



A new species of *Hersilia* Audouin, 1826 (Araneae: Hersiliidae) from India, with notes on its natural history

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Abstract

A new species of *Hersilia* Audouin, *H. orvakalensis* sp. nov., is described from Andhra Pradesh, India. The taxonomic affinities of the species are discussed and a brief note on its natural history is provided.

Key words: Long-spinnered bark spider, common two-tailed spider, *Hersilia*, India

Introduction

Hersilia Audouin, 1826 is the largest and most diverse genus in the family Hersiliidae, with 72 described species (Platnick 2010) distributed in the Afrotropical, Oriental and Australian Regions. Hersiliid spiders are popularly known as Long-Spinnered Bark Spiders or Common Two-Tailed Spiders. They are easily recognized by the flattened body, raised eye region, the bi-articulations on the metatarsi of legs I, II and IV, the extremely long posterior spinnerets and by the legs that are stretched out radially on tree bark or lichen-covered crags (Baehr and Baehr 1993; Chen 1994; Foord and Dippenaar-Schoeman 2005, 2006; Rheims and Brescovit 2004). Knowledge of the natural history of *Hersilia* is still rudimentary, although most species are cryptic and remain ad-pressed on the substrate when at rest, moving at great speed when disturbed (Dippenaar-Schoeman and Jocqué 1997).

In India, the genus *Hersilia* is represented by three species: *H. savignyi* Lucas, 1836, *H. sumatrana* (Thorell, 1890) and *H. tibialis* Baehr & Baehr, 1993. *Hersilia savignyi* is the only species known from the State of Andhra Pradesh. Historically, Indian hersiliid taxonomy has received little attention except for a revision of Hersiliidae from the Oriental Region by Baehr and Baehr (1993) and an additional recent paper by Javed and Tampal (2010). The current paper is based on an examination of specimens collected during a recent biodiversity inventory conducted by the World Wide Fund for Nature-India (WWF-India), Andhra Pradesh State Office (APSO). *Hersilia orvakalensis* sp. nov. is described and compared with all known species.

Material and methods

Terminology for the male pedipalp and genitalia follows Rheims and Brescovit (2004), Foord and Dippenaar-Schoeman (2006) and Marusik and Fet (2009), while measurements were taken as per Chen (1994) and Rheims and Brescovit (2004). All measurements are in millimeters and taken with digital callipers and an ocular micrometer with up to 50x magnification. Photographs of specimens were taken with a Sony Cyber-shot (DSC-W120) digital camera mounted directly on the eye piece of an Olympus SZX 12 stereomicroscope.

Type specimens are deposited in the collections of the Zoological Survey of India, Freshwater Biology Regional Center, Arachnid section (ZSI/FBRC/A), Hyderabad.

The following abbreviations are used throughout the text: AER, anterior eye row; ALE, anterior lateral eye; AME, anterior median eye; MOQ, median ocular quadrangle; PER, posterior eye row; PLE, posterior lateral eye; PME, posterior median eye.

