CHAPTER 3

A Revision of the Afrotropical Species of *Hersiliola* Thorell and *Tama* Simon with Description of a New Genus *Tyrotama* (Araneae: Hersiliidae)

Abstract

The genera *Hersiliola* Thorell and *Tama* Simon, two ground active spider genera, in the family Hersiliidae of the Afrotropical Region are revised. *Hersiliola macullulata* Thorell 1870, *H. simoni* (O.P.-Cambridge 1872) and *H. versicolor* Blackwall, 1865 are redescribed. *Hersiliola fragilis* Lawrence, 1928 and *H. australis* (Simon, 1893) both known from southern Africa are transferred to a new genus, *Tyrotama.* Three *Tama* species *T. arida* Smithers, 1945, *T. bicava* Smithers, 1945 and *T. incerta*, Tucker, 1920 are transferred to *Tyrotama* gen. nov. *Tama obscura* Smithers, 1945 is synonymized with *T. arida*. The males of *T. arida* and *T. bicava* are described for the first time. Three *Tyrotama* species *T. gamkasiensis*, *T. makalaliensis,* and *T. taris* are described as new. A key to the species of *Tyrotama* gen. n. is provided. Three *Hersiliola* species are valid. *Tyrotama* consists of six valid species, three are redescriptions and three newly described. Only females are known for *H. versicolor*, *T. incerta*, *T gamkasiensis*, *T. taris*, and only males for *T. makalaliensis*.

Key words: Afrotropical Region, Araneae, Hersiliidae, key, new genus, *Tama*, *Hersiliola, Tyrotama*.

INTRODUCTION

The family Hersiliidae is a small family with a worldwide distribution that prior to this study comprised 145 species in 7 genera (Platnick 2004). They are medium-sized three-clawed, entelegyne spiders characterized by their markedly elongated posterior spinnerets and long legs I, II and IV (Baehr 1998; Rheims & Brescovit, 1994). The hersiliids have diverse life-styles with most of the species being arboreal, found on tree bark. However, members of *Hersiliola* Thorell and *Tama* Simon are ground active spiders found under stones where they build irregular webs(Smithers 1945, Lawrence 1964).

The genus *Hersiliola* was described by Thorell in 1870, and consists of ten species in the Palearctic and Afrotropical regions. There are five species known for the Afrotropical Region. Dufour (1831) described the first Hersiliola species from the Afrotropical Region, *Hersiliola macullulata*, as *Aranea macullulata*. Simon (1882) transferred *Aranea macullulata* to *Hersiliola* and considered *Hersilia oraniensis* Lucas, 1846 a junior synonym of *Hersiliola macullulata*. *Hersiliola simoni* was first described by O.P.-Cambridge in 1872 as *Hersiliada simonii* and Blackwall described *Hersiliola versicolor* in 1865. Simon (1893) described the first *Hersiliola* species, *H. australis* from the Southern parts of the Afrotropical Region and subsequently Lawrence (1928) described *Hersiliola fragilis* from Namibia.

The genus *Tama* was described by Simon (1882) based on the type species *Tama edwardsi*, a ground-living spider inhabiting the arid regions of the Mediterranean Region. Numerous species have since then been added to *Tama*, including doubtful additions of arboreal species. Until recently the genus was considered to be the most widespread of all the hersiliid genera with representatives in the Neotropical, Afrotropical, Palearctic and Australian Regions. However, after the first revision of the Australian hersiliids by Baehr & Baehr (1987), it was found that the Australian *Tama* species belongs somewhere else and they were all transferred to a new genus, *Tamopsis* Baehr & Baehr. Similar transfers were made of the Neotropical *Tama* species. After a revision of the hersiliids of that region by Rheims & Brescovit (2004) the known *Tama* species were transferred to three newly described genera and the genus *Neotama* Baehr & Baehr.

Simon (1893) provided some revisionary work on *Hersiliola* and *Tama* of the Afrotropical Region. However, uncertainty exists around the validity of characters used to distinguish them (Smithers 1945). Baehr & Baehr (1993) speculated that they possibly belong in the genus *Neotama* and questioned the correct placement of the Afrotropical *Tama* species.

A study of all available material from the Afrotropical Region showed that the *Tama* and *Hersiliola* species of the southern and central regions differ from the species found in North Africa and the Mediterranean Region. A new genus *Tyrotama* was erected to house the species previously listed in *Tama* and *Hersiliola* of the Afrotropical Region. *Tama* is now only known from the Mediterranean Region - Spain, Portugal and Algeria, while species of *Hersiliola* are known from the Palearctic and northern parts of the Afrotropical Region.

This paper is the first in a series on the Hersiliidae of the Afrotropical Region. We erect a new genus, *Tyrotama* gen. nov., based on results of a cladistic analysis, redescribe six species, synonymize one species, transfer three species to *Tyrotama*, and describe three new species. A key to the *Tyrotama* species is provided.

MATERIAL AND METHODS

Study area: The area covered by this study is the Afrotropical Region, including the islands in both the Indian and Atlantic oceans. Reference is made to the distribution of species from the rest of Africa (countries outside the Afrotropical Region), only if such species also occur, at least partly, in the Afrotropical Region. Terminology follows Baehr & Baehr (1993) in part.

Slide preparation: The epigyne of the female and the left palp of the male (where available, otherwise the right) were removed and mounted temporarily on slides in Heinze's modified PVA mounting medium (Meyer & Rodrigues 1966).

