

Three New Species of the Genus *Mallinella* (Araneae, Zodariidae) from Vietnam

Hirotsugu Ono

Department of Zoology, National Science Museum, 3–23–1, Hyakunin-cho,
Shinjuku-ku, Tokyo, 169–0073 Japan
e-mail: ono@kahaku.go.jp

Abstract Spiders of the genus *Mallinella* Strand, 1906 (Zodariidae), obtained from Cuc Phuong National Park in Ninh Binh Province, and from the mountainous area around Mt. Phang Si Pang in Lai Chau Province, northern Vietnam are taxonomically studied. Three new species are described under the names *Mallinella paradisea*, *M. flammea* and *M. septemmaculata*. *Mallinella paradisea* and *M. flammea* seem to belong to a small group in the genus with *M. vietnamensis* Ono, 2003 (Vietnam), *M. uncinata* (Ono, 1983) (Nepal) and *M. irrorata* (Thorell, 1895) (Myanmar), having filiform embolus and simple median apophysis on tegulum of the male palp, while *M. septemmaculata* is regarded as a member of the major group with many species from Nepal, Myanmar, China, Japan, and Vietnam, especially close to *Mallinella hoosi* (Kishida, 1935) from Japan and *M. suavis* (Thorell, 1895) from Myanmar in the structure of female genitalia. Male palpal organ and female genitalia of these new species are observed into details and illustrated.

Key words: Taxonomy, Araneae, Zodariidae, new species, Vietnam

Introduction

Spiders of the genus *Mallinella* Strand, 1906, belonging to the family Zodariidae, are nocturnal hunters wandering on forest floor to prey upon insects. Although the whole distributional range of the genus covers a wide area in Afrotropical and Oriental Regions (Bosmans & van Hove, 1986; Jocqué, 1991), that of each species is generally limited because of their poor ability in spreading without ballooning and the reduction of their habitat by human activities as well.

Mallinella spiders are hardly found in the fields with the naked eye because they are hidden under dead leaves and rocks in the daylight. Therefore, sifting, some kinds of trapping and extractions with Tullgren Funnels are required to collect those spiders.

Through the entomological expeditions to Vietnam (1995–2003) made by the National Science Museum, Tokyo (NSMT), in partnership with the Institute of Ecology and Biological Resources (IEBR), Hanoi, Vietnam, many specimens of spiders were obtained for taxonomical

studies, including a few zodariids of the genus *Mallinella*.

Based on these specimens, four new species collected from Tam Dao National Park in Vinh Phu Province, and from Bach Ma National Park in Thua Thien Hue Province, were recently reported by me (Ono, 2003). Although more than 50 species of the genus were described in Asia, mainly from Burma, Nepal, Indonesia, the Philippines, Japan and China, only one species, *Mallinella klossi* (Hogg, 1922), had been known from Vietnam before I started to research.

In the present paper, further results of studies on Vietnamese *Mallinella* are reported. Specimens (12 exs.) collected from Cuc Phuong National Park in Ninh Binh Province, and from the mountainous area around Mt. Phang Si Pang in Lai Chau Province, northern Vietnam, were classified into five species. Of these, three species are recognized as new to science and will be described in the following pages, while the other two species are omitted because of their immature stage.

The abbreviations of morphological terms

used in the present paper are as follows: ALE, anterior lateral eye; AME, anterior median eye; PLE, posterior lateral eye; PME, posterior median eye. Type specimens of the new species described herein are for the moment preserved in the collection of the Department of Zoology, National Science Museum, Tokyo (NSMT) in the joint ownership between NSMT and IEBR.

