

WOLF SPIDERS (ARANEAE: LYCOSIDAE) OF THE RESERVE FORESTS OF DOOARS, WEST BENGAL, INDIA

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ABSTRACT: 31 species under 6 genera till date are found to compose lycosid fauna of Dooars, West Bengal. Of these *Arctosa quinquedens* is considered as new to science. Hitherto unknown male morph of *Draposa amkhasensis* (Tikader & Malhotra) comb. nov. is reported. Record of *Pardosa procurva* Yu & Song from the country delimits its distribution range. All these new spiders are described and illustrated. New combination for the species *Draposa amkhasensis* (Tikader & Malhotra) and *D. burasantiensis* (Tikader & Malhotra) is proposed.

KEY WORDS: Lycosid, new species, new male morph, new combination, Dooars, West Bengal.

Wolf spiders are free living, litter and ground dwellers found worldwide with 2387 species under 120 genera (Platnick, 2012). They are so named because of their chasing habit. They are supposed to play an important role in regulating ground dwelling insect pests. Sebastian & Peter (2009) listed 126 species under 17 genera from our country that includes 48 species under 8 genera known from the state (Tikader & Biswas, 1981; Biswas & Biswas, 1992; Majumder, 2005, 2007).

Despite several publications dealing with the spiders of Dooars (for details see Raychaudhuri & his coworkers), lycosids are known by 3 species, *Hippasa partita* (O. P. Cambridge), *Pardosa sumatrana* (Thorell) and *P. duplicata* Saha et al. (Saha et al., 1994a,b) only.

An attempt is therefore made to deal with 205 lycosid individuals representing 31 species under 6 genera sampled (67.16% by hand picking; 23.0% by pit fall trap; and 9.84% through Berlese extraction) till date from the area. These include a new species *Arctosa quinquedens*, hitherto unknown male morph of *Draposa amkhasensis* (Tikader & Malhotra) comb. nov. and *Pardosa procurva* Yu & Song as new from the country. We propose new combination for the species *Draposa amkhasensis* (Tikader & Malhotra) and *D. burasantiensis* (Tikader & Malhotra). Besides providing data of the recorded species, the species considered new are described and illustrated.

MATERIAL AND METHODS

Materials were mainly collected by hand on the ground and under stone during the surveys conducted (1993-2011) in the reserve forests of Dooars viz. Chapramari Wild Life Sanctuary (CWLS), Gorumara National Park (GNP),

Jaldapara Wild Life Sanctuary (JWLS) and Buxa Tiger Reserve (BTR) . They were also collected by pitfall traps and Berlese extraction.

Spider specimens thus sampled were preserved following Tikader (1987) and were studied under Stereo Zoom Binocular Microscopes, model Olympus SZX-7 and Zeiss SV-11. The measurements indicated in the text are in millimeters (mm), made with an eye piece graticule. Materials are in the deposition of Entomology Laboratory, Department of Zoology, University of Calcutta, Kolkata.

Abbreviations used: AL= abdominal length, ALE= anterior lateral eye, AME= anterior median eye, AW= abdominal width, CL= cephalothoracic length, CW= cephalothoracic width, PLE= posterior lateral eye, PME= posterior median eye, TL= total length.

RESULTS

Genus: *Arctosa* C. L. Koch

Arctosa himalayensis Tikader & Malhotra

Arctosa himalayensis Tikader & Malhotra, 1980. Rec. Zool. Surv. India, 1 (2): 369.

Material examined: 1 female, **Rajabhatkhawa**, BTR, Jalpaiguri, West Bengal, India, 14. iv. 2010, coll. D. C. Dhali; 1 female, **Poro**, BTR, Jalpaiguri, West Bengal, India, 22. ix. 2010, coll. D. C. Dhali.

The species is the first record for the Dooars fauna.

Distribution: India: Uttar Pradesh, West Bengal (Tikader & Malhotra, 1980; Majumder & Tikader, 1991; Biswas & Biswas, 1992).

Arctosa indica Tikader & Malhotra

Arctosa indica Tikader & Malhotra, 1980. Rec. Zool. Surv. India, 1 (2): 371.

Material examined: 2 males, **Rajabhatkhawa**, BTR, Jalpaiguri, West Bengal, India, 12. iv. 2010, coll. D. C. Dhali.

The species is the first record for the Dooars fauna.

Distribution: India: Maharashtra, West Bengal; China (Tikader & Malhotra, 1980; Majumder & Tikader, 1991; Biswas & Biswas, 1992).

Arctosa quinquedens sp. nov.

Description: Female (Holotype)

CL- 2.22, CW- 1.57, AL- 2.52, AW- 1.61, TL- 4.74. Cephalothorax (Fig. 1) dark brown, longer than wide, anteriorly narrowed, posteriorly deeply depressed, convex, glabrous, clothed with pubescence, margined with transparent, short hairs, midlongitudinally with a pale brown band extending up to the middle of ocular quad. Cephalic region raised, with 2 dark brown, narrow, nearly parallel sided, basally convergent bands between the PLE, cephalic groove inconspicuous, cervical furrow deeply grooved. Eyes 8, transparent, except anteromedians, round, ringed with black, arranged in 2 rows, anterior straight or nearly so, posterior strongly recurved; eye diameter: PME > PLE > ALE > AME; interocular distance (Fig. 2): AME-AME-0.13; ALE-AME-0.13; ALE-ALE-0.39; PME-PME-0.61; PLE-PME-0.57; PLE-PLE-0.83; ALE-PLE-0.74; and AME-PME-0.30. Clypeus pale brown, basally darker, armed with more than 10 dark spines. Thoracic region with prominent short, black, midlongitudinal fovea, 2 short black lines just above it, radii 3 on each side distinct. Chelicerae (Fig. 3) pale brown, small, stout, retromargin with 3 and promargin with 2 black, equal sized teeth and scopulate; fang brown, short, stout, curved. Labium (Fig. 4) pale brown, basally constricted, distally swollen, apical margin round, scopulate. Maxillae (Fig. 4) pale brown, longer than wide, inner margin concave, outer margin inwardly curved at both ends and scopulate. Sternum (Fig. 4) pale brown, cordate, anteriorly weakly concave, posteriorly narrowed, clothed with black hairs. Legs dark brown except coxae and trochanter, femur I more dark, moderate, slender, coxae with a longitudinal in fold laterally, claws brown, 3, unequal, larger with 2 pectinations; femora with 2-0-0-0 and tibia with 0-6 (2-2-2)-0-0 spinations. Leg formula - 4123.

