

## First Report of *Hersilia orvakalensis* Javed *et al.*, 2010 (Araneae, Hersiliidae) from Telangana, India

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### Abstract:

We report the sighting record of the Orvakal two-tailed spider *Hersilia orvakalensis* Javed, Foord and Tampal (Araneae, Hersiliidae) from Pastapur, Medak district, Andhra Pradesh, India. This constitutes the first record of the recently described species from Telangana and extends its range 230 km northwards. Variations in characters in types and the new material are also discussed.

**Keywords:** Hersiliidae, *Hersilia orvakalensis*, range extension, India

### 1.0 Introduction

The family Hersiliidae comprises of conspicuously long-legged, delicate small-bodied spiders characterized by extremely long posterior lateral spinnerets. They are commonly known as Bark Spiders or Two-tailed Spiders. Hersiliidae family is distributed globally and currently includes 176 species belonging to 15 genera (Platnick, 2013), (*nomen dubia* excluding). Hersilid species are mostly found in tropical and subtropical regions (Afrotropical, South Asia and Southeast Asia) (Foord, 2008). Only a few species extending north of 40°N are known (Marusik and Fet, 2009). Genus *Hersilia* of Hersiliidae family is a small genus with 75 species known worldwide. In India, the family Hersiliidae is represented by eleven species of four genera, namely, *Hersilia* Audouin, 1826 *Murricia* Simon, 1882, *Tama* Simon, 1882 (*T. gravelyi* Sinha, 1951; *nomen dubia*) and *Neotama* Baehr & Baehr, 1993. The genus *Hersilia* in India is known from six species, namely, *H. savignyi* Lucas, 1836, *H. sumatrana* Thorell, 1890, *H. striata* Wang & Yin, 1985, *H. tibialis* Baehr & Baehr, 1993, *H. orvakalensis* Javed, Foord & Tampal, 2010, *H. longivulva* Sen, Saha & Raychaudhuri, 2010. The *nomen* *H. kalimpongensis* Sinha, 1951 is a *nomen dubia* and is excluded.

In a short survey conducted in May 2011, in the vicinity of Zahirabad, Medak District, Andhra Pradesh, India, two female specimens of Hersiliidae family were collected near Pastapur about 5.7 kilometer west of Zahirabad. The specimens were identified as *H. orvakalensis* Javed, Foord & Tampal, 2010 basing on the structure of the internal epigyne. This constitutes the first record of Orvakal two-tailed spider after its type description in 2010.

### 2.0 Material and Methods

All measurements, presented in millimetres, were taken following Rheims and Brescovit (2004) and Foord (2008). Photographs of live specimens were taken with a supermacro digital camera, while photos of the preserved material were taken with a Sony Cybershot digital camera mounted on the eye piece of a Lawrence & Mayo stereo zoom microscope; only minor colour corrections were made to the pictures; line diagrams were drawn using camera lucida mounted on an Olympus stereo zoom binocular microscope. Epigyne was dissected and immersed in 50% NaOH solution (Barrion and Litsinger 1995) for 24 hrs to study internal structures. The terminology used in the current paper partly follows Baehr and Baehr (1993), Rheims and Brescovit (2004), and Foord

(2008). The specimen is deposited in the collection of the Natural History Museum of Osmania University, Hyderabad, India.

**Abbreviations:** AER, anterior eye row; ALE, anterior lateral eye; AME, anterior median eye; bs, basal segment of posterior lateral spinnerets; CD, copulatory duct; d, dorsal; DMP, dorsal muscular pits; FD, fertilization duct; Fe, femur; MOQ, median ocular quadrangle; Mt, metatarsus; OUNHM, Osmania University Natural History Museum; p, prolateral; PER, posterior eye row; PLE, posterior lateral eye; PLS, posterior lateral spinnerets; PME, posterior median eye; Pmt, promarginal teeth; r, retrolateral; Rmt, retromarginal teeth; SP, spermatheca; SR, seminal receptacle; Tib, tibia; ts, terminal segment of posterior lateral spinnerets; TBL, total body length (carapace + abdomen); VMP, ventral muscular pits; vs., versus; WA, anterior width of the MOQ; WP, posterior width of the MOQ.

### 3.0 Results and Discussion:

#### 3.1 *H. orvakalensis* Javed, Foord & Tampal, 2010

**Diagnosis:** Belongs to *H. pectinata* species group. *Hersilia orvakalensis* Javed, Foord and Tampal, 2010 can be distinguished from all other species of *Hersilia* from India in lacking crenulae on the retrolateral border of the median apophysis and short truncated distal area of the cymbium in males and tri-lobed spermathecae and broad median epigynal plate in females. Both sexes are also characterized by the presence of two humps laterally on the abdomen (Javed *et al.*, 2010).