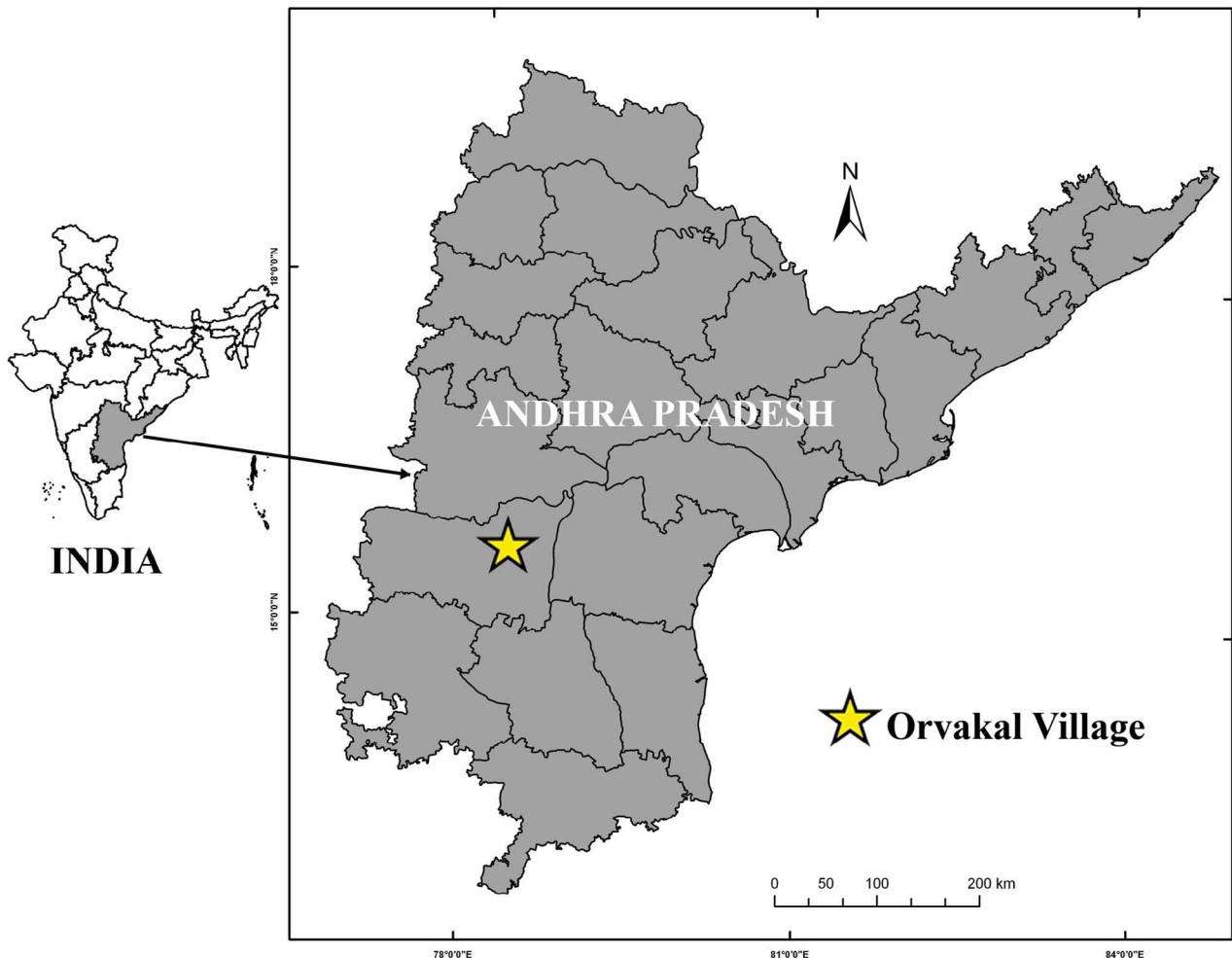


FIGURE 1. Map depicting the type locality of *Hersilia orvakalensis* sp. nov. at Orvakal Village, Andhra Pradesh, India.

Taxonomy

Family Hersiliidae Thorell, 1870

Genus *Hersilia* Audouin, 1826

Hersilia Audouin, 1826: 317; Lucas, 1869: 1; Simon, 1893: 440; Smithers, 1945: 1; Benoit 1967: 1; Baehr & Baehr, 1987: 351; Baehr & Baehr, 1993: 3; Levy, 2003: 1; Rheims & Brescovit, 2004: 1; Foord & Dippenaar-Schoeman, 2006: 8.

Type species. *Hersilia caudata* Audouin, 1826, by original designation.

Diagnosis. Members of the genus *Hersilia* resemble the genus *Murricia* Simon by the following combination of characters: metatarsi of legs I, II, and IV with bi-articulations; chelicerae with three large promarginal and six-10 minute retromarginal teeth; four pairs of dorsal muscular sigillae on the abdomen; eyes heterogeneous, with ALE pearly white and AER and PER strongly recurved; and MOQ rectangular, as broad anteriorly as posteriorly. Species of *Hersilia* can be distinguished from similar species of *Murricia*, by the leg I, which is

usually longer than leg II, by the embolus which does not complete a full revolution, and by the internal genitalia of the female, which have short and simple insemination ducts, accessory glands and spermathecae present on either side of the epigynum (Baehr and Baehr 1993; Foord 2008).

Distribution. The genus *Hersilia* occurs in the Afrotropical, Oriental and Australian Regions (Baehr and Baehr 1993; Rheims and Brescovit 2004; Foord 2008).



FIGURE 2. Habitat of *Hersilia orvakalensis* **sp. nov.** near Orvakal Village, showing medium-sized trees along the State Highway. Image by S. M. Maqsood Javed.

