

# 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.

Permanent slides of the genitalia were prepared. Epigynes were carefully removed from the abdomen by lifting the mid epigastric furrow using insect needle. Male palpi were removed from the base using the same needle. For preparation of Epigyne, it was treated with KOH, dehydrated, cleared in clove's oil and mounted in canada balsam. Male pedipalp was mounted in canada balsam after xylene treatment.

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 foveae; MOQ as long as  
wide; labium distinctly wider than long; spermathecal  
sacs balloon shaped *C. chichawatiensis* new species  
No trifid marking behind thoracic foveae; 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. hexatuberculata* Tikader

#### *Cyclosa krusa* Barrion and Litsinger

1995. *Cyclosa krusa* Barrion and Litsinger, *Riceland Spiders of South and Southeast Asia*,: 596.

*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

1995. *Cyclosa saismarka* Barrion and Litsinger, *Riceland Spiders of South and Southeast Asia*,: 605.

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, foveae circular pit like, trifold dark brown marking posterior to foveae. 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). Spination 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*

Holotype female, *Oryza sativa*, 11.10.98, Chichawatni – Sahiwal; 1 female, 5 Imm, same data as holotype; 1 female, 4 Imm, *Morus alba*, 25.7.96, FP Shorkot – Jhang; 3 Imm, *Dalbergia sisso*, 25.7.96, FP Shorkot – Jhang; 4 females, 7 Imm, *Mangifera indica*, 20.7.97, Jamke Cheema, Daska – Sialkot.

*Discussion*

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

MOQ as long as wide, trifold marking behind thoracic foveae. 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.

