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## First record of the genus *Vailimia* Kammerer, 2006 from India, with the description of two new species (Araneae: Salticidae: Plexippina)

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### Abstract

The genus *Vailimia* Kammerer, 2006 is recorded for the first time from India. Two new species, *Vailimia ajmerensis* Caleb & Jangid **sp. nov.** (♂), and *V. jharbari* Basumatary, Caleb & Das **sp. nov.** (♂♀), are described and illustrated in detail. Presently, the genus is known only by the males, which means that the female of *V. jharbari* described herein is the first female known in the genus.

**Key words:** taxonomy, jumping spider, Assam, Rajasthan

### Introduction

The oriental jumping spider genus *Vailimia* was originally erected as *Vailima* by Peckham & Peckham (1907), with *Vailima masinei* Peckham & Peckham, 1907 as its type. Since the generic name was preoccupied, a replacement name was proposed (Kammerer 2006). *Vailimia* was placed within subtribe Plexippina (tribe Plexippini of the Salticinae) by Maddison (2015). It presently comprises four described species, of which three, namely *V. masinei* (Peckham & Peckham, 1907), *V. bakoensis* Prószyński & Deeleman-Reinhold, 2013 and *V. jianyuae* Prószyński & Deeleman-Reinhold, 2013, are known from Borneo, and one species (*V. longitibia* Guo, Zhang & Zhu, 2011) is known from China (World Spider Catalog 2020). In the present paper we record the genus for the first time in India with the description of two new species, *Vailimia ajmerensis* **sp. nov.**, and *V. jharbari* **sp. nov.**, from Rajasthan and Assam states, respectively.

### Materials and methods

Specimens were hand collected and live specimens were photographed in the field with a Nikon COOLPIX L310. Specimens were preserved in 80% ethanol and were later examined under a Leica EZ4 HD stereomicroscope. Detailed microphotographs were obtained using a Leica M205A stereomicroscope attached with Leica DFC500 HD camera enabled with a Leica Application Suite (LAS) version 3.8. Epigyne was dissected and macerated in 10% KOH to clear soft tissue. All measurements are in millimeters. Leg measurements are given as total length (femur,

patella, tibia, metatarsus and tarsus). Type specimens are deposited in National Zoological Collections, Zoological Survey of India (NZC-ZSI), Kolkata.

Abbreviations used are as follows: AER = anterior eye row, ALE = anterior lateral eye, AME = anterior median eye, EFL = eye field length, PER = posterior eye row, PLE = posterior lateral eye, PME = posterior median eye, RTA = retrolateral tibial apophysis.

## Taxonomy

### *Vailimia* Kammerer, 2006

**Type species:** *Vailimia masinei* (Peckham & Peckham, 1907).

**Diagnosis.** For detailed diagnosis of males, see Prószyński & Deeleman-Reinhold (2013). Epigyne with a pair of oval translucent windows, separated by a narrow septum; anteriorly placed copulatory openings; copulatory ducts less sclerotized, broad, sinuous; spermathecae globular (Figs 24–27).



**FIGURES 1–4.** *Vailimia ajmerensis* sp. nov., male. 1 dorsal view; 2 ventral view; 3 frontal view; 4 lateral view. Scale bars: 2 mm (1–2, 4); 1 mm (3).



*Vailimia ajmerensis* Caleb & Jangid sp. nov.