***Hersilia orvakalensis* sp. nov.**

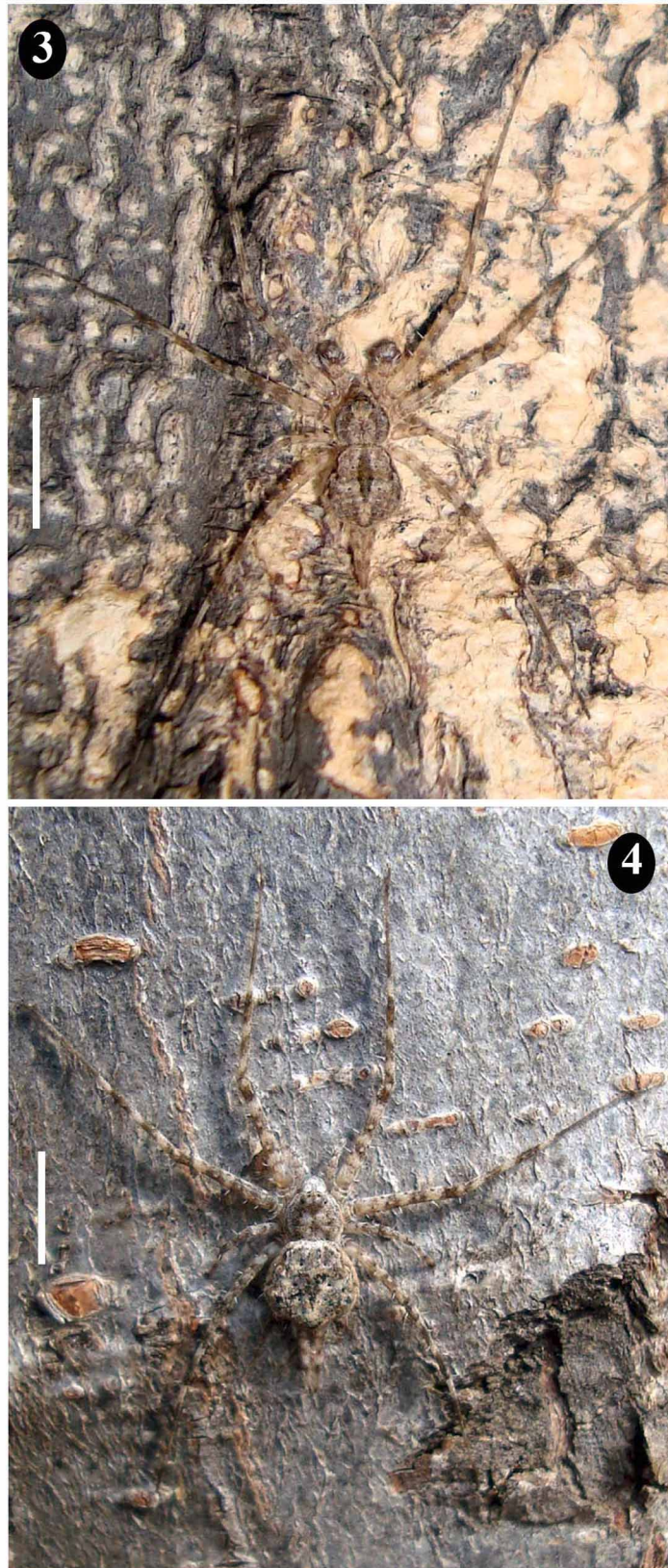
Figs 3–27

Type material. **INDIA: Andhra Pradesh:** holotype male, Orvakal, Kurnool District, 15°41'N, 78°10'E, 20 May 2010, S. M. Maqsood Javed (ZSI/FBRC/A-27). Paratypes: allotype female, same data