

Research article

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**A new species and a new record of the jumping spider genus
Phintella Strand, 1906 (Araneae: Salticidae)
from the Central Highlands of Vietnam**

Quang Duy Hoang ^{1,*}, Hanh Phuong Thi Tran ², Thuy Bich Vu ³ & Phuong Thi Pham ⁴

^{1,2,3,4}Faculty of Natural Sciences and Technology, Tay Nguyen University, 567 Le Duan, Buon Ma Thuot City, Dak Lak Province, 630000, Vietnam

*Corresponding author: Email: hqduy@ttn.edu.vn

¹[urn:lsid:zoobank.org:author:30BAFC8E-8127-45AB-B97C-BACE9CDCF788](https://zoobank.org/author:30BAFC8E-8127-45AB-B97C-BACE9CDCF788)

²[urn:lsid:zoobank.org:author:389DC3B0-85A4-4115-9BB3-F31FFC649679](https://zoobank.org/author:389DC3B0-85A4-4115-9BB3-F31FFC649679)

⁴[urn:lsid:zoobank.org:author:AEB72608-8F4C-483A-8602-AEF1A128B0FF](https://zoobank.org/author:AEB72608-8F4C-483A-8602-AEF1A128B0FF)

⁴[urn:lsid:zoobank.org:author:78216DFB-DC43-452A-81F7-466BD55DF008](https://zoobank.org/author:78216DFB-DC43-452A-81F7-466BD55DF008)

Abstract. A new jumping spider species, *Phintella daklak* Hoang sp. nov. (♂♀) is described and illustrated from the Central Highlands, Vietnam. Additionally, the species *P. sancha* Cao & Li, 2016 is reported for the first time in Vietnam, from a male specimen. To date, a total of nine species of the genus *Phintella* Strand, 1906 have been recorded for the country.

Keywords. Dak Lak, description, speciose, transfer, Oriental region.

INTRODUCTION

The genus *Phintella* Strand, 1906 is one of the most speciose genera of Salticidae, with currently 70 species mainly found in the Oriental region, and a few in the Palearctic and Afrotropical regions (Logunov 2021; World Spider Catalog 2023). However, more than half of these species were previously assigned to other genera before being transferred to *Phintella* (World Spider Catalog 2023).

The first species of the genus *Phintella* recorded in Vietnam was *P. argenteola* (Simon, 1903) ex. *Telamonia* from Phuc Son, Nghe An Province (Simon, 1903) (now known as Phuoc Son District, Quang Nam Province, as noted by Hoang et al. 2023). After being long neglected, the salticid fauna in Vietnam was first revised by Žabka (1985), who reported nine species of *Phintella* in the country, of which one was later recognized to be a synonym (Luong et al. 2016) and another was transferred to *Chinattus* (Logunov 1999). Currently, the genus is represented by seven species in Vietnam: viz., *P. aequipeiformis* Žabka, 1985; *P. accentifera* (Simon, 1901); *P. argenteola* (Simon, 1903); *P. bifurcilinea* (Bösenberg and Strand, 1906); *P. debilis* (Thorell, 1891); *P. suavis* (Simon, 1885); *P. vittata* (Koch, 1846) (Žabka 1985; Peng & Li 2003; Ono et al. 2012; Logunov & Jäger 2015; Luong et al. 2016; Logunov 2021).

In this study, a new jumping spider species *Phintella daklak* Hoang sp. nov. (♂♀) discovered in the Chu

Yang Sin National Park, Dak Lak Province, Vietnam is described. Furthermore, the species *P. sancha* Cao & Li, 2016 based on a male specimen from Buon Ma Thuot City, also in Dak Lak Province, Vietnam is documented, herein. In all, nine species of the genus *Phintella* are recorded in Vietnam.

