Spiders of the Genus *Cyclosa* (Araneae : Araneidae) from Punjab, Pakistan

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**Abstract.** Specimens of the genus *Cyclosa* were collected from 14 localities of seven districts of the province of Punjab. A total of 90 specimens (66 females, 4 males and 20 Imm) were captured comprising six species. Of these, one species (*Cyclosa chichawatniensis*) is new to science and three species (*Cyclosa krusa* Barrion and Litsinger, *Cyclosa saismarka* Barrion and Litsinger, and *Cyclosa hexatuberculata* Tikader) are new records to Pakistan. A key to the species so far recorded from Pakistan has been provided.

**Key words:** Spiders, *Cyclosa*, new species, new records, Pakistan.

**INTRODUCTION**

*Cyclosa* Menge is considered as a senior synonym of *Parazygia* Caporiacco by Levi (1977). The genus contains 171 species and has wide distribution in the world (Platnick, 2004). In Asia many workers contributed from India (Gravely, 1921; Tikader and Biswas, 1981; Tikader, 1982; Biswas and Biswas, 1992; Biswas and Majumder, 1995; Patel and Vyas, 2001; Patel, 2003; Biswas and Biswas, 2003), Bangladesh (Biswas and Raychaudhuri, 1998), China (Yin *et al*., 1997), and South and Southeast Asia (Barrion and Litsinger, 1995). From Indo–Pakistan subcontinent, Dyal (1935) was first to record three species from Lahore. Of these, one species was new to science. Later on, Qureshi (1982) recognized another species from Lahore. Khatoon (1986) reported the genus from Islamabad. Recently, Ghafoor and Beg (2002) revised the genus and described a new species from Faisalabad. In the present study a total of 90 specimens (66 females, 4 males and 20 Imm) were captured comprising six species. Of these, one species is considered as new to science, whereas three species are new records from Pakistan.

**MATERIALS AND METHODS**

The survey included 14 localities from seven districts of the province of Punjab. Collection was done by jarring and handpicking from the foliage of 17 different host plants in a variety of habitats. The specimens were transferred into a container having 70% ethyl alcohol, before being brought to the laboratory. Collected specimens were washed with xylene. Each specimen was preserved in a separate vial in a mixture of 1:1 ethyl alcohol and glycerine. Identification was done on the basis of morphological characters of various body parts. The help was taken from the available literature mentioned in the Introduction and Nentwig *et al*. (2003).

A comprehensive description of only new species has been given. However, the already known species have been provided with present and previous locality records. Measurements (mm) of various body parts of the specimens were taken with the help of ocular micrometer. Ranges of various body parts (except legs) with their means and standard deviations of new species were also provided. The leg measurements were given in the following sequence: total (femur, patella + tibia, metatarsus, tarsus). Drawings of important body parts of new species were drawn with the help of ocular grid.
Collection was done by the first author. All the specimens and slides have been housed in the Araneae Laboratory, Department of Zoology and Fisheries, University of Agriculture, Faisalabad for record and ready reference.

The following abbreviations have been used in the text: AME = anterior median eyes, PME = posterior median eyes, MOQ = median ocular quad, Imm = immature, GC = Government College, CRH = canal rest house, GHS = Government High School, FP = forest plantation.

KEY TO THE SPECIES OF THE GENUS CYCLOSA, MENGE FROM PAKISTAN

1. Abdomen elongated, not bifid posteriorly .................. 2
   Abdomen oval, bifid posteriorly ........................................... C. walckenaeri (O. P.-Cambridge)

2. Abdomen with tubercles, paired, unpaired or both ........ 4
   Abdomen without tubercles ................................................ 3

3. Leg formula 1243; abdomen rounded at both ends .......... .............................. C. krusa Barrion and Litsinger
   Leg formula 1423; abdomen tapering posteriorly .......... .............................. C. caroli Hentz

4. Abdomen concave above, with anterior median conical tubercle ........................................... C. mohini Dyal
   Abdomen not concave above, without anterior median conical tubercle ........................................... 5

