

Orsima Simon (Araneae: Salticidae), a remarkable spider from Africa and Malaya

Marek Żabka

Zakład Zoologii WSR-P,
08-110 Siedlce,
Prusa 12, Poland

Summary

Redescriptions of two little-known species of *Orsima* Simon are presented. *Orsima formica* Peckham & Peckham is synonymised with *Cosmophasis ichneumon* Simon and the new combination *Orsima ichneumon* is proposed. Remarks on the biology, relationships and distribution of the genus are given.

Introduction

In 1988 I was asked by David Knowles (Trigg, Western Australia) to identify his slides of spiders taken during a Malayan expedition. One remarkable animal especially attracted my attention. It has been widely known for years as *Orsima formica* Peckham & Peckham and is interesting because of its peculiar body shape and behaviour pattern (Reiskind, 1976; Preston-Mafham & Preston-Mafham, 1984). At that time I was sceptical about its generic status because the type species of the genus (*O. constricta* Simon) is found in Africa — without any known representatives of the genus in between. The presence of *Orsima* in Malaya seemed unlikely to me. I therefore accepted an offer by Prof. M. Edmunds (Preston, England) to study his Malayan material and thus to clarify whether *Orsima formica* and the African *O. constricta* are congeneric.

Abbreviations used: CL = cephalothorax length; EFL = eye field length; AEW = anterior eyes width; PEW = posterior eyes width; AL = abdomen length. BMNH = British Museum (Natural History), London — part of Prof. Edmunds' collection; MNHN = Museum National d'Histoire Naturelle, Paris; MCZ = Museum of Comparative Zoology, Harvard University, Cambridge, Mass.

Remarks on biology, relationships and distribution

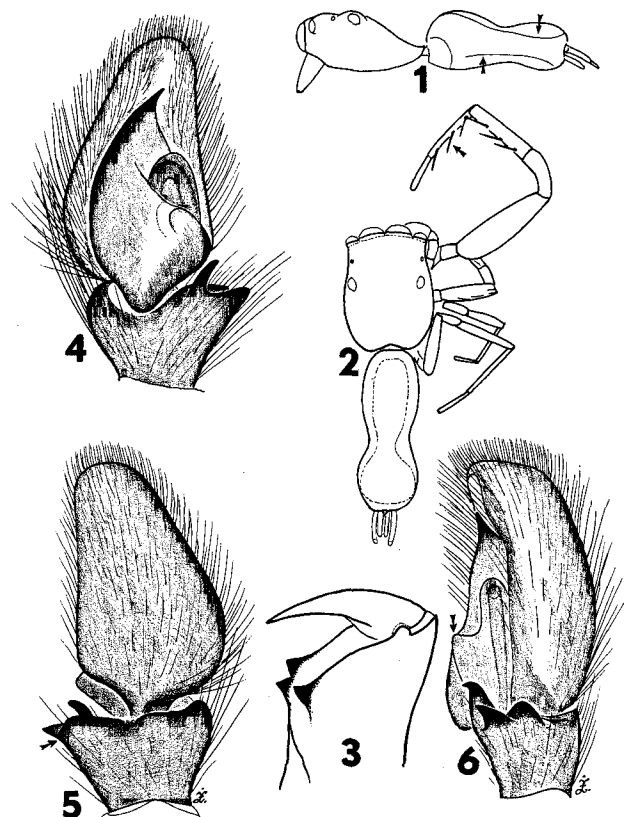
The genus *Orsima*, as defined here, comprises two species. They are very similar in appearance but also differ in some important details, e.g. abdominal scutum, leg spination, palpal tibia and stridulating bristles. The subfamily placing of *Orsima* is unclear because of the lack (with a few exceptions) of satisfactory research regarding relationships within the Salticidae. Simon (1901a) put the genus into the Chrysilleae group, and Petrunkevitch (1928) included it in the subfamily Heliophaninae. It seems that both authors were not far from the truth. On the grounds of genitalia structure, hairiness (metallic iridescent scales) and distribution pattern the following genera appear to be related: *Cyllobelus*, *Chrysilla*, *Epocilla*, *Cosmophasis*, *Siler* and *Silerella* (the last two genera are synonyms of *Cyllobelus* (Prószyński, 1985)). Also *Natta*, despite Simon's (1903) opinion, does not belong in Peckhamieae but in Chrysilleae. The group is of tropical Old World origin though single species can be