MATERIAL AND METHODS

All specimens used in the present study were collected by beating sheet. The specimens were examined using a Leica M205C stereo microscope. Photos were captured using a Jenoptik ProgRes CF Scan 12.5MP camera and Jenoptik ProgRes Capture Pro ver. 2.10.0.1 software. The male palp and female epigyne were dissected and examined, and the female genitalia were cleared in a 10% KOH solution at room temperature for approximately 12 hours. Photos were stacked using Helicon Focus ver. 8.2.2 Pro software and then edited using Adobe Photoshop CS2 ver. 9.0. All measurements are given in millimeters (mm). The terminology of leg spination follows Ono (1988). Measurements of leg segment lengths are presented as follows: femur + patella + tibia + metatarsus + tarsus (total length). The studied specimens have been deposited at the Vietnam National Museum of Nature (VNMN) in Hanoi, Vietnam.

Abbreviations used in the article

ALE = anterior lateral eye
 AME = anterior median eye
 PLE = posterior lateral eye
 PME = posterior median eye
 Fm = femur
 Pt = patella
 RTA = retrolateral tibial apophysis
 Tb = tibia
 Mt = metatarsus

Abbreviations for morphological terms (position of spines on legs)

ap = apical
 d = dorsal
 pr = prolateral
 rt = retrolateral
 v = ventral

RESULTS**Taxonomy**

Family **Salticidae** Blackwall, 1841

Genus ***Phintella*** Strand, 1906

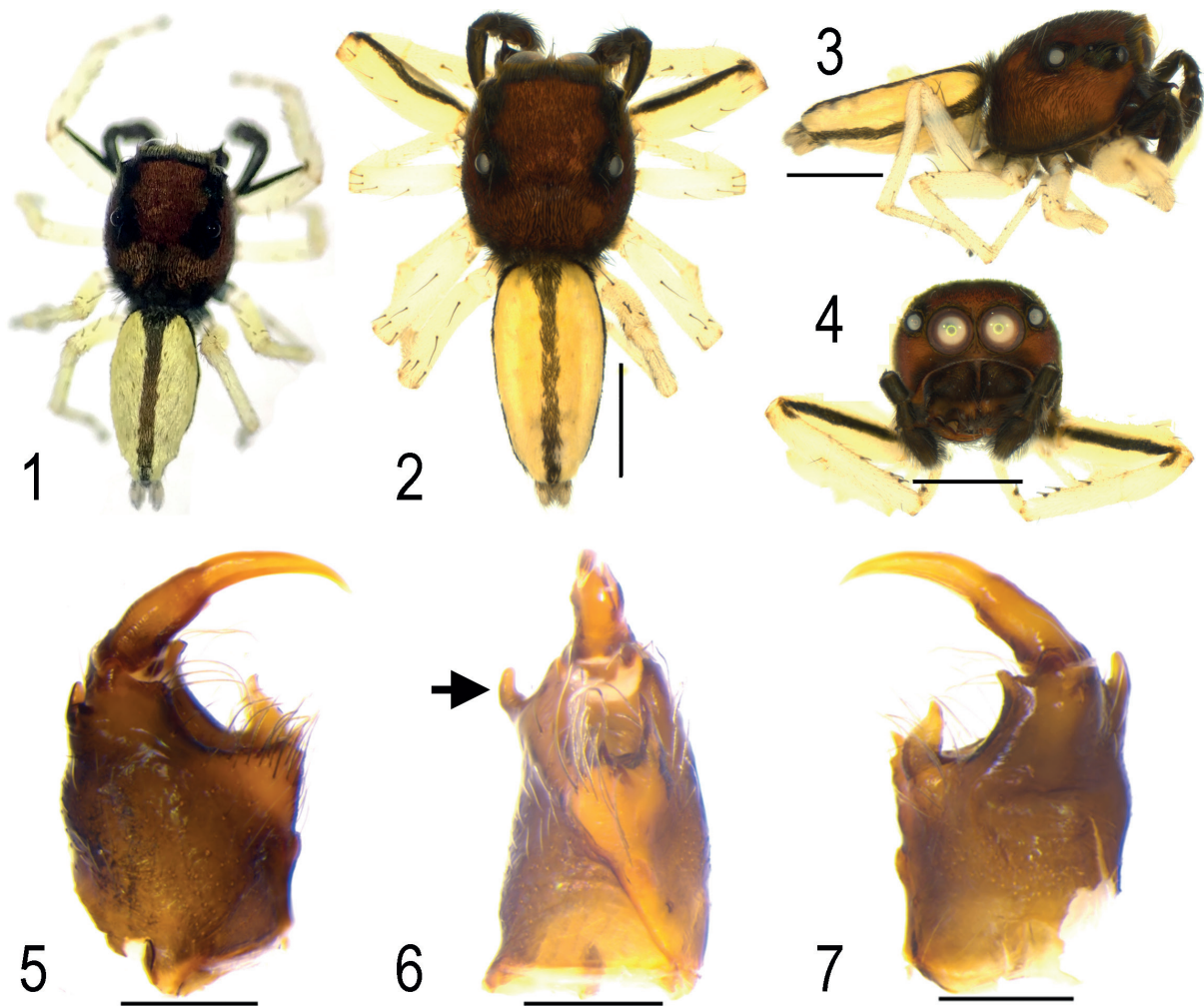
Phintella daklak Hoang sp. nov.