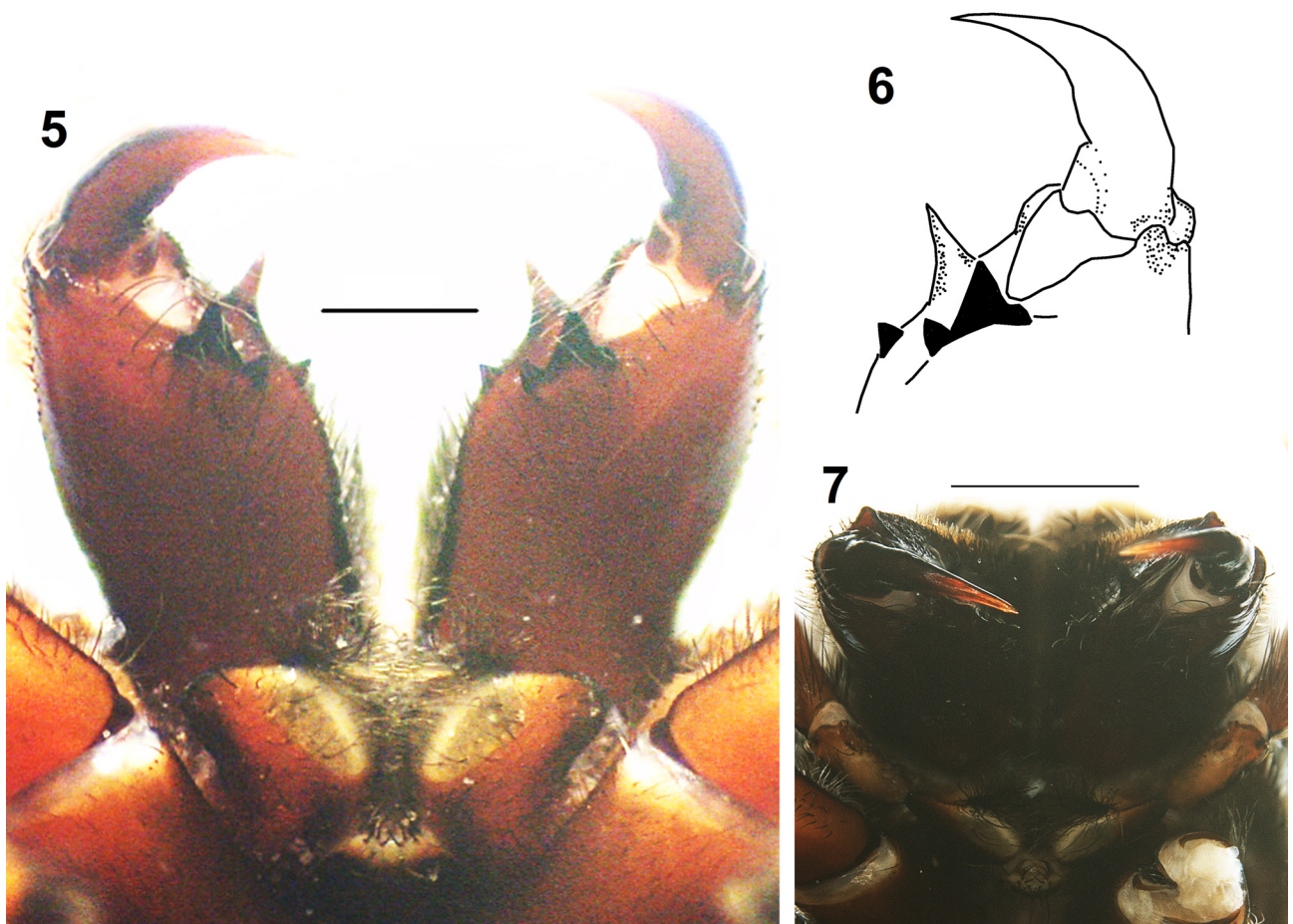
Figs 1–11

**Note:** This species was misidentified as *Ptocasius strupifer* Simon, 1901 in Kaur et al. (2014: 503, figs 2A–G): ♂ from India, Rajasthan, Keoladeo National Park, Bharatpur, Indraprastha University collection, not examined.

**Type material. Holotype:** ♂ (NZN-ZSI 6590/18): Ajmer (26.50747°N, 74.68112°E), 490 m a.s.l., Rajasthan, India, 06 June 2017, leg. Ashish K. Jangid.

**Etymology.** The specific name is derived from the type locality (Ajmer, Rajasthan) from where the holotype was collected.