Abdomen (Fig.1) dark brown, elongate oval, anteriorly with several dark brown hairs, posteriorly pubescent. Dorsum with longitudinal pale brown band, enclosing 4 tiny, brown

sigilla on the anterior half. Venter pale brown, clothed with pubescence, medially faintly dark, epigastric furrow distinct.

Epigynum and internal genitalia (Figs. 5-6): Epigynum conspicuous; copulatory openings small, round, near epigastric furrow; copulatory ducts short, thin, coiled; spermathecae elongate, tubular, basally inwardly curved and converging at the narrower apex of median septum; fertilization ducts short, very thin, curved and opening into atrium near septal apex.

Material examined: 1 female (Holotype), **Rajabhatkhawa**, BTR, Jalpaiguri, West Bengal, India, 9. iv. 2009, coll. D. C. Dhali.

Type deposition: Entomology Laboratory, Department of Zoology, University of Calcutta, Registration no. EZC 0025-12.

Distribution: India: West Bengal.

Etymology: The species name is derived from the five cheliceral teeth.

Remark: The closest ally of the present species appears to be *Arctosa subamylacea* (Bosenberg & Strand, 1906), but can be separated by (i) short length, 4.82 mm (longer, 6.92 in *A. subamylacea*), (ii) femora I with 2 dorsal spines (femora I with 3 dorsal spines in *A. subamylacea*), (iii) tibia I with 3 pairs of ventral spines (tibia I with 2 pairs of ventral spines in *A. subamylacea*), (iv) spermathecae elongate, tubular, basally inwardly curved and converging at the narrower apex of median septum (spermathecae round in *A. subamylacea*) and (v) fertilization ducts short, very thin, curved and opening into atrium near septal apex (fertilization ducts short, thin and opening into atrium just above the septum apex in *A. subamylacea*). Such differences justify the erection of the new species.

Genus: *Draposa* Kronstedt

Draposa amkhasensis (Tikader & Malhotra) comb. nov.

Pardosa amkhasensis Tikader & Malhotra, 1976. Proc. Indian Acad. Sci., 83 (3): 124-126.

Description: New male morph

CL-2.91, CW-2.35, AL-2.70, AW-1.70, TL-5.61. Cephalothorax (Fig. 7) pale brown, with brown patch, ocular area black, longer than wide, convex, both ends narrowing and truncate, medially widest, clothed with pubescence and black, long, erect hairs and white pubescence on and around ocular area; both cephalic and thoracic region in the same plane, former with a midlongitudinal, faint groove, extending from the midlongitudinal, deep, brown, long thoracic fovea up to the middle. Eyes 8, transparent, posterior row with bluish tinge, ringed with black, in 2 rows, anterior shorter and weakly recurved than the recurved posterior; ocular quad longer than wide, basally broader. Eye diameter PME>PLE>AME>ALE. Inter ocular distance: AME-AME-0.17, ALE-AME-0.22, ALE-ALE-0.57, PME-PME-0.57, PLE-PME-0.65, PLE-PLE-0.96, ALE-PLE-0.83, and AME-PME-0.30. Clypeus brown, medially marked by black, anterolateral corners blackish brown, vertical, height medium, clothed with 2 black, long hairs on each side of median black marking. Thorax with numerous distinct radii. Chelicerae (Fig. 8) brown, long, strong, both margins with 3 teeth and scopulate; fang deep brown, medially black, long and curved. Labium (Fig. 9) grey brown, basally darker, wider than long, apex round, medially widest, basally narrowing, shortly pedunculate, truncate, and scopulate. Maxillae (Fig. 9) grey, longer than wide, apically widest, basally pointed, inner margin concave, outer margin round, and scopulate. Sternum (Fig. 9) pale, cordate, anteriorly truncate, posteriorly pointed, margins weakly produced between each coxa, clothed with spiny hairs. Legs pale, femora dorsally with numerous faint black patches, long, slender, 3 clawed, superior 2 with 6 pectinations all over the length while inferior without such, clothed with hairs, each trochanter distally broadly bifurcate with apices spiny; femora I with 3-0-2(2)-4(2-1-1), femora II with 3-0-2-4, femora III with 3-0-2-2, femora IV with 3-0-2-1 and tibia with 2-6(2-2-2)-2-2 spination.

Leg formula- 4132.

Abdomen (Fig. 7) pale, with numerous black patches, elongately oval, clothed with pubescence and black, spiny hairs; dorsum anteromedially with a faint, pale yellow marking, midlongitudinally with 11 pairs of tiny, black spots; venter pale, posterolateral margins spotted with black, clothed with pubescence.

Male palp (Figs. 10-11): pale brown; embolus long, curved, wider before sharp tip; tegular apophysis sclerotised and hook like, sub apically protuberant; palea with variable projections, subpalea with prominent projections, these remain covered by terminal part of bulbous; paleal apophysis at the base of embolus; sperm duct long, distinct and curved.

Material examined: 1 male, **Jaldapara**, JWLS, Jalpaiguri, West Bengal, India, 12. iv. 2009, coll. D. C. Dhali; 3 males, **Murti**, GNP, Jalpaiguri, West Bengal, India, 01. vi. 2009, coll. D. C. Dhali.

Distribution: India: Madhya Pradesh, West Bengal (Tikader & Malhotra, 1980; Majumder & Tikader, 1991; Biswas & Biswas, 1992).

Note: The species was so far known by the females only and hence the male is described and illustrated.

***Draposa burasantiensis* (Tikader & Malhotra) comb. nov.**

Pardosa burasantiensis (Tikader & Malhotra), 1976. Proc. Indian Acad. Sci., 83 (3): 130-131.

Material examined: 1 male, **Bichabhanga**, GNP, Jalpaiguri, West Bengal, India, 15. iv. 2009, coll. D. C. Dhali; 1 male, **Murti**, GNP, Jalpaiguri, West Bengal, India, 01. vi. 2009, coll. S. Sen. This species is the first record for the Dooars fauna.

Distribution: India: West Bengal; China (Tikader & Malhotra, 1976; Tikader & Malhotra, 1980; Tikader & Biswas, 1981; Biswas & Biswas, 1992).

Remarks: Kronstedt (2010) opined that *Pardosa amkhasensis* Tikader & Malhotra and *P. burasantiensis* Tikader & Malhotra may qualify for transfer to the genus *Draposa* Kronstedt. Our perception to the species in question fits well with the definition of *Draposa* Kronstedt. Hence we propose new combination *Draposa amkhasensis* (Tikader & Malhotra) and *D. burasantiensis* (Tikader & Malhotra).

Genus: *Hippasa* Simon

***Hippasa agelenoides* (Simon)**

Pirata agelenoides Simon, 1884. Ann. Mus. Civ. Stor. Nat. Genova, 20: 334.