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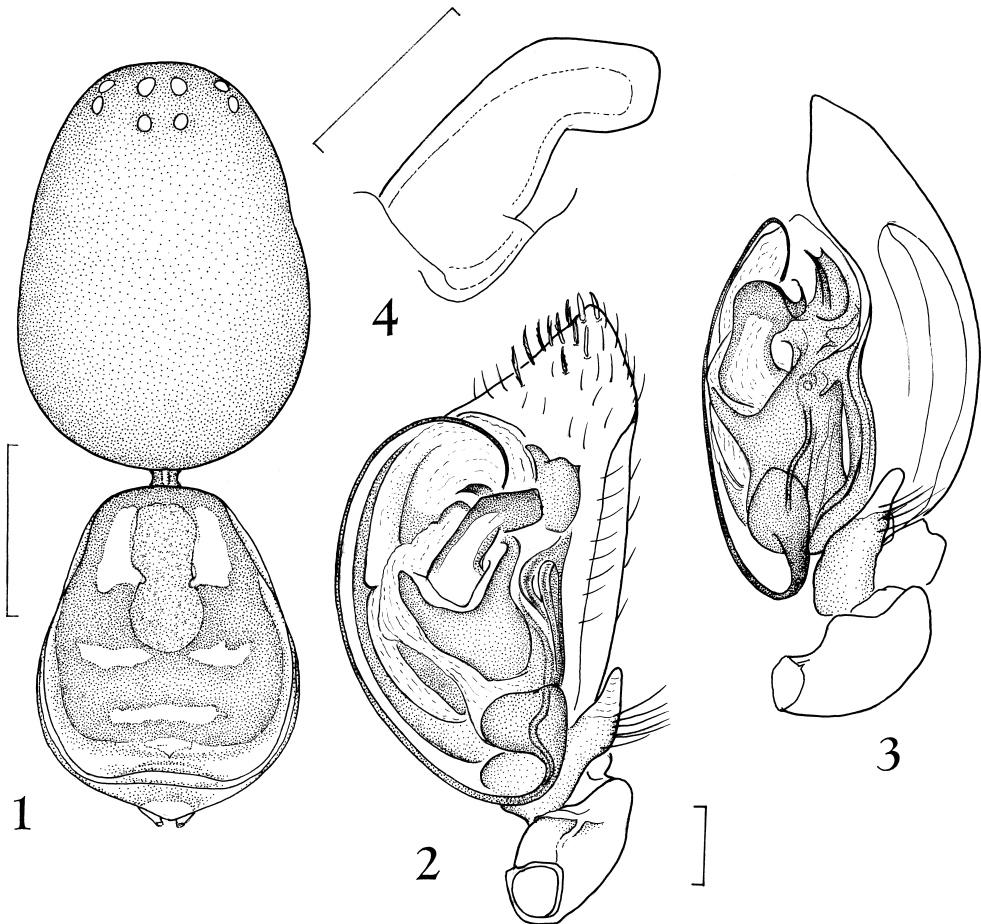
Descriptions of New Species

Family *Zodariidae*

Mallinella paradisica sp. nov.

(Figs. 1–4)

Diagnosis. This new species closely resembles *Mallinella vietnamensis* Ono, 2003 described from Tam Dao in Vinh Phu Province, Vietnam, in the structure of male palpal organ. In



Figs. 1–4. *Mallinella paradisica* Ono, sp. nov., male holotype (NSMT-Ar 5472). — 1, Pro- and opisthosomata, dorsal view; 2, palpal organ, ventral view; 3, palpal organ, retrolateral view; 4, median apophysis, ventral view. [Scales: Fig. 1, 1 mm; Figs. 2–4, 0.2 mm.]

both the species, the embolus is long and filiform and the median apophysis on tegulum is simple in shape (cf. Figs. 2–4 and Ono, 2003, figs. 11–13). However, the new species is clearly distinguished from the latter not only by the details of the median apophysis but also by the shape of male palpal tibia.

Type specimen. Male holotype from Deo Trampton, 1650 m in elevation, one of northern Valleys of Mt. Phang Si Pang, ca. 15 km west from Sapa, Lai Chau Prov., northern Vietnam, 18–VII–2001, S. Nomura leg. (IEBR and NSMT-Ar 5472).