**Distribution:** Until now, from the type locality, Orvakal (15°39' N, 78°10' E), Kurnool district, Andhra Pradesh (Javed *et al.*, 2010); and presently also from Pastapur (17°38' N, 77°32' E), Medak district, Andhra Pradesh.

#### 3.2 Description based on the new material of *H. orvakalensis* Javed, Foord & Tampal, 2010 (Figs. 1-10)

**Material examined:** Female, 2 numbers, adult; Pastapur (17.68N, 77.56E), near Zahirabad, Medak District, Andhra Pradesh, India; 11 May 2011, coll. Aditya Srinivasulu and Bhargavi Srinivasulu; Reg. no. OUNHM.ART.ARA.2011.11 and OUNHM.ART.ARA.2011.12. *H. orvakalensis* 2 males

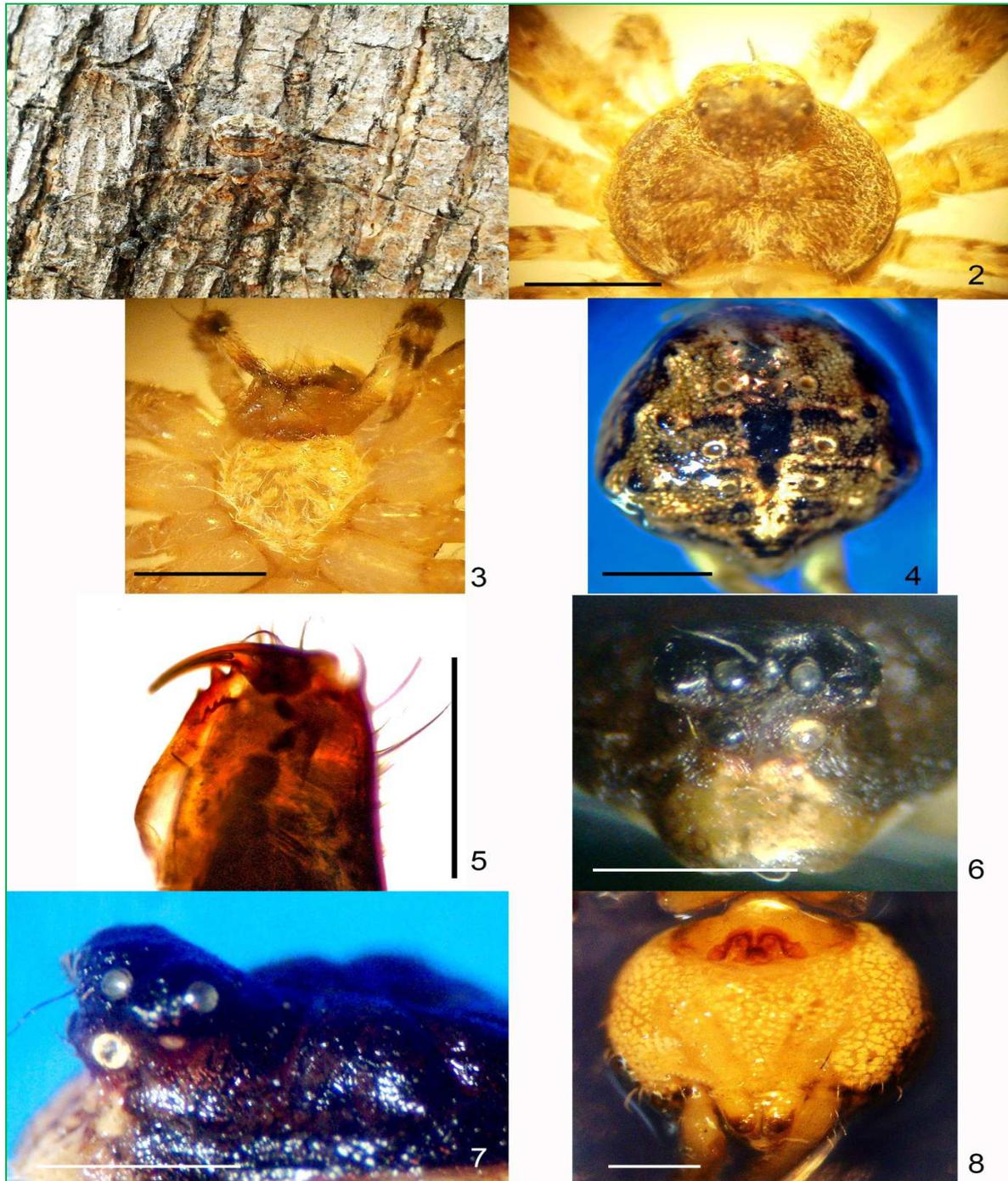
(ZSI/FBRC/A-27 and A-29) and 2 females (ZSI/FBRC/A-28 and A-30).