Hippasa agelenoides (Simon, 1884); Simon, 1885. Bull. Soc. Zool. France, 10: 31.

Material examined: 1 female, **Kodalbasti**, JWLS, Jalpaiguri, West Bengal, India, 21. ix. 2007, coll. S. Saha; 1 female, **21 Miles**, BTR, Jalpaiguri, West Bengal, India, 13. iv. 2009, coll. S. Sen; 1 female, **Lataguri**, GNP, Jalpaiguri, West Bengal, India, 13. iv. 2009, coll. D. Raychaudhuri; 2 females, **Jaldapara**, JWLS, Jalpaiguri, West Bengal, India, 13. iv. 2009, coll. D. C. Dhali; 1 female, **Jaldapara**, JWLS, Jalpaiguri, West Bengal, India, 13. iv. 2009, coll. D. C. Dhali; 1 female, **Murti**, GNP, Jalpaiguri, West Bengal, India, 15. iv. 2009, coll. D. C. Dhali; 1 female, **Kalipur**, GNP, Jalpaiguri, West Bengal, India, 18. iv. 2009, coll. D. C. Dhali; 1 female, **Jaldapara**, JWLS, Jalpaiguri, West Bengal, India, 19. iv. 2009, coll. D. C. Dhali; 1 female, **Panjhora**, CWLS, Jalpaiguri, West Bengal, India, 17. v. 2009, coll. D. C. Dhali; 6 females, **Murti**, GNP, Jalpaiguri, West Bengal, India, 01. vi. 2009, coll. D. C. Dhali; 1 female, **Murti**, GNP, Jalpaiguri, West Bengal, India, 10. vi. 2009, coll. D. C. Dhali; 1 female, **Jayanti**, BTR, Jalpaiguri, West Bengal, India, 10. x. 2009, coll. S. Sarkar; 1 female, **Bichabhanga**, GNP, Jalpaiguri, West Bengal, India, 15. vi. 2009, coll. D. C. Dhali; 1 female, **Raimatang**, BTR, Jalpaiguri, West Bengal, India, 9. iv. 2010, coll. D. C. Dhali; 2 females, **Chipra**, BTR, Jalpaiguri, West Bengal, India, 29. x. 2010, coll. D. C. Dhali; 1 female, **South Rydak**, BTR, Jalpaiguri, West Bengal, India, 30. x. 2010, coll. D. C. Dhali.

The species is the first record from West Bengal.

Distribution: India: Karnataka, Kerala, Maharashtra, Tamil Nadu, Uttar Pradesh, West Bengal (new record); to Taiwan (Tikader & Malhotra, 1980).

***Hippasa greenalliae* (Blackwall)**

Lycosa greenalliae Blackwall, 1867. Ann. Mag. Nat. Hist., 19 (3): 387.

Hippasa greenalliae (Blackwall, 1867); Simon, 1885. Bull. Soc. Zool. France, 10: 31.

Material examined: 1 female, **Murti**, GNP, Jalpaiguri, West Bengal, India, 01. ix. 2009, coll. D. C. Dhali; 1 female, **Buxaduar**, BTR, Jalpaiguri, West Bengal, India, 09. ix. 2009, coll. D. C. Dhali; 1 female, **Barovisha**, BTR, Jalpaiguri, West Bengal, India, 01. x. 2010, coll. S. Sarkar. This species is the first record for the Dooars fauna.

Distribution: India: Andhra Pradesh, Karnataka, Kerala, Maharashtra, Orissa, Sikkim, Tamil Nadu, Uttar Pradesh, West Bengal; Bangladesh, China, Sri Lanka, (Tikader & Malhotra, 1980; Biswas & Biswas, 1992; Thulsi Rao et al, 2005; Majumder, 2007).

Hippasa madraspatana Gravely

Hippasa madraspatana Gravely, 1924. Rec. Indian Mus. Calcutta, 26: 595.

Material examined: 1 male, **Chapramari**, CWLS, Jalpaiguri, West Bengal, India, 02. vi. 2009, coll. D. C. Dhali.

The species is the first record from West Bengal.

Distribution: India: Gujarat, Tamil Nadu, West Bengal (new record) (Gravely, 1924; Tikader & Malhotra, 1980).

Hippasa partita (O. P. Cambridge)

Trochosa partita O. P.-Cambridge, 1876. Proc. Zool. Soc. London. 1876: 599.

Hippasa partita (O. P.-Cambridge, 1876); Pavesi, 1895. Ann. Mus. Civ. Stor. Nat. Genova, 35: 521.

Material examined: 1 male, **South Rydak**, BTR, Jalpaiguri, West Bengal, India, 05. iv. 1993, coll. S. Saha.

Distribution: India: Gujarat, Madhya Pradesh, Rajasthan, West Bengal; Alexandria, Egypt, Central Asia, Pakistan (Tikader & Malhotra, 1980; Saha et al, 1994a,b; Gajbe, 2004; Majumder, 2007).

Genus: *Hogna* Simon

Hogna himalayensis Gravely

Lycosa himalayensis Gravely, 1924. Rec. Indian Mus. Calcutta, 26: 603.

Hogna himalayensis (Gravely, 1924); Buchar, 1997. Ent. Basil, 20: 15-17.

Material examined: 1 female, **Mendabari**, JWLS, Jalpaiguri, West Bengal, India, 02. iv. 2003, coll. D. Raychaudhuri; 3 females, **Jaldapara**, JWLS, Jalpaiguri, West Bengal, India, 12. iv. 2009, coll. D. C. Dhali; 1 female, **Murti**, GNP, Jalpaiguri, West Bengal, India, 01. vi. 2009, coll. S. Sen; 2 females, **Bichabhanga**, GNP, Jalpaiguri, West Bengal, India, 15. x. 2009, coll. S. Saha; 1 female, **Checko**, BTR, Jalpaiguri, West Bengal, India, 17. ii. 2010, coll. D. C. Dhali; 1 female, **Buxaduar**, BTR, Jalpaiguri, West Bengal, India, 08. iv. 2010, coll. S. Sarkar; 1 female, **Raimatang**, BTR, Jalpaiguri, West Bengal, India, 09. iv. 2010, coll. D. C. Dhali; 1 female, **Checko**, BTR, Jalpaiguri, West Bengal, India, 17. ix. 2010, coll. D. C. Dhali; 1 female, **Poro**, BTR, Jalpaiguri, West Bengal, India, 22. ix. 2010, coll. T. K. Roy; 1 female, **South Rydak**, BTR, Jalpaiguri, West Bengal, India, 30. x. 2010, coll. D. C. Dhali; 2 males, **Chapramari**, CWLS, Jalpaiguri, West Bengal, India, 31. x. 2010, coll. D. C. Dhali.