found in temperate East Asia (*Chrysilla*, *Epocilla*) or in tropical Australia (*Cosmophasis*). Some representatives of the group, e.g. *Orsima*, have become extremely specialised in body shape and behaviour pattern.

According to Reiskind (1976) and Preston-Mafham & Preston-Mafham (1984), *Orsima formica* (renamed *O. ichneumon* here) mimics mutillid wasps in reverse. The tip of the abdomen and spinnerets resemble an insect's head with appendages. This shape itself is protective, misleading predators, thereby giving the spider a greater chance to escape. There is no information on *O. constricta*, but its body structure suggests that unusual behaviour can also be expected.

Prószyński suggests (pers. comm.) that, in some spiders (e.g. *Goleta* from Madagascar, see Prószyński, 1984), long and movable spinnerets can be autotomised when the spider is attacked by a predator. There are also other genera that mimic insects in reverse, e.g. *Diolenius* and related taxa, which I had a chance to observe in Papua New Guinea. Living on ginger leaves, they mimic flies: the extremely long first legs are held in a way that imitates fly's wings. Instead of normal forward movement they walk backwards in a fly-like manner.

Ballooning, human agency, geological events and floristic changes have caused representatives of many genera to have scattered, distant ranges. Salticidae in general do not have a reputation for being as effective in ballooning as Erigonidae, Oxyopidae or Araneidae, for instance. *Orsima*, being a specialised rain forest spider, is a particularly poor candidate for aerial or human dispersal. Perhaps its present distribution reflects an ancient



Figs. 1–6: *Orsima constricta* Simon, male. 1 General appearance, lateral view; 2 Ditto, dorsal view; 3 Cheliceral dentition; 4 Left palp, ventral view; 5 Ditto, dorsal view; 6 Ditto, lateral view. Important characters marked with arrows.

continuous range disrupted by climatic changes and habitat extinction. There is no evidence for any other event, e.g. plate tectonics, being responsible for the present distribution of the genus.

Genus *Orsima* Simon, 1901

Orsima Simon, 1901a: 544, 549, 551, 554.

Cosmophasis [part] Simon, 1901a: 553.

Type species: Orsima constricta Simon, 1901.

Diagnosis: The genus differs from related taxa in body shape, long spinnerets and behaviour pattern.

Description: Small to medium spiders, covered with numerous brightly iridescent hairs. Cephalothorax rather low, surface sometimes stippled, posterior eyes elevated. Abdomen constricted, slender. Spinnerets long — especially 3rd pair; very movable, mimic insect's antennae. Chelicerae of unident pattern, long, vertical, bowed. Tegulum of male palpal organ with posterior lobe, embolus pointed. Epigyne oval, spermathecae thick-walled, insemination ducts short and wide. Legs delicate and long, tibiae and metatarsi I with two or three pairs of long spines. Genitalia similar to those of *Epocilla* and *Chrysilla*.