**Habitus (Fig. 1):** Medium-sized (TBL 5.59 and 6.43 mm), two-tailed spider with four DMP and medium PLS.

**Colour:** Carapace dark brown, with brown and white spots laterally; clypeus pale, white anteriorly; eye area dark around AME eyes and PER; white mark posteriad on eye tubercle. Sternum heart-shaped with white mottling. Legs pale yellow with dark brown bands. Abdomen pale yellow with dark borders anteriorly; mid dorsally with chevron-shaped mark; posterior half of abdomen broad, V-shaped at the apex, dark border around dorsal muscular pits; dorsum, lateral and posterior borders of abdomen with scattered, conspicuous, dark-coloured, flat leaf-like hairs; ventrum mottled white.

**Carapace (Fig. 2,3,5):** Rounded, as long as wide, 2.10 and 2.27 long, 2.08 and 2.47 wide (length / width = 1.009 and 0.91); furnished with short hairs, some flat leaf-like hairs between AME and at the back of ocular region; fovea longitudinal with radial striae; ocular region raised, concave behind PER, AER and PER recurved, area between PME and PLE has a prominent tubercle; clypeus slightly raised, furnished with long hairs; chelicerae small, 0.67 and 0.84 mm, distal part with strong and long hairs, Pmt with three robust, triangular teeth (the 1st very small, the 3rd the biggest) and Rmt with four and five minute teeth on either side, respectively. Maxilla 0.41 and 0.52 long, 0.25 and 0.35 wide (length/width = 1.64 and 1.48); labium 0.28 and 0.33 long, 0.44 and 0.36 wide (length/width = 0.63 and 0.91); sternum 1.31 and 1.29 long, 1.14 and 1.21 wide (length/width = 1.14 and 1.06).

**Eyes (Fig. 2,6,7):** Small; lateral eyes situated on the tubercle; AME, PME and PLE black, while ALE white; MOQ 0.45 and 0.47 long, 0.51 and 0.47 WA, 0.42 and 0.48 WP. Eye sizes and inter distances: AME > PLE > PME > ALE (0.17, 0.15, 0.12, 0.06 and 0.21, 0.18, 0.17, 0.09) and AME – AME 0.21 and 0.19, AME – ALE 0.16 and 0.16, PME – PME 0.17 and 0.18, PME – PLE 0.28 and 0.21, PLE – PLE 0.68 and 0.60, ALE – PLE 0.15 and 0.13, ALE – ALE 0.56 and 0.51; AER 1.09 and 0.84, PER 1.14 and 0.81; AME, largest; ALE, smallest.



**Figure 1.** *Hersilia orvakalensis*, live habitus of female (NHM.OU.ART.ARA.2011.11) from Pastapur, Medak district, Andhra Pradesh, India.

**Figure 2.** *Hersilia orvakalensis*, carapace, dorsal view (scale 1 mm).

**Figure 3.** *Hersilia orvakalensis*, cephalothorax, ventral view showing heart-shaped sternum mottled with white (scale 1 mm).