This species is the first record for the Dooars fauna.

Distribution: India: Karnataka, Kerala, Maharashtra, Tamil Nadu, Uttar Pradesh, West Bengal (new record); to Taiwan (Gravely, 1924; Tikader & Malhotra, 1980).

Genus: *Lycosa* Latreille

Lycosa bistriata Gravely

Lycosa bistriata Gravely, 1924. Indian Mus. Calcutta, 26: 600.

Material examined: 1 female, **Buxaduar**, BTR, Jalpaiguri, West Bengal, India, 11. iv. 2009, coll. D. C. Dhali; 2 females, **Bichabhanga**, GNP, Jalpaiguri, West Bengal, India, 13. iv. 2009; 1 female, **Jayanti**, BTR, Jalpaiguri, West Bengal, India, 18. iv. 2009, coll. D. C. Dhali; 1 female, **Murti**, GNP, Jalpaiguri, West Bengal, India, 2. vi. 2009, coll. D. C. Dhali; 1 female, **Rajabhatkhawa**, BTR, Jalpaiguri, West Bengal, India, 10. iv. 2010, coll. D. C. Dhali.

This species is the first record for the Dooars fauna.

Distribution: India: Madhya Pradesh, Tamil Nadu, West Bengal; Bhutan (Gravely, 1924; Tikader & Malhotra, 1980; Biswas & Biswas, 1992; Gajbe, 2007).

Lycosa carmichaeli Gravely

Lycosa carmichaeli Gravely, 1924. Rec. Indian Mus. Calcutta, 26: 604.

Material examined: 1 female, **Dhupjora**, GNP, Jalpaiguri, West Bengal, India, 15. x. 2009, coll. D. C. Dhali; 2 females, **Poro**, BTR, Jalpaiguri, West Bengal, India, 13. vi. 2010, coll. D. C. Dhali.

This species is the first record for the Dooars fauna.

Distribution: India: Assam, Uttar Pradesh, West Bengal (Gravelly, 1924; Tikader & Malhotra, 1980; Biswas & Biswas, 1992; Majumder, 2007).

Lycosa indagatrix Walckenaer

Lycosa indagatrix Walckenaer, 1837. Histoire Naturelle des Ins. Apt. Paris, 1: 339.

Material examined: 1 male, **Raimatang**, BTR, Jalpaiguri, West Bengal, India, 09. iv. 2010, coll. D. C. Dhali; 1 male, **Rajabhatkhawa**, BTR, Jalpaiguri, West Bengal, India, 12. iv. 2010, coll. D. C. Dhali.

The species is a new record for the West Bengal fauna.

Distribution: India: Andhra Pradesh, Tamil Nadu, West Bengal (new record); Sri Lanka (Tikader & Malhotra, 1980).

Lycosa kempii Gravelly

Lycosa kempii Gravelly, 1924. Rec. Indian Mus. Calcutta, 26: 602.

Material examined: 2 females & 1 male, **Rajabhatkhawa**, BTR, Jalpaiguri, West Bengal, India, 12. iv. 2010, coll. D. C. Dhali; 1 female, **Silbunglow**, BTR, Jalpaiguri, West Bengal, India, 2. xi. 2010, coll. D. C. Dhali.

This species is the first record for the Dooars fauna.

Distribution: India: Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim, West Bengal; Bhutan, China, Pakistan (Gravelly, 1924; Tikader & Malhotra, 1980; Biswas & Biswas, 1992, 2004, '06; Majumder, 2007).

Lycosa mackenziei Gravelly

Lycosa mackenziei Gravelly, 1924. Rec. Indian Mus. Calcutta, 26: 606.

Material examined: 1 female, **Murti**, GNP, Jalpaiguri, West Bengal, India, 01. vi. 2009, coll. D. C. Dhali; 1 female, **Kumargram**, BTR, Jalpaiguri, West Bengal, India, 10. iv. 2010.

This species is the first record for the Dooars fauna.

Distribution: India: Bihar, Karnataka, Kerala, Punjab, West Bengal; Bangladesh, Pakistan (Gravelly, 1924; Tikader & Malhotra, 1980; Biswas & Biswas, 1992; Majumder, 2007).

Lycosa madani Pocock

Lycosa madani Pocock, 1901. Jour. Bombay Nat. Hist. Soc., 13: 486.

Material examined: 1 female, **Bichabhanga**, GNP, Jalpaiguri, West Bengal, India, 02. vi. 2009, coll. S. Sen; 2 females, **Rajabhatkhawa**, BTR, Jalpaiguri, West Bengal, India, 19. iv. 2010, coll. D. C. Dhali; 1 female, **Rajabhatkhawa**, BTR, Jalpaiguri, West Bengal, India, 13. iv. 2010, coll. D. C. Dhali; 1 female, **Raimatang**, BTR, Jalpaiguri, West Bengal, India, 20. iv. 2010, coll. D. C. Dhali.

The species is a further addition to the West Bengal fauna.

Distribution: India: Andhra Pradesh, Bihar, Karnataka, Kerala, Maharashtra, Orissa, West Bengal (new record) (Tikader & Malhotra, 1980).

Lycosa phipsoni Pocock

Lycosa phipsoni Pocock, 1899. Jour. Bombay Nat. Hist. Soc., 12: 751.

Material examined: 1 female, **Mairadanga**, JWLS, Jalpaiguri, West Bengal, India, 10. iv. 2009, coll. D. C. Dhali; 1 female, **Bichabhanga**, GNP, Jalpaiguri, West Bengal, India, 13. iv. 2009, coll. T. K. Roy; 2 females, **Buxaduar**, BTR, Jalpaiguri, West Bengal, India, 9. x. 2009, coll. D. C. Dhali; 5 females, **Rajabhatkhawa**, BTR, Jalpaiguri, West Bengal, India, 12. iv. 2010, coll. D. C. Dhali; 2 females, **Tashigaon**, BTR, Jalpaiguri, West Bengal, India, 13. iv. 2010, coll. S. Saha; 1 female, **Raimatang**, BTR, Jalpaiguri, West Bengal, India, 14. iv. 2010, coll. D. C. Dhali; 1 female, **Chipra**, BTR, Jalpaiguri, West Bengal, India, 28. iv. 2010, coll. D. Raychaudhuri; 1 female, **Rajabhatkhawa**, BTR, Jalpaiguri, West Bengal, India, 16. ix. 2010, coll. S. Sarkar; 1 female, **Checko**, BTR, Jalpaiguri, West Bengal, India, 17. iv. 2010, coll. S. Sen; 1 female, **Poro**, BTR, Jalpaiguri, West Bengal, India, 22. ix. 2010, coll. D. C. Dhali; 1♀, **Bhutanghat**, BTR, Jalpaiguri, West Bengal, India, 28. ix. 2010, coll. D. C. Dhali; 1 female, **Chipra**, BTR, Jalpaiguri, West Bengal, India, 29. ix. 2010, coll. D. C. Dhali; 1 female, **South Rydak**, BTR, Jalpaiguri, West Bengal, India, 30. ix. 2010, coll. D. C. Dhali; 1 female, **Barovisha**, BTR, Jalpaiguri, West Bengal, India, 01. xi. 2010, coll. D. C. Dhali; 1 female, **Kumargram**, BTR, Jalpaiguri, West Bengal, India, 31. i. 2011, coll. D. C. Dhali.

