

## Redescription of the poorly known crab spider *Firmicus bivittatus* (Araneae: Thomisidae)

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**Abstract.** *Firmicus bivittatus* Simon, 1895 was described from the Edough Mt, Algeria, based on one male only. Here, a redescription and new illustrations of the species based on the existing type material is presented. The female is figured for the first time.

**Keywords:** Algeria, France, genital characters, new figures, Spain

**Zusammenfassung. Wiederbeschreibung der wenig bekannten Krabbenspinne *Firmicus bivittatus* (Araneae: Thomisidae).** *Firmicus bivittatus* Simon, 1895 wurde vom Berg Edough, Algerien, auf Basis eines Männchens beschrieben. Es werden eine Wiederbeschreibung und neue Abbildungen mithilfe des Typenmaterials präsentiert. Das Weibchen wird erstmals abgebildet.

The genus *Firmicus* (Thomisidae) currently comprises 17 species, distributed mainly in Africa, most of them poorly known (WSC 2016). A single species occurs in the territory of Europe: *Firmicus bivittatus* Simon, 1895. This species was initially described by Simon (1895), from the Edough Mt, Algeria, based on one male only. The description is short and lacks illustrations. Lessert (1919: 195, sub *Synaema*) listed the species in his thomisid catalogue of Africa. Later, Simon (1932: 786, fig. 1147) presented again the description of the male, accompanied by a drawing of the male palp in ventral view. A description of the female was also presented, without any illustrations and without data for the locality. The species is mentioned (albeit only in the attached catalogue, Simon 1932: 868) from France, Spain and Algeria. In this contribution *Firmicus bivittatus* is redescribed and illustrated, the female for the first time.

### Material and methods

The current study is based on the material (type and additional material) from the Muséum National d'Histoire Naturelle, Paris (MNHN). Male palps and female genitalia were examined and illustrated after they had been dissected from the spiders' bodies. Photographs were taken with a Panasonic DMC-FS62 digital camera mounted on Wild M5A stereomicroscope. Measurements of the legs were taken from the dorsal side. Total length of the body includes the chelicerae. All measurements are in mm. Abbreviations used in text include: AME, anterior median eyes; ALE, anterior lateral eyes; PME, posterior median eyes; PLE, posterior lateral eyes; E, embolus; TA, tegular apophysis; VTA, ventral tibial apophysis; ITA, intermediate tibial apophysis; RTA, retrolateral tibial apophysis; CH, central hood; ST, spermatheca.

### Taxonomy

#### Thomisidae Sundevall, 1833

#### *Firmicus* Simon, 1895

#### *Firmicus bivittatus* Simon, 1895 (Figs 2-19)

**Type material.** ALGERIA, holotype male, MNHN 10954 (Fig. 1a), Edough Mt, (Annaba pr.).

**Other material.** SPAIN, 1 female, MNHN 22655 (Fig. 1b), La Granja, (Segovia pr.); 1 male, SPAIN, Avila, Puerto del Pico, 20.V.1991, P. Poot leg. (R. Bosmans in litt.).

### Diagnosis

Somatic characteristics of *Firmicus bivittatus* correspond to those of the genus *Firmicus*, but the genitalia differ from all other known species of the genus. Morphologically, *Firmicus bivittatus* most resembles *F. dewitzi* Simon, 1899 (see Levy 1973, 1985), but the male is distinguished by the slender embolus, slightly curved apically, the pyramidal tegular apophysis, longer ventral and retrolateral tibial apophyses and shorter but more massive intermediate tibial apophysis; the epigyne/vulva differs from that of *F. dewitzi* by a smaller hood, opening anteriorly and clearly visible coiled spermathecae (Figs 5-7, 11-19).

