Biswas; 1♀, Barisal, 12.X.1991, Coll : V Biswas; 2♀, Dhaka, 4.III.1993, Coll : V Biswas; 2♀, Faridpur, 5.VIII.1992, Coll : V. Biswas; 1♀, Mymensingh, 12.IX.1992, Coll : V Biswas; 1♀, Noakhali, 2.III.1992, Coll : V. Biswas; 2♀, Digha, Rajshahi, 3.III.92, Coll : V Biswas.

Distribution : BANGLADESH : Bagerhat, Barisal, Dhaka, Faridpur, Mymensingh, Noakhali, Rajshahi; INDIA (Tikader and Malhotra, 1980).

10. *Pardosa sumatrama* (Thorell)

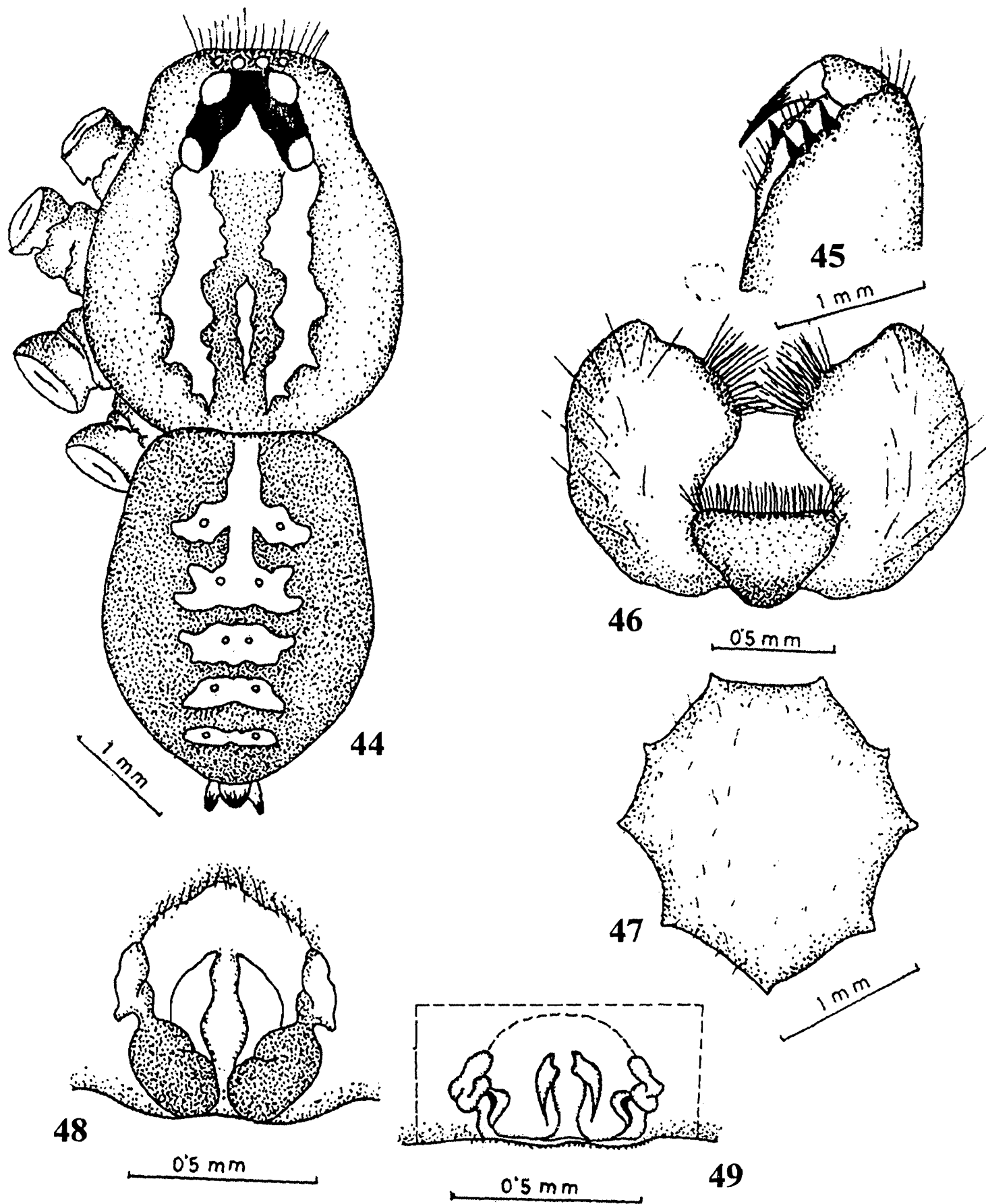
(Figs. 56–62)

1890. *Lycosa sumatrana* Thorell, *Ann. Mus. Stor. nat. Genova*, 30 : 139.