as holotype except 14 February 2010 (ZSI/FBRC/A-28); 1 male, 1 female, same data as holotype (ZSI/FBRC/A-29-30).

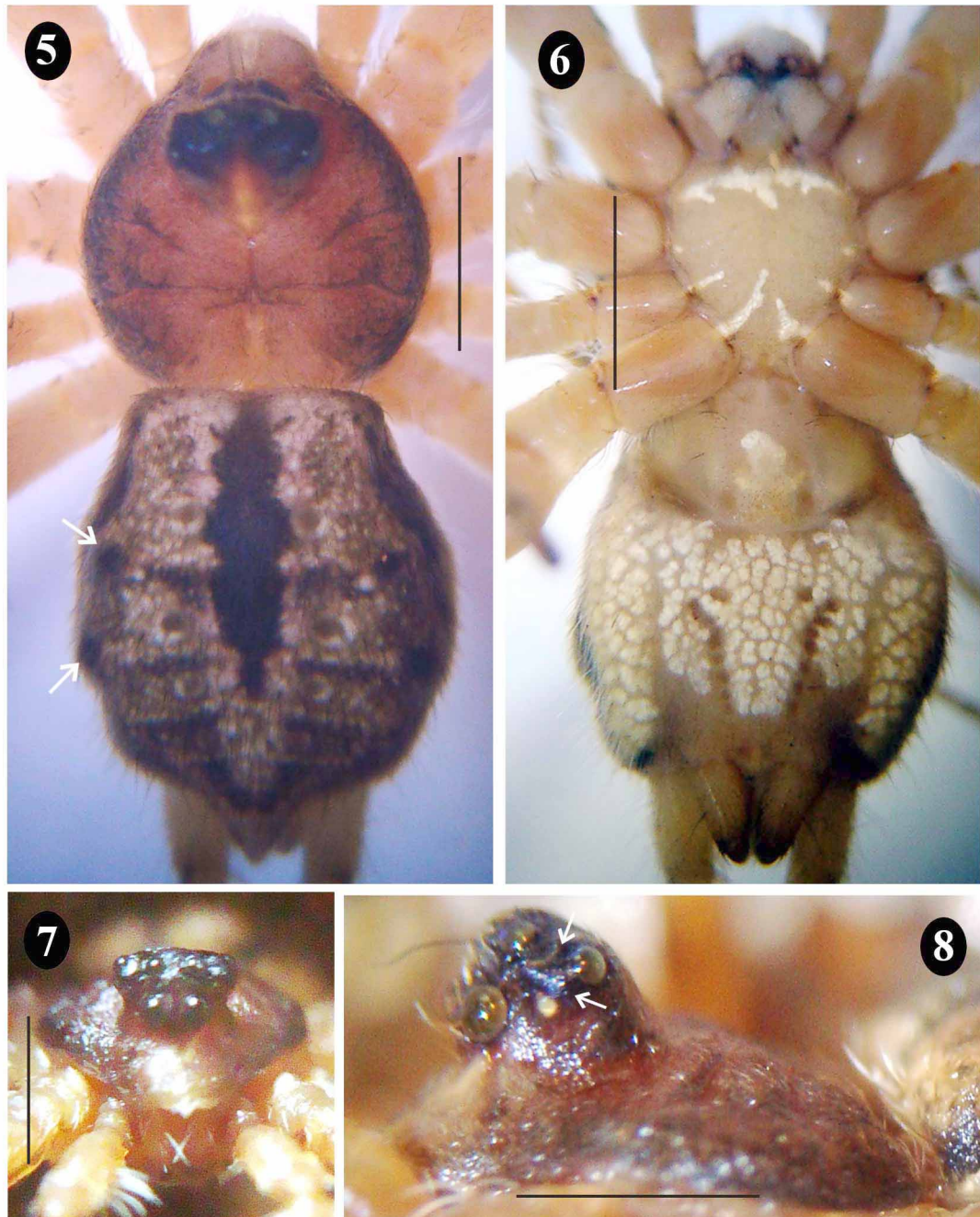
Etymology. The specific epithet is a noun in apposition, taken from the type locality at Orvakal Village, Kurnool District.