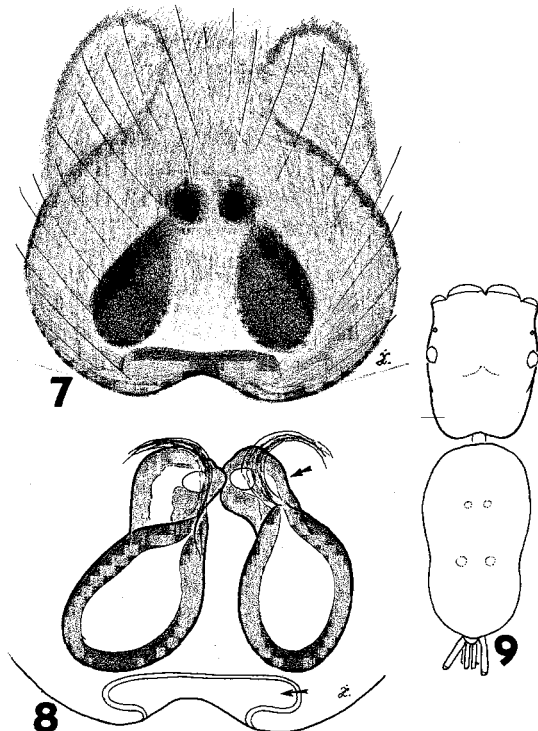
Sexual variation: First legs of females relatively shorter, abdomen less constricted, than in males.

Orsima constricta Simon, 1901 (Figs. 1–9)

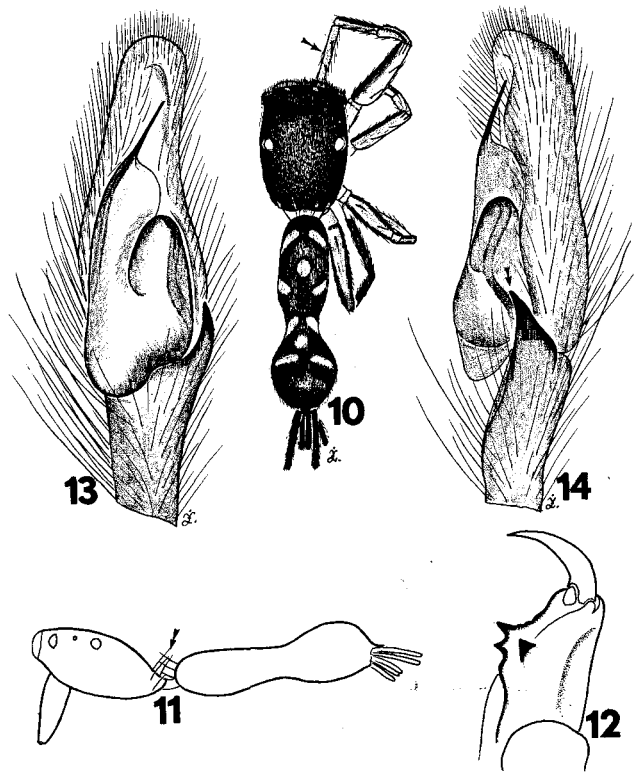
Orsima constricta Simon, 1901b: 149.

Orsima constricta: Prószyński, 1987: 20.

Material: ♂ type, 4♂, 8♀, 2 j., Congo, Gabon, MNHN 20014; ♂ Ivory Coast: Bingerville, July 1937, MNHN B2318.



Figs. 7–9: *Orsima constricta* Simon, female. 7 Epigyne; 8 Vulva; 9 General appearance, dorsal view. Important characters marked with arrows.



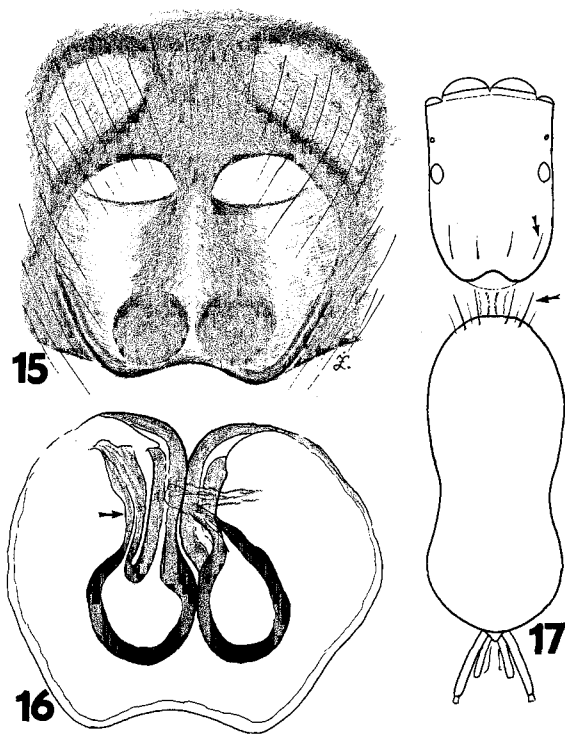
Figs. 10–14: *Orsima ichneumon* (Simon), male. 10 General appearance, dorsal view; 11 Ditto, lateral view; 12 Cheliceral dentition; 13 Left palp, ventral view; 14 Ditto, lateral view. Important characters marked with arrows.

