

# Spiders of the Genus *Clubiona* (Araneae : Clubionidae) from Punjab, Pakistan

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**Abstract.** Spider fauna of the genus *Clubiona* was surveyed during 1996 to 1998 and 2000 from 25 collection sites of 19 districts of the province of Punjab. Collection was done by jarring and handpicking from the foliage of 26 different host plants including forest plantations, crops, and orchards, ornamental and wild plants. In all, 240 specimens (99 females, 62 males and 79 Imm) were captured representing five species. Of these one species (*Clubiona kasurensis*) is new to science and one species (*Clubiona filicata*, O. P.-Cambridge) new record for Pakistan. A key to the species so far recorded from Pakistan has been developed.

**Key words:** *Clubiona*, news species, new record, Pakistan.

## INTRODUCTION

The *Clubiona*, Latreille is a very large genus with 429 known species all over the world (Platnick, 2004). The genus has been studied from Asia by several workers. Gravely (1931), Tikader and Biswas (1981), Majumder and Tikader (1991) Biswas and Biswas (1992), Biswas and Majumder (1995), Barrion and Litsinger (1995), Biswas and Raychaudhuri (1996), Zhu and An (1999), Song *et al.* (1999), Hu (2001), and Patel (2003) made significant contribution from India, Bangladesh, China, and South and Southeast Asia. It has been studied in Pakistan by Qadir (1997) from Sialkot, Nazir (1999) from Bahawalpur, and Nazir (2001) from Jhang but there work is unpublished. This paper reports a total of five species including a new species and a new record in the collection of 240 specimens (99 females, 62 males and 79 Imm).

## MATERIALS AND METHODS

The survey was carried out during 1996-1998 and 2000 in 25 collection sites from 19 districts of the province of the Punjab. Collection was done by jarring and handpicking from the foliage of 26 different host plants including forest plantations, crops, orchards and ornamental and wild plants. The specimens were transferred into a container. The

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 by KOH treatment followed by dehydration, clearing in clove oil and mounting in Canada Balsam. 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 and mounted in Canada Balsam after treatment with xylene. Identification was done on the basis of morphological characters of various body parts using literature mentioned in the introduction and Nentwig *et al.* (2003).

A comprehensive description of only the new species has been given. However, the already known species which came into collection 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 the new species are also given. The leg measurements were given in the following sequence: total (femur, patella + tibia, metatarsus, tarsus). The spination on the legs has been represented in this sequence: dorsal, ventral, prolateral, and retrolateral following Barrion and Litsinger (1995). Drawings of important body parts of the new species were drawn with the help of ocular grid.

Collection was done by M. K. Mukhtar. 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: TL = total length, CL = carapace length, CW = carapace width, AL = abdomen length, AW = abdomen width, NMS = number of measured specimens, LL = leg lengths, ER = eye row, AER = anterior eye row, PER = posterior eye row, AME = anterior median eyes, ALE = anterior lateral eyes, MOQ = median ocular quad, VTA = ventral tibial apophysis, RTA = retrolateral tibial apophysis, Imm = immature, GC = Government College, CRH = canal rest house, FP = forest plantation.

**KEY TO THE SPECIES OF THE GENUS *CLUBIONA*,  
LATREILLE FROM PAKISTAN**

1. Cleft of vulva with longitudinal marking, no 'V' shaped structure present in front ..... *C. analis* Thorell  
Cleft of vulva with transverse marking, more or less 'V' shaped structure present in front..... 2
2. AME pearly white, slightly smaller than ALE.....  
..... *C. filicata*, O. P.-Cambridge  
AME blackish, slightly larger than ALE ..... 3
3. AME close to laterals than to each other; abdomen broad anteriorly ..... *C. pashabhaii* Patel and Patel  
Eyes of anterior row nearly equidistant or medians close to each other than laterals; abdomen narrow anteriorly ..... 4
4. Outer margin of chelicerae with one big and six small teeth, MOQ longer than wide; abdomen without markings ..... *C. nicobarensis* Tikader  
Outer margin of chelicerae with two or three teeth; MOQ wider than long; abdomen with markings ..... 5
5. Carapace with lateral striae on either side of foveae; sternum heart shaped with four deep brown spots opposite coxae; leg formula 4321; spermathecae rounded, divided into two parts .....  
..... *C. ludhianaensis* Tikader  
Carapace without lateral striae; sternum oval or elongated without deep brown spots; spermathecae oval or elongated, not divided; leg formula different from above..... 6
6. Labium twice longer than wide; outer margin with two similar teeth; leg formula 4231; copulatory tube short, not coiled ..... *C. hyssina* Simon  
Labium less than twice in length than width, outer margin with three similar or dissimilar teeth, leg formula different from above; copulatory tube long, highly convoluted ..... 7
7. Femur I with two dorsal spines, tibia I with three ventral spines; abdomen elongated and constricted laterally