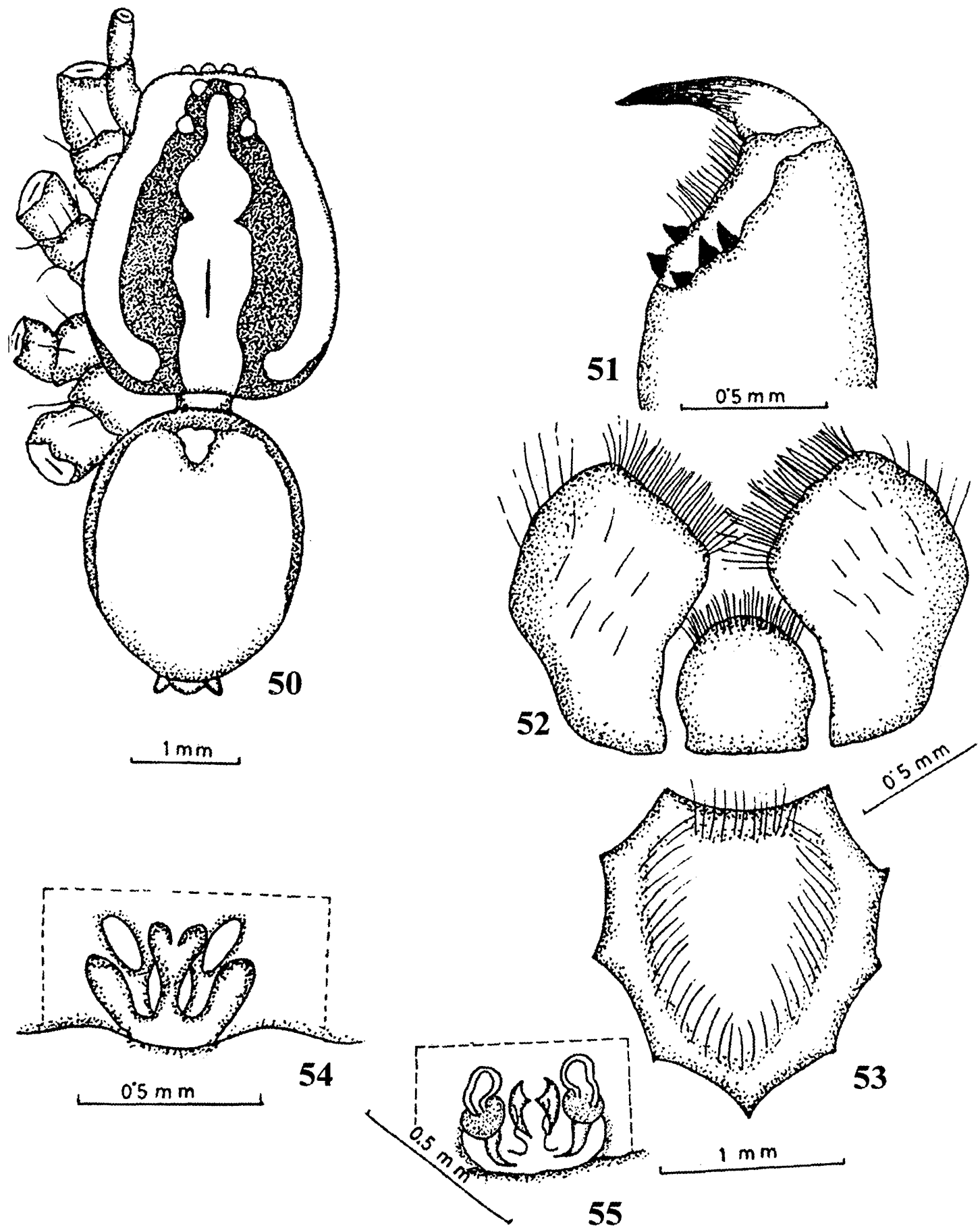
1980. *Pardosa sumatrana* : Tikader & Malhotra, *Fauna of India, Spiders*, 1(2) : 353.

Material examined : 2♀, Chittagong, 12.IX.1990, Coll : V. Biswas; 2♀, R. U. campus, 3.III.1992, Coll : V. Biswas; 2♀, Japhlong, Sylhet, 10.I.1993, Coll : V. Biswas; 2♀, Shikerpur, Jhenidah, 8.V.1992, Coll : V Biswas; 1♂, Kustia, 5.VI.1992, Coll : V Biswas; 1♂, 3♀, Mymensingh, 5.III.1991, Coll : V Biswas.

