

## Two New Species of the Genus *Oxyopes* Latreille (Arachnida: Araneae: Oxyopidae) From Punjab, Pakistan

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**Abstract.** *Oxyopes machuensis* new species and *Oxyopes shakilae* new species are described here from Punjab, Pakistan. *Oxyopes machuensis* new species is close to *Oxyopes wroughtoni* Pocock but differs from the latter and other congeners due to the presence of deep invaginations on the both anterior and posterior side of epigynal plate in this new species. *Oxyopes shakilae* new species resembles somewhat with *Oxyopes ryvesii* Pocock but differs due to the presence of hexagonal epigynal plate in new species. Similarly internal epigynal structure in both new species also differs from other species of this genus.

**Key words:** Araneae, Oxyopidae, *Oxyopes machuensis*, *Oxyopes shakilae*.

### INTRODUCTION

The *Oxyopes* Latreille, 1804 is a large genus of spiders with 295 species and subspecies from all over the world (Platnick, 2013). The genus has been studied by several workers from Asia, from India (Pocock, 1901; Tikader and Biswas, 1981; Biswas and Majumder, 1995; Sadana and Gupta, 1995; Biswas *et al.*, 1996; Gajbe, 1999, 2008; Biswas and Roy, 2005; Sebastian and Peter, 2009; Sen *et al.*, 2011; Bodkhe and Vankhede, 2012), from China (Xie and Kim, 1996; Song *et al.*, 1999; Hu, 2001; Bao and Yin, 2002; Yin *et al.*, 2003; Zhang and Zhu, 2005; Zhang *et al.*, 2005a, b; Tang and Li, 2012), from Korea (Kim and Cho, 2002; Namkung, 2002, 2003); from Japan (Yaginuma, 1986; Ono and Ban, 2009), from Iran (Esyunin *et al.*, 2011), from Russia (Marusik and Kovblyuk, 2011), from Phillipines (Barrion and Litsinger, 1995) and from Laos (Jäger and Praxaysombath, 2009).

From Pakistan, the genus has been studied by few workers. Dyal (1935) recorded five species of this genus from Lahore, Pakistan. Of these, one species was new to science. Khaton (1986) recorded three of these species from Islamabad. Mushtaq and Qadar (1999) described three new species (*Oxyopes campii*, *Oxyopes gossypae* and *Oxyopes oryzae*) from Faisalabad, Pakistan. *O. oryzae* was also reported from Sialkot. Later on,

Butt and Beg (2001) described one new species (*Oxyopes azhari*) from Faisalabad. In the present study, two new species are described from Punjab, Pakistan.

### MATERIALS AND METHODS

The specimens were collected by hand picking method and preserved in 95% ethyl alcohol with little glycerin. Slides of genitalia were made following Mukhtar (2012). Identification was done on the basis of morphological characters. The spination on the legs is given in the following sequence: dorsal, ventral, prolateral, and retrolateral, e.g. spination of femora I = 3 (111) – 0 – 3 (111) – 3 (111). It indicates that femora 1 has three dorsal spines (one each on proximal, medial, and distal position), no ventral spines, three prolateral spines (one each on proximal, medial, and distal position) and, three retrolateral spines (one each on proximal, medial, and distal position).

The following abbreviations have been used in this paper: AER, anterior eye row; AL, abdomen length; ALE, anterior lateral eyes; AME, anterior median eyes; AW, abdomen width; CL, carapace length; CW, carapace width; FP, forest plantation; Imm, Immature; LL, leg length; MOQ, median ocular quadrangle; NMS, number of measured specimens; ODOAE, Office of District Officer Agricultural Extension; PER, posterior eye row; PME, posterior median eyes; PLE, posterior lateral eyes; TL, total length. All the specimens were collected by the author. The specimens and slides were deposited in the Museum, Department of

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Genus *OXYOPES* Latreille, 1804

1804. *Oxyopes* Latreille, *Nouv. Dict. Hist. Nat.*, **24**: 135.

1805. *Sphasus* Walckenaer, *Tabl. des Aran.*: 19.