Illustrations: All illustrations were made with a stereomicrocope Zeizz Stemi SV 6, using a camera lucida. Scanning electron micrographs were taken with a JEOL (JSM 840) microscope.

Measurements*:* Where enough material was available, ten specimens of both sexes were measured for each species. Measurements were made under a

stereomicroscope using an ocular micrometer with up to 50× magnifications. All measurements are given in millimetres with the observed ranges in parentheses. The following measurements were taken. TL – total length; carapace: CL - carapace length (measured from clypeal edge to posterior edge); CW - carapace width (measured over widest part of carapace); CLL - clypeus length (measured from outer edge of AME to anterior edge of clypeus). Eyes: size of eyes is given as relative to AME in the following order: AME: ALE: PME: PLE. Legs: LL – length of leg (each segment from femur to tarsus was measured and the sum of the measurements given as the leg length); length ratio of legs is relative to leg I. Spinneret length (measured each segment). Epigyne: length and width.

Abbreviations: The following abbreviations are used in this paper: AER – anterior eye row; ALE – anterior lateral eye; AME – anterior median eye; bS – basal segment of posterior lateral spinneret; c – copulatory duct; CHI – cheliceral index (derived by dividing total length of chelicera by its width); CI – carapace index (derived by dividing length of carapace by its width); CL – carapace length; CLI – clypeal index (derived by dividing length of clypeus with length of median ocular quadrangle); CLL – clypeus length; co – copulatory opening; CW – carapace width; dtp – distal tegular projection; el – epigyne length; ew – epigyne width; f – fertilization duct; Fe – femur; lb – lateral border; LL – length of leg; MOQ – median ocular quadrangle; MOQ-AW – MOQ anterior width; MOQ-PW – MOQ posterior width; mp – median plate; Mt – metatarsus; Pat – patella; PER – posterior eye row; PLE – posterior lateral eyes; PME – posterior median eyes; sr – seminal receptacle; s – spermathecae; Ta – tarsus; Tib – tibia; TL – Total length; tS – terminal segment of posterior lateral spinneret.

Material examined: A total of 147 specimens from North Africa and the Afrotropical Region housed in southern African, European and American institutions, were studied. Material was received on loan from the following institutions: AMNH – American Museum of Natural History, New York, USA; CASC – California Acadamy of Sciences, Golden Gate Park, San Francisco, California, USA; CAUB – Collection Arachnida Universitat de Barcelona, Barcelona, Spain; DNSM – Durban Natural Science Museum, Durban, South Africa; HECO – Hope Entomological Collection, Oxford University Museum of Natural History, Oxford, United Kingdom; MNHN – Museum

National d'Histoire naturelle, Paris, France; MNHU – Museum für Naturkunde der Humboldt Universität, Berlin, Germany; MRAC – Koninklijk Museum voor Midden Afrika, Tervuren, Belgium; NCA –National Collection of Arachnida, ARC – Plant Protection Research Institute, Pretoria, South Africa; NM – Natal Museum, Pietermaritzburg, South Africa; NMB – National Museum, Bloemfontein, South Africa; ; NMN – National Museum of Namibia, Windhoek, Namibia; SAM – South African Museum, Cape Town, South AfricaTMP – Northern Flagship Institute (Transvaal Museum), Pretoria, South Africa.

TAXONOMY

Genus ***Hersiliola*** Thorell*, 1870*

Hersiliola Lucas, 1846: 163; Thorell, 1870: 110; Simon, 1882: 256; 1893: 445; Smithers, 1945: 1; Baehr & Baehr, 1993:1; Levy, 2003: 1; Rheims *et al.*, 2004: 343.

Type species: *Aranea macullulata* Dufour, designated by Thorell, 1870.

Discussion

Five species of the genus *Hersiliola* were known from the Afrotropical Region prior to this study. Comparison of material at hand showed that the southern African species *H. australis* Simon, 1893 (South Africa) and *H. fragilis* Lawrence, 1928 (Namibia) do not belong to *Hersiliola*. Both species were transferred to the new genus *Tyrotama*.

Diagnoses

Hersiliola resembles *Tama* and *Tyrotama* gen. n. in the depressed dorsal surface of eye tubercle; unarmed chelicerae; elongate clypeus; inclined thorax and leg IV being the longest. It differs from *Tama* in leg III being >0.5 length of leg I; metatarsi uniarticulate without a flexible zone; cymbium digitate and presence of hook-shaped median tegular apophysis. It differs from *Tyrotama* gen n. in the flattened bulbus of male palp; filiform, elongate, spirally coiled embolus (Figs. 2a,b); elongate, coiled copulatory ducts, small seminal receptacles (Fig. 2g & Table 1).