This species is the first record for the West Bengal fauna.

Distribution: India: Maharashtra, Orissa, West Bengal (new record); Bhutan, China, Nepal, Taiwan (Tikader & Malhotra, 1980).

***Lycosa shillongensis* Tikader & Malhotra**

Lycosa shillongensis Tikader & Malhotra, 1980. Rec. Zool. Surv. India, 1 (2): 403.

Material examined: 1 female, **Murti**, GNP, Jalpaiguri, West Bengal, India, 04. v. 2008, coll. S. Sen; 1 female, **Jaldapara**, JWLS, Jalpaiguri, West Bengal, India, 12. iv. 2009, coll. D. C. Dhali. This species is the first record for the Dooars fauna.

Distribution: India: Manipur, Meghalaya, West Bengal (Gravely, 1924; Tikader & Malhotra, 1980; Biswas & Biswas, 1992, 2004; Majumder, 2007).

***Lycosa tista* Tikader**

Lycosa tista Tikader, 1970. Rec. Zool. Surv. India, 64: 67.

Material examined: 3 females, **Rajbhatkhawa**, BTR, Jalpaiguri, West Bengal, India, 12. iv. 2010, coll. D. C. Dhali; 1 female, **Dima**, BTR, Jalpaiguri, West Bengal, India, 18. ix. 2010, coll. S. Sarkar; 1 female, **South Rydak**, BTR, Jalpaiguri, West Bengal, India, 30. ix. 2010, coll. Dhali.

This species is the first record for the Dooars fauna.

Distribution: India: Arunachal Pradesh, Kerala, Manipur, Sikkim, West Bengal; (Tikader, 1970; Tikader & Malhotra, 1980; Biswas & Biswas, 1992, 2004, '06; Majumder, 2007).

Genus: *Pardosa* C. L. Koch

***Pardosa birmanica* Simon**

Pardosa birmanica Simon, 1884. Ann. Mus. Civ. Stor. Nat. Genova, 20: 333.

Material examined: 2 females, **Buxaduar**, BTR, Jalpaiguri, West Bengal, India, 10. iv. 2009, coll. D. C. Dhali; 2 females, **Panjhora**, CWLS, Jalpaiguri, West Bengal, India, 02. vi. 2009, coll. D. C. Dhali; 3 females, **Buxaduar**, BTR, Jalpaiguri, West Bengal, India, 10. iv. 2009, coll. S. Sarkar; 1 female, **Poro**, BTR, Jalpaiguri, West Bengal, India, 10. iv. 2010, coll. D. Raychaudhuri; 1 female, **Checko**, BTR, Jalpaiguri, West Bengal, India, 17. ix. 2010, coll. S. Saha; 2 females, **South Rydak**, BTR, Jalpaiguri, West Bengal, India, 30. x. 2010, coll. T. K. Roy; 1 female, **Kumargram**, BTR, Jalpaiguri, West Bengal, India, 3. xi. 2010, coll. D. C. Dhali.

This species is the first record for the Dooars fauna.

Distribution: India: Andhra Pradesh, Bihar, Gujarat, Himachal Pradesh, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal; Bangladesh, Bhutan, China, Myanmar, Pakistan, Philippines (Gravely, 1924; Tikader & Malhotra, 1980; Biswas & Biswas, 1992; Barrion & Litsinger, 1995; Biswas & Raychaudhuri, 2003; Gajbe, 2007).

***Pardosa chambaensis* Tikader & Malhotra**

Pardosa chambaensis Tikader & Malhotra, 1976. Proc. Indian Acad. Sci. 83 (B): 128.

Material examined: 1 female, **Chapramari**, CWLS, Jalpaiguri, West Bengal, India, 29. v. 2009, coll. D. C. Dhali; 1 female, **Bhutanghat**, BTR, Jalpaiguri, West Bengal, India, 11. x. 2009, coll. D. C. Dhali.

This species is the first record for the Dooars fauna.

Distribution: India: Himachal Pradesh, West Bengal (new record) (Tikader & Malhotra, 1976; Tikader & Malhotra, 1980).

***Pardosa duplicata* Saha, Biswas et Raychaudhuri**

Pardosa duplicata Saha, Biswas and Raychaudhuri, 1994 Acta. Arachnol, 43 (1): 46.

Material examined: 1 female, **South Rydak**, BTR, Jalpaiguri, West Bengal, India, 06. iv. 1993, coll. S. Saha.

Distribution: India: West Bengal (Saha et al, 1994).

***Pardosa heterophthalma* (Simon)**

Acrionops heterophthalmus Simon, 1898. Histoire Naturelle des Araignées. Paris, 2: 362.

Pardosa heterophthalma (Simon, 1898); Tikader & Malhotra, 1980. Rec. Zool. Surv. India, 1 (2): 345.

Material examined: 4 females, **Murti**, GNP, Jalpaiguri, West Bengal, India, 01. vi. 2009, coll. D. C. Dhali.

This species is the first record for the Dooars fauna.

Distribution: India: Tamil Nadu, West Bengal (new record); to Indonesia (Tikader & Malhotra, 1980; Biswas & Raychaudhuri, 2003).

***Pardosa pseudoannulata* (Bösenberg & Strand)**

Tarentula pseudoannulata Bösenberg & Strand, 1906. Abh. Senck. Naturf. Ges., 30: 319.

Pardosa pseudoannulata (Bösenberg & Strand, 1906); Yaginuma, 1986. Hoikusha Publ. Co., Osaka: 162.

Material examined: 1 female, **Jaldapara**, JWLS, Jalpaiguri, West Bengal, India, 12. iv. 2009, coll. S. Sen; 3 females, **Buxaduar**, BTR, Jalpaiguri, West Bengal, India, 08. iv. 2010, coll. D. C. Dhali; 2 females, **Silbunglow**, BTR, Jalpaiguri, West Bengal, India, 2. xi. 2009, coll. D. C. Dhali.