Description (based on the male holotype; female unknown). Measurement: Body length 4.60 mm; prosoma length 2.52 mm, width 1.78 mm; opisthosoma length 1.93 mm, width 1.48 mm; lengths of legs [total length (femur+patella+tibia+metatarsus+tarsus)]: I 6.93 mm (1.85+0.60+1.74+1.48+1.26), II 5.68 mm (1.56+0.67+1.33+1.19+0.93), III 5.78 mm (1.56+0.67+1.22+1.41+0.89), IV 7.93 mm (1.93+0.63+1.85+2.26+1.26).

Prosoma. Carapace longer than wide (length/width 1.41), with a median furrow. Eyes: both the eye rows procurved in dorsal view, all eyes same in size, AME-AME<AME-ALE (1:2), PME-PME<PME-PLE (1:3), clypeus much longer than the anterior width of median ocular area (2:1), median ocular area longer than wide (length/width 1.14), wider behind than in front (anterior width/posterior width 0.93). Labium triangular, slightly longer than wide (length/width 1.06), sternum haired, slightly wider than long (length/width 0.95), its lateral margin with small, pointed extensions fitting in coxal concavities of legs. Chelicera without teeth on margins of fang furrow, fang very short. Legs with short spines on femora I–IV, patellae III–IV, tibiae III–IV and metatarsi I–IV; metatarsi I–IV with ventral hair tufts in the apical part; upper claws of legs with 6–7 teeth.

Male palp (Figs. 2–4): Retrolateral apophysis of tibia large, digitiform, widened at the base (Fig. 3). Cymbial furrow developed; median apophysis on tegulum simple in form, its tip wide

and strongly sclerotized (Fig. 4), embolic division very thin and not bifid, embolus filiform (Fig. 2).

Opisthosoma pyriform, longer than wide (length/width 1.30). Posterior spinnerets very small, much shorter than the anterior ones and not visible in ventral view.

Coloration and markings (Fig. 1). Carapace blackish brown, shiny, chelicera, maxillae and sternum reddish brown, coxae, trochanters and femora of palp and legs reddish brown, other segments of these appendages yellowish brown. Opisthosoma dorsally black, with a reddish brown plate and white spots; ventrally white, with black markings.

Distribution. Northern Vietnam (at present known only from the type locality).

Remark. The species is named with Latin meaning “from a hidden paradise,” according to my impression of the type area.

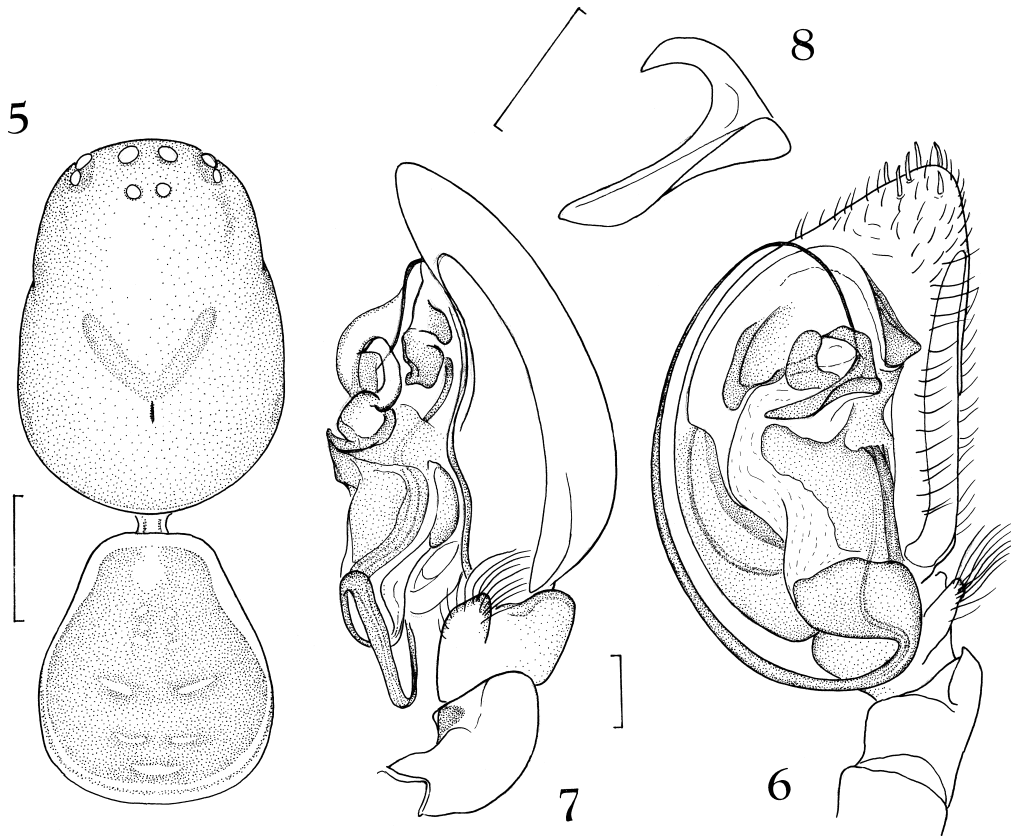
Mallinella flammea sp. nov.