Affinities. In the classification of Baehr and Baehr (1993) *Hersilia orvakalensis* **sp. nov.** would be placed in the *H. pectinata* species group. This group includes three other species from the Oriental Region and four species from the Afrotropical Region. Males are characterized by a pronounced angular dorsal projection on the pedipalpal tibia with four-seven strong spines, by lamellar modifications on the bulb of the male pedipalp, by a complex median apophysis and by a long, ridged embolus. Females are characterized by a median epigynal plate with basal rippled pads. *Hersilia orvakalensis* seems otherwise closely related to *H. tibialis* from India and Sri Lanka in possessing a relatively short male pedipalp, with a short and wide tibia bearing a conspicuous ridge and five strong spines. Like *H. tibialis*, the cymbium is also stout and markedly pilose,

rounded off at the apex, with numerous short spines; the embolus is curved and free, with an enlarged apex; the retrolateral projection of the median apophysis is flat and broad; and the epigynum is large, consisting of a median plate with distinct lateral borders and an extended base.



FIGURES 3–4. *Hersilia orvakalensis* sp. nov., live habitus images of male (3) and female (4) (ZSI/FBRC/A 27-28) sitting on tree trunks. Scale bars = 5 mm. Images by S. M. Maqsood Javed.

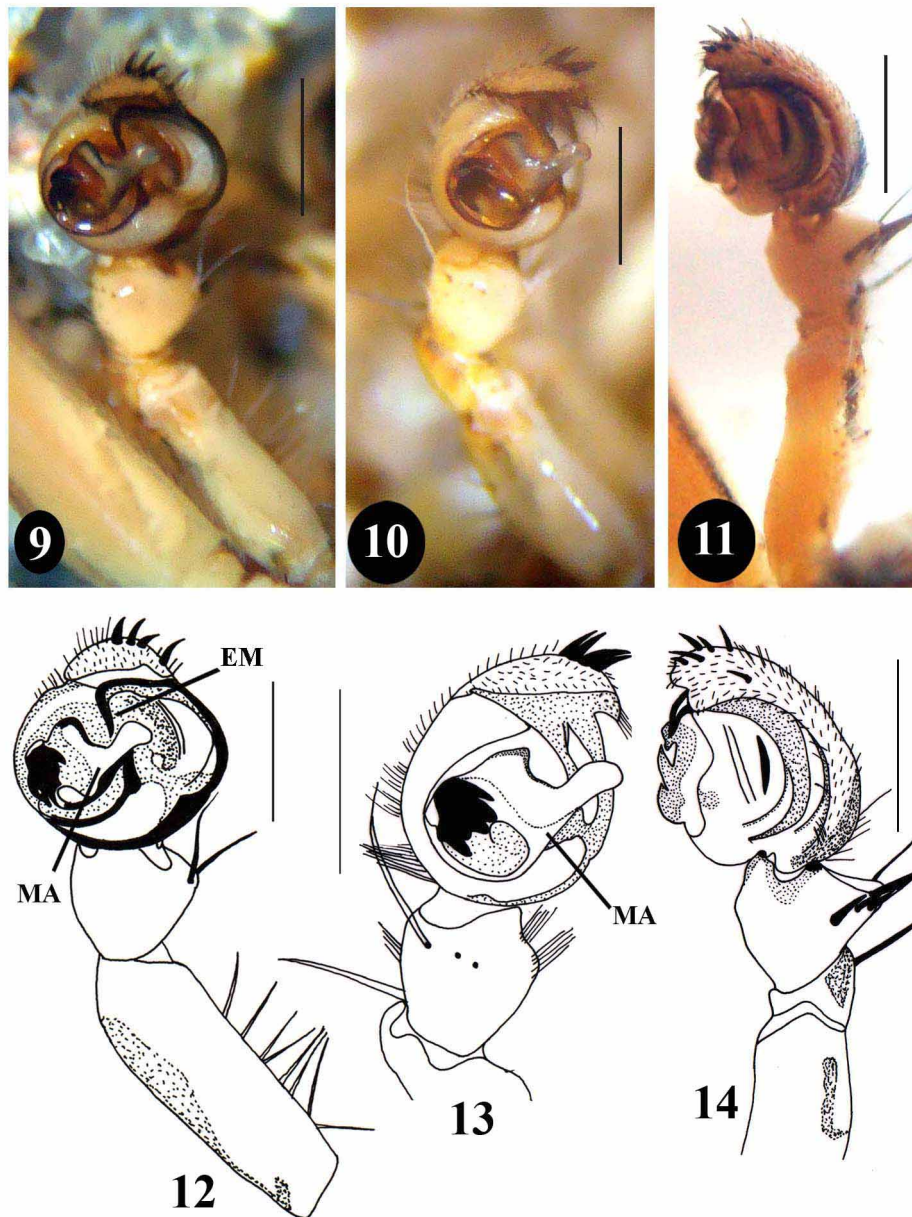


FIGURES 5–8. *Hersilia orvakalensis* **sp. nov.**, holotype male (ZSI/FBRC/A-27): 5, body, dorsal view, showing the two pairs of lateral abdominal humps; 6, body, ventral view; 7, ocular region, clypeus and chelicerae, anterior view; 8, carapace, lateral view, showing tubercle between PME and PLE. Scale bars = 1 mm.

Diagnosis. Males of *Hersilia orvakalensis* **sp. nov.** can be distinguished from all other described congeners (including *H. tibialis*) by the absence of crenulae on the retrolateral border of the median apophysis and by the short truncated distal area of the cymbium (Figs 9–14). Females can be distinguished by the shape of the spermathecae and accessory glands, which form a single elongate tri-lobed and pod-shaped structure, and by the shape of the median epigynal plate, which is extended posteriorly with a broad base (Figs 23–24). Both sexes are also characterized by the presence of two humps laterally on the abdomen (Figs 5, 17).

Description. Male (holotype): *Cephalothorax* (Figs 3, 5–8): Carapace slightly longer than wide (2.02 long, 1.84 wide), covered with short white pilose setae; ocular region strongly raised, slightly convex between PME, concave behind PER; AER and PER recurved; clypeus broad, 0.49 long. Cheliceral paturon 0.42 long;

promargin with three robust, triangular teeth and retromargin with nine minute teeth. Maxillae 0.47 long, 0.27 wide; labium 0.29 long, 0.19 wide; sternum 0.98 long, 0.92 wide. Eyes small, with lateral eyes situated on a tubercle; AME, PME and PLE black, ALE pearly white; MOQ square, 0.38 long, 0.38 wide. Eye sizes and inter-distances: AME>PLE>PME>ALE (0.16, 0.12, 0.12, 0.06); AME–AME 0.04, AME–ALE 0.11, PME–PME 0.14, PME–PLE 0.14; AER 0.81 wide, PER 0.91 wide.