Description

Female. Size: small to medium-sized (range 5.6 – 6.83). Colour: carapace varies from pale yellow to dark brown, border dark, varying in thickness; clypeus pale with dark or pale markings; eye tubercle dark; sternum, labium and endites pale; dorsum pale

yellow to dark brown; antero-lateral border pale to dark brown; heart mark varies in form and colour (Figs. 2e & 3e); venter pale; posterior lateral spinnerets pale with annulation; femora, tibiae and palps pale with faint to dark annulation and lateral striations. Carapace: wider than long; thoracic region widest, inclined (Figs. 2c & 3c); clypeus sloping, >6 × ocular area length, 1.54 – 1.82 × median ocular quadrangle length, eye tubercle depressed. Eyes: PER recurved seen from above, straight seen from front; AER recurved seen from above, dorsally curved seen from front; AME> PME>PLE>>ALE ratio range 1: 0.58 - 0.68: 0.7 – 0.83: 0.73 – 0.82; MOQ wider than long, widest anteriorly. Chelicerae: elongate, unarmed. Sternum: heart-shaped. Labium: crescent-shaped, 0.42 × endite length. Endites: subquadrate, broad. Abdomen: longer than wide; ovoid; convex; densely covered with plumose setae; four pairs of small dorsal sigilla (Figs. 2e & 3e). Posterior lateral spinnerets shorter than carapace width; terminal segment <1.5 × length of basal segment. Legs: leg IV longest; leg III >0.5 × length of leg I; metatarsus I < 4 × longer than tarsus I; femur, patella, and metatarsus with spines; spine formula fairly similar between species with little variation; Two rows of several spines ventrally on femurs; spines with longitudinal grooves dorsally, small randomly arranged projections ventrally (Fig. 1a). Epigyne (Figs. 2f,g): median plate T-shaped, narrowed anteriorly, wider posteriorly; copulatory ducts elongate, coiled, Spermathecae larg, seminal receptacle small; fertilization ducts short, simple.

Male. Size: Small (3.53 – 5.2). Resembles female in shape and colour; male differs structurally as follows: smaller in size; abdomen more slender, widest medially. Palp (Figs. 2a,b & 3a,b): tibia stout, cymbium digitate, projecting beyond bulbus; sperm duct shape varies from circular to meandering; embolus filiform, elongate, coiled with apex acute; originate proximally or distally on bulbus; median tegular apophysis hook-shaped angled longitudinally, apex acute.

Distribution. Mediterranean Region and countries in the northern parts of Africa and Central Asia.

***Hersiliola macullulata* (Dufour, 1831) (Figs. 2 & 11)**

Aranea macullulata Dufour, 1831: 360.

Hersilia oraniensis Lucas, 1846: 129.

Hersilidia (sic) oraniensis: Simon, 1870: 347 (first synonymized by Simon, 1882: 256).

Hersiliola macullulata (Dufour). Simon, 1882: 256; 1893: 447; Bonnet 1957: 2180 (as *maculata*); Denis, 1955: 128 (misidentification of *simonii*); 1966: 125 (misidentification as *lucasii*); Benoit, 1974: 997 (as *maculata*); Ribera *et al*., 1988: 98 (as *maculata*); Levy, 2003: 28.

Types. Described from Spain but according to Levy (2003: 28) the types are lost.

Diagnosis. Epigyne with median plate sub-triangular, sides oblique (Fig. 2f), copulatory ducts coiled with more than three coils, coils extend well beyond spermathecae (Fig. 2g); embolus elongate, coiled, filiform; originate retrolaterally on bulbus (Figs. 2a,b).

Description. Female. Size (n=5). TL 4.95 (3.53 - 6.83); CL 1.78 (1.58 - 2.1); CW 1.93 (1.65 - 2.25); CI 0.95; CLL 0.57; CLI 1.62; MOQ-AW 0.37; MOQ-PW 0.27; CHI 2.16.

Colour: carapace pale yellow-orange with isolated dark markings, ; clypeus pale with dark medial line (Fig. 2d); eye area dark; abdomen pale yellow, heart mark with isolated dark markings (Fig. 2e). Carapace: thoracic region dorsally with procurved transverse depression posteriad of fovea; AME largest; eye ratio 1: 0.51: 0.7: 0.73; chelicerae very elongate; abdomen: posterior lateral spinnerets 0.46 × carapace width; tS 0.74 × bS. Legs: leg ratio: 1: 1.02: 0.6: 1.21; metatarsus I, 2.64 × length of tarsus I; leg measurements: I-Fe 2.58, Pat + Tib 3.17, Mt I 2.75, Ta 1.04, total 9.54; II-2.6, 3.5, 2.83, 0.83, total 9.75; III-5.83, 1.87, 1.42, 0.69, total 5.83; IV-3.02, 4.32, 4.25, 1.17, total 13.47; palp-0.88, 0.93, 0.71, total 2.58 Epigyne (Figs. 2f,g): wide (el/ew 0.63); medio-posterior part T-shaped, widens posteriorly into broad sclerotization; copulatory ducts elongate at least four or more coils, extend well beyond spermathecae, Spermathecae large, seminal receptacles small.

Male. Size (n=2). TL 3.75 (3.53 - 3.98); CL 1.28 (1.05 - 1.5); CW 1.62 (1.58 - 1.65); (CI 0.79); CLL 0.4 (0.39 - 0.42); OAL 0.31 (0.32 - 0.32); CLI 1.28; MOQ-AW 0.4; MOQ-PW 0.27; CHI 2.64.

Resemble females except: smaller, carapace wider; leg measurements: I- Fe 2.25, Pat + Tib 2.66, Mt I 2.33, Ta 0.98, total 8.22; II-8.71, 2.93, 2.55, 0.72, total 8.71; III-1.31, 1.58, 1.28, 0.57, total 4.73; IV-2.74, 3.04, 2.96, 0.79, total 9.53; palp-0.9, 0.57, 0.97, total 2.44. Palp (Figs. 2a,b): tibia stout, as long as wide; cymbium: digitate, 2.4 × longer than wide, projecting beyond bulbus, two apical spines; bulbus flattened; sperm duct regularly curved; embolus: coiled, filiform, originate retrolaterally on bulbus; median tegular apophysis hook-shaped with apex acute.