(Figs. 5–8)

Diagnosis. This new species is unique in the genus *Mallinella*, having red prosoma, and is readily distinguished from other congeners by the coloration. Although no close relatives have been known, *Mallinella flammea* should belong to the same group with *M. vietnamensis* Ono, 2003 and the former new species, further with *M. uncinata* (Ono, 1983) described from Kaski District, Central Nepal (ca. 1900 m in elevation) and *M. irrorata* (Thorell, 1895) from “Palon, Burma,” in the structure of the male palpal organ. The embolus of the new species is thin and filiform and the median apophysis is simple and small (Figs. 6–8).

Type specimen. Male holotype from Cuc Phuong National Park, ca. 340 m in elevation, Ninh Binh Prov., northern Vietnam, I–VI–1998, S. Nomura leg. (IEBR and NSMT-Ar 5473).

Description (based on the male holotype; female unknown). Measurement: Body length 5.26 mm; prosoma length 2.96 mm, width 2.00 mm; opisthosoma length 2.15 mm, width



Figs. 5–8. *Mallinella flammea* Ono, sp. nov., male holotype (NSMT-Ar 5473). — 5, Pro- and opisthosomata, dorsal view; 6, palpal organ, ventral view; 7, palpal organ, retrolateral view; 8, median apophysis, ventral view. [Scales: Fig. 5, 1 mm; Figs. 6–8, 0.2 mm.]

1.56 mm; lengths of legs [total length (femur+patella+tibia+metatarsus+tarsus)]: I 8.51 mm (2.22+0.74+2.07+2.00+1.48), II 7.33 mm (1.93+0.74+1.70+1.63+1.33), III 7.22 mm (2.00+0.70+1.56+1.85+1.11), IV 9.63 mm (2.44+0.74+2.26+2.67+1.52).

Prosoma. Carapace longer than wide (length/width 1.48), with a median furrow. Eyes: anterior eye row straight and the posterior one procurved, respectively in dorsal view, $PME < ALE = ALE < AME$ (5:7:7:8 in size), $AME - AME < AME - ALE < PME - PME < PME - PLE$ (4:5:6:12), clypeus very long, much longer than the anterior width of median ocular area (5:3), median ocular area longer than wide (length/width 1.11), narrower behind than in front (anterior width/posterior width 1.13). Labi-

um triangular, as long as wide, sternum haired, slightly wider than long (length/width 0.96), with a small tubercle in the posterior part, its lateral margin with small, pointed extensions fitting in coxal concavities of legs. Chelicera without teeth on margins of fang furrow, fang very short. Legs with short spines on femora I–IV, patellae III–IV, tibiae and metatarsi I–IV and long trichobothria on all tibiae, metatarsi and tarsi, metatarsi I–IV with ventral hair tufts in the apical part; upper claws of legs with 4–6 teeth.

Male palp (Figs. 6–8): Retrolateral apophysis of tibia not developed, short and wide (Fig. 7). Cymbial furrow developed and deep; median apophysis on tegulum very small, its tip curved and pointed (Fig. 8), embolic division very thin and not bifid, embolus filiform (Fig. 6).