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Figs 1–20

Type material**Holotype**

VIETNAM • ♂ (VNMN-ARA-SAL-71.1); Dak Lak Prov., Krong Bong District, Chu Yang Sin National Park; 12.42405° N, 108.3476° E; 608 m a.s.l.; 15 Feb. 2022, Q.D. Hoang leg.



Figs 1–7. *Phintella daklak* Hoang sp. nov., ♂ (VNMN-ARA-SAL-71.1). 1. Habitus (in life), dorsal view, without scale. 2. Same (in ethanol), dorsal view. 3. Same, lateral view. 4. Carapace, frontal view. 5. Left chelicera, frontal view. 6. Same, with a dorsal hook (black arrow), lateral view. 7. Same, posterior view. Scale bars: 2–4 = 1 mm; 5–7 = 0.3 mm.

Paratypes

VIETNAM • 6 ♀♀ (VNMN-ARA-SAL-38.1-7), 1 ♂ (VNMN-ARA-SAL-71.2); same collection data as for holotype • 1 ♀ (VNMN-ARA-SAL-51), 1 ♂ (VNMN-ARA-SAL-71.3); Dak Lak Prov., Buon Ma Thuot City; 12.5971° N, 108.0528° E; 392 m a.s.l.; 19 Feb. 2022; Q.D. Hoang leg.

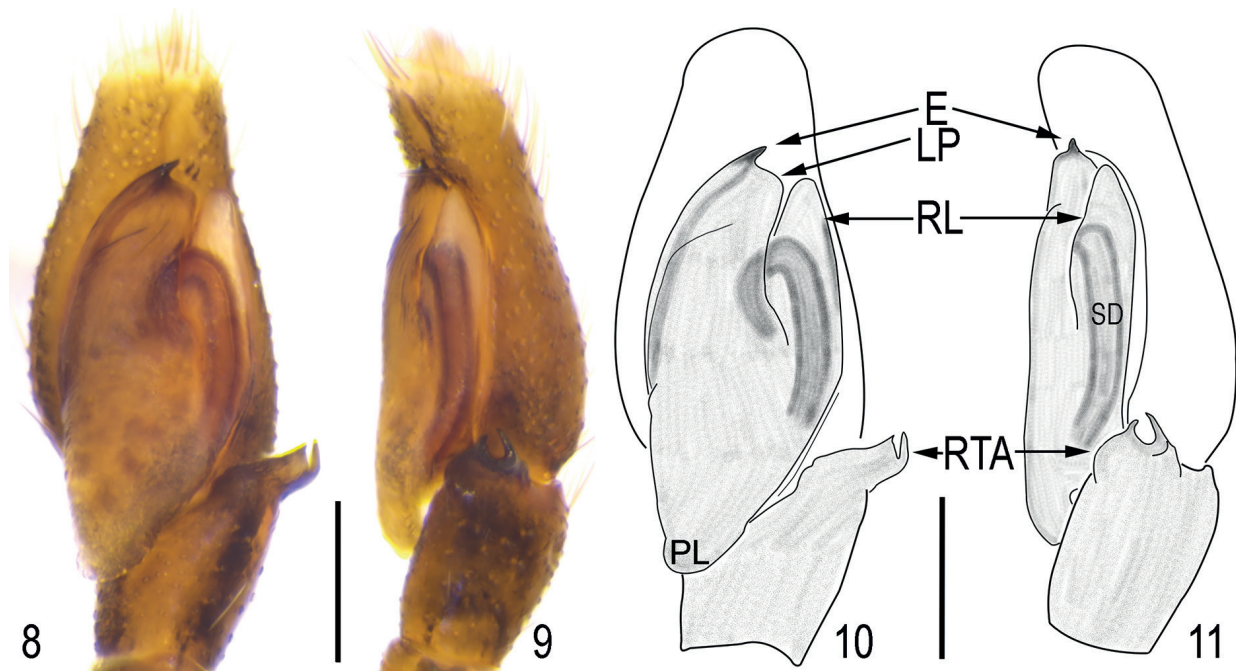
Etymology. This specific epithet is derived from the type locality, Dak Lak Province, where the species was found; noun in apposition.