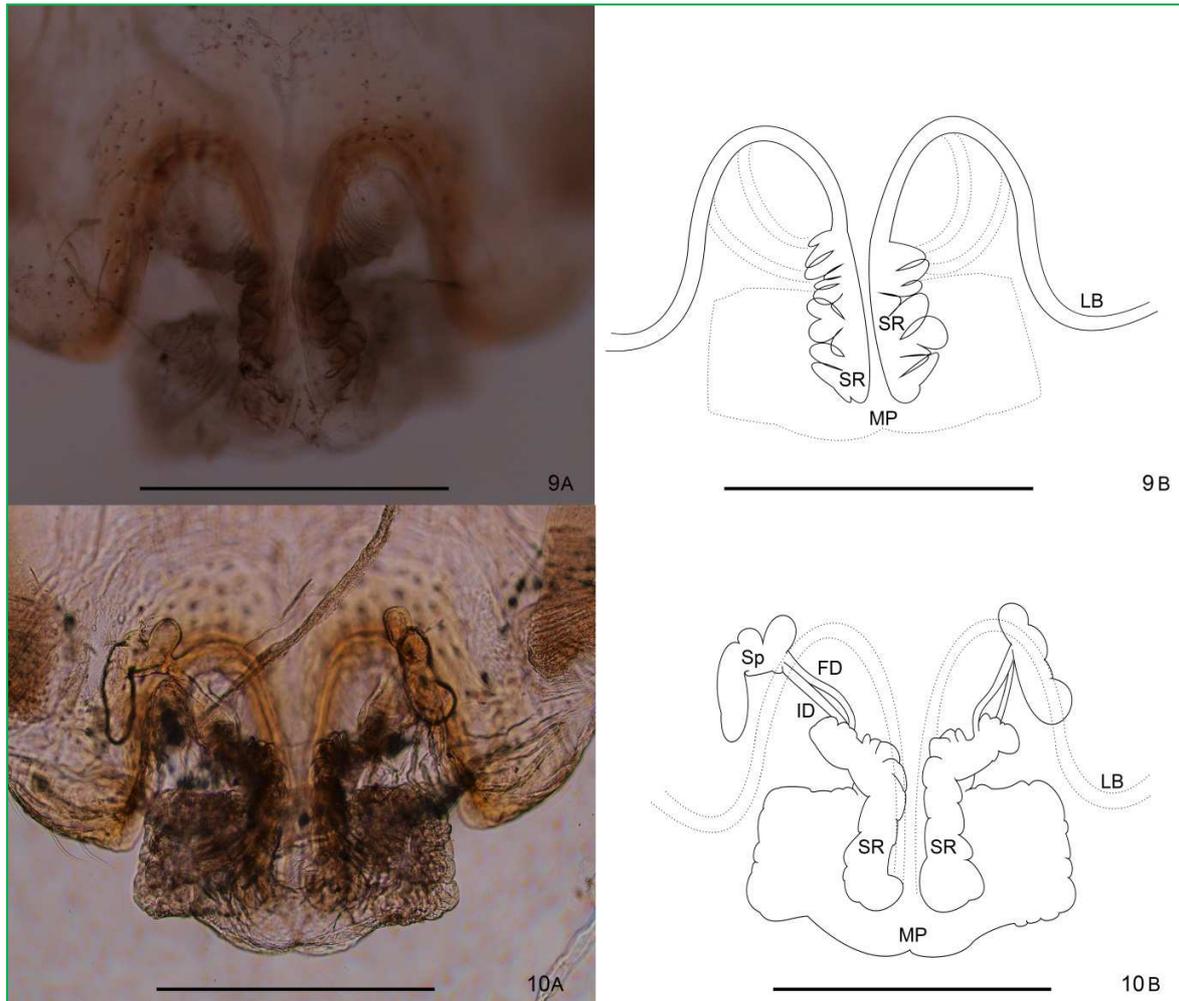
**Figure 4.** *Hersilia orvakalensis*, abdomen, dorsal view showing DMP and chevron shaped marking (scale 1 mm).

**Figure 5.** *Hersilia orvakalensis*, chelicera, ventral view showing three Pmt and four Rmt (scale 0.5 mm).

**Figure 6.** *Hersilia orvakalensis*, ocular quadrangle (scale 0.5 mm).

**Figure 7.** *Hersilia orvakalensis*, carapace, lateral view showing prominent tubercle between PME and PLE (scale 0.5 mm).

**Figure 8.** *Hersilia orvakalensis*, abdomen, ventral view showing epigynum in ventral view (external epigynum), VMP and spinnerets (scale 1 mm).



**Figure 9.** *Hersilia orvakalensis*, A. epigynum in ventral view (external epigynum) after clearing, and B. corresponding line drawing (LB, lateral border; MP, median plate; SR, seminal receptacle) (scale 0.5 mm).

**Figure 10.** *Hersilia orvakalensis*, A. epigynum in dorsal view (internal epigynum) after clearing, and B. corresponding line drawing (FD, fertilization duct; ID, insemination duct; LB, lateral border; MP, median plate; Sp, spermatheca; SR, seminal receptacle) (scale 0.5 mm).