### Redescription

#### Male holotype

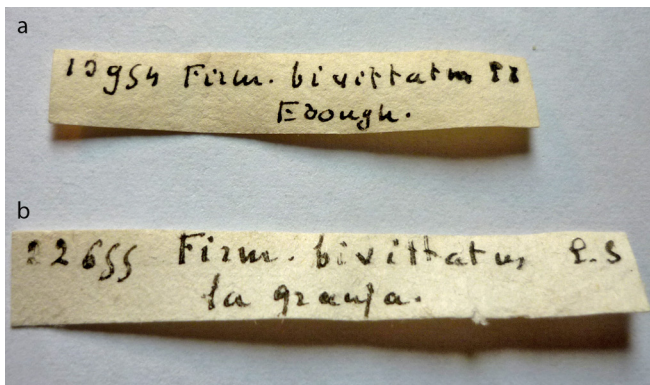
Total length 6.38; prosoma length 2.18, width 1.95; sternum length 0.98, width 0.9; clypeus height 0.15; chelicerae length 0.53, width 0.53; opisthosoma length 4.13. Eye sizes and inter-distances: AME 0.05, ALE 0.10, PME 0.025, PLE 0.05, AME-AME 0.25, AME-ALE 0.25, PME-PME 0.33, PME-PLE 0.33 (Fig. 2).

Carapace: Red-brown, unicoloured, with a thin white, marginal line (Fig 3). Chelicerae light-brown. Sternum: smooth, light-brown, shield-shaped with a brown border (Fig. 4). Abdomen: dorsum, grey, with two light-brown longitudinal bands, venter, grey, in the middle, with two white longitudinal bands (Figs 3-4). Legs: anterior pairs, femora, patellae and tibiae, brown, metatarsi and tarsi pale yellow; posterior pairs, pale yellow (Figs 3-4). Leg formula 1234, measurements as in Tab. 1.

**Tab. 1.** *Firmicus bivittatus*, leg measurements (holotype)

Legs	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	2.1	0.98	1.73	1.28	0.98	7.05
II	2.1	0.98	1.73	1.28	0.98	7.05
III	1.5	0.6	0.98	0.6	0.6	4.28
IV	1.43	0.6	0.98	0.6	0.6	4.2

Male palp (Figs 5-7, 14-16): Cymbium rounded, tibia with three apophyses: ventral apophysis well developed, curved in prolateral direction; intermediate apophysis short, but massive, terminally rounded; retrolateral apophysis long, subterminally bent and terminally rounded. Tegular apophysis small, developed as sharp, triangular pyramid. Embolus long and slender, nearly circular, slightly curved at the end.