Diagnosis. The male of the new species *Phintella daklak* Hoang sp. nov. resembles *P. suavisoides* Lei & Peng, 2013 in having male with short embolus (Figs 8–11), bulbus without tegulum bump, presence of retrolateral lobe of tegulum, posterior lobe directed prolaterad (Figs 8, 10), and bifurcated RTA (Figs 8–11), but differs from *P. suavisoides* in having embolus short and directed at 2 o'clock position (longer and directed at 1 o'clock in *P. suavisoides*, Lei & Peng 2013: fig. 6a; Cao et al. 2016: fig. 36c–d), retrolateral lobe of tegulum relatively longer in the new species (Figs 8–11) compared to *P. suavisoides* (Lei & Peng 2013: fig. 6a–b; Cao et al. 2016: fig. 36b–d), posterior lobe directed at 8 o'clock (Figs 8, 10) vs. 6:30 o'clock in *P. suavisoides* (Lei & Peng 2013: fig. 6a; Cao et al. 2016: fig. 36c–d), tibia almost half as long as cymbium (about a third in *P. suavisoides*), RTA elongated and slanted, longer than of that of *P. suavisoides* (Lei & Peng 2013: fig. 6a–c; Cao et al. 2016: fig. 36b–c). Female of the new species is most similar to those of *P. mii*, *P. ban-*

na and *P. suavisoides* (see comparative illustrations in Metzner 2023), but can be distinguished by the following characters: epigyne with two pockets (Figs 16–17, 19), copulatory opening far from each other, copulatory ducts almost straight, aligned in V-shape, and relatively narrow, and spermathecae touching each other.