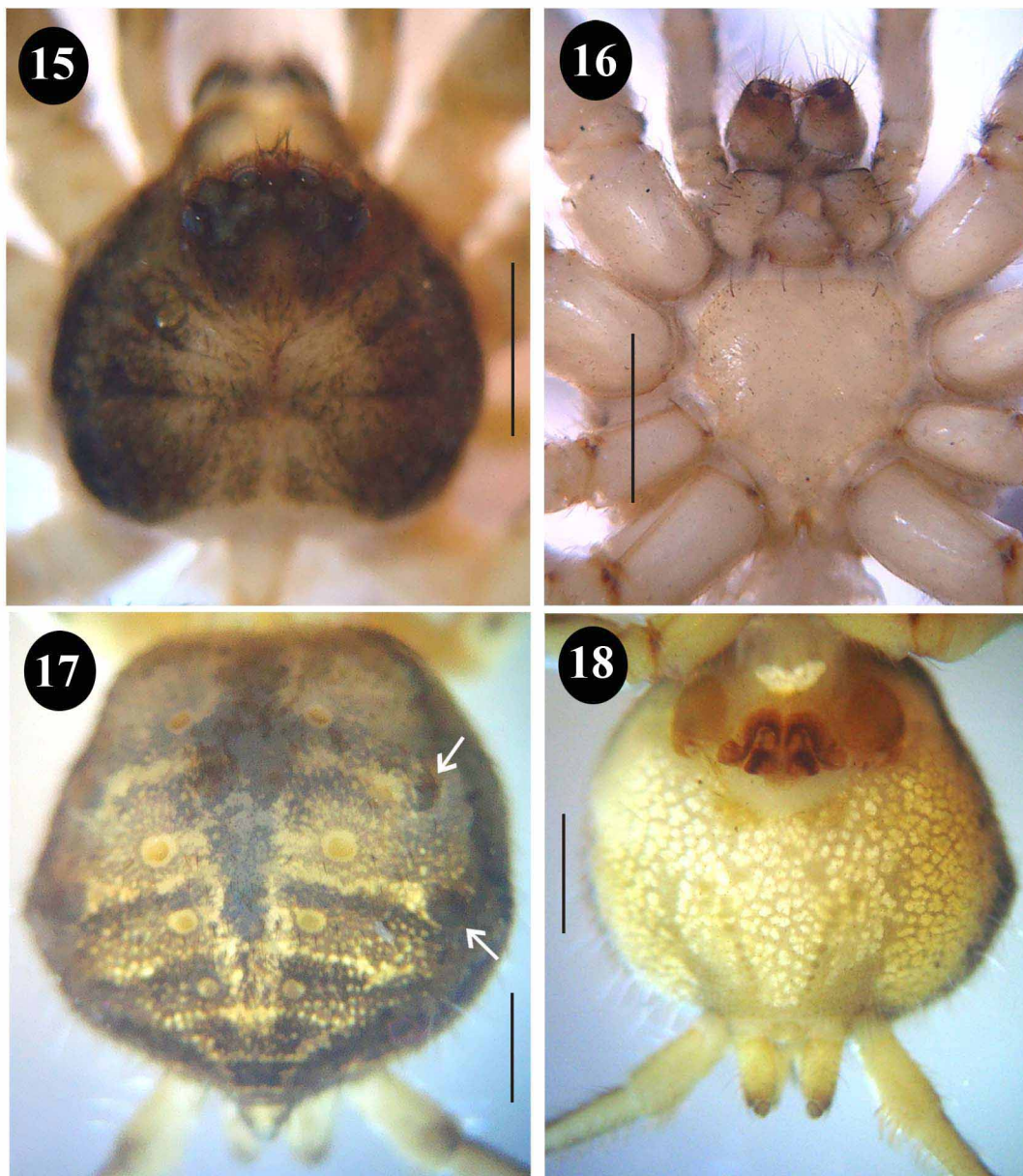


FIGURES 9–14. *Hersilia orvakalensis* sp. nov., holotype male (ZSI/FBRC/A-27) right pedipalp: 9, 12, ventral view; 10, 13, retrolateral view; 11, 14, prolateral view. EM, embolus; MA, median apophysis. Scale bars = 0.5 mm.

Legs: Leg formula 2143, lengths of legs [total length (femur + patella + tibia + metatarsus + tarsus)]: I = 13.22 (3.42 + 1.01 + 3.43 + 4.79 + 0.57); II = 13.75 (3.48 + 1.08 + 3.60 + 4.97 + 0.62); III = 4.79 (1.33 + 0.38 + 1.30 + 1.32 + 0.46); IV = 11.43 (3.14 + 0.65 + 2.76 + 4.18 + 0.70). Leg spination: legs I, II, III and IV have similar numbers and arrangement of spines (femur dorsal 1–1–1, prolateral 1–1–1–1, retrolateral 1–1–1–1; patella dorsal 1–1, prolateral 1–1, retrolateral 1–1; tibia dorsal 1–1, prolateral 1–1–1, retrolateral 1–1–1; metatarsus dorsal 1–1–1, prolateral 1–1–1, retrolateral 1–1–1).

Abdomen (Figs 5–6): Longer than wide, 3.06 long, 2.28 wide, widest posteriorly, subquadrate, with two slight humps on lateral edge. Dorsally with four pairs of spherical muscular sigillae, all dissimilar in size, with

fourth pair smallest. Ventral muscular sigillae arranged in a wide V-shape. Posterior lateral spinnerets slightly shorter than abdomen, 3.03 long (basal segment 0.72, terminal segment 2.31); spigots on median border dense and elongate.