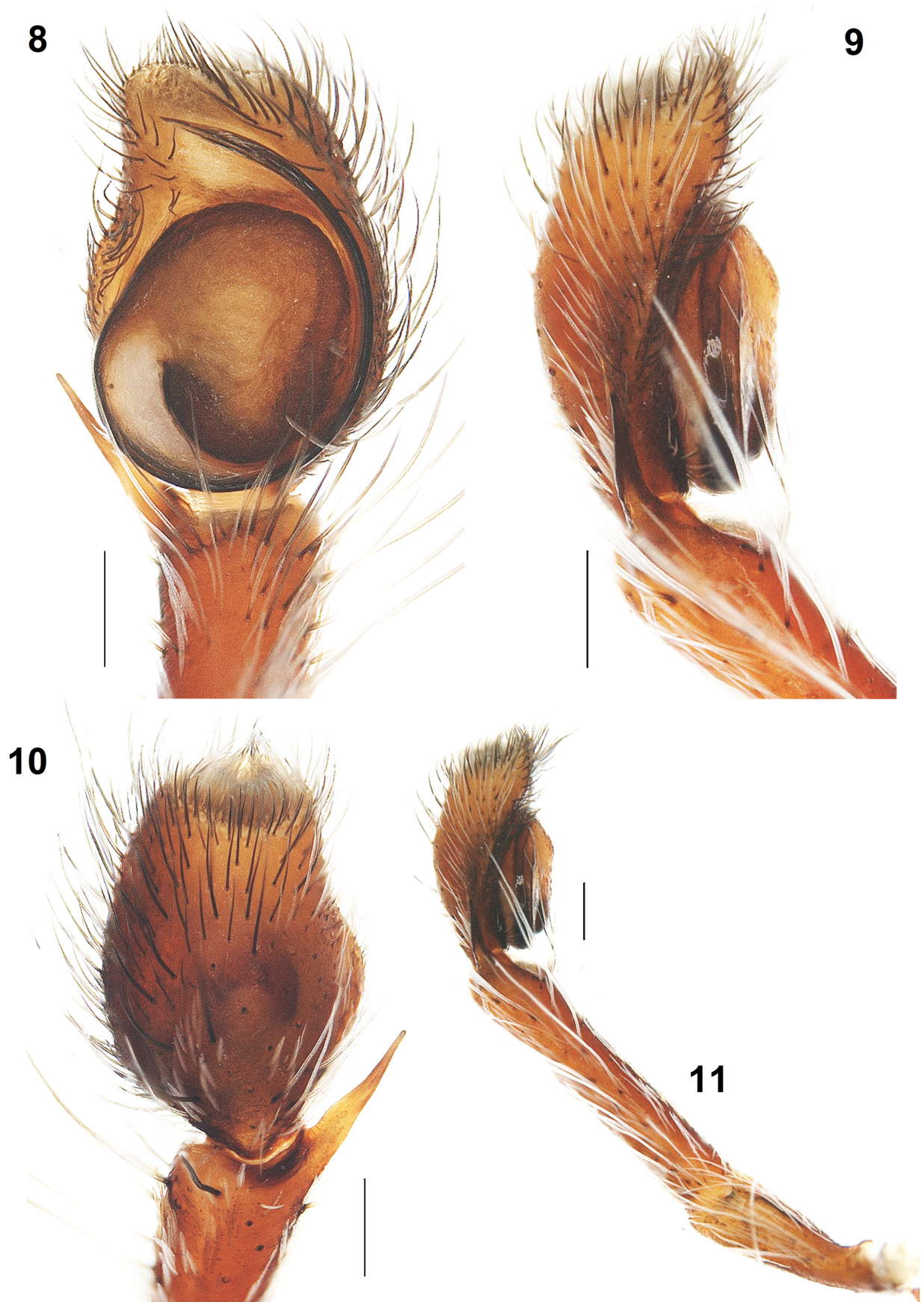
**Diagnosis.** The species is similar to *Vailimia jianyuae* Prószyński & Deeleman-Reinhold, 2013 in having a long palpal tibia, but can be distinguished by the thicker distal embolic region pointing retrolaterally (tapering uniformly and directed apically in *V. jianyuae*); shorter and wider apical portion of cymbium and the proportionately larger bulb, occupying 3/4 of the cymbium (narrower and longer cymbium; bulb occupying 1/2 the cymbium in *V. jianyuae*) (cf. Fig. 8 herein with Prószyński & Deeleman-Reinhold 2013: fig. 139); RTA with a ridge at the base and gently curving distally (RTA with a small notch at the base, sharply bending and slightly curved at the apex in *V. jianyuae*) (cf. Figs 9–10 herein with Prószyński & Deeleman-Reinhold 2013: fig. 141).



**FIGURES 5–7.** *Vailimia ajmerensis* sp. nov. 5–6 male chelicerae, retrolateral view; 7 chelicerae and fangs, apical view. Scale bars: 0.5 mm (5); 1 mm (7).