Distribution: India: Kerala, Tamil Nadu, West Bengal; Bangladesh, Bhutan, Japan, Indonesia, Myanmar, Nepal, Pakistan, Philippines (Gravely, 1924; Tikader & Malhotra, 1980; Tikader & Biswas, 1981; Biswas & Biswas, 1992; Barrion & Litsinger, 1995; Biswas & Raychaudhuri, 2003; Gajbe, 2007).

***Pardosa pusiola* (Thorell)**

Lycosa pusiola Thorell, 1891. Kongl. Svenska. Vet.-Acad. Handl., 24 (2): 65.

Pardosa pusiola (Thorell, 1891); Simon, 1905. Mitt. Naturh. Mus. Hamburg, 22: 70.

Material examined: 1 female, **Kalipur**, GNP, Jalpaiguri, West Bengal, India, 12. iv. 2009, coll. D. C. Dhali; 1 female, **Chapramari**, CWLS, Jalpaiguri, West Bengal, India, 29. v. 2009, coll. S. Sen; 1 female, **Rajabhatkhawa**, BTR, Jalpaiguri, West Bengal, India, 12. iv. 2010, coll. D. C. Dhali.

The species is the first record for the Dooars fauna.

Distribution: India: West Bengal; Bangladesh, Bhutan, China, Indonesia, Myanmar, Nepal, Sri Lanka (Gravely, 1924; Tikader & Malhotra, 1980; Biswas & Biswas, 1992; Biswas & Raychaudhuri, 2003).

***Pardosa procurva* Yu & Song**

Pardosa procurva Yu & Song, 1988. Acta Zootaxon Singapore, 13: 30.

Description: Female

CL-1.93, CW-1.68, AL-2.93, AW-2.07, TL-4.86. Cephalothorax (Fig. 12) brown to blackish brown, longer than wide, convex, anteriorly narrower, truncate, posteriorly round, medially widest, clothed with white hairs and pubescence; cephalic region little raised, with 2 midlongitudinal, nearly parallel, narrow bands, converging posteriorly between PLE. Eyes 8, transparent, ringed with black, in 2 rows, anterior procurved, posterior strongly recurved; ocular area black with few white, long hairs and setae between PME. Eye diameter PME>PLE>AME>ALE. Inter ocular distance (Fig. 13): AME-AME-0.13, ALE-AME-0.13, ALE-ALE-0.36, PME-PME-0.60, PLE-PME-0.51, PLE-PLE-0.80, ALE-PLE-0.76, and AME-PME-0.33. Clypeus blackish and vertical. Thoracic fovea black and prominent; radii distinct. Chelicerae (Fig. 14) red brown to brown, longer than wide, robust, inner base with black marking, clothed with black, long hairs, both margins with 3 equal teeth; fang blackish brown, short, stout. Labium (Fig. 15) brown, wider than long, basally narrower than widest middle, lateral margins constricted, apically concave and scopulate. Maxillae (Fig. 15) brown, longer than wide, basally narrower, outer margin weakly concave and scopulate. Sternum (Fig. 15) pale brown, subcordate, clothed with black, long, erect hairs. Legs yellowish brown, femora darker, slender, 3 clawed, superior 2 with pectinations while inferior without such; femora with 3-0-1-1 and tibia with 0-6(2-2-2)-0-0 spination. Leg formula- 4132.

Abdomen (Fig. 12) black, anteriorly pale, with a pair of sigilla along side, oval; dorsum clothed with black, short, hairs, these anteriorly long and median hairs few, white, long, with a pair of small, white, submedian spots; venter off-white, with numerous, black, small markings, midlongitudinally with 2 rows of small sigilla extending from the epigastric furrow to the spinnerets, converging posteriorly.

Epigynum-internal genitalia (Figs. 16-17): Epigynum distinctly with 2 large, M-shaped hood; copulatory ducts long, thin; spermathecae basally expanded, medially thin, coiled and apically again expanded and round; fertilization ducts short, thin; lateral margins of median septum nearly straight.

Material examined: 1 female, **Buxaduar**, BTR, Jalpaiguri, West Bengal, India, 08. iv. 2010, coll. D. C. Dhali.

Distribution: India (new record): West Bengal; China, Taiwan (Yu & Song, 1988).

Note: The species is described and illustrated in the interest of Indian Arachnology.

***Pardosa songosa* Tikader & Malhotra**

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

Material examined: 3 females, **Dhupjhora**, GNP, Jalpaiguri, West Bengal, India, 19. iii. 2007, coll. D. Raychaudhuri; 1 female, **Dhupjhora**, GNP, Jalpaiguri, West Bengal, India, 03. v. 2008, coll. S. Saha; 2 females, Khunia, GNP, Jalpaiguri, West Bengal, India, 21. xii. 2008, coll. S. Sen; 1 female, **Chapramari**, CWLS, Jalpaiguri, West Bengal, India, 16. ii. 2009, coll. S. Sen; 4 females, **Panjhora**, CWLS, Jalpaiguri, West Bengal, India, 13. iv. 2009, coll. D. C. Dhali; 5 females, **Murti**, GNP, Jalpaiguri, West Bengal, India, 01. vi. 2009, coll. D. C. Dhali; 1 female, **Panjhora**, CWLS, Jalpaiguri, West Bengal, India, 02. vi. 2009, coll. S. Sen; 2 females, **Chilapata**, JWLS, Jalpaiguri, West Bengal, India, 04. vi. 2009, coll. D. C. Dhali; 2 females & 2 males, **Buxaduar**, BTR, Jalpaiguri, West Bengal, India, 09. x. 2009, coll. D. C. Dhali; 4 females, **Buxaduar**, BTR, Jalpaiguri, West Bengal, India, 08. iv. 2010, coll. S. Sarkar; 2 females, **Rajabhatkhawa**, BTR, Jalpaiguri, West Bengal, India, 10. iv. 2010, coll. D. C. Dhali; 1 male, **Buxaduar**, BTR, Jalpaiguri, West Bengal, India, 11. iv. 2010, coll. D. C. Dhali; 1 female, **Tashigaon**, BTR, Jalpaiguri, West Bengal, India, 11. iv. 2010, coll. D. C. Dhali; 10 males, **Rajabhatkhawa**, BTR, Jalpaiguri, West Bengal, India, 16. ix. 2010, coll. D. Raychaudhuri; 4 females, **Checko**, BTR, Jalpaiguri, West Bengal, India, 17. ix. 2010, coll. S. Saha; 2 females, **Poro**, BTR, Jalpaiguri, West Bengal, India, 22. ix. 2010, coll. D. C. Dhali; 1 female, **Bhutanghat**, BTR, Jalpaiguri, West Bengal, India, 28. x. 2010, coll. D. C. Dhali; 2 females, **Chipra**, BTR, Jalpaiguri, West Bengal, India, 29. x. 2010, coll. D. C. Dhali; 7 females, **Tiamari**, BTR, Jalpaiguri, West Bengal, India, 31. x. 2010, coll. D. C. Dhali; 1 female, **Silbunglow**, BTR, Jalpaiguri, West Bengal, India, 2. xi. 2010, coll. D. C. Dhali.