1898. *Oxyopes* Simon, *Hist. Nat. Araign.*, **2**: 379.

1935. *Oxyopes* Dyal, *Bull. Zool. Punj. Univ.*, **1**: 149.

#### Diagnosis

Eyes in compact group of four transverse rows. AME smallest and close, other six eyes forming hexagon; ALE largest and wider. PER strongly procurved, equidistant; PLE and PME sub equal in size, larger than AME but slightly smaller than ALE; PME with ALE form an ocular quad which is longer than broad. Cephalothorax high and convex, cephalic area slightly elevated, sloping sharply at thoracic declivity, face almost vertical. Labium longer than wide; maxillae exceed length of labium, converging, outer lateral margin usually concave. Chelicerae usually with one tooth on retromargin. Abdomen elongated, widest at base, tapering posteriorly. Legs very long, usually with longitudinal gray bands on venter of femora; spines long, thick. Leg formula 1243 or 1,2 = 4,3 or 4123.

#### Type species

*Oxyopes heterophthalmus* (Latreille, 1804)

#### Distribution

Worldwide.

#### *Oxyopes machuensis*, new species

(Fig. 1)

#### Type material

Holotype ♀, found on *Prosopis glandulosa*, 25.9.98, FP Machu, Layyah, 30°57'N, 70°57'E; 2 ♀♀, same data as holotype; 3 ♀♀, 3 Imm, *Phoenix dactylifera*, 17.7.96, Shorkot City, Jhang, 30°50'N, 72°04'E; 3 ♀♀, 5 Imm, *Saccharum munja*, 25.7.96, FP Shorkot, Jhang, 30°45'N 72°12'E; 1 ♀, 4 Imm, *Nerium* spp., 26.9.98, FP Inyat, Layyah, 30°57'N 70°57'E; 1 ♀, *Citrus reticulata*, 14.10.98, ODOAE, Attock, 33°54'N 72°14'E.

#### Description

Female: TL 14.8, CL 5.2, CW 3.6, AL 9.6, AW 3.8. LL: I = 18.9 (5.0 + 6.7 + 4.9 + 2.3), II = 17.4 (4.5 + 6.2 + 4.9 + 1.8), III = 14.1 (4.0 + 4.5 + 4.0 + 1.6), IV = 17.6 (5.0 + 5.6 + 5.2 + 1.8). NMS 10. Range: TL 12.1 – 14.8 (13.22 ± 0.89), CL 4.9 – 5.5 (5.1 ± 0.25), CW 3.5 – 3.9 (3.68 ± 0.16), AL 7.2 – 9.6 (8.12 ± 0.91), AW 2.9 – 3.8 (3.12 ± 0.38).

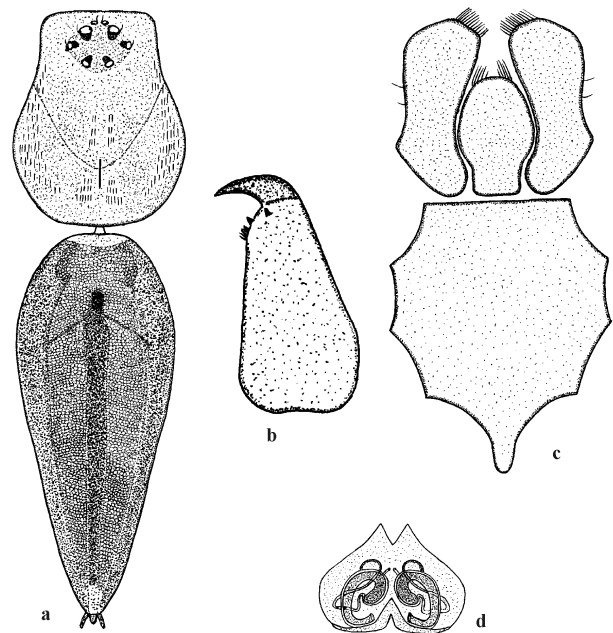


Fig. 1. *Oxyopes machuensis*, new species. a, body dorsal view, 9x; b, chelicera ventrolateral view, 24x; c, labium, maxillae and sternum ventral view, 24x; d, epigyne internal view, 60x.