**Description. Male** (holotype). Total length: 7.06; carapace: 3.56 long, 2.99 wide; abdomen: 3.50 long, 2.18 wide. Carapace dark brown, covered with pale greyish hairs (Fig. 1); two pairs of tubercles present along the margin of the ocular area, a smaller one between the ALEs and PME and a larger one near the PLEs (Fig. 4). Anterior eyes surrounded by white setae. Clypeal region brown, covered with long dark brownish setae (Fig. 3). Eye measurements: AME 0.69, ALE 0.37, PME 0.11, PLE 0.36, AER 2.42, PER 3.04, EFL 1.36. Clypeus height 0.16. Sternum oval, brownish. Chelicerae reddish-brown, two teeth (one small and one big) on the promargin and one uneven bifid tooth on the retromargin, with a small ridge at the base (Figs 5–6); labium and maxillae brown with pale margins.





**FIGURES 8–11.** *Vailimia ajmerensis* sp. nov., right male palp. 8 ventral view; 9 retrolateral view; 10 dorsal view; 11 retrolateral view, with tibia and patella. Scale bars: 0.2 mm.

Legs reddish-brown; leg I & II with fringe of hairs ventrally on patella, tibia and metatarsus. Leg measurements: I 9.61 (2.71, 2.14, 2.31, 1.59, 0.86); II 6.78 (2.07, 1.57, 1.37, 1.10, 0.67); III 7.48 (2.64, 1.45, 1.39, 1.27, 0.73); IV 6.53 (2.10, 1.22, 1.23, 1.39, 0.59). Leg formula: 1324. Abdomen reddish-brown; covered with pale hairs; mid dorsal region lighter with chevron-shaped markings; venter dark brown with lateral yellow-brown longitudinal stripes; spinnerets brown (Figs 1–2). Palps yellow-brown; palpal tibia and patella covered with long white hairs laterally; cymbium with a dorsal scopula and white hairs present at the base; embolus long arising from the retrolateral margin encircling the bulb; RTA strong and long, tapering toward the tip, directed anteriorly (Figs 8–11).

**Female.** Unknown.

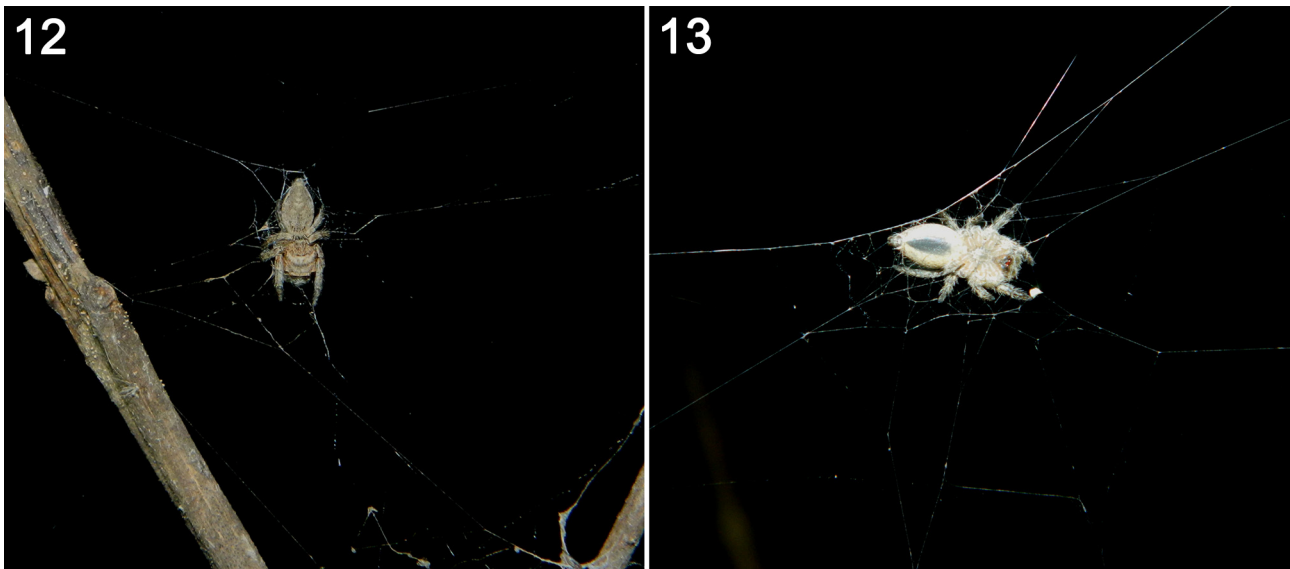
**Distribution.** Known only from Rajasthan (India).