Material examined. Burkina Faso: Niou, 80 km NW Ouagadougou (11°45'N 02°14'W), 1 male, 12-26.vii.1988, W. van Cotthem (MRAC 172.521); Soulou (11°45'N 2°28'W), 1 male, 16-18.vii.1993, pitfall, De Visscher, Balanca (MRAC 207.791); 1 male, same data, (MRAC 207.790); **Algeria:** Sahara, Hassi Ras el Erg, 90 km S. of de Golea (3ºE 30º05'E), 300m asl, 1 female, 25.ii.1982, H. Doutrelepont (MRAC 162.015); 4 females, Colomb Beahar, 11-16.xi.1948, B. Malkin (AMNH).

Distribution. Algeria, Spain, Israel, New record: Burkino Faso, (Fig. 10).

Natural history. In Burkino Faso adult males were collected in July, females in February and August.

***Hersiliola simoni* (O.P.-Cambridge, 1872) (Figs. 3 & 11)**

Hersiliada (sic) simonii O.P.-Cambridge, 1872: 275.

Hersilidia (sic) lucasii O.P.-Cambridge, 1876: 562 (first synonymized by Levy, 2003: 25).

Hersiliola simoni: Simon, 1893: 445; Denis, 1966: 124; Benoit, 1974: 997; Ribera *et al.,* 1988: 99; Schmidt & Krause, 1995: 356.

Hersiliola lucasii: Wiehle, 1960: 466.

Types. Hersiliola simoni, male and female syntypes, Israel: Jerusalem and the Plains of the Jordan, Israel, 5 males, 7 females, (HECO, B.408, t.9); same data, (HECO, B.400, t.4) (not examined); Hersiliola lucasii, male syntype and immatures, Egypt: Alexandria, (HECO, B.505, t.5) (not examined).

Diagnoses. Epigyne with lateral borders angular; median plate T-shaped, sides longitudinal (Fig. 3f); copulatory ducts complete three regular coils; spermathecae visible above coils (Fig. 3g); male palp with embolus elongate, coiled, filiform, originate apically on bulbus (Fig. 3a).

Description. Female. Size (n=2). TL 4.91 (4.88 - 4.95); CL 1.91 (1.88 - 1.95); CW 1.95 (1.88 - 2.03); CI 0.98; CLL 0.52 (0.46 - 0.59); OAL 0.06 (0.05 - 0.07); CLI 1.87; MOQ-AW 0.31; MOQ-PW 0.23; CHI 2.86.

Colour: colouration as in *H. macullulata*. Carapace: as wide as long, clypeus long (Fig. 3 c&d); eye ratio: 1: 0.68: 0.7: 0.73. Abdomen: faint impressions of dorsal sigilla visible (Fig. 3e); posterior lateral spinnerets 0.69 × carapace width; tS 1.27× bS. Legs: leg ratio: 1: 1.15: 0.7: 1.19; metatarsus I 2.42 × tarsus I; leg measurements: I- Fe 2.44, Pat + Tib 2.89, Mt I 2.36, Ta 0.98, total 9.94; II-2.7, 3.3, 2.7, 1.24, total 9.94; III-1.88, 1.95, 1.5, 0.75, total 6.08; IV-3, 3.34, 3.15, 0.83, total 10.31; Palp-0.98, 1, 0.9, total 2.78. Epigyne (Figs. 3f,g): wider than long (el/ew 0.85); lateral lobes angular; central septum subquadrate, significant anteriad narrowing (Fig. 3f); copulatory duct elongate, regularly coiled; Spermathecae large; seminal receptacle smale; fertilization ducts short, curved (Fig. 3g).

Male. Size n=3). TL 5.11 (4.13 - 6); CL 2.17 (2.08 - 2.25); CW 2.28 (2.08 - 2.48); CI 0.96; CLL 0.51 (0.44 - 0.65); OAL 0.07; CLI 1.7; MOQ-AW (0.36)-0.38-(0.39); MOQ-PW 0.25; CHI 2.68.

Resemble females, except: legs longer; eye ratio: 1: 0.58: 0.71: 0.84; leg measurements: I- Fe 3.04, Pat + Tib 3.68, Mt I 3.01, Ta 1.27, total 10.99; II-3.16, 3.88, 3.29, 1.22, total 11.55; III-2.01, 2.36, 1.73, 0.74, total 6.84; IV-3.24, 4.05, 4.14, 1.24, total 12.67; Palp-1.13, 1, 1.21, total 3. Palp (Figs. 3a,b): tibia stout, as wide as long; cymbium digitate, projecting beyond bulbus, 1.4 × longer than wide; three spines apically; bulbus flattened; sperm duct regularly curved; embolus originate apically on bulbus, filiform, coiled, apex acute; median tegular apophysis hook-shaped, longitudinally angled. apex acute.

Material examined. Morocco: Anti-Atlas (30ºN 8º 30'W), ca. 30 km nordl Igherm, under stones, uberall haufig, 1 male, 27.vii.2000, S. Huber (MNHN); **Spain:** Cabeza de Asno, Cieza, Province Murcia, 1 male, 1 female, 12.v.2001, under stones, J.

Minano (CAUB); Rambia Chumitta, Province Murcia, 1 male, 1 female 18.vii.2003, under stones, J. Minano (CAUB).