Remarks on material studied: Specimen from Congo — probably the type described by Simon; others from Gabon — of unknown derivation. Ivory Coast male probably that studied by Berland & Millot (1941).

Diagnosis: In comparison with *O. ichneumon*, lacking stridulating bristles, tegulum of male palpal organ with process, tibia with three apophyses, epigyne with posterior pockets, metatarsi I with three pairs of spines instead of two.

Male (Figs. 1–2): Cephalothorax stippled, orange to dark brown, with black eye surrounds and lighter lateral bands. Abdomen long, constricted, with dark and light mosaic, covered with grey hairs and metallic iridescent scales. In adult specimens dorsal and ventral scuta present. Spinnerets long, grey-brown to black. Clypeus orange, chelicerae (Fig. 3) yellow to orange, maxillae, labium and sternum dirty yellow. Venter beige-grey. Legs orange to yellow, IV with longitudinal lateral dark stripes. Tibiae and metatarsi I with 3 pairs of spines. Leg formula: I-IV-III-II. Palpal organ (Figs. 4–6) with short, wide tibia, with three apophyses of various sizes. Tegular process present, embolus short. Measurements (mm): CL 1.8–2.1, EFL 0.7, AEW 1.4–1.55, PEW 1.4–1.55, AL 2.45–3.0.

Female (Fig. 9): Cephalothorax dark brown, eye surrounds darker. Abdomen dark grey, spinnerets black. Whole surface covered with iridescent hairs. Clypeus light brown, chelicerae orange, maxillae, labium and sternum dirty orange, venter beige to grey. Legs coloured as in male, formula: IV-III-I-II. Epigyne (Figs. 7–8) oval with double posterior pocket. Insemination ducts short. Measurements: CL 1.65, EFL 0.7, AEW 1.2, PEW 1.3, AL 2.1–2.5.



Figs. 15–17: *Orsima ichneumon* (Simon), female. **15** Epigyne; **16** Vulva; **17** General appearance, dorsal view. Important characters marked with arrows.

Distribution: Congo, Gabon, Ivory Coast (Berland & Millot, 1941; Wanless & Clark, 1975; Prószyński, 1987).

***Orsima ichneumon* (Simon, 1901) comb. n. (Figs. 10–17)**

Cosmophasis ichneumon Simon, 1901b: 148.

Orsima formica Peckham & Peckham, 1907: 630, syn. n.

Material: ♂, ♀ types of *Orsima formica* Peckham & Peckham, Borneo: Kuching, MCZ 1432. 4♂, 6♀, 3 j., Kuala Lumpur: Gombak Forest Reserve, Jan.–Feb. 1989, M. Edmunds, BMNH.

Diagnosis: Abdominal scuta absent, metatarsi I with two pairs of spines only. Both sexes with four protruding bristles on posterior end of thorax and anterior end of abdomen. Male palpal organ long, tibia with single apophysis, tegulum without process, epigynal pockets lacking. Genitalia similar to those of *Chrysilla*.