near anterior end..... *C. kasurensis* new species  
Femur I with three long dorsal spines, tibia I with four ventral spines; abdomen nearly oval in shape without lateral constrictions ..... *C. drassodes*, O. P.-Cambridge

*Clubiona filicata*, O. P.-Cambridge

1874. *Clubiona filicata*, O. P.-Cambridge, *Proc. zool. Soc. Lond.*: 413.  
1907. *Clubiona swatowensis*, Strand, *Zool. Anz.*, **31**: 562.  
1931. *Clubiona filicata*, Gravely, *Rec. Indian Mus.*, **33**: 261.  
1981. *Clubiona filicata*, Tikader and Biswas, *Rec. zool. Surv. India, Occ. Pap.*, **30**: 69.  
1989. *Clubiona filicata*, Gong, *Wuyi Sci. J.*, **7**: 109.  
1999. *Clubiona filicata*, Song *et al.*, *The Spiders of China*, 415.

*C. filicata*, O. P.-Cambridge is new record for Pakistan. It is widely distributed in Punjab and reported from 16 districts. Host plants include crops, shrubs and trees as mentioned in material examined. This species is confined to Asia and not reported from other areas of the world.

*Material examined*

1 female, 3 Imm, *Cassia fistula*, 6.9.96, University of Arid Agriculture Rawalpindi; 1 female, 2 Imm, *Sorghum bicolor*, 24.8.97, Khanuwana – Faisalabad; 1 female, 4 Imm, *Cordia dichotoma*, 30.8.97, CRH Uqbana – Faisalabad; 4 females, 10 Imm, *Citrus limonia*, 30.8.97, CRH Salarwala, Chak Jhumra – Faisalabad; 1 female, *Oryza sativa*, 30.8.97, Mud Baloochan – Sheikhpura; 3 males, 4 Imm, *Hibiscus rosa-sinensis*, 30.8.97, CRH Nanuwana – Hafizabad; 1 female, *Ricinus communis*, 31.8.97, CRH Jora, Chiniot – Jhang; 3 females, 1 male, *Tamarindus indica*, 19.12.97, near desert canal, National Park Lal Sohanra – Bahawalpur; 3 females, 1 male, 8 mm, *Morus alba*, 19.6.98, Bagh-e-Jinnah, Lahore; 3 females, 1 male, *Lagistomia* spp., 20.6.98, Bagh-e-Jinnah, Lahore; 1 female, 2 males, *M. alba*, 24.6.98, Race Course Park, Lahore; 1 female, *Eriobotrya japonica*, 2.10.98, Kallar Kahar – Chakwal; 2 females, *Zea mays*, 1 female, *Jasminum* spp., 8.10.98, Fazilpur – Rajanpur; 1 female, *Grewia asiatica*, 1 female, *Bougainvillea spectabilis*, 8.10.98, Forest Colony, Dera Ghazi Khan; 1 female, 2 males, *Thuja orientalis*, 15.10.98, GC Jehlum; 2 males, *Jasminum* spp., 15.10.98, Government Zimindara Science College Gujrat; 1 female, 4

males, 7 Imm, *Gardenia florida*, 16.10.98, Government Maray College Sialkot; 13 males, *O. sativa*, 16.10.98, Sialkot; 1 male, *Zizyphus jujuba*, 17.10.98, GC Gujranwala; 1 female, 7 males, *Dalbergia sisso*, 29.10.98, GC Okara; 12 females, 8 Imm, *Gossypium hirsutum*, 30.10.98, Pattuki – Kasur; 2 females, 3 males, *D. sisso*, 31.10.98, FP Changa Manga – Kasur; 1 male, *C. fistula*, 25.6.2000, Shorkot City – Jhang.