5. Abdomen with paired and median caudal tubercles ...... 6
   Abdomen without paired tubercles, with long blunt caudal tubercle ........................................... C. bifida (Doleschall)

6. Coxa IV with small apicolateral tubercle directed towards abdomen; median caudal tubercle very short, rounded ................................ C. saismarka Barrion and Litsinger
   Coxa IV without apicolateral tubercle; median caudal tubercle long ........................................... 7

7. Epigyne without scape; abdomen with one pair of less distinct tubercle posteriorly.............................. 8
   Epigyne with scape; abdomen with one or two pairs of distinct tubercles ........................................... 9

8. Trifid marking behind thoracic fovae; MOQ as long as wide; labium distinctly wider than long; spermathecal sacs balloon shaped C. chichawaiensis new species
   No trifid marking behind thoracic fovae; MOQ slightly longer than wide, labium nearly as long as wide; spermathecal sacs rounded ...... C. confraga (Thorell)

9. Abdomen with median caudal tubercle bifurcated; two pairs of lateral tubercles, posterior pair distinct........ .............................. C. punjabiensis Ghafoor and Beg
   Abdomen with median caudal tubercle not bifurcated; one or two pairs of lateral tubercles, may or may not be distinct .......................................................... 10

10. Abdomen with a median caudal tubercle and one or two paired tubercles which are sharp and distinct; epigynal scape short .......................................................... 11
    - Abdomen with a median caudal tubercle and a single pair of posterior tubercles which are blunt and short; epigynal scape long ....................... C. insulana (Costa)

11. One pair of distinct tubercles at base of caudal tubercle; epigynal scape with deep constriction, bent at right angle to base ......................... C. spirifera Simon
    Two pairs of distinct tubercles – one at middle of abdomen, other at base of caudal tubercle; epigynal scape with no constriction, slightly bent .............................................. C. hexaituberculata Tikader

Cyclosa krusa Barrion and Litsinger


Cyclosa krusa Barrion and Litsinger was previously recorded only from Philippines (Barrion and Litsinger, 1995). This species is new record to Pakistan.

Material examined

4 females, Hibiscus rosa-sinensis, 15.10.98, GC Jehlum.

Previous locality record

Philippines.

Cyclosa saismarka Barrion and Litsinger


Previously this species has been recorded by Barrion and Litsinger (1995) from Philippines. There is no record of this species from Pakistan prior to this study, now it is collected from Islamabad and Jhang. It is confined only to Pakistan and Philippines.

Material examined

One male, Eucalyptus spp., 25.7.96, FP Shorkot – Jhang; 1 female, Gardenia florida, 4.9.96, Shakarparian, Islamabad; 2 males, Jasminum spp., 29.7.97, Rose and Jasmine Garden, Islamabad.

Previous locality record

Philippines.
**Cyclosa chichawatniensis** new species  
*(Fig. 1a – f)*

**Female**

**Measurements**

Total length 6.5; carapace length 1.7, width 1.1; abdomen length 5.0, width 2.0. Leg lengths: I = 4.1 (1.1 + 1.6 + 0.9 + 0.5), II = 3.8 (1.1 + 1.4 +0.8 + 0.5), III = 2.4 (0.7 + 0.8 + 0.5 + 0.4), IV = 3.8 (1.2 + 1.3 +0.8 + 0.5). Specimens measured 7. Range: Total length 5.1 – 7.1 (6.05 ± 0.84); carapace length 1.6 – 2.0 (1.73 ± 0.14), width 1.0 – 1.2 (1.11 ± 0.07); abdomen length 3.6 – 5.3 (4.46 ± 0.69), width 1.4 – 2.0 (1.61 ± 0.27).