Opisthosoma pyriform, longer than wide (length/width 1.38). Posterior spinnerets very small and not visible in ventral view.

Coloration and markings (Fig. 5). Carapace red and shiny, with some darker markings, chelicera, labium and sternum reddish brown, maxillae yellowish brown, palp and legs yellowish brown. *Opisthosoma* dorsally black, margined with white and with small white spots; ventrally white, mottled with black.

Distribution. Northern Vietnam (known only from the type locality).

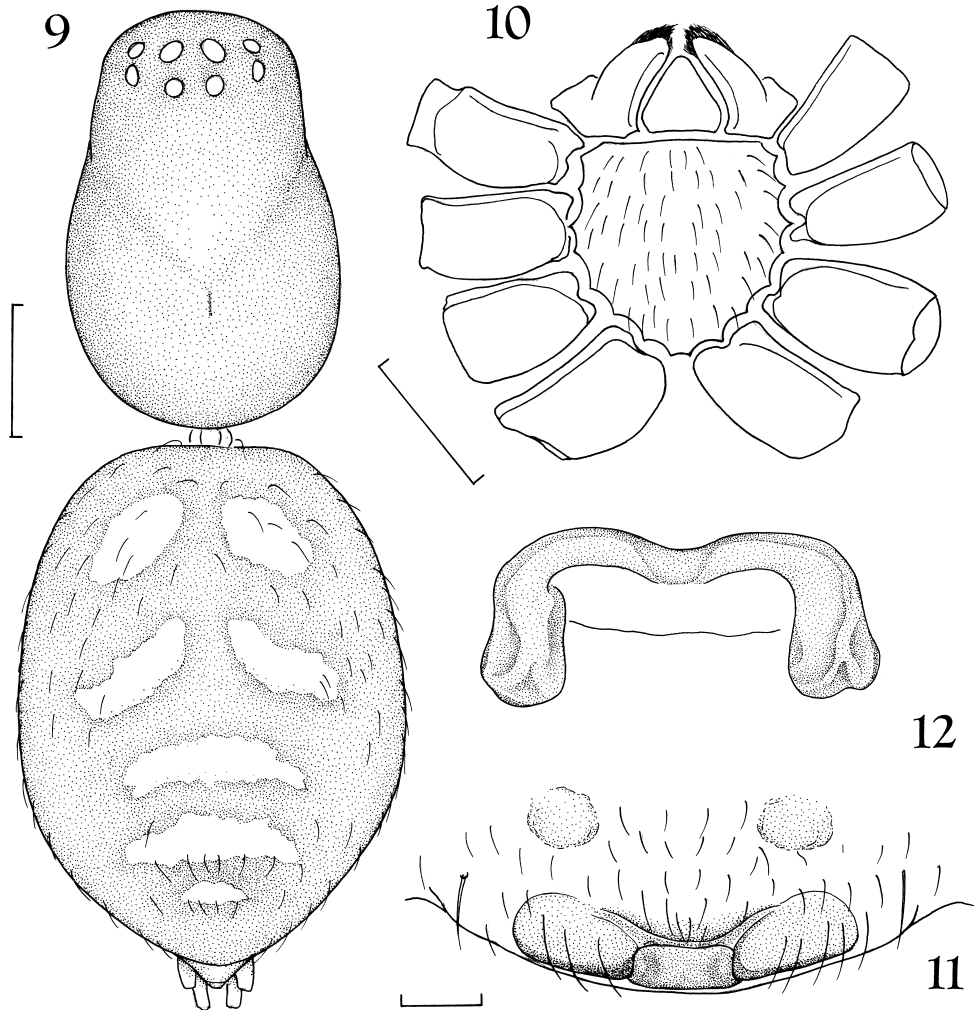
Remark. Specific name is Latin meaning

“red” derived from the colour of carapace.

Mallinella septemmaculata sp. nov.