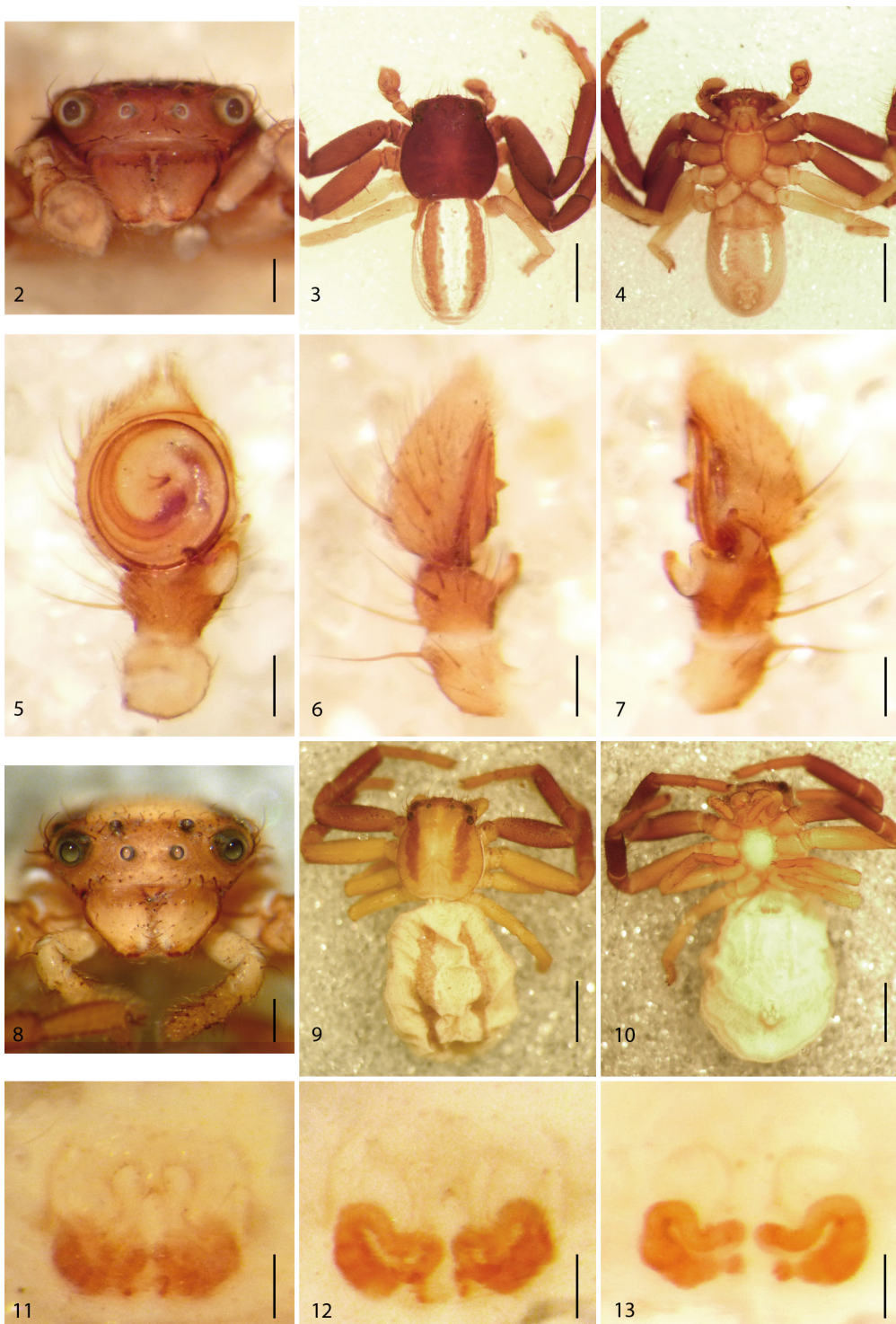
**Fig. 1:** *Firmicus bivittatus*; **a.** label of male holotype; **b.** label of female

**Female**

Total length 6.75; prosoma, length 2.25, width 1.88; sternum length 1.13, width 0.9; opisthosoma, length 4.5 (Figs 8-10). All characters as described for the male except as noted.

Carapace, yellowish, with two light-brown longitudinal bands and a thin white, marginal line (Fig. 9). Legs: all characters as described for male except the pale-yellow femora of the second pair of anterior legs. Leg measurements as in Tab. 2.

Epigyne and vulva (Figs. 11-13, 17-19): Epigynal plate almost unpigmented; upper part with small transparent hood, opening anteriorly; spermathecal bends visible through transparent epigynal plate.