Distribution. Yemen, Cape Verde Islands, Egypt, Israel, Spain, Morocco(Fig. 10).

Remarks. Schmidt & Krause (1995) collected two adult females on Maio (15°9'N 23°14'W). No definite identification can be made based on their drawings and specimens were not sent by the institution where they are deposited. Rheims *et. al.* did however record specimens from Yemen confirming that the species does occur in the Afrotropical Region.

Natural History. Adults were collected from under stones from May to July.

***Hersiliola versicolor* Blackwall, 1865 (Figs. 4 &11)**

Hersiliola versicolor Blackwall, 1865: 81; Simon, 1893: 445.

Types. Female holotype, Cape Verde Islands: Island of St Jago (15º7'N 23º31'W), O.P.-Cambridge, HECO 404 (examined).

Diagnosis. S-shaped lateral borders of median plate of epigynum result in a pronounced anterior narrowing of median plate (Fig. 4a). Male unknown.

Remarks. Females of this species closely resemble that of H. macullulata. Only females are known for this species and descriptions by Blackwall (1865) make no reference to the genitalic characters. Because type specimens of H. macullulata were not sent by institutions where they are housed and because of this no decisions about synonymy could be made.

Description. Female. (Size n = 3). TL 4.15 (3.75 - 4.58); CL 1.68 (1.62 - 1.77); CW 1.71 (1.65 - 1.77); CI 0.98; CLL 0.3 (0.25 - 0.35); OAL 0.05 (0.04 -0.07); CLI 0.83; MOQ-AW 0.32; MOQ-PW 0.28; CHI 1.95. Colour: cephalothorax pale yellow; clypeus with dark medial line, oblique lines laterally; abdomen in old preserved specimen without any observable pattern, pale yellow; legs pale yellow, femora with broad annulation. Carapace: as wide as long; clypeus short (Fig. 4d), 0.83 × MOQL; eye ratio: 1: 0.5: 0.81: 1. Abdomen: faint impression of four dorsal sigilla; posterior lateral spinnerets 0.73 ×

carapace width; tS 0.64 × bS. Legs: leg ratio: 1: 1.13: 0.6: 1.15; metatarsus I 2 × tarsus I: 2; leg measurements: I- Fe 2.31, Pat + Tib 2.85, Mt I 2.31, Ta 1.16, total 8.62; II-2.7, 3.16, 2.46, 1.16, total 9.7; III-1.64, 1.62, 1.23, 0.54, total 5.16; IV-2.82, 3.23, 3.08, 0.92, total 9.93; palp-0.77, 0.92, 0.77, total 2.46. Epigynum (Fig. 5a,b): wider than long (el/ew 0.67 mm); border of median plate s-shaped, pronounced narrowing of median plate anteriorly (Fig. 4a); copulatory ducts with more than three coils, extend beyond spermathecae, more than two times longer than spermathecae (Fig. 4b).

Male. Unknown.

Additional material examined. Cape Verde: 1 female, Ile Fogo, Sâo Filipe (14°53'N 24°31'W), viii.1934, MNHN10081; 1 female, Bouvier, MNHN 10077.

Distribution. Cape Verde Islands.

Natural History. Females were caught in August.

*Genus **Tama** Simon, 1882*

Tama Simon, 1882: 256; 1893: 440; Smithers, 1945: 1; Baehr & Baehr, 1993: 1; 1998: 61.

Type species: *Tama edwardsi* Lucas, 1846.

Discussion. *Tama* differs from *Hersiliola* and *Tyrotama* gen n. by the metatarsi with a flexible zone distally; leg III are much shorter than rest of legs (<0.4 x leg I)**;** heart mark is lancet-shaped and abdomen wider in posterior half (Table 1).

Simon (1893) distinguished between *Tama* and *Hersiliola* as follows: the length of leg III, relative to the other legs, is shorter in *Tama* than in *Hersiliola* and the terminal segment of the posterior lateral spinneret is more than twice the basal segment as opposed to *Hersiliola* where it is 1.3 ×. Smithers (1945) questioned the reliability of the first character and used only the second in his key for the Southern African species of *Tama* and *Hersiliola*. However, the shorter length of leg III holds true for *Tama edwardsi* Lucas and representatives of *Hersiliola* from North Africa and the Mediterranean Region *viz.* *Hersiliola macullulata* and *H. simonii*. Tucker (1920) suggested that the tarsus of leg I exceeded half the length of the metatarsus in *Hersiliola* as opposed to *Tama* where it is less than half. In addition he noted that the posterior lateral spinnerets are longer than sternum length in *Tama* and shorter in *Hersiliola*. Smithers (1945) considered the relative

length of tarsus I and metatarsus I, and the length of the posterior lateral spinnerets compared to carapace length to be of value. However, none of these characters are reliable indicators of monophyly.

Before this study four *Tama* species were known from the Afrotropical Region. Tucker (1920) described *T. incerta* from Namibia and Smithers (1945) added three species collected from the Western Cape Province: *T. arida*, *T. bicava* , *T. obscura*. During this study all the available *Tama* material was examined. It was found that that they do not belong in *Tama* and were transferred to the new genus *Tyrotama.* Only *Tama edwardsi* remains in the monotypic genus Tama.

Distribution. *Tama* is restricted to the Mediterranean countries of North Africa and Southern Europe.

Genus ***Tyrotama*****,** gen. n.

Type species: *Tama arida* Smithers, 1945.