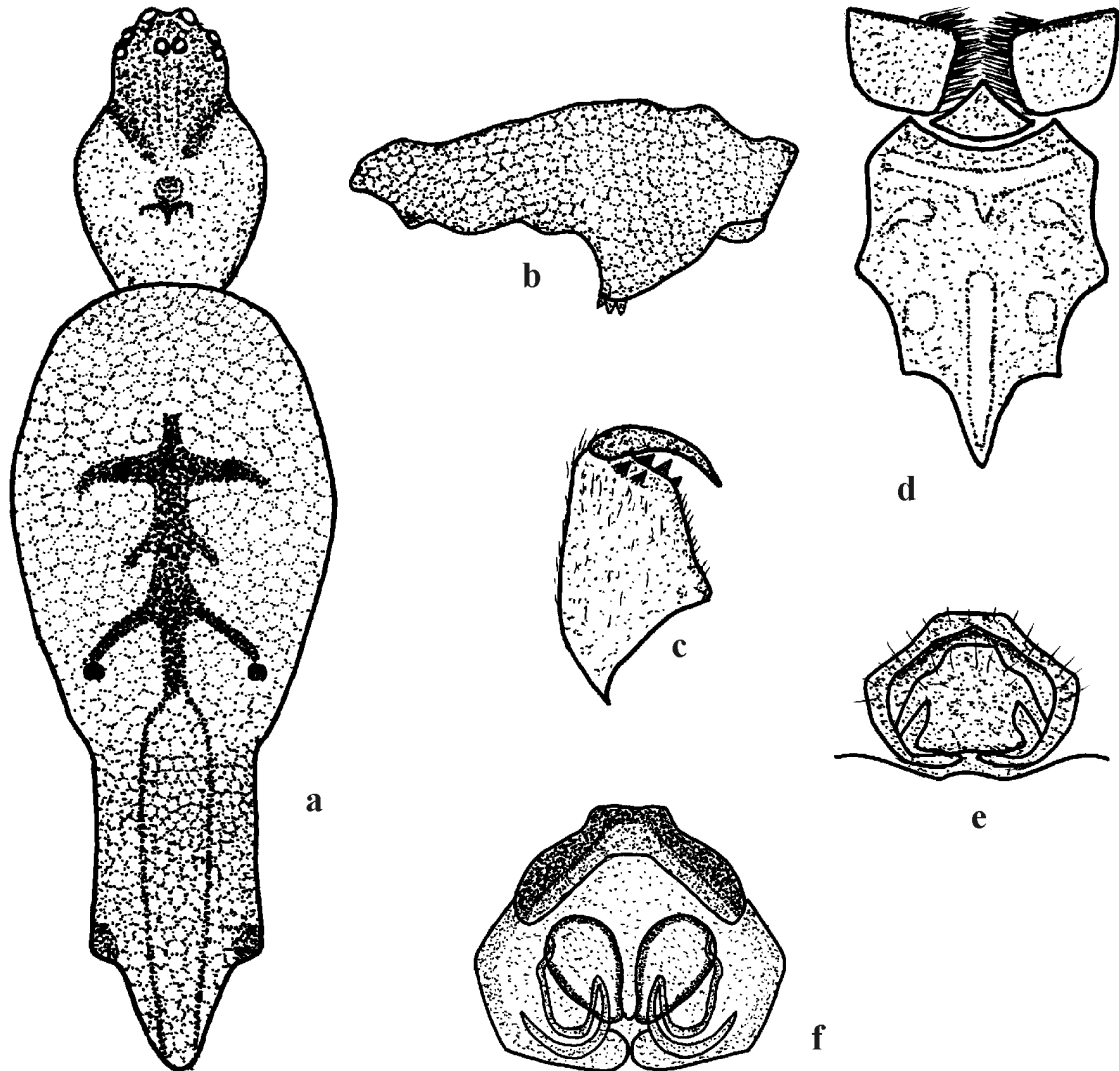


Fig. 1. *Cyclosa chichawatniensis* new species, female. a, body, dorsal view 9x; b, abdomen, lateral view 6x; c, chelicera, ventrolateral view 40x; d, labium, maxillae and sternum, ventral view 24x; e, epigyne, external view 40x; f, epigyne, internal view 100x.

*Cyclosa confragata* (Thorell)

1892. *Epeira confragata* Thorell, *Bull. Soc. Ent. Ital.*, **24**: 239.  
 1909. *Cyclosa confragata* Simon, *Bull. Sci. Fr. Belg.*, **42**: 104.  
 1935. *Cyclosa confragata* Dyal, *Bull. Dept. Zool. Punjab Univ.*, **1**: 191.  
 1982. *Cyclosa confragata* Tikader, *Fauna of India: Araneae*, **2**: 193.  
 2001. *Cyclosa confragata* Patel and Vyas, *Zoos' Print J.*, **16**: 590.  
 2003. *Cyclosa confragata* Patel, *Zoos' Print J.*, **18**: 1082.

2004. *Cyclosa confragata* Platnick, *The World Spider Catalog, Version 5.0*.

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

*Material examined*

14 females, *Eriobotrya japonica* and *Justicia adhatoda*, 2.10.98, Kallar Kahar – Chakwal; 10 females, *Psidium guajava*, 14.10.98, office of District Officer Agriculture Extension Attock; 21 females, *Thuja orientalis* and *Cupressus sempervirens*, 15.10.98, GC Jehlum; 4 females, *Morus alba*, 16.10.98, Government Maray College Sialkot.

*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

1889. *Cyclosa spirifera* Simon, *J. Asiat. Soc. Beng.*, **58**: 337.

1982. *Cyclosa spirifera*, Tikader, *Fauna of India: Araneae*, **2**: 195.

1992. *Cyclosa spirifera*, Biswas and Biswas, *State Fauna Series*, **3**: 458.

Ghafoor (2002) recorded this species from Faisalabad.

*Material examined*

1 female, *Punica granatum*, 24.7.96, Badh Rajbana, Shorkot City – Jhang; 2 females, *Lantana* spp., 6.9.96, National Park Margalla Hills, Islamabad.

*Previous locality record*

Pakistan: Faisalabad. India: Joansar, Thadyar.

*New locality record*

Islamabad, Jhang.

*Cyclosa hexatuberculata* Tikader

1982. *Cyclosa hexatuberculata* Tikader, *Fauna of India: Araneae*, **2**: 197.

1992. *Cyclosa hexatuberculata*, Biswas and Biswas, *State Fauna Series*, **3**: 457.

*C. hexatuberculata* Tikader was not

previously recorded from Pakistan. Present study reports its occurrence in Islamabad, Kasur, Sahiwal and Jhang districts.

*Material examined*

1 Imm, *Sorghum bicolor*, 21.7.96, Basti Mangan, Shorkot City – Jhang; 1 male, *Nerium* spp., 1.8.97, Rawal Dam, Islamabad; 1 female, *Thuja orientalis*, 11.10.98, GHS Chichawatni – Sahiwal; 1 female, *Gardenia florida*, 31.10.98, GHS Changa Manga – Kasur.

*Previous locality records*

India: Poona, Maharashtra.

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(Received 2 December 2004, revised 12 February 2005)