(Figs. 9–12)

Diagnosis. The new species shows characters typical in Asian species of the genus with larger size and black *opisthosoma* spotted in white. The structure of female genitalia of this new species resembles those of *Mallinella nepalensis* (Ono, 1983) and *M. erratica* (Ono, 1983) from Nepal, *M. suavis* (Thorell, 1895) and *M. decorata* (Thorell, 1895) from Burma, *M.*



Figs. 9–12. *Mallinella septemmaculata* Ono, sp. nov., female holotype (NSMT-Ar 5474). — 9, Pro- and opisthosomata, dorsal view; 10, maxillae, labium, sternum and coxae of legs, ventral view; 11, epigynum, ventral view; 12, female genitalia, dorsal view. [Scales: Figs. 9–10, 1 mm; Figs. 11–12, 0.2 mm.]

hingstoni (Brignoli, 1982) from Tibet, *M. labialis* Song et Kim, 1997 and *M. dinghu* Song et Kim, 1997 from China, *M. hoosi* (Kishida, 1935), *M. sadamotoi* (Ono et Tanikawa, 1990) and *M. fulvipes* (Ono et Tanikawa, 1990) from Japan, and *M. nomurai* Ono, 2003 from northern Vietnam. Of these, *Mallinella hoosi* and *M. suavis* seem to be closer to the new species with oval spermathecae and distinct intromittent canals, but some delicate distinctions are recognizable in the shape of epigynal plate and in the length and direction of spermathecae between those three species. *Mallinella nomurai* is at present known to be geographically nearest to the new species. Its type locality, Tam Dao, lies about 120 km apart in the northerly direction from Cuc Phuong where the new species was collected. However, the intromittent canals of *Mallinella nomurai* are short and hardly visible in dorsal view (cf. Fig. 12 and Ono, 2003, fig. 8), and the epigynum is much longer than that of *M. septemmaculata* (cf. Fig. 11 and Ono, 2003, fig. 7).

Type specimen. Female holotype from Don Don Bai in Cuc Phuong National Park, 170 m in elevation, Ninh Binh Prov., northern Vietnam, 1–VI–1998, S. Nomura leg. (IEBR and NSMT-Ar 5474).

Description (based on the female holotype; male unknown). Measurement: Body length 7.96 mm; prosoma length 3.19 mm, width 2.15 mm; opisthosoma length 3.85 mm, width 2.89 mm; lengths of legs [total length (femur+patella+tibia+metatarsus+tarsus)]: I 9.55 mm (2.48+0.81+2.18+2.30+1.78), II 8.59 mm (2.37+0.85+1.85+2.00+1.52), III 8.51 mm (2.15+0.81+1.70+2.44+1.41), IV 11.50 mm (2.81+0.88+2.44+3.48+1.89).

Prosoma. Carapace longer than wide (length/width 1.48), with a median furrow. Eyes: both the eye rows procurved in dorsal view, PME<ALE=PLE<AME (5:6:6:8 in size), AME-AME=AME-ALE<PME-PME<PME-PLE (4:4:7:9), clypeus much longer than the anterior width of median ocular area (2:1), median ocular area as long as wide (length/width 1.00), narrower behind than in front (anterior

width/posterior width 1.12). Labium triangular, as long as wide, sternum haired, slightly longer than wide (length/width 1.04), its lateral margin with small, pointed extensions fitting in coxal concavities of legs (Fig. 10). Chelicera without teeth on margins of fang furrow, fang very short. Legs with short spines on femora I–IV, patellae III–IV, tibiae and metatarsi I–IV, hair tuft present on metatarsi I–IV; upper claws of legs with 6–8 teeth.

Opisthosoma oval, longer than wide (length/width 1.33). Posterior spinnerets shorter than anterior ones.

Female genitalia (Figs. 11–12): Opening part narrow, epigynal plate oblong, wider than long; spermathecae small and oval, with short, tubular intromittent canals.

Coloration and markings (Fig. 9). Carapace reddish brown, lighter at the head, chelicerae, maxillae, labium and sternum light reddish brown, palps and legs yellowish brown. Opisthosoma dorsally black, with seven white markings as in Fig. 9; ventrally brown, with three black axial lines.

Distribution. Northern Vietnam (known only from the type locality).

Remark. Species name is Latin derived from seven white markings on the opisthosoma.

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