*Previous locality record*

India: Mumbai, Poona, Maharashtra; Udaipur, Rajasthan, Sibpuri, Madhya Pradesh; Howrah, 24 Parganas, Calcutta. Bangladesh. China.

*Clubiona pashabhahii* Patel and Patel

1973. *Clubiona pashabhahii*, Patel and Patel, *Proc. Indian Acad. Sci.*, **78**: 2.  
 1991. *Clubiona pashabhahii*, Majumder and Tikader, *Rec. zool. Surv. India, Occ. Pap.*, **102**: 26.  
 2003. *Clubiona pashabhahii*, Patel, *Zoos' Print J.*, **18**: 1082.

*C. pashabhahii* Patel and Patel is found only in India and Pakistan. In Pakistan, this species was previously recorded from Sialkot (Qadir, 1997), Jhang (Nazir, 1999), and Bahawalpur (Nazir, 2001). New locality records are Lahore, Sheikhupura, Hafizabad and Gujranwala.

*Material examined*

6 females, 1 male, *Oryza sativa*, 30.8.97, Mud Baloochan – Sheikhupura; 4 females, *Hibiscus rosa-sinensis*, 30.8.97, CRH Nanuwana – Hafizabad; 5 females, 1 male, *Gardenia florida*, 19.6.98, Bagh-e-Jinnah, Lahore; 8 females, *O. sativa*, 16.10.98, Sialkot; 3 females, *Thuja orientalis*, 17.10.98, GC Gujranwala.

*Previous locality record*

Pakistan: Sialkot, Faisalabad, Jhang, Bahawalpur. India: Vidhyanagar, Gujarat.

*Clubiona ludhianaensis* Tikader

1976. *Clubiona ludhianaensis* Tikader, *J. Bombay nat. Hist. Soc.*, **73**: 176.  
 1991. *Clubiona ludhianaensis*, Majumder and Tikader, *Rec. zool. Surv. India, Occ. Pap.*, **102**: 31.

1996. *Clubiona ludhianaensis*, Biswas and Raychaudhuri, *Proc. Recent Adv. Life Sci. (1994)*, **1**: 200.

In Pakistan, previously *C. ludhianaensis*, Tikader was recorded from Sialkot (Qadir, 1997). Now this species has been collected from Faisalabad and Jhang.

*Material examined*

8 females, *Saccharum officinarum*, 24.8.97, Khanuwana – Faisalabad; 7 females, *Sorghum bicolor*, 25.6.2000, Shorkot City – Jhang.

*Previous locality record*

Pakistan: Sialkot. India: Ludhiana, Punjab; Umran, Meghalaya; Himainagar, Gujarat; Goalpara, Assam; Burdwan, West Bengal. Bangladesh.

*Clubiona drassodes*, O. P.-Cambridge

1874. *Clubiona drassodes*, O. P.-Cambridge, *Proc. zool. Soc. Lond.*: 414.  
 1970. *Clubiona atwali*, Singh, *Sci. and Cult.*, **36**: 410.  
 1983. *Clubiona drassodes*, Gong, *Verh. Naturw. Ver. Hamb.*, **26**: 64.  
 1991. *Clubiona atwali*, Majumder and Tikader, *Rec. zool. Surv. India, Occ. Pap.*, **102**: 33.  
 1991. *Clubiona drassodes*, Majumder and Tikader, *Rec. zool. Surv. India, Occ. Pap.*, **102**: 35.  
 1995. *Clubiona drassodes*, Barrion and Litsinger, *Riceland Spiders of South and Southeast Asia*, pp. 106.  
 2001. *Clubiona drassodes*, Hu, *Spiders in Qinghai-Tibet Plateau of China*, pp. 285.