Etymology. Combination of Tyro, Latin word for ancestress of the Etruscans, and Tama.

Diagnosis. The following unambiguous synapomorphies support the monophyly of the new genus: a sclerotized atrium medially on the epigynal plate (Fig. 5f); copulatory openings that open anteriorly of the spermathecae (Fig. 7g); the presence of large hyaline seminal receptacles. Short copulatory ducts and the presence of less than four dorsal abdominal sigilla are homoplasic characters also used to define this group. They differ from Hersilia in having shorter legs with metatarsi uniarticulate; abdomen ovoid and bearing a variable number (four or less) of small dorsal sigilla; shorter posterior lateral spinnerets; unarmed chelicerae; inclined thoracic region; depressed eye tubercle (Fig. 5c) and long clypeus (Fig. 4d). It is distinguished from other ground-living genera as follows (Table 1): from Hersiliola by the absence of a hook-shaped median apophysis, globose bulbus and the absence of coiled copulatory ducts in the female genitalia; from Tama with leg III being longer than 0.5 × leg I, heart mark subquadrate; metatarsi I, II and IV uniarticulate without a flexible zone distally.

Description. Female. Small to medium-sized spiders (range 4.88 – 9.45). Colour: carapace varies from pale yellow to dark brown, bordered with intermittently darker patches (Fig. 8e); clypeus pale to dark; eye tubercle dark; sternum, labium and endites pale; dorsum pale to dark brown; antero-lateral border dark brown; heart mark dark, subquadrate (Fig. 8e), venter pale brown; femora and tibiae brown to pale yellow; spinnerets pale with faint annulation. Carapace: as wide as or wider than long; thoracic region widest, inclined; fovea longitudinal with radial striae (Fig. 8e), crescent-shaped depression posteriorly; clypeus rounded in dorsal view (Fig. 8e), sloping, not projecting much beyond eye area. Eyes: on low tubercle; PER recurved seen from above (Fig. 8e), straight seen from front (Fig. 3d); AER recurved seed from above, curved dorsally seen from front (Fig. 3d); eye ratio range 1: 0.3 – 0.55: 0.7 – 1: 0.8 – 1.1; MOQ wider than long, widest anteriorly; chelicerae elongate, at least twice as long as wide, unarmed. Sternum: heart-shaped. Labium: crescent-shaped, half the length of endites. Endites: stout. Abdomen: longer than wide, oval, convex; densely covered with plumose setae with plain setae scattered in between (Fig. 1d); dorsal sigilla small, varies between four or less. Posterior lateral spinnerets: short, at least shorter than carapace width; terminal segment < 3 × length of basal segment. Legs: leg IV longest; leg ratio IV: II: I: III; femur, patella, tibia and metatarsus with long spines > femur diameter; spines: leg spine formula similar between species with little variation. Two rows of spines verntrally on femur. Spine microstructure: longitudinal grooves dorsally and randomly arranged conical projections ventrally (Figs. 1a,b); tarsi: three-clawed with 10-11 teeth on paired tarsal claws. Epigyne: atrium with sclerotized rim medially (Fig. 4f); copulatory openings anterior of spermathecae; copulatory ducts short, simple; seminal receptacles large, hyaline; spermathecae small sclerotized (Fig. 6g); fertilization ducts short, simple, medially directed.

Male. Size: Small to medium (3.84 – 8.40). Resembles female in shape and colour; male differs structurally as follows: smaller in size; legs longer in relation to body length. Palp: tibia stout, as wide as long; cymbium stout, not projecting far beyond bulbus (Figs. 4a & 5a); bulbus: globose with distal tegular projection in some species (Figs. 4a & 7a); shape of sperm duct varies between species; embolus: either long and

filiform, directed anti-clockwise (Fig. 5a) or short and stout (Fig. 8c), or hook-shaped (Fig. 4a), apex acute.

Distribution. All species are found throughout the arid regions of Southern Africa: Angola, Namibia, South Africa. Several species are found in the Succulent and Nama Karoo Biomes of the Western Cape Province in South Africa.

Natural history. Tyrotama are found under stones where they build irregular webs. They construct a circular-shaped retreat of closely woven webbing in which small pebbles, chips and vegetable debris are incorporated. Anchor threads attached to the substratum warn the spider of approaching prey (Dippenaar-Schoeman et al. 1999). They move at great speed overpowering their prey and dragging it back to their retreat where they are feed on it (Lawrence 1964). Prey capture resembles that of Hersilia in that the prey is rapidly encircled, usually in a clock-wise direction. In the process the prey is enswathed in silk emanating from the posterior lateral spinnerets (first author pers. obs.). The prey is then killed with a bite to the head. Their round egg sacs are attached to the underside of a stone and covered with stone chips (Smithers 1945).

Key to the species of the Afrotropical genus *Tyrotama* gen. n.