Cephalothorax slightly elevated and narrow anteriorly, orange brown, four longitudinal patches of gray leaf like hairs on central and lateral areas, distinctly longer than wide, fovea long and reddish brown. Ocular area brown, yellow erect setae present at base of eyes except PME. Eight eyes in a compact group of four transverse rows with interior black patches except AME. AME very small, closer, other six eyes forming hexagon are equidistant; eye formula: ALE > PME > PLE > AME. AER recurved, PER procurved. Clypeus height large, with few yellow erect setae on anterior margin,

small black area on anteriolateral sides, without black streaks. Chelicerae yellowish brown, broad basally, gradually narrow anteriorly, both margins with one tooth, retromarginal tooth higher; fangs dark brown, short, strongly curved, without scopulae. Pedipalp pale yellow except yellowish brown tarsus with fine hairs and long spines, tarsus single clawed. Labium yellowish brown with long hairs on apical margin, distinctly longer than wide, more than half of maxillae, narrow and rounded anteriorly, widest medially, truncate posteriorly. Maxillae yellowish brown with dense black scopulae, distinctly longer than wide, medially constricted outer lateral margin with few yellow setae, somewhat narrow basally, broad apically. Sternum yellowish brown, longer than wide, heart shaped, narrow anterior margin straight, widest medially, strongly tapering between coxae IV. Legs long, yellowish brown, femora without longitudinal dark brown ventral line, tibiae and metatarsi with dorsodistal transverse dark brown band. Spination on legs: femora I = 3 (111) – 0 – 3 (111) – 3 (111), II = 3 (111) – 0 – 2 (101) – 3 (111), III = 3 (111) – 0 – 2 (011) – 3 (111), IV = 3 (111) – 0 – 2 (101) – 1 (001); patellae I – IV with one short basal, one long apicodorsal; tibiae I = 1 (010) – 6 (222) – 1 (010) – 1 (100), II – III = 1 (010) – 4 (220) – 2 (110) – 2 (110), IV = 1 (010) – 4 (220) – 1 (010) – 2 (110); metatarsi I – IV = 0 – 6 (222) – 3 (111) – 3 (111). Tarsi three clawed. Leg formula 1423.

Abdomen distinctly longer than wide, anterior margin rounded, widest near anterior end, gradually tapering posteriorly. Dorsum with chalk white area between narrow median longitudinal dark brown band and lateral dark brown area. Anal tubercle yellowish brown, conical. Ventral side with broad median longitudinal dark brown band running from epigastric furrow to base of spinnerets, sides yellowish brown. Spinnerets dark brown, anterior pair converging, median short; posterior with median segment long, apical segment darker, wider apart. Epigyne with globular, anterior, converging spermathecal sacs; median septum wedge shaped, broad basally, pointed apically reaching near the half of epigyne; spermathecal ducts coiled; epigynal orifices large, longitudinal, near septum; epigynal plate narrow anteriorly and broad posteriorly, both margins with deep invaginations.

#### Male

Unknown.

#### Etymology

Named after type locality (FP Machu, Layyah).

#### Diagnosis

*Oxyopes machuensis*, new species is close to *Oxyopes wroughtoni* Pocock but it differs from the latter as follows. Black streaks are not found on clypeus in *O. machuensis* new species whereas these are found on *O. wroughtoni*. Femora without black ventral streaks in this species. Tibiae and metatarsi with dorsodistal transverse dark brown bands in *O. machuensis* new species. Epigynal plate having deep invaginations both anteriorly and posteriorly in this new species whereas such invaginations are not found in *O. wroughtoni*. Epigyne, as described earlier, also shows significant internal differences from *O. wroughtoni* and other species of the genus. The morphometric and epigynal differences justify it to be given a separate species status.