This species is the first record for the Dooars fauna.

Distribution: India: Uttar Pradesh, West Bengal; Bangladesh, China (Tikader & Malhotra, 1976; Tikader & Malhotra, 1980; Tikader & Biswas, 1981; Biswas & Biswas, 1992; Majumder, 2007).

***Pardosa sumatrana* (Thorell)**

Lycosa sumatrana Thorell, 1890. Ann. Mus. Civ. Stor. Nat. Genova, 30: 136.

Pardosa sumatrana (Thorell, 1890); Buchar, 1976. Ergebn. Forsch. Unternehmens Nepal Himalaya, 5: 207.

Material examined: 1 female, **South Rydak**, BTR, Jalpaiguri, West Bengal, India, 05. iv. 1993, coll. V. Biswas; 3 females, **Murti**, GNP, Jalpaiguri, West Bengal, India, 20. iii. 2007, coll. S. Saha; 5 females, **Dhupjhora**, GNP, Jalpaiguri, West Bengal, India, 30. x. 2007, coll. S. Sen; 1 female, Bichabhanga, GNP, Jalpaiguri, West Bengal, India, 01. v. 2008, coll. S. Sen; 2 females, **Dhupjhora**, GNP, Jalpaiguri, West Bengal, India, 12. iv. 2009, coll. D. C. Dhali; 1 female, **Murti**, GNP, Jalpaiguri, West Bengal, India, 01. vi. 2009, coll. S. Sen; 1 female, **Chapramari**, CWLS, Jalpaiguri, West Bengal, India, 02. vi. 2009, coll. D. C. Dhali; 1 female, **Bhutanghat**, BTR, Jalpaiguri, West Bengal, India, 11. x. 2009, coll. D. C. Dhali; 1 female, **Bhutanghat**, BTR, Jalpaiguri, West Bengal, India, 11. x. 2009, coll. D. C. Dhali; 1 female, **Tashigaon**, BTR, Jalpaiguri, West Bengal, India, 11. iv. 2010, coll. D. C. Dhali; 1 female, **Rajabhatkhawa**, BTR, Jalpaiguri, West Bengal, India, 13. iv. 2010, coll. S. Sarkar; 1 female, **Jayanti**, BTR, Jalpaiguri, West Bengal, India, 20. ix. 2010, coll. D. C. Dhali; 1 female, **South Rydak**, BTR, Jalpaiguri, West Bengal, India, 30. x. 2010, coll. D. Raychaudhuri; 1 female, **Tiamari**, BTR, Jalpaiguri, West Bengal, India, 31. x. 2010, coll. D. C. Dhali.

Distribution: India: Andhra Pradesh, Arunachal Pradesh, Bihar, Gujarat, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Rajasthan, Tamil Nadu,

Tripura, West Bengal; Bhutan, Bangladesh, China, Indonesia, Myanmar, Nepal, Philippines, Sri Lanka (Gravely, 1924; Tikader & Malhotra, 1980; Tikader & Biswas, 1981; Barrion & Litsinger, 1995; Biswas & Biswas, 1992, 2004, '06; Majumder, 2007; Gajbe, 2007).

***Pardosa tridentis* Caporiacco**

Pardosa tridentis Caporiacco, 1935. Mem. Soc. Ent. Italy, 13: 241.

Material examined: 1 male, **Bichabhanga**, GNP, Jalpaiguri, West Bengal, India, 02. iv. 2006, coll. S. Saha; 1 male, **Dima**, BTR, Jalpaiguri, West Bengal, India, 9. iv. 2009, coll. D. C. Dhali. The species is the first record from West Bengal.

Distribution: India: Jammu & Kashmir, Uttarakhand, West Bengal (new record); Nepal (Tikader, 1964; Tikader & Malhotra, 1980).

***Pardosa kupupa* (Tikader)**

Lycosa kupupa Tikader, 1970. Rec. Zool. Surv. India, 64: 66.

Pardosa kupupa (Tikader, 1970); Tikader & Malhotra, 1980. Rec. Zool. Surv. India, 1 (2): 333.

Material examined: 1 female, **Bichabhanga**, GNP, Jalpaiguri, West Bengal, India, 12. iv. 2009, coll. D. C. Dhali; 1 female, **Rajabhatkhawa**, BTR, Jalpaiguri, West Bengal, India, 14. iv. 2010, coll. S. Sarkar; 1 female, **South Rydak**, BTR, Jalpaiguri, West Bengal, India, 30. x. 2010, coll. D. C. Dhali; 2 females, **Barovisha**, BTR, Jalpaiguri, West Bengal, India, 01. xi. 2010, coll. D. C. Dhali.

The species is the first record from West Bengal.

Distribution: India: Sikkim, West Bengal (new record) (Tikader, 1970; Tikader & Malhotra, 1980).

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Table 1. Length of legs of female (Holotype) of *Arctosa quinquedens* sp. nov. (in mm).

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	1.40	0.53	1.20	1.00	0.73	4.86
II	1.07	0.60	0.73	0.87	0.67	3.94
III	0.73	0.40	1.27	0.73	0.53	3.66
IV	1.13	0.60	1.47	1.40	0.87	5.47

Table 2. Length of legs of new male morph of *Draposa amkhasensis* (Tikader & Malhotra) comb. nov. (in mm).

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	2.07	1.00	1.93	2.07	1.33	8.40
II	1.47	0.93	1.73	1.93	1.07	7.13
III	1.87	0.93	1.53	2.00	1.07	7.40
IV	2.53	1.00	2.20	3.47	1.53	10.73

Table 3. Length of legs of female of *Pardosa procurva* Yu & Song (in mm).