**Figs 2-13:** *Firmicus bivittatus*

**Fig. 2:** Male holotype, frontal view, scale: 0.3 mm;

**Figs 3-4:** Habitus, dorsal and ventral views, scales: 1.0 mm

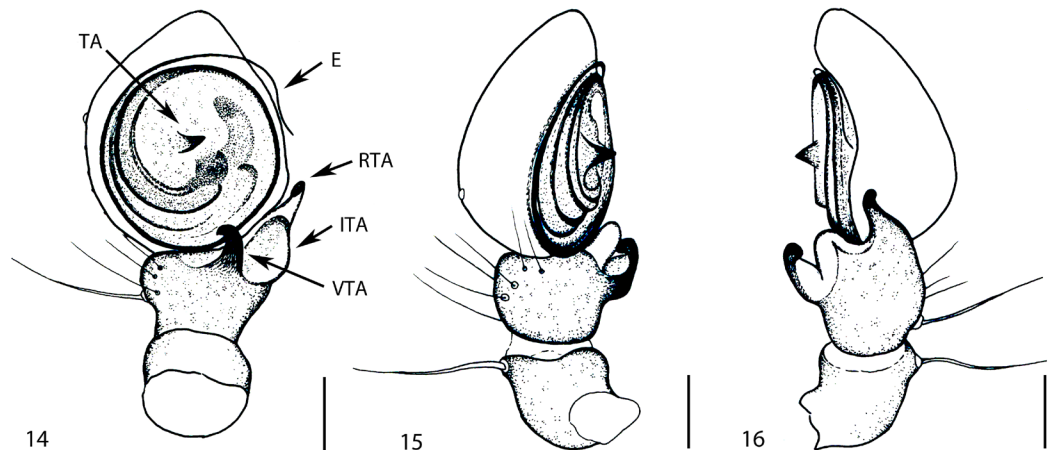
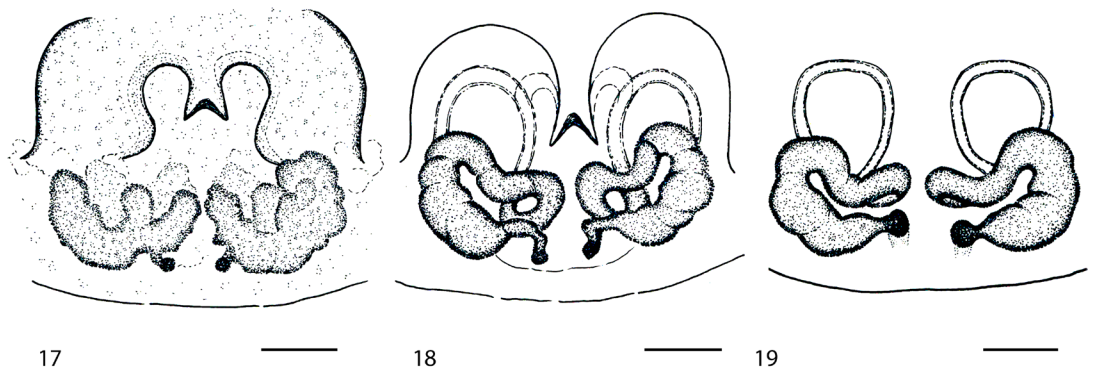
**Figs 5-7:** Male palp, ventral, pro- and retrolateral view, scales: 0.4 mm

**Fig. 8:** Female, frontal view, scale: 0.3 mm;

**Figs 9-10:** Habitus, dorsal and ventral view, scales: 1.0 mm

**Fig. 11:** Epigyne, scale: 0.4 mm;

**Figs 12-13:** Vulva, ventral and dorsal view, scales: 0.4 mm

**Figs 14-19:** *Firmicus bivittatus***Figs 14-16:** Male palp, ventral, prolateral and retrolateral view, scales: 0.6 mm**Fig. 17:** Epigyne, scale: 0.4 mm**Figs 18-19:** Vulva, ventral and dorsal view, scales: 0.4 mm**Tab. 2.** *Firmicus bivittatus*, leg measurements (female)

Legs	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	1.88	1.05	1.43	0.98	0.9	6.24
II	1.88	1.05	1.43	0.98	0.9	6.24
III	1.2	0.68	0.83	0.53	0.53	3.75
IV	1.28	0.68	0.83	0.53	0.53	3.83

**Ecology.** *Firmicus* spiders are rare. Nothing is known about their natural history, they probably live under stones (Levy 1973, 1985: for *F. dewitzi* Simon, 1899).

**Distribution.** The most recent information can be found in Jiménez-Valverde et al. (2006), where the species is mentioned near Madrid. The species is hitherto known only from southern France (one locality), central Spain (3 locs.) and north-eastern Algeria (locus typicus, R. Bosmans could not re-collect it there, in litt.).

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