#### *Oxyopes shakilae*, new species

(Fig. 2)

#### Type material

Holotype ♀, found on *Ipomoea* spp., 8.3.2000, Tariq Hall, University of Agriculture Faisalabad, 31°25'N 73°07'E; paratype ♂, *Thuja orientalis*, 14.10.98, ODOAE Attock, 33°54'N 72°14'E; 3 ♀♀, same data as holotype; 1 ♀, same data as paratype; 2 ♀♀, *Broussonetia papyrifera*, 4.9.96, FP Shakarparian, Islamabad, 33°43'N 73°04'E; 1 ♀, *Ervatamia coronaria*, 25.7.97, UAF, 31°25'N 73°07'E; 5 ♀♀, *Lagistomia* spp., 20.8.97, Fishries Research Farms, UAF, 31°25'N 73°07'E; 2 ♀♀, *Pennisetum typhoides*, 24.8.97, Khanuwana, Faisalabad, 31°25'N 73°07'E; 2 ♀♀, *Gardenia florida*, 24.8.97, CRH Burala, Jaranwala, Faisalabad, 31°15'N 73°26'E; 1 ♀, *G. florida*, 30.8.97, Mud Baloochan, Sheikhpura, 31°43'N 73°59'E; 1 ♀, *O. sativa*, 30.8.97, Pindi Bhattian, Hafizabad, 31° 54' N, 73° 16'E; 1 ♀, *Jasminum* spp., 31.8.97, CRH Nurwala, Faisalabad 31°25'N 73°07'E; 1 ♀, *G. Florida*, 31.8.97, CRH Kot Khudayar, Jhang 31°16'N 72°19'E; 2 ♀♀, *Jasminum* spp., 2.10.98, GC Chakwal, 32°56'N

72°52'E; 1 ♀, *O. sativa*, 11.10.98, Chichawatni, Sahiwal, 30° 32'N 72° 42'E.

### Description

Female: TL 9.0, CL 3.2, CW 2.4, AL 5.8, AW 2.8. LL: I = 12.2 (3.4 + 4.3 + 3.2 + 1.3), II = 10.9 (2.7 + 3.7 + 3.2 + 1.3), III = 8.8 (2.4 + 3.1 + 2.3 + 1.0), IV = 10.2 (3.0 + 3.6 + 2.3 + 1.3). NMS 5. Range: TL 6.7 – 10.4 (8.42 ± 1.45), CL 2.8 – 3.5 (3.12 ± 0.28), CW 2.2 – 2.5 (2.38 ± 0.13), AL 3.9 – 6.9 (5.28 ± 1.63), AW 2.0 – 2.8 (2.48 ± 0.56). Male: TL 5.8, CL 2.5, CW 1.8, AL 3.3, AW 1.3.

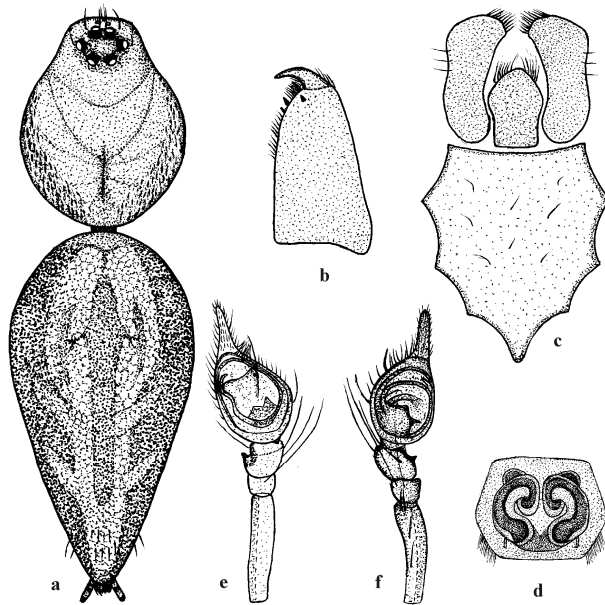


Fig. 2. *Oxyopes shakilae*, new species. a, body dorsal view 9x; b, chelicera ventrolateral view 24x; c, labium, maxillae and sternum ventral view 24x; d, epigyne internal view 60x; e and f, left male palp dorsolateral and ventrolateral views 18x.