In Pakistan, previous record of this species was only from Jhang (Nazir, 1999). The present study reveals its occurrence in Rawalpindi, Chakwal, Khushab, Sheikhupura and Kasur.

*Material examined*

2 females, 1 male, *Hibiscus rosa-sinensis*, 6.9.96, University of Arid Agriculture Rawalpindi; 7 females, 2 males, 3 Imm, *Oryza sativa*, 30.8.97, Mud Baloochan – Sheikhupura; 4 females, 2 Imm, *Eucalyptus* spp., 2.10.98, Kallar Kahar – Chakwal; 3 females, 1 male, 1 Imm, *Jasminum* spp., 3.10.98, GC Joharabad – Khushab; 4 females, *Saccharum officinarum*, 30.10.98, Pattuki – Kasur.

*Previous locality record*

Pakistan: Jhang, Punjab. India: Mumbai,

Maharashtra; Birbhum, Burdwan, Howrah, Calcutta, West Bengal; Dehra Dun, Khati, UP; Saran, Bihar; Belgaon, Karnataka; Crowlia Ghat, Andaman; Ludhiana, Punjab. Bangladesh. China. Nepal.

*Clubiona kasurensis*, new species  
(Fig. 1a – f)

*Measurements*

Female: TL 10.8, CL 4.8, CW 3.1, AL 6.0, AW 2.4. LL: I = 11.0 (3.2 + 4.0 + 2.4 + 1.4), II = 11.9 (3.2 + 5.0 + 2.3 + 1.4), III = 8.5 (2.3 + 3.3 + 1.9 + 1.0), IV = 13.9 (3.7 + 5.0 + 4.0 + 1.2). NMS 10. Range: TL 8.7 – 10.8 (9.74 ± 0.78), CL 2.8 – 4.8 (3.84 ± 0.74), CW 2.0 – 3.1 (2.60 ± 0.45), AL 5.7 – 6.0 (5.90 ± 0.12), AW 2.3 – 3.2 (2.70 ± 0.42). Male: TL 10.8, CL 4.5, CW 3.2, AL 6.3, AW 2.6. NMS 10. Range: TL 6.6 – 10.8 (9.37 ± 1.48), CL 2.7 – 4.5 (4.10 ± 0.70), CW 1.8 – 3.2 (2.82 ± 0.51), AL 3.9 – 6.3 (5.27 ± 0.83), AW 1.6 – 2.6 (2.28 ± 0.39).

Cephalothorax orange yellow, distinctly longer than wide, clothed with fine hairs, slightly narrow anteriorly, with conspicuous orange red foveae. Ocular area orange brown with few black erect setae; eyes in two rows, pearly white with brown rings except darker AME, both medians slightly larger than laterals. AER slightly recurved, medians closer to each other than to laterals. PER longer than AER, straight, medians closer to laterals than each other. MOQ wider than long, narrow anteriorly. Clypeus height small, less than half of AME diameter. Chelicerae long and strong, yellowish brown with yellow and dark brown erect setae scattered dorsally, tuft of dark brown long hairs on inner side of posterior ventral half and scattered hairs on other areas; promargin with three teeth, upper very small, median largest; retromargin with two teeth of equal size, first tooth well above the first promarginal tooth, second slightly lower than first promarginal tooth; fangs moderately long, strongly curved, orange yellow, with dark brown scopulae at base. Labium and maxillae yellowish brown with dense dark brown scopulae. Labium distinctly longer than wide with few brown setae, less than half of maxillae, slightly narrow and depressed anteriorly, widest medially, slightly