1. Females……2
— Males……8

2. Epigyne with copulatory openings surrounded by circular sclerotizations, (Fig. 7a).....……..3
— Epigyne with atrium surrounded by sclerotized projecting rim and lobiform lateral borders (Fig. 5f)……4

3. Crescent-shaped ridge extend between copulatory openings; copulatory ducts short and simple (Fig. 10g,h) (Northern Cape)……*T. taris* sp.n.
— Crescent-shaped ridge absent between copulatory openings; copulatory ducts with medial bend (Fig. 7a,b) (Namibia)……*T. bicava* (Smithers)

4. Atrium elongate; projecting rim present anteriad of atrium (Fig. 6f); (Northern Cape

Province, Free state, KwaZulu-Natal, Eastern Cape)……..…*T. australis* (Smithers)

— Atrium circular; sclerotized projecting rim surround atrium (Fig. 5f)……..…..5

5. Thin crescent-shaped sclerotization laterally around atrium; lateral projections of copulatory ducts visible (Fig. 8f) (Namibia)……..……*T.fragilis* (Lawrence)

— Projecting rim heavily sclerotized; projections of copulatory ducts not visible (Figs. 5f & 9a,i)……...…….…….……6

6. Atrium circular(Fig. 9a) (Western Cape Province) ……..…*T. gamkasiensis* sp. n.

— Atrium not as above……...….....…….…….…….7

7. Atrium heart-shaped (Fig. 5f) (Western Cape Province)……...*T. arida* (Smithers)

— Atrium subquadrate, lateral sides curve inwardly (Fig. 9i) (Western Cape Province)…...…..……..……..…*T. incerta* (Tucker)

8. Palp without apophysis on bulbus; embolus directed anti-clockwise or straight (Fig. 6a)…..……...…….……..…...…….9

— Palp with hook-shaped distal apophysis on bulbus; embolus hook-shaped, short stout (Fig. 5a)……...…….…….....……..11

9. Bulbus pear-shaped (Figs. 7a,b)....…….……*T. bicava* (Smithers)

Bulbus globose (Figs. 6a,b)……..……..……..10

10. Embolus short, stout (Fig. 10a); bulbus tapering distally (Limpopo Province)……...…...……..…*T. makalaliensis* sp. n.

— Embolus long, filiform; regularly curved; bulbus truncate distally (Fig. 6a) (Northern Cape Province, Free state, KwaZulu-Natal)……*T. australis* (Smithers)

11. Bulbus large, round with hook-shaped distal apophysis with acute apex, adjacent to hook-shaped embolus; sperm duct circular (Figs. 8a,b) (Namibia)……
……..…..*T. fragilis* (Lawrence)

— Bulbus narrow distally with hook-shaped distal apophysis with round apex; separated from embolus; sperm duct S-shaped (Fig. 5a,b) (Western Cape Province)……*T. arida* (Smithers)

***Tyrotama arida* (Smithers, 1945) comb. n. (Figs. 5 & 12)**

Tama arida Smithers, 1945: 10.

Tama obscura Smithers, 1945: 12, syn. n.

Remarks. Smithers (1945) based the description of two species T. arida from Montagu and T. obscura from Matroosberg, on the difference in the epigyne structure. It was found that the type of T. obscura, only known from that specimen, is in fact a subadult female of T. arida and matches females in that stage of the latter species.

Types. Tama arida, holotype female, South Africa: Western Cape Province: Montagu (33º47'S 20º07'E), Nauchaspoort, 1.vi.1938, R. Smithers (SAM B9298) (examined).

Diagnosis. Medium-sized spiders; clypeus very long (Fig. 5d); median plate of epigyne with heart-shaped atrium surrounded heavily sclerotized rim (Fig. 5f); male palp with large round bulbus, narrowing distally, bearing a broad distal tegular distal projection (Figs. 5a,b) with round apex; embolus short, hook-shaped.

Description. Female. Size (n=2). TL 8.84 (8.08 – 9.6); CL 3.34 (2.88 – 3.8); CW 3.8 (3.6 – 4); CI 0.88; CLL 1.23 (1.2 – 1.26); OAL 0.16 (0.14 – 0.18); CLI 1.81; MOQ-AW 0.85; MOQ-PW 0.66; CHI 2.03.

Colour: carapace pale yellow with dark border; clypeus pale, darker laterally; eye area dark; abdomen dark brown with dark antero-lateral border; heart mark broad; faint transverse lines posteriorly (Fig. 5e). Carapace: eye ratio 1: 0.55: 1: 1. Abdomen: one pair of round dorsal sigilla; posterior lateral spinnerets, 0.64 × abdomen length, 0.9 × carapace width; tS 2.77 × bS. Legs: leg IV longest; leg ratio 1: 1.1: 0.64: 1.23; metatarsus I, 2.4 × length of tarsus I; leg measurements: I- Fe 4.38, Pat + Tib 4.81, Mt I 3.83, Ta 1.65, total 14.37; II-4.88, 5.59, 4.28, 1.5, total 16.59; III-3, 3.09, 2.48, 1.02, total 9.58; IV-4.95,

6.12, 6.15, 1.32, total 18.53; Palp-1.39, 1.85, 1.47, total 4.7. Epigyne (Figs. 5f,g): wide (el/ew 0.67); lateral borders lobiform; heart-shaped atrium surrounded by a heavily sclerotized rim; copulatory ducts heavily sclerotized; seminal receptacled large, hyaline; fertilization ducts short, simple, directed medially.

Male. Size (n=1). TL 7.35; CL 3; CW 3.3; CI 0.91; CLL 0.98; OAL 0.1; CLI 1.95; MOQ-AW 0.61; MOQ-PW 0.44; 2.17. Males structurally resemble females except: smaller, legs longer, clypeus very elongate; eye ratio 1: 0.28: 0.61: 0.83; leg measurements: I- Fe 4.5, Pat + Tib 5.25, Mt I 4.65, Ta 2.1, total 16.5; II-4.88, 6.08, 5.63, 2.25, total 18.83; III-3, 3.38, 2.63, 1.13, total 10.13; IV-4.88, 6.75, 7.5, 2.1, total 21.23; Palp-1.88, 1.73, 1.13, total 4.73. Palps (Figs. 5a,b): tibia stout, as long as wide; cymbium compact, 0.83 × longer than wide, three spines apically; bulbus globose, narrowing distally; embolus hook-shaped, apex acute, originate distally on bulbus; tegular apophysis distal, small, broad, apex rounded.