Description

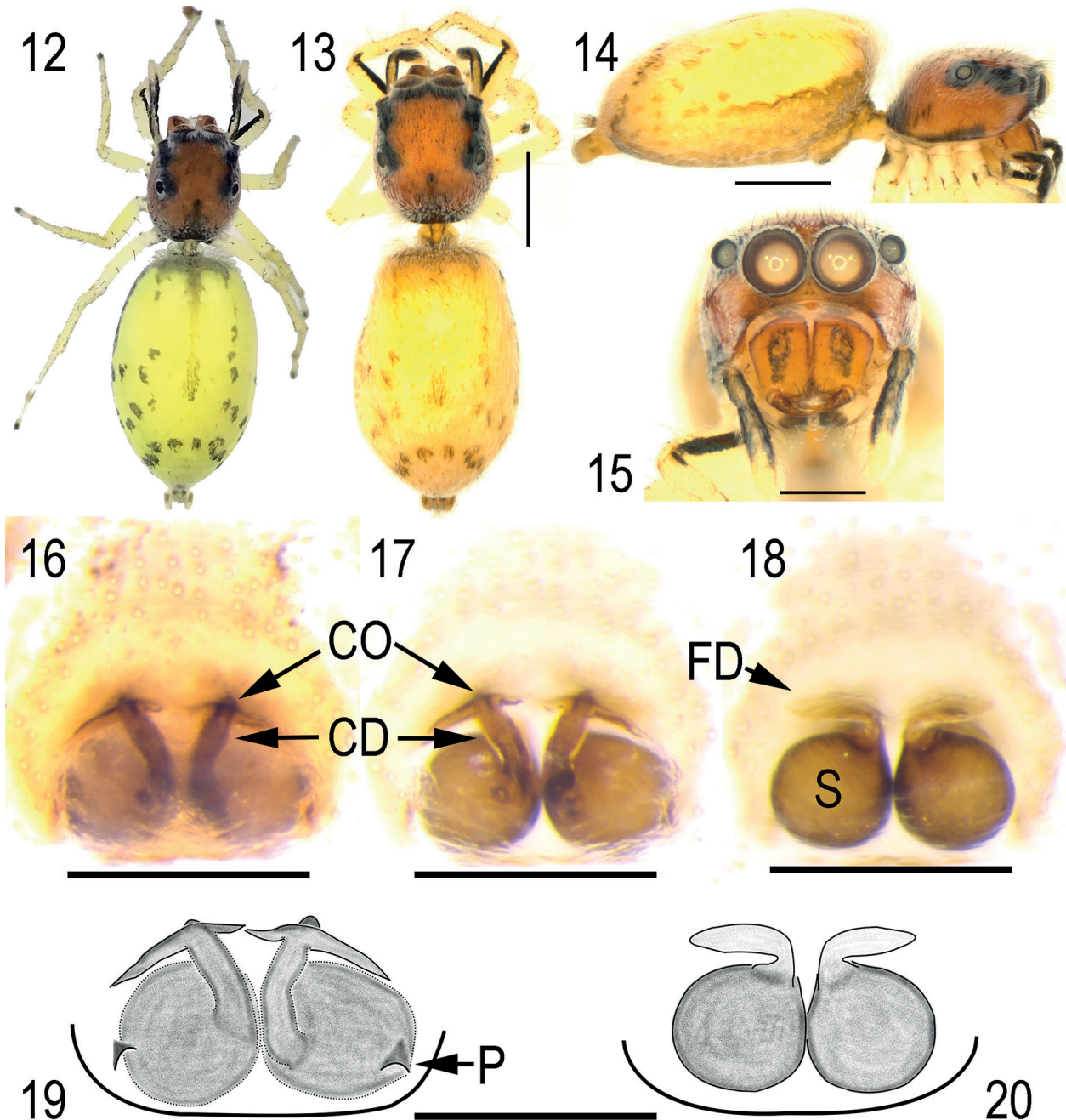
Male (holotype). Measurements: Carapace length 1.78, width 1.51; Abdomen length 2.01, width 0.99. Clypeus height 0.03. Carapace reddish brown, clothed with dense black hairs (Figs 1–4), some protruding long pale hairs. Anterior eyes surrounded by yellow-orange orbital setae (Fig. 4), continuous dark patch from ALE to PLE. Clypeus dark brown (Fig. 4), three stout and long pale setae located above clypeus medially. Sternum yellowish. Endites and labium yellowish brown, with light yellow tip. Chelicerae dark brown with a hook dorsally (Figs 5–7); promargin with one tooth, two larger retromarginal teeth (Figs 5–7). Abdomen yellowish, with a same sized dark longitudinal band of dorsum with a little broadens anteriorly (Figs 1–2). Lateral sides of the abdomen with a dark longitudinal band (Fig. 3), lateral and dorsal bands united anteriorly. Spinnerets yellowish covered with sparse dark hairs. Leg pale yellow (except femora with dark band prolaterally). Width of eye rows: anterior eye row 1.29; posterior medial eye row 1.14; posterior lateral eye row 1.30. Distance between ALE-PME 0.40; ALE-



Figs 8–11. *Phintella daklak* Hoang sp. nov., ♂ (VNMN-ARA-SAL-71.1). 8. Left palp, ventral view. 9. Same, retrolateral view. 10. Same, ventral view. 11. Same, retrolateral view. Scale bars: 8–11 = 0.2 mm. Abbreviations: E = embolus; LP = lamellar process; PL = posterior lobe; RL = retrolateral lobe of tegulum; RTA = retrolateral tibial apophysis; SD = sperm duct.