constricted near posterior end, narrow and truncate posteriorly. Maxillae with few brown setae, distinctly longer than wide, outer lateral margin medially constricted, inner margin with slight cavity, broad apically, narrow basally. Sternum pale yellow with brown setae, distinctly longer than wide, oval shaped, slightly narrow and truncate anteriorly, widest before and after midpoint, tapering posteriorly, posterior end blunt between coxae IV. Male palp long, yellowish brown with dark brown tinges on tegulum; cymbium longer than wide, apical portion short, with fine yellow hairs and three dark brown spines, without spur; embolus long and coiled, tegulum with tegular apophysis; tibia longer than wide, with three retrolateral spines; RTA developed, moderately long, broad basally, pointed and directed inward apically; VTA absent; patella and femur each with two spines. Legs long, yellowish except yellowish brown tarsi. Spinnation on legs: femora I = 2 (110) – 0 – 1 (100) – 0, II = 3 (111) – 0 – 1 (100) – 0, III = 3 (111) – 0 – 2 (110) – 2 (110), IV = 3 (111) – 0 – 1 (100) – 1 (100); patellae I – II without spines, III – IV with one short retrolateral; tibiae I – II = 0 – 3 (021) – 0 – 0, III = 0 – 2 (110) – 2 (011) – 2 (011), IV = 0 – 3 (111) – 2 (011) – 2 (011); metatarsi I – II = 0 – 2 (002) – 0 – 0, III = 0 – 6 (222) – 3 (111) – 3 (111), IV = 0 – 5 (212) – 3 (111) – 3 (111). Metatarsi and tarsi with thin brown scopulae. Tarsi two clawed with dense black claw tuft. Leg formula 4213.

Abdomen elongated, distinctly longer than wide, narrow and depressed anteriorly, constricted laterally near anterior end, widest medially, gradually tapering posteriorly. Dorsum dark brown with 'V' shaped dark reddish brown ornamentation on posterior half, cluster of dark brown backwardly directed semi erect setae on anterior end, yellow erect backwardly directed setae on lateral margins of posterior 1/3. Anal tubercle large, conical, yellowish brown with tuft of yellowish brown hairs on posterior margin. Ventral side uniformly dark brown, without any band. Spinnerts yellowish brown, convergent; anterior short and robust; posterior long and slender, well separated from base. Epigyne with flat and convex plate, copulatory opening conspicuous; internal genitalia with elongated spermatheca, copulatory tube long and highly convoluted.