***Vailimia jharbari* Basumatary, Caleb & Das sp. nov.**

Figs 12–27

**Type material. Holotype:** ♂ (NZC-ZSI 6591/18) from India, Assam, Kokrajhar, Jharbari Forest Range (26.6052°N, 90.2419°E), 74 m a.s.l., 1 February 2017, leg. P. Basumatary. **Paratypes:** 1 ♂ (NZC-ZSI 6592/18) from Jharbari Forest Range under Chirang Reserve Forest (26.5970°N, 90.2376°E), 72 m a.s.l., 21 December 2017; 2 ♀ (NZC-ZSI 6593/18) and (NZC-ZSI 6594/18) from Jharbari Forest Range under Chirang Reserve Forest (26.6045°N, 90.2378°E), 81 m a.s.l., 11 March 2018, all leg. P. Basumatary.

**Etymology.** The specific name is derived from Jharbari Forest range, from where the species was collected. The name is used as a noun in apposition.



**FIGURES 12–13.** *Vailimia jharbari* sp. nov. 12 female on web; 13 resting position on web.

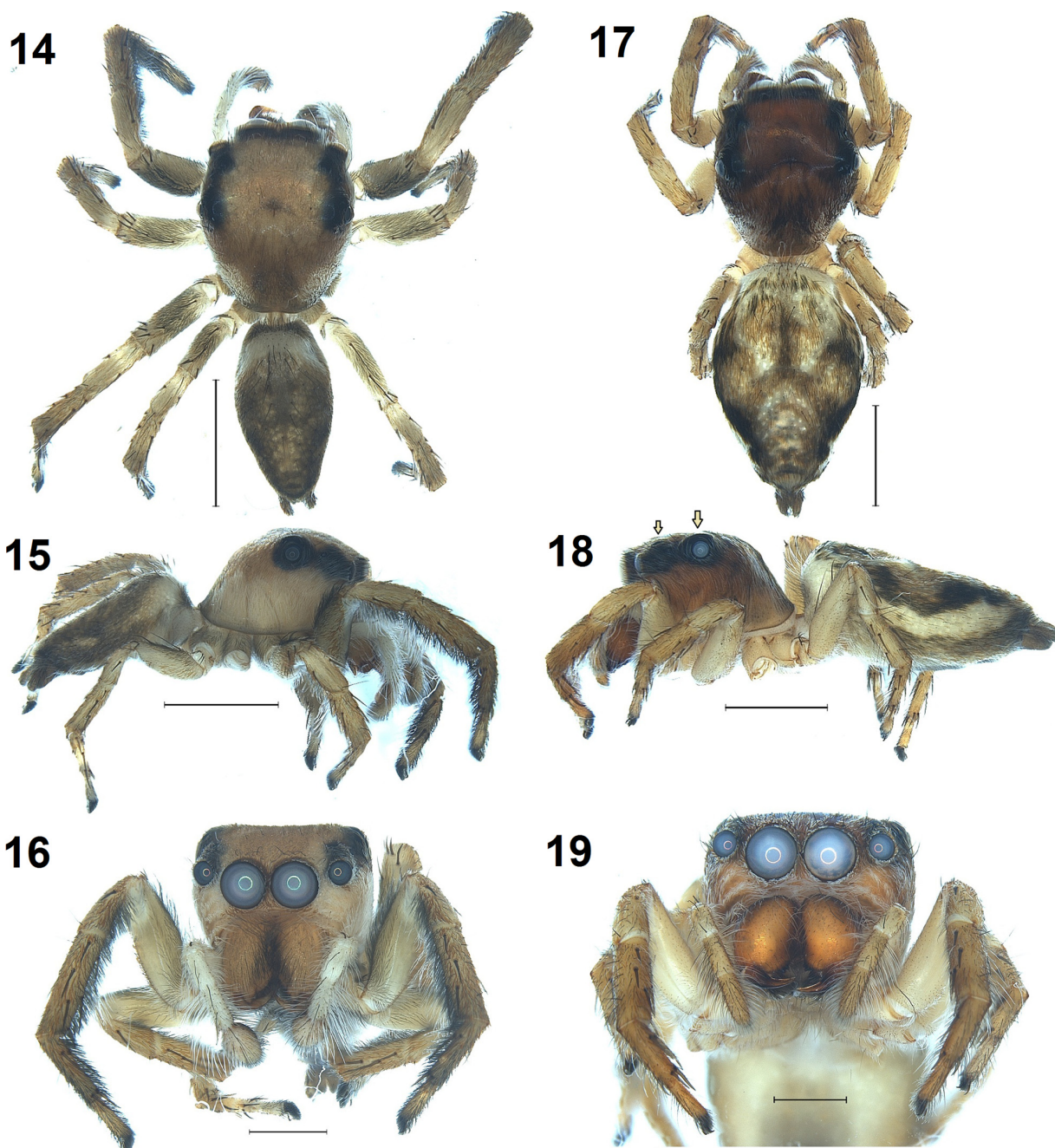
**Diagnosis.** The species closely resembles *Vailimia longitibia* Guo, Zhang & Zhu, 2011 in the habitus and palp (Figs 14–16, 20–22), but differs in having a relatively shorter palpal tibia and broader apical cymbial region; RTA with a broad base without a ridge, narrow, directed distally (with a ridge at the base; curved and directed dorsally in *V. longitibia*) (cf. Figs 20–22 herein with Guo, Zhang & Zhu 2011: figs 4–5).