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	1.27	0.73	1.27	1.13	0.80	5.20
II	1.20	0.67	1.07	1.07	0.73	4.74
III	1.27	0.60	1.00	1.40	0.67	4.94
IV	1.73	0.67	1.60	2.27	0.60	6.94

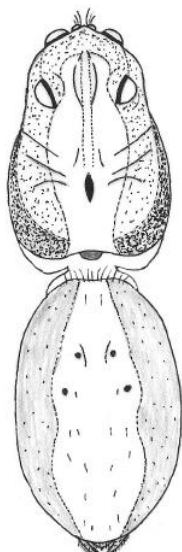


Fig. 1



Fig. 2

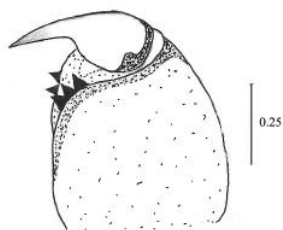


Fig. 3

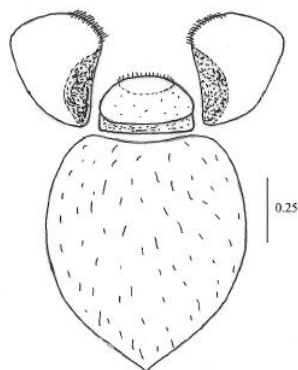


Fig. 4

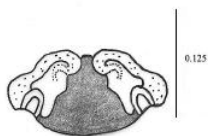


Fig. 6

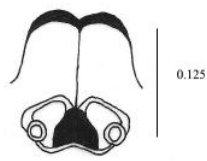


Fig. 5

Figures 1-6. *Arctosa quinquedens* sp. nov., female (Holotype): 1. Cephalothorax and abdomen, dorsal view; 2. Eyes, frontal view; 3. Chelicerae, ventral view; 4. Maxillae, labium and sternum, ventral view; 5. Epigynum, ventral view; 6. Internal genitalia, dorsal view.

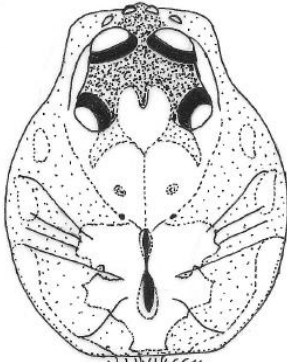


Fig. 7

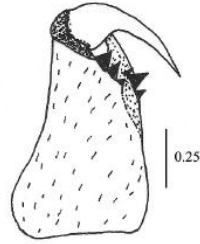


Fig. 8

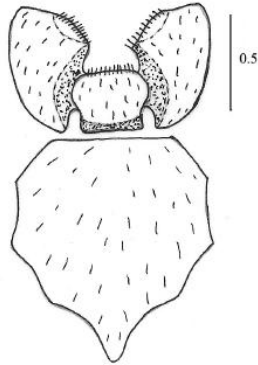


Fig. 9

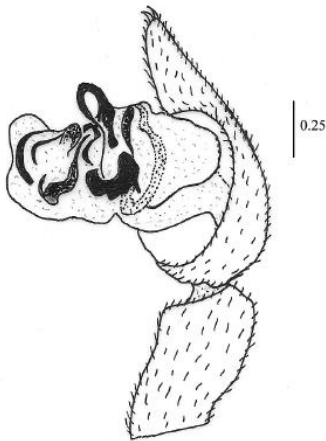


Fig. 11

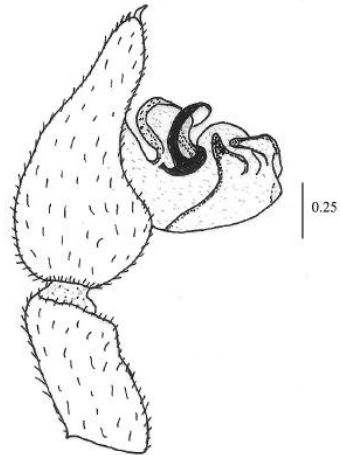


Fig. 10

Figures 7-11. *Draposa amkhasensis* (Tikader & Malhotra) comb. nov., male: 7. Cephalothorax and abdomen, dorsal view; 8. Chelicerae, ventral view; 9. Maxillae, labium and sternum, ventral view; 10. Dorsolateral view of right palp; 11. Ventral view of right palp.

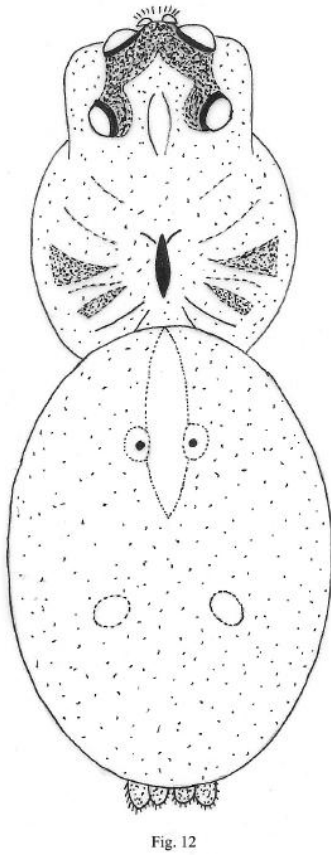


Fig. 12

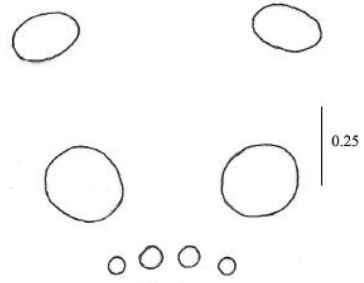


Fig. 13

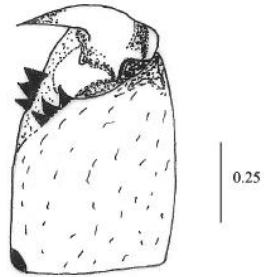


Fig. 14

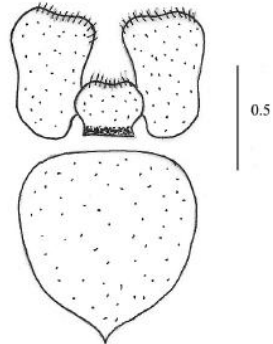


Fig. 15



Fig. 17

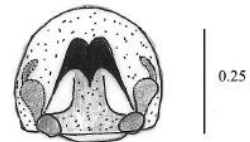


Fig. 16

Figures 12-17. *Pardosa procurva* Yu & Song, female: 12. Cephalothorax and abdomen, dorsal view; 13. Eyes, frontal view; 14. Chelicerae, ventral view; 15. Maxillae, labium and sternum, ventral view; 16. Epigynum, ventral view; 17. Internal genitalia, dorsal view.



Figures 18-20. Photographic images: General habitus: 18. *Arctosa quinquedens* sp. nov., female (Holotype); 19. *Draposa amkhasensis* (Tikader & Malhotra) comb. nov., male; 20. *Pardosa procurva* Yu & Song., female.