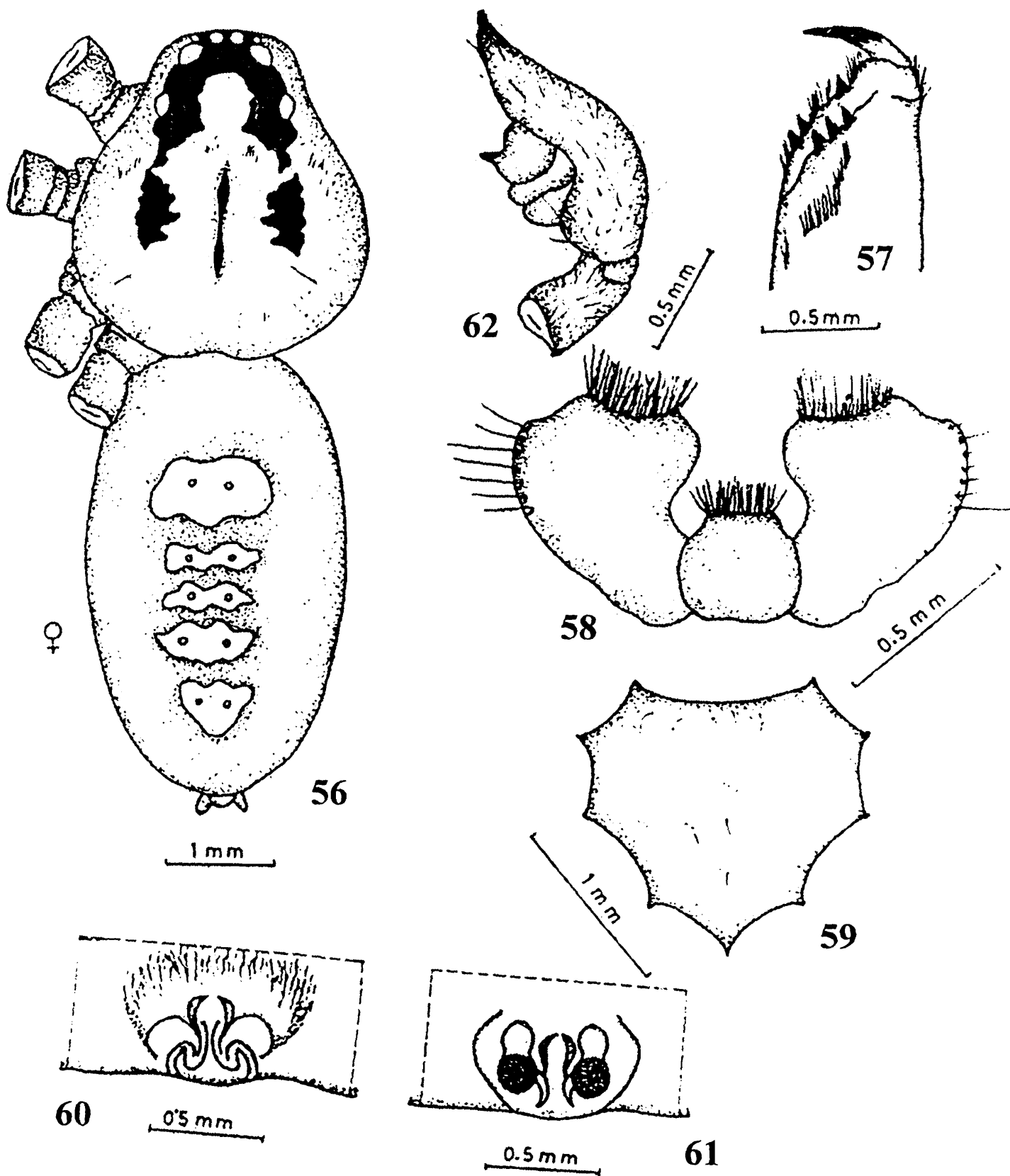
Distribution : BANGLADESH : Chittagong, Jhenidah, Kustia, Myemnsingh, Rajshahi, Sylhet; INDIA; SRILANKA; SUMATRA (Tikader and Malhotra, 1980).



Figs. 44-49 : *Pardosa shyamae* (Tikader) : 44. Whole body (dorsal view); 45. Chelicerae; 46. Maxillae and Labium; 47. Sternum; 48. Epigynum and 49. Internal genitalia.



Figs. 50-55 : *Pardosa songosa* Tikader & Malhotra : 50. Whole body (dorsal view); 51. Chelicerae; 52. Maxillae and Labium; 53. Sternum; 54. Epigynum and 55. Internal genitalia.



Figs. 56-62 : *Pardosa sumatrana* (Thorell) : 56. Whole body (dorsal view); 57. Chelicerae; 58. Maxillae and Labium; 59. Sternum; 60. Epigynum; 61. Internal genitalia and 62. Male palp.

SUMMARY

The wolf spiders of the genus *Pardosa* C. L. Koch, Bangladesh, is represented by 10 (ten) species namely-*P. annandalei* (Gravely), *P. birmanica* Simon, *P. heterophthalmus* (Simon), *P. ladakhensis* Tikader, *P. minutus* Tikader & Malhotra, *P. pusiola* (Thorell), *P. shyamae* Tikader, *P. songosa* Tikader & Malhotra, *P. sumatrana* (Thorell) and *P. royi* n. sp.

The study of the spiders of this area was started in 1984, has revealed the existence of the above species for a particular area of Bangladesh. Identity of the species were later confirmed by the Zoological Survey of India, Kolkata.

ACKNOWLEDGEMENTS

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