**Description. Male** (holotype). Total length: 6.63; carapace: 3.12 long, 2.77 wide; abdomen: 3.51 long, 2.23 wide. Carapace brown, covered with greyish and whitish hairs; eyes surrounded by blackish region; broad white band present on lateral margin; two pairs of tubercles present along the margin of the ocular area, one between the ALEs and PME another near the PLEs (Fig. 14). Anterior eyes surrounded by white setae, clypeal region light brown covered with long hairs; ‘cheek region’ covered with four thin transverse white stripes (Fig. 16). Eye measurements: AME 0.73, ALE 0.37, PME 0.14, PLE 0.34, AER 2.28, PER 2.54, EFL 1.42. Clypeus height 0.10. Chelicerae light brown with two promarginal teeth and a bifid retromarginal tooth (Fig. 23). Sternum pale brown and oval; labium and maxillae pale brown. Legs yellowish brown; leg I & II covered with dense black hairs on ventral region of patellae, tibiae and metatarsi. Leg measurements: I 7.18 (2.11, 1.51, 1.81, 1.03, 0.72); II 5.04 (1.84,



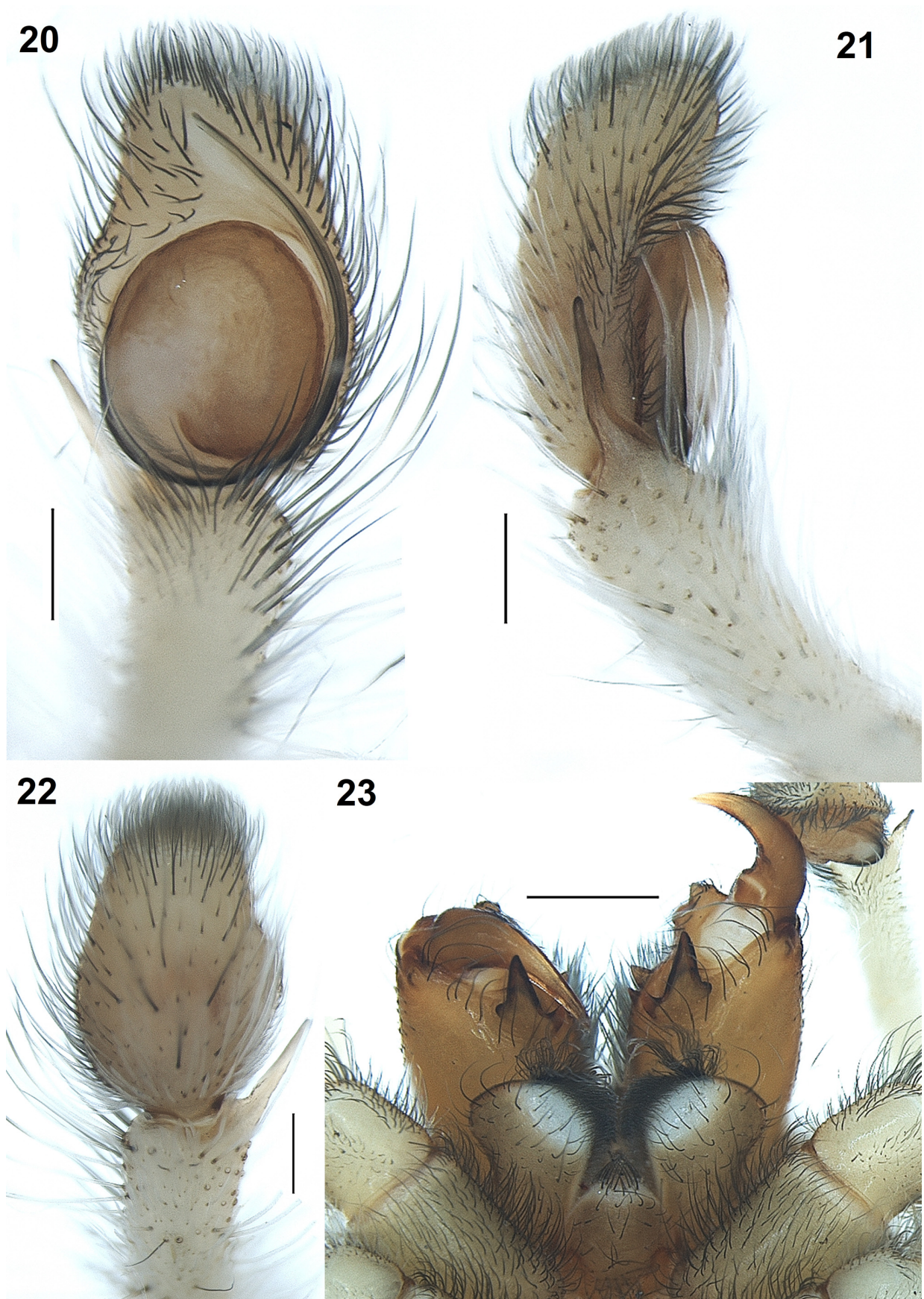