PLE 0.84. Diameter of eyes: AME 0.45; ALE 0.21; PME 0.04; PLE 0.20. Length of leg segments: I $1.27 + 0.69 + 0.88 + 0.75 + 0.32$ (3.91); II $0.90 + 0.47 + 0.54 + 0.58 + 0.31$ (2.80); III $1.13 + 0.48 + 0.75 + 0.87 + 0.33$ (3.56); IV $1.21 + 0.42 + 0.86 + 1.02 + 0.38$ (3.89). Leg formula

IV-I-III-II. Leg spination: I: Fm d 1-1-1; Ti v 2-2-2; Mt v 2-2ap. II: Fm d 1-1-3; Tb v 2-2; Mt v 2-2ap. III: Fm d 1-1-3; Tb pr 0-0-1, rt 0-0-1, v 0-1-0; Mt d 0-0-2, rt 1-0-1, v 0-1-2 and IV: Fm d 1-1-3; Tb pr 0-0-1, rt 0-1-1, v 0-0-1ap; Mt d 0-0-2, rt 1-1-1, v 0-1-2.



Figs 12–20. *Phintella daklak* Hoang sp. nov., ♀ (VNMN-ARA-SAL-38.1). 12. Habitus (in life), dorsal view, without scale. 13. Same (in ethanol), dorsal view. 14. Same, lateral view. 15. Carapace, frontal view. 16. Epigyne (unmacerated), ventral view. 17. Epigyne (cleared in KOH), ventral view. 18. Vulva, dorsal view. 19. Epigyne, ventral view. 20. Vulva, dorsal view. Scale bars: 13–14 = 1 mm; 15 = 0.5 mm; 16–20 = 0.2 mm. Abbreviations: CD = copulatory duct; CO = copulatory opening; FD = fertilization duct; P = pocket; S = spermathecae.

Palp (Figs 8–11) dark brown; tibia nearly half as long as cymbium (Figs 8–11); RTA elongated, slanted, and bifurcated, wrench-like (Figs 8–11). Posterior lobe directed prolaterally (Figs 8, 10). Embolus short, pointed, strongly sclerotized, directed at two o'clock (Figs 8–11). Lamellar process triangular (Figs 8, 10). Retrolateral lobe of tegulum long, trapezoid in ventral view (Figs 8, 10).

Female. Measurements: Carapace length 1.51, width 1.28; Abdomen length 2.85, width 1.75. Clypeus height 0.03. Carapace orange, clothed with dense white hairs (Figs 12–15), with some protruding long pale hairs. Anterior eyes surrounded by white orbital setae (Fig. 15), continuous dark patch from ALEs to PLEs. Clypeus brown (Fig. 15), three stout and long pale setae located above clypeus medially. Sternum yellowish with dark brown rim. Endites and labium yellowish. Chelicerae yellowish with dark patch, without a hook, promargin with two teeth, and one retromarginal tooth. Abdomen yellowish, with scatter of small black hair spots on dorsum (Figs 12–13). Lateral sides of abdomen darker (Fig. 14). Spinnerets yellowish covered with sparse dark hairs. Legs pale yellow (except femora with dark prolateral band). Width of eye rows: anterior eye row 1.14; posterior medial eye row 1.05; posterior lateral eye row 1.17. Distance between ALE-PME 0.37; ALE-PLE 0.76. Diameter of eyes: AME 0.39; ALE 0.18; PME 0.03; PLE 0.18. Length of leg segments: I 0.76 + 0.39 + 0.51 + 0.46 + 0.26 (2.38); II 0.71 + 0.34 + 0.44 + 0.41 + 0.23 (2.13); III 0.88 + 0.35 + 0.56 + 0.67 + 0.24 (2.70); IV 1.04 + 0.74 + 0.75 + 0.83 + 0.31 (3.67). Leg formula IV–I–III–II. Leg spination: I: Fm d 1–1–1; Ti v 2–2–2; Mt v 2–2ap. II: Fm d 1–1–3; Tb v 2–2; Mt v 2–2ap. III: Fm d 1–1–3; Tb pr 0–0–1, rt 0–1–1; Mt d 0–1–2, rt 1–0–1, v 0–0–2 and IV: Fm d 1–1–3; Tb pr 0–0–1, rt 0–1–1, v 0–0–1ap; Mt d 0–1–2, pr and rt 0–0–1, v 0–0–2.