Cephalothorax slightly elevated and narrow anteriorly, cephalic region orange brown, thoracic region yellowish brown anteriorly and orange brown posteriorly, two longitudinal patches of gray leaf like hairs on lateral area, distinctly longer than wide, fovea long and reddish brown, three faint lines radiating laterally from fovea on each side. Ocular area yellowish brown, yellow erect setae present at base of eyes except PME. Eight eyes in a compact group of four transverse rows with interior black

patches except AME. AME very small, closer, other six eyes forming hexagon are not equidistant; eye formula: ALE > PME > PLE > AME. AER recurved, PER procurved. Clypeus height large, with few setae, two black streaks extend from base of AME up to  $\frac{3}{4}$  length of chelicerae. Chelicerae yellowish brown, broad basally, gradually narrow anteriorly; promargin with two teeth, lower small, upper large; retromarginal tooth higher; fangs dark brown, short, strongly curved with scopulae at base. Labium orange brown with long hairs on apical margin, distinctly longer than wide, more than half of maxillae, pointed anteriorly, widest medially, narrow and truncate posteriorly. Maxillae orange yellow with dense black scopulae, medially constricted outer lateral margin with few brown setae, somewhat narrow basally, broad apically. Sternum yellowish with few yellowish brown short erect hairs, margins yellowish brown, distinctly longer than wide, heart shaped, narrow anterior margin slightly depressed, widest near anterior end, strongly tapering posteriorly between coxae IV. Female pedipalp pale yellow except dark brown spines and tarsal segment, tarsus single clawed. Male palp yellowish with dark tinges on tegulum; cymbium longer than wide, apically long, with three spines – one on apical and two on basal segment; embolus long and coiled; conductor curved and tube like; tegulum with median short bifurcated apophysis, terminal apophysis long and pointed, curved outward forming 'C' shaped cavity; femur with two short apicodorsal and two long dorsal spines, patella with two long dorsal spines, tibia with two long prolateral spines, two long erect retrolateral hairs. Legs long, femora and tibiae pale yellow, femora with paired longitudinal dark brown ventral lines, tibiae with dorsodistal dark brown transverse band, metatarsi and tarsi yellowish brown. Spination on legs: femora I – III = 3 (111) – 0 – 2 (011) – 3 (111), IV = 3 (111) – 0 – 2 (011) – 2 (011); patellae I – IV = one short basodorsal, one long apicodorsal, one short retrolateral; tibiae I – II = 2 (110) – 4 (220) – 1 (001) – 1 (001), III – IV = 2 (110) – 4 (220) – 1 (010) – 1 (010); metatarsi I – IV = 0 – 6 (222) – 3 (111) – 3 (111). Tarsi three clawed. Leg formula 1234.

Abdomen distinctly longer than wide, anterior margin rounded, widest near anterior end,

gradually tapering posteriorly. Dorsum chalk white with median narrow longitudinal dark brown band, lateral area with dark brown patches, few short white erect setae near posterior end. Anal tubercle dark brown, conical, with black apical hairs. Ventral side with median longitudinal dark brown band running from epigastric furrow to base of spinnerets, lateral area chalk white. Spinnerets yellowish brown, anterior pair converging, median short; posterior with median segment long, wider apart. Epigyne with globular, anterior, diverging, spermathecal sacs; spermathecal ducts coil outward; epigynal orifices on posterior margin; epigynal plate hexagonal with posterior margin narrow and straight.

#### Etymology

Named after my Ph.D. supervisor Prof. Dr. Skakila Mushtaq.

#### Diagnosis

*Oxyopes shakilae* new species has some resemblance with *Oxyopes ryvesii* Pocock but differs from latter as follows. Patterns on cephalothorax and abdomen differ. Sternum without long brown hairs. Legs with dorsodistal yellowish brown transverse band on tibiae; leg IV longer than II. Spination on legs also differs. Epigynal plate hexagonal, internal genitalia also differs. Male palpi of the two species could not be compared due to unavailability of male's description in literature.

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