0.76, 1.22, 0.83, 0.39); III 5.97 (2.58, 0.82, 0.80, 1.29, 0.48); IV 5.99 (2.11, 0.93, 1.21, 1.34, 0.40). Abdomen oval, brownish, covered sparsely with blackish setae, having chevron markings mid-dorsally (Fig. 14); venter brown with yellow longitudinal lateral margins. Spinnerets brownish. Palps light yellow; palpal tibia with blackish long hairs; cymbium with a patch of dorsal scopulae and white hairs present at the base; RTA long and narrow, with a broad base; embolus long and slender (Figs 20–23).

**Female** (NZC-ZSI 6593/18). Total length: 9.12; carapace: 4.02 long, 3.16 wide; abdomen: 5.10 long, 3.40 wide. Eye measurements: AME 0.71, ALE, 0.38, PME 0.13, PLE 0.36, AER 2.48, PER 2.93, EFL 1.50. Clypeus height 0.21. Leg measurements: I 6.85 (1.98, 1.47, 1.71, 0.86, 0.83); II 6.19 (2.18, 1.17, 1.18, 0.93, 0.73); III 7.71 (2.99, 1.53, 1.41, 1.12, 0.66), IV 6.82 (2.30, 1.16, 1.46, 1.23, 0.67). Coloration pattern as in male, but differs by following: abdomen with black patches on lateral sides and a short dark brown mid-dorsal stripe above the chevron pattern (Fig. 17). Epigyne with a pair of oval translucent windows, separated by a narrow septum; copulatory openings present at the anterior region; copulatory ducts broad, arching anteriorly (Figs 24, 26); spermathecae globular (Figs 25, 27).