Male (Figs. 10–11): Body covered with silvery, reddish, iridescent scales and black hairs. Cephalothorax brown to black, lighter hairs present dorsally; posterior thoracic part with four long protruding (stridulating) bristles, corresponding with similar ones on anterior abdominal surface. Abdomen generally dark, narrow and long, constricted. Spinnerets very long, black. Clypeus brown, chelicerae (Fig. 12) orange to brown, vertical, bowed. Maxillae and labium dark with orange tips. Sternum

almost black, venter dark. All legs long and delicate, with black lateral stripes or spots, dorso-ventrally yellowish, distal segments generally lighter. Tibia and metatarsus IV black. Legs I and II with 3 pairs of tibial and 2 pairs of metatarsal spines. Leg formula: I-IV-III-II. Palpal organ (Figs. 13–14) relatively longer than in *O. constricta*, embolus thin and distinctive, tegular process lacking, with only one tibial apophysis. Measurements: CL 2.1–2.5, EFL 1.0–1.05, AEW 1.4–1.6, PEW 1.4–1.55, AL 3.0–3.6.

Female (Fig. 17): Cephalothorax as in male, abdomen similar in colour pattern but less constricted. Chelicerae not bowed. Venter grey with large ventrolateral light spots. Colour and leg spination as in male. Leg formula: IV-I-III-II. Epigyne (Figs. 15–16) without pockets, insemination ducts longer than in *O. constricta*. Measurements: CL 2.25–2.3, EFL 0.9–1.0, AEW 1.45–1.55, PEW 1.45–1.55, AL 3.5–3.8.

Distribution: Malay Peninsula, Sumatra, Borneo (Prószyński, 1984; Preston-Mafham & Preston-Mafham, 1984).

Acknowledgements

I am grateful to Prof. Malcolm Edmunds (Preston, England) for allowing me to study his Malayan specimens and for valuable comments on the typescript. Prof. H. W. Levi (MCZ, Harvard University) and Dr C. Rollard (MNHN, Paris) kindly made types and other material available for study. Finally, thanks are due to two anonymous referees who provided critical remarks.

References

- BERLAND, L. & MILLOT, J. 1941: Les araignées de l'Afrique occidentale française. *Mém. Mus. natn. Hist. nat. Paris* **12**(2): 297–422.
- PECKHAM, G. W. & PECKHAM, E. G. 1907: The Attidae of Borneo. *Trans. Wis. Acad. Sci. Arts Lett.* **15**: 603–653.
- PRESTON-MAFHAM, K. & PRESTON-MAFHAM, R. 1984: *Spiders of the world*. Blandford Press, Dorset.
- PETRUNKOVICH, A. 1928: Systema Araneorum. *Trans. Conn. Acad. Arts Sci.* **29**: 1–270.
- PRÓSZYŃSKI, J. 1984: *Atlas rysunków diagnostycznych mniej znanych Salticidae*. Zesz. nauk. WSR-P, 2, IX + 177 pp. Siedlce.
- PRÓSZYŃSKI, J. 1985: On *Siler*, *Silerella*, *Cylobelus* and *Natta* (Araneae, Salticidae). *Annls zool. Warsz.* **39**(2): 69–85.
- PRÓSZYŃSKI, J. 1987: *Atlas rysunków diagnostycznych mniej znanych Salticidae*. Zesz. nauk. WSR-P, VI + 172 pp. Siedlce.
- REISKIND, J. 1976: *Orsima formica*: A Bornean salticid mimicking an insect in reverse. *Bull. Br. arachnol. Soc.* **3**(8): 235–236.
- SIMON, E. 1901a: *Histoire naturelle des araignées* **2**(3): 381–668. Roret: Librairie Encyclopédique, Paris.
- SIMON, E. 1901b: Descriptions d'araignées nouvelles de la famille des Attidae (suite). *Annls Soc. ent. Belg.* **45**: 141–161.
- SIMON, E. 1903: *Histoire naturelle des araignées* **2**(4): 669–1080. Roret: Librairie Encyclopédique, Paris.
- WANLESS, F. R. & CLARK, D. J. 1975: On a collection of spiders of the family Salticidae from the Ivory Coast. *Revue Zool. afr.* **89**(2): 273–296.