**Legs:** Leg II longest, leg III smallest. Leg formula 2143; lengths of legs and palp [total length (femur + patella + tibia + metatarsus + tarsus)]: specimen 1 (OUNHM.ART.ARA.2011.11) I = 12.23 (3.65 + 0.70 + 2.8 + 4.56 + 0.52); II = 12.73 (3.7 + 0.82 + 3.01 + 4.66 + 0.54); III = 4.42 (1.35 + 0.56 + 0.87 + 1.09 + 0.55); IV = 11.27 (3.08 + 0.72 + 2.58 + 4.37 + 0.52); palp [total length (femur + patella + tibia + tarsus)]: 2.53 (0.89 + 0.42 + 0.44 + 0.78); metatarsus of legs I, II and IV is biarticulate; leg spination: I (Fe 2p,2d,2r; Tib 1p,1d,1r; Mt 1p,1d,1r); II (Fe 2p,2d,1r; Tib 2p,2d,1r; Mt 1p,1d,1r); III (Fe 1p; Tib 1p,1d; Mt 1p,1d,1r); IV (Fe 2p,2d,1r; Tib 1p,1d,1r; Mt 2p,1d,1r); specimen 2 (OUNHM.ART.ARA.2011.12) I = 14.05 (4.11 + 0.92 + 3.23 + 5.0 + 0.79); II = 14.33 (3.99 + 0.98 + 3.43 + 5.16 + 0.77); III = 5.18 (1.64 + 0.54 + 0.99 + 1.23 + 0.78); IV = 12.60 (3.33 + 0.78 + 2.77 + 4.92 + 0.80);

palp [total length (femur + patella + tibia + tarsus)]: specimen 1 (OUNHM.ART.ARA.2011.11) 2.53 (0.89+0.42+0.44+0.78), specimen 2 (OUNHM.ART.ARA.2011.12) 2.90 (1.06 + 0.36 + 0.50 + 0.98); metatarsus of legs I, II and IV is biarticulate; leg spination: specimen 1 (OUNHM.ART.ARA.2011.11) I (Fe 2p,2d,2r; Tib 1p,1d,1r; Mt 1p,1d,1r); II (Fe 2p,2d,1r; Tib 2p,2d,1r; Mt 1p,1d,1r); III (Fe 1p; Tib 1p,1d; Mt 1p,1d,1r); IV (Fe 2p,2d,1r; Tib 1p,1d,1r; Mt 2p,1d,1r), specimen 2 (OUNHM.ART.ARA.2011.12) I (Fe 2p,1d; Tib 1p,1d,1r; Mt 1p,2d,1r); II (Fe 1p,1d,1r; Tib 2p,1d,2r; Mt 1p,1d,1r); III (Fe 1p,1d,1r; Tib 1d; Mt 1p,1d,1r); IV (Fe 1p,1d; Tib 1p,1d; Mt 1p,1d).

Abdomen (Fig. 1,4,8): Longer than wide, 3.49 and 4.16 long, 3.29 and 3.78 wide (length/width = 1.03 and 1.10), being widest posteriorly. Dorsally two humps on the lateral sides and with four pairs of DMP, all pairs of DMP dissimilar in size, the second pair by far the largest, the fourth pair the smallest. VMP arranged in a V shape. PLS 3.12 and 3.72 long (bs 0.81 and 0.72, ts 2.31 and 3.0), nearly the length of abdomen; posterior lateral spinnerets with faint annulation; spigots on the median border of the PLS dense and elongate.

Epigyne (Fig. 9,10): Epigynum large, poorly sclerotized, median plate broad, slightly incurved in the middle, lateral border distinct, seminal receptacle closely set and visible in ventral view. Internal epigyne consists of tri-lobed spermatheca; long, slightly curved insemination ducts; short fertilization ducts, and elongated complexly coiled seminal receptacle.

**3.3 Natural History:** The specimens were collected on the bark of a *Peltophorum rouxburghiana* tree along the side of the road connecting Pastapur and Zahirabad in Medak district, Andhra Pradesh, India.

The original description of *Hersilia orvakalensis* by Javed *et al.* (2010) did not mention about the reteromarginal teeth (rmt) on the chelicerae in the female specimens (allotype and a paratype), while describing the male as holotype 9 rmt were reported. The female specimens studied by us had four to five rmt. No variation with respect to numbers of rmt on each side of the chelicerae was seen. The present specimens also differ from the types by having variations with respect to epigynal structure. The epigyne of the type specimens were described by Javed *et al.* (2010) as being "large, consisting of median plate with distinct lateral borders and broad, rounded base extending posteriorly; basal ripple pads behind epigynal plate visible in dorsal view; spermathecae elongate, tri-lobed, pod shaped with small basal and large distal lobe; insemination ducts curved and elongate; fertilization duct short". The Pastapur specimens, unlike the Orvakal specimens, have seminal receptacles (or basal ripple pads, as per Javed *et al.*, 2010) close to each other and heavily coiled (Fig. 9&10). The present observation of the recently described Orvakal two-tailed spider from Pastapur, Medak district extends the range of the species by 230 km northwards. We have also sighted, but not collected, the Orvakal two-tailed spider from the adjoining Bidar and Gulbarga districts of Karnataka within 80 km radius of Pastapur and are of opinion that it could be having

a wider range and further research will certainly help in ascertaining its distribution correctly.

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