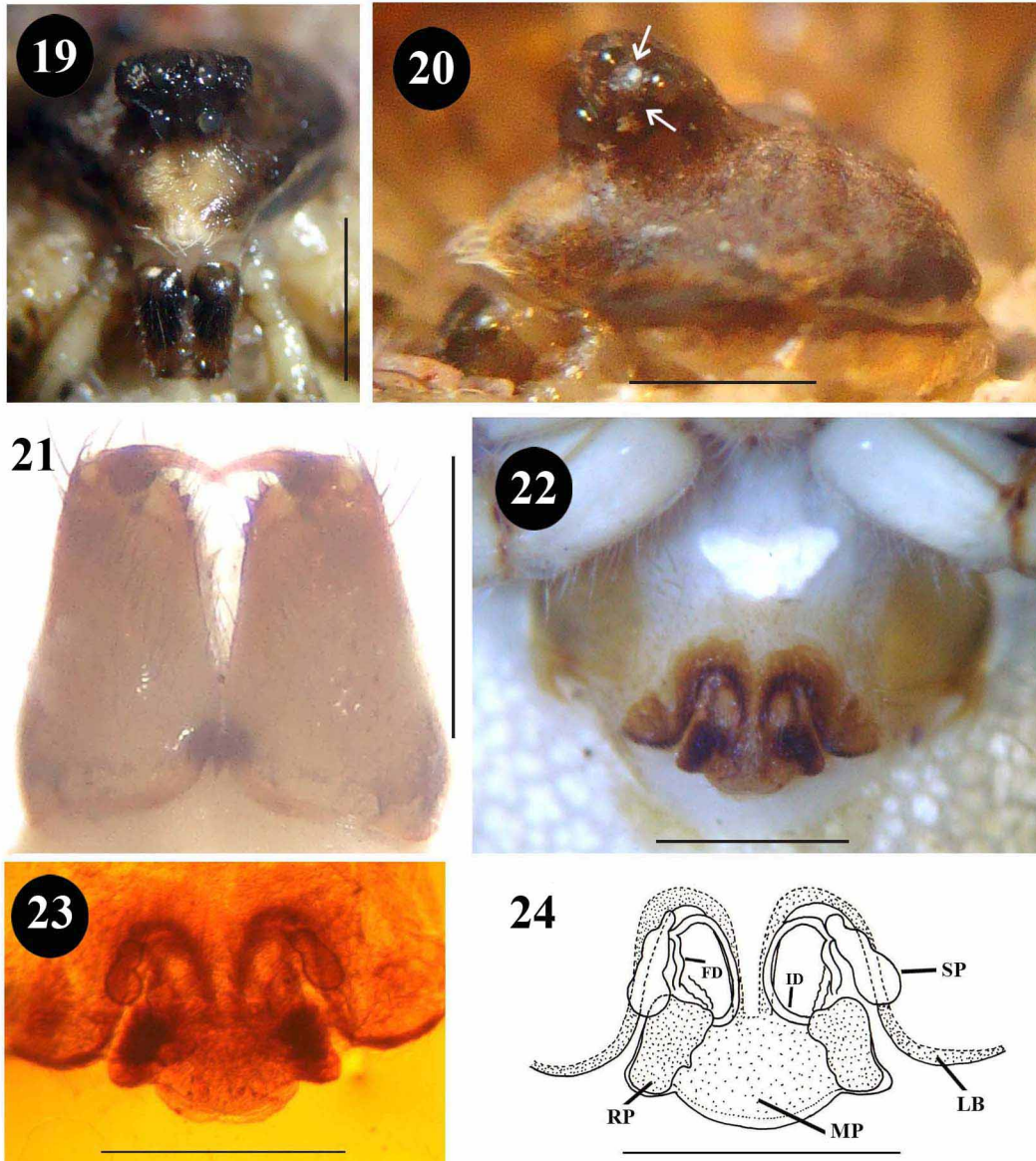


FIGURES 15–18. *Hersilia orvakalensis* sp. nov., allotype female (ZSI/FBRC/A-28): 15, carapace, dorsal view; 16, cephalothorax, ventral view; 17, abdomen, dorsal view showing two pairs of prominent humps on lateral edge; 18, abdomen, ventral view. Scale bars = 1 mm.

Pedipalp (Figs 9–14): Total length (femur + patella + tibia + tarsus): 2.40 (0.91+ 0.40 + 0.39 + 0.70). Tibia short, as long as patella, with angulated projection dorsally and five strong dorsal spines arranged in continuous row. Cymbium very short and stout, markedly pilose on anterior dorsal region; apex widely rounded, with five short and stout spines distally and separate spine present on lateral side. Embolus widely curved, free, apex slightly excised. Retrolateral projection of median apophysis flat and broad, without any crenulae on retrolateral border.

Colouration and markings (Figs 3, 5–8): In life dorsum of carapace, abdomen and legs grey with black streaks and spots along with several brown and cream markings. In ethanol carapace reddish brown with darker radiating grooves, dark ocular region and broad black band around margin; clypeus with broad white

longitudinal streak below MOQ; chelicerae uniform brown and ventrally pale. Sternum, maxillae and labium pale grey; anterior edge of maxillae bordered with thin black streak; sternum marked with irregular mottled white radiating markings towards the centre. Dorsum of abdomen grayish intermingled with mottled brown, white and black patches; lateral borders narrowly dark; medially with broad, dark lancet-shaped stripe extending to third pair of dorsal muscular sigillae. Dorsal muscular sigillae black with horizontal black streaks present between each pair. Ventrums of abdomen (posterior to epigastric furrow) with uniform mottled white patches. Legs, pedipalps and spinnerets with grey and black annulate markings, on retrolateral femora and patellae of legs.