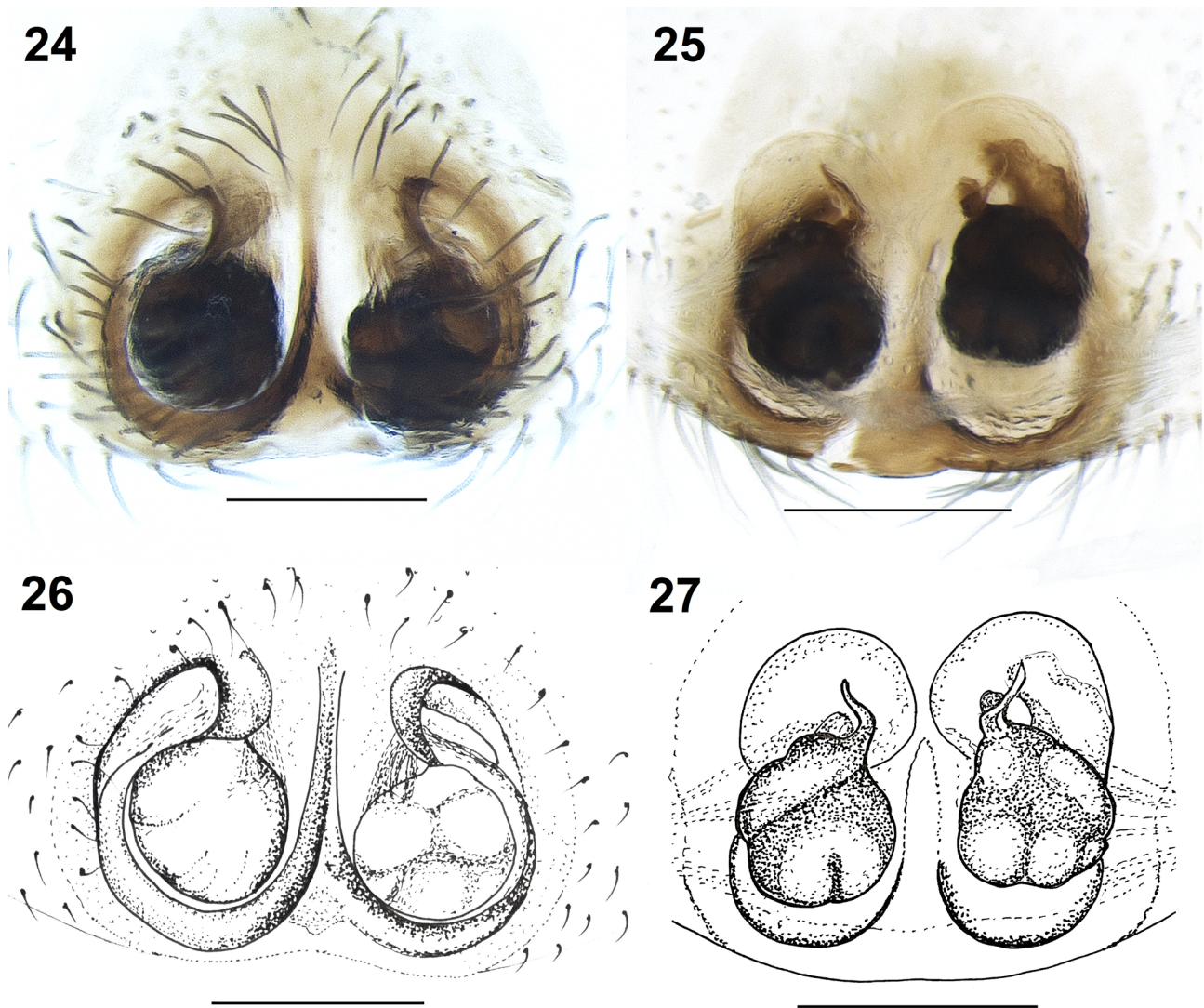
**FIGURES 14–19.** *Vailimia jharbari* sp. nov. 14–16 male (14 dorsal view; 15 lateral view; 16 frontal view). 17–19 female (17 dorsal view; 18 lateral view; 19 frontal view). Scale bars: 2 mm (14–15, 17–18); 1 mm (16, 19).





**FIGURES 20–23.** *Vailimia jharbari* sp. nov. 20–22 right male palp (20 ventral view; 21 retrolateral view; 22 dorsal view); 23 chelicerae, retrolateral view. Scale bars: 0.2 mm (20–22); 0.5 mm (23).





**FIGURES 24–27.** *Vailimia jharbari* sp. nov. epigyne. 24 cleared, ventral view; 25 vulva, dorsal view; 26 ventral view; 27 vulva, dorsal view. Scale bars: 0.2 mm.

**Natural history.** The species was found to be active at night, constructing silken retreats between the twigs found in mixed shrubs (Figs 12–13). Whether the silken construction is used for trapping prey or just for resting is yet unclear. However, recent observations of a jumping spider tentatively identified as *Anarrhotus* sp. from south-western India by Hill *et al.* (2019) indicate that the orb webs are rather used as nocturnal retreats than for prey capture.

**Distribution.** Known only from Assam (India).

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