Cephalothorax distinctly longer than wide, narrow anteriorly, clothed with hairs; cephalic region slightly elevated, dark brown, separated from thorax by distinct cephalic groove; thorax yellowish brown, fovae circular pit like, trifid dark brown marking posterior to fovae. Eyes pearly white except darker AME, laterals smaller than medians. Anterior eye row strongly recurved, eyes equally spaced, AME larger than PME. Posterior eye row slightly recurved; medians very close nearly touching each other, with black rings. Both laterals sub equal, close, on prominent tubercles. MOQ as long as wide, wider in front than behind. Clypeus height less than half of AME diameter. Chelicerae small, weak, yellowish brown with hairs; promargin with three dissimilar teeth, lower tooth very small, median larger; retromargin with two teeth. Labium light brown, wider than long, nearly triangular in shape, pointed anteriorly, broad and rounded posteriorly. Maxillae brown, broad, anterior margin black, with dense dark brown scopulae. Sternum yellowish brown; with six chalk white patches, one transverse anteriorly, one mid longitudinal in posterior half, two pairs lateral in position; distinctly longer than wide, heart shaped, concave anteriorly, very pointed posteriorly; coxae IV sub contiguous. Legs moderately long and slender, pale yellow, with transverse distal dark brown patches (leg I on all segments, leg II – IV on tibiae and metatarsi). Spinnation on legs: tibia I with two pairs of ventral spines, tibiae II – IV with one pair of ventral spines; metatarsi I and II with two pairs of ventral spines. Tarsi three clawed. Leg formula 1,2 = 4,3.

Abdomen elongated, 2.5 times longer than wide, broad anteriorly, very narrow posteriorly, large caudal tubercle and two lateral tubercles posteriorly. Dorsum decorated with small chalk white spots having dark brown partitions in anterior portion, posterior narrow area with chalk brown patches, two pairs of mid longitudinally arranged dark brown sigella; a narrow median longitudinal dark brown band with three pairs of lateral arms, bifurcates posteriorly. Ventral side concolour with dorsal side. Spinnets beneath abdomen in anterior half, dark brown, convergent anterior pair thick. Epigyne without scape, broad dark brown bulging structure present anteriorly; spermathecal sacs balloon shaped, divergent anteriorly; spermathecal duct long, coiled; epigynal orifice median, conspicuous.

**Male**

Unknown.

**Etymology**

Named after type locality, Chichawatni.

**Type material**


**Discussion**

*Cyclosa chichawatniensis* new species is close to *Cyclosa confraga* (Thorell) but can be distinguished from it by the following characters.

MOQ as long as wide, trifid marking behind thoracic fovae. Labium distinctly wider than long. Sternum yellowish with six chalk white patches. Dorsum of abdomen with narrow median longitudinal dark brown band having three pairs of lateral arms, band bifurcates posteriorly; with two pairs of mid longitudinally arranged sigella. Ventral side of abdomen concolour with dorsal side, black median patch and lateral chalk white patches absent in *Cyclosa chichawatniensis*, sp. nov. Epigyne and internal genitalia differ, spermathecal sacs balloon shaped, spermathecal duct long and coiled.
Cyclosa confraga (Thorell)


Patel and Vyas (2001), and Patel (2003) erroneously spelled the species as *confrega*, whereas the accepted spelling is *confraga* which is followed here. In Pakistan, this species was recorded from Lahore (Dyal, 1935), Islamabad (Khatoon, 1986), and Sialkot (Qadir, 1997).
Material examined


Previous locality records

Pakistan: Islamabad; Sialkot, Lahore, India: Ballabhvidyanagar, Gujarat; Poona, Maharashtra; Karnataka; Assam; Sikkim. Bangladesh to Malaysia.

New locality record

Attock, Chakwal Jehlum.

*Cyclosa spirifera* Simon


Ghafoor (2002) recorded this species from Faisalabad.

Material examined


Previous locality record

Pakistan: Faisalabad. India: Joansar, Thadyar.

New locality record

Islamabad, Jhang.

*Cyclosa hexatuberculata* Tikader


*C. hexatuberculata* Tikader was not previously recorded from Pakistan. Present study reports its occurrence in Islamabad, Kasur, Sahiwal and Jhang districts.

Material examined


Previous locality records

India: Poona, Maharashtra.

REFERENCES


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(Received 2 December 2004, revised 12 February 2005)