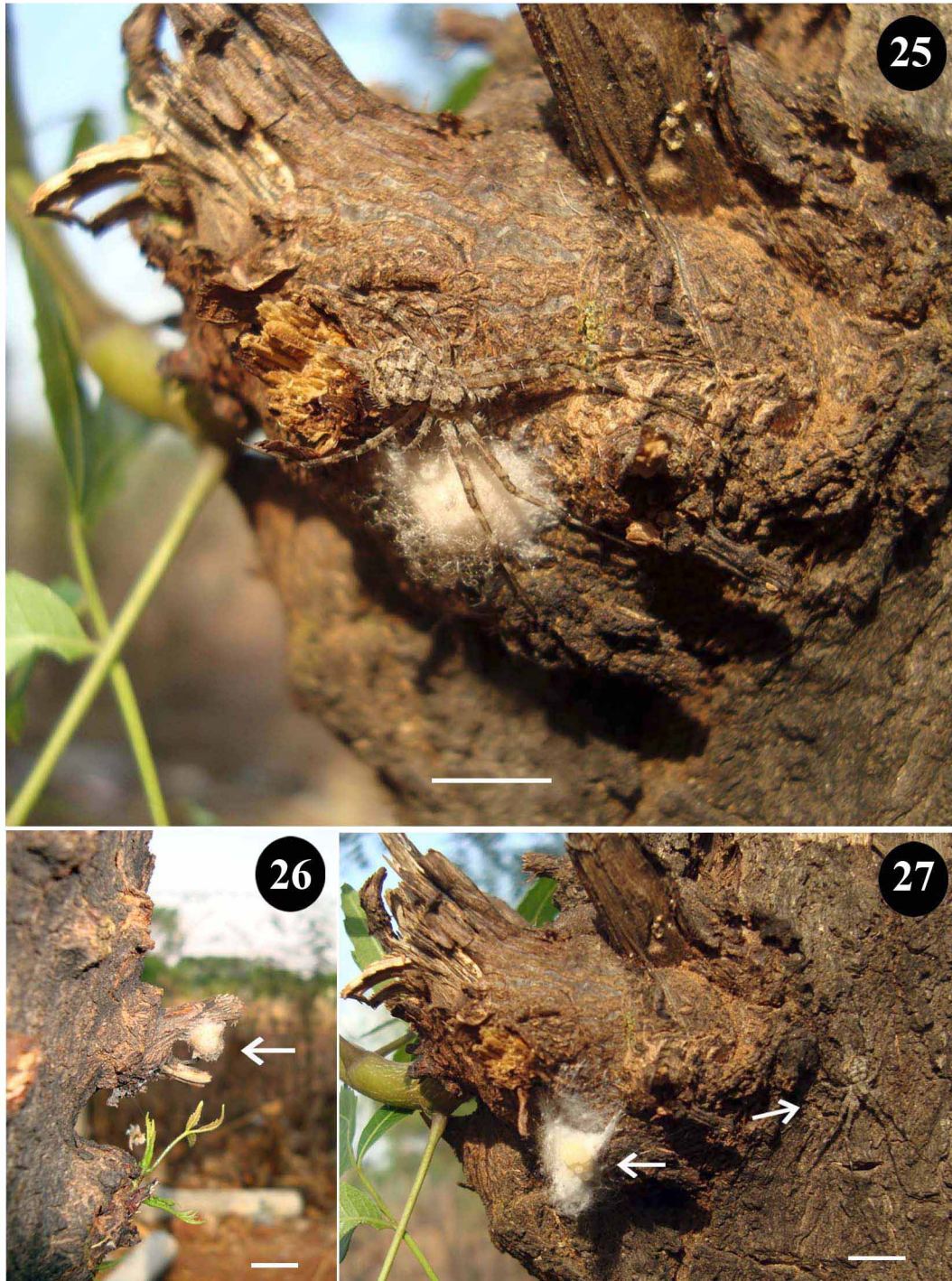


FIGURES 19–24. *Hersilia orvakalensis* sp. nov., allotype female (ZSI/FBRC/A-28): 19, ocular region, clypeus and chelicerae, anterior view; 20, carapace, lateral view, showing prominent tubercle between PME and PLE; 21, chelicerae, ventral view, showing three promarginal teeth; 22, epigynum, ventral view; 23, 24, internal genitalia in clove oil (23) and corresponding line diagram (24). FD, fertilization duct; ID, insemination duct; LB, lateral border; MP, median plate; RP, rippled pad; SP, spermatheca. Scale bars = 1 mm (19–20), 0.5 mm (21–24).

Female (allotype) (Figs 4, 15–21): As for male except as follows. *Cephalothorax*: Carapace 2.32 long, 2.01 wide; clypeus 0.66 long; chelicerae 0.52 long with three large prominent teeth on promargin (Fig. 21); maxilla 0.39 long, 0.21 wide; labium 0.24 long, 0.16 wide; sternum 1.35 long, 1.31 wide; MOQ 0.40 long,

0.38 wide. Eye sizes and inter distances: AME>PLE>PME>ALE (0.18, 0.14, 0.14, 0.06); AME–AME 0.04, AME–ALE 0.12, PME–PME 0.14, PME–PLE 0.14); AER 0.92 wide, PER 0.98 wide.

Genitalia (Figs 22–24): Epigynum large, consisting of median plate with distinct lateral borders and broad, rounded base extending posteriorly; basal rippled 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 ducts short.



FIGURES 25–27. *Hersilia orvakalensis* sp. nov., allotype female (ZSI/FBRC/A-28): 25, female guarding egg sac; 26, hanging egg sac; 27, flipped egg sac bearing cluster of eggs and camouflaged female nearby. Scale bars = 5 mm. Images by S. M. Maqsood Javed.

Distribution. This species is known only from the type locality at Orvakal Village, Andhra Pradesh, India (Fig. 1).

Natural history. *Hersilia orvakalensis* is an arboreal species, found on *Pongamia pinnata* (Fabaceae) and *Azadirachta indica* (Meliaceae) tree trunks close to the Kurnool-Nandyal State Highway near Orvakal Village (Fig. 2). Three individuals (two males and a female) were located on *P. pinnata*, while one female, guarding an egg sac, was located on *A. indica* (Figs 25–27). Egg sacs were pale cream to white, while the older sacs were pale and dry in appearance. The egg sac forms a spherical knob on tiny, broken twigs near the base of a broken branch. We located two egg sacs on the same branch, 10 cm apart, and on opposite sides of the branch. One fresh egg sac was opened and a clutch of 42 small spherical eggs were observed. All adult specimens were recorded in February and May.

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