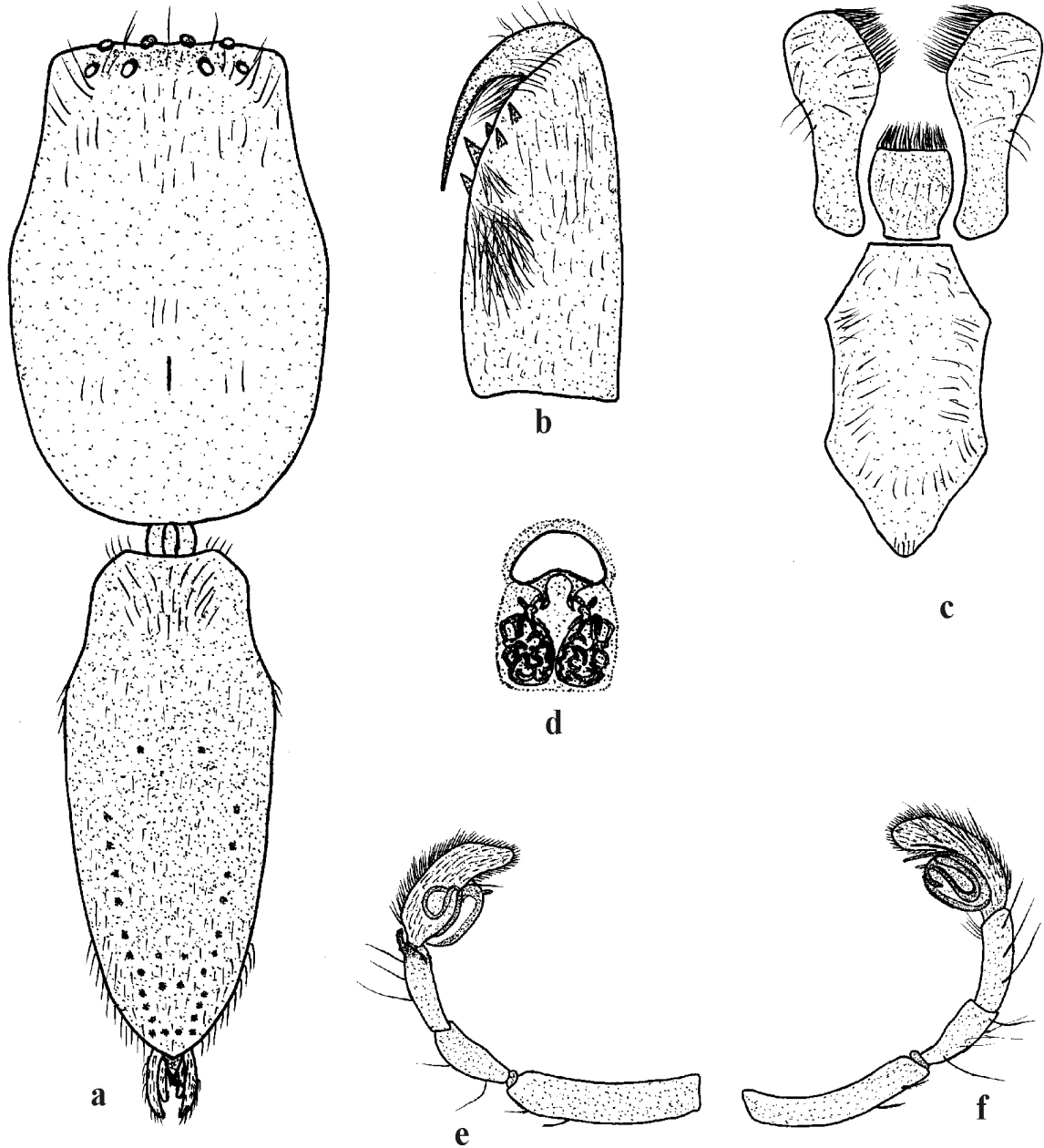


Fig. 1. *Clubiona kasurensis*, new species a: Body dorsal view 9x. b: Chelicera ventrolateral view 24x. c: Labium, maxillae and sternum ventral view 24x. d: Epigyne internal view 60x. e and f: Left male palp dorsolateral and ventrolateral views 18x.

*Etymology*

Name derived from type locality i.e. Kasur.

*Type material*

Holotype female, *Gossypium hirsutum*,

30.10.98, Pattuki – Kasur; allotype male, *Sorghum bicolor*, 30.10.98, Okara; 1 female, 5 Imm, *Colocasia esculenta*, 23.7.96, Shorkot City – Jhang; 1 male, 2 Imm, *Morus alba*, 30.8.97, Muchiwala, Pindi Bhattian – Hafizabad; 4 Imm, *Hibiscus rosa-*

*sinensis*, 30.8.97, CRH Nanuwana – Hafizabad; 6 Imm, *Pongamia glabra*, 11.10.98, FP Chichawatni – Sahiwal; 4 Imm, *Oryza sativa*, 16.10.98, Sialkot; 1 male, 7 Imm, *Pennisetum typhoides*, 22.10.98, Bhakkar; 1 female, 8 Imm, *Dalbergia sisso*, 23.10.98, Canal Bank, Kundian – Mianwali; 3 females, 7 males, 2 Imm, *Sorghum bicolor*, 30.10.98, Okara; 1 male, 4 Imm, *Dendrocalamus strictus*, 30.10.98, GC Okara.

#### Discussion

*Clubiona kasurensis*, sp. nov. is close to *Clubiona drassodes*, O. P.-Cambridge but differs from latter on the basis of following characters.

AME closer to each other than laterals, PER straight. Labium less than half of maxillae, shape also different. Median constriction on outer lateral margin of maxillae not deep, inner margin with slight cavity. Spination on legs varies from *Clubiona drassodes*, O.P.-Cambridge. Abdomen constricted laterally near anterior end, more elongated and less convex. Epigyne and internal genitalia differ in structural details. RTA developed, moderately long, broad basally, pointed and directed inward apically; male palpi of the two species show other variations as well.

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(Received 2 December 2004, revised 12 February 2005)