Epigyne (Figs 16–20) with two small pockets, copulatory openings complemented by an anterior rim as hammerhead-like (Figs 16–17, 19), copulatory ducts narrow, almost straight, converging posteriorly (V-shaped) in ventral view (Figs 16–17, 19), copulatory ducts connected to inner mid portion of spermathecae (Figs 16–17, 19); spermathecae large, spherical, touching each other (Figs 17–20).

Distribution. Known only from the type locality.

Phintella sancha Cao & Li, 2016

Figs 21–23

Phintella sancha Cao & Li, in Cao, Li & Žabka 2016: 91, figs 34a–d, 35a–b (Dm).

Material examined

VIETNAM • 1 ♂ (VNMN-ARA-SAL-72); Dak Lak Prov., Buon Ma Thuot City; 12.5971° N, 108.0528° E; 392 m a.s.l.; 19 Feb. 2022; Q.D. Hoang leg.

Diagnosis. The species *Phintella sancha* is closely related to the new species, *P. daklak* sp. nov. and *P. suavisoides*

in palpal structure and general appearance. However, it differs from both latter species by embolus thin, longer, claw-shaped (Figs 22–23) (thicker and shorter in *P. daklak* and *P. suavisoides*); tibia wider than long (longer than wide in *P. daklak* and *P. suavisoides*), RTA with three branches (Figs 22–23) vs. two in both *P. daklak* and *P. suavisoides*.

Description. See Cao et al. 2016. Habitus and male palp from Vietnam as in Figs 21–23.

Distribution. China (Yunnan Prov.) and Vietnam (Dak Lak Prov.).

DISCUSSION

With the addition of a new species and a new record from the Central Highlands, the genus *Phintella* Strand, 1906 in Vietnam now comprises nine species. Vietnam is divided into three distinct regions: north (which includes northwestern, northeast and Red River Delta areas), cen-



Figs 21–23. *Phintella sancha* Cao & Li, 2016, ♂. 21. Habitus, dorsal view. 22. Left palp, ventral view. 23. Same, retrolateral view. Scale bars: 21 = 1 mm; 22–23 = 0.1 mm.

tral (north central coast, south central coast and central highlands) and south (southeastern and Mekong River Delta areas). The distribution of the genus in Vietnam exhibits a decreasing trend in the number of species from north to south. For instance, three species, namely, *P. accentifera*, *P. debilis* and *P. suavis* are restricted to northern Vietnam (Žabka 1985; Peng & Li 2003), the species *Phintella aequipeiformis* is distributed from north to central Vietnam (Žabka 1985; Luong et al. 2016), the species *P. daklak* Hoang sp. nov., *P. sancha* and *P. argenteola* are exclusively found in central Vietnam while the species *P. vittata* and *P. bifurcilinea* are distributed throughout the country (Žabka 1985; Peng & Li 2003; Logunov & Jäger 2015; Logunov 2021).

Although the western neighboring countries of Vietnam, Laos and Cambodia, have not recorded any representatives of the genus *Phintella*, China in the north has recorded the largest number of species of this genus, with more than 30 species (Metzner 2023). Therefore, it is expected that more *Phintella* species will be found in Vietnam, especially in the north.

However, to accurately determine the true diversity of this genus, as well as the salticid fauna in Vietnam, more extensive surveys are required to cover all regions of the country.

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