Additional material examined. South Africa. Western Cape Province: Clanwilliam, Sanddrift, Dwarsrivier, (32º28'S19º16'E), 1 female, 10.iii.1993, J. Henschel (NCA 93/274); Karoo National Park, 10 km N of Beaufort West, 3500 feet, (32º18'S 22º33'E), 1 male, 3 juvenile females, 22-24.x.1985, C. Griswold, J. Doyen, T.M. Griswold (NM); 1 female, Ceres, Matroosberg (33°23S 19°40E), xii.1917, R.M. Lightfoot (SAM B3552) (examined).

Distribution. South Africa, endemic to Western Cape Province (Fig.12).

Natural history. Females were caught in March and June and males in October.

***Tyrotama australis* (Simon, 1893) comb. n. (Figs. 6 & 12)**

Hersiliola australis Simon, 1893: 447; Tucker, 1920: 472; Smithers, 1945: 16.

Types. Male holoptype, South Africa: Western Cape Province: Poortjiesfontein (29º38'S 26º01'E), 1905, Neeser (SAM 14481) (examined); - paratypes: 2 females, same data (examined).

Diagnosis. Small spiders, clypeus long (Fig. 6d); epigyne with elongate depression on median plate, broadening anteriorly into small circular depression;

chitinous rim thin anteriad of circular depression (Fig. 6f); male palp with bulbus globular; embolus filiform, directed anti-clockwise; distal tegular projection absent (Figs. 6a,b).

Description. Male. Size (n=7). TL 4.2 (3.15 – 4.88); CL 1.81 (1.5 – 2.1); CW 1.89 (1.7 – 2.1); CI 0.95; CLL 0.51 (0.39 – 0.7); OAL 0.1 (0.08 – 0.12); CLI 1.31; MOQ-AW 0.48; MOQ-PW 0.32; CHI 2.33.

Colour: carapace testaceous, thin dark border, clypeus pale brown, laterally dark; eye area pale; abdomen testaceous, border dark; long, brown setae sparsely cover abdomen (Fig. 6e). Carapace: eye ratio 1: 0.31: 0.64: 0.71. Abdomen (Fig. 6e): variable number of small, round dorsal sigilla; posterior lateral spinnerets 0.51 × abdomen, 0.65 × carapace width; tS 1.25 × bS. Legs: leg ratio: 1: 0.93: 0.47: 1.18; metatarsus I, 1.73 × length of tarsus I; leg measurements: I- Fe 2.94, Pat + Tib 3.8, Mt I 2.6, Ta 1.73, total 11.45; II-3.09, 3.83, 3.4, 1.75, total 11.46; III-1.67, 1.73, 1.38, 0.85, total 5.14; IV-3.49, 4.3, 4.29, 1.36, total 13.05; Palp-0.94, 0.77, 0.89, total 2.64. Palps (Figs. 6a,b): tibia stout, as wide as long; cymbium elongate, 1.96 × longer than wide, not projecting much beyond bulbus, three apical spines; bulbus globular; sperm duct meandering; embolus curved, filiform, directed anti-clockwise; distal tegular projection absent.

Female. Size (n=5). TL 5.04 (4.88 – 5.44); CL 1.89 (1.65 – 2); CW 2.05 (1.73 – 2.2); CI 0.92; CLL 0.55 (0.46 – 0.72); OAL 0.09 (0.07 – 0.12); CLI 1.48; MOQ-AW 0.45; MOQ-PW 0.36; CHI 2.29. Resemble males except larger; legs shorter; leg measurements: I- Fe 2.69, Pat + Tib 3.14, Mt I 2.4, Ta 1.36, total 9.68; II-2.7, 3.39, 2.53, 1.31, total 9.8; III-1.78, 1.52, 1.25, 0.81, total 4.9; IV-3.09, 3.76, 3.29, 1.18, total 10.73; Palp-0.75, 1.13, 0.9, total 2.78. Epigyne (Figs. 6f,g): as wide as long (el/ew 1.07); lateral borders lobiform; elongate, median plate with longitudinal depression broadening anteriorly; sclerotized laterally with thin, chitinous rim anteriorly; spermathecae large, hyaline; fertilization ducts curled.

Additional material examined. South Africa, Free State Province: Brandfort, Florisbad (28°46'S 26°05'E), 2 males, 1 female, 1250m, 1-15.ii.1988, L.N. Lotz (NMBA 4132); same data, female (NMBA 3556); same data, male (NMBA 3642); Bloemfontein, Wolfkop (29°08'S 26°04'E), pit traps, south slope, 1 male, ii-iv.1990, S. du Toit (NMBA 5605); Northern Cape Province: Richtersveld, Paradyskloof summit (28°20'S 17°00'E), 1

male, 6.x.1991, S. Louw (NMBA 5811); Greenvalley, near Upington (28°26'S 21°15E), 1 male, C. Haddad, (NCA); Western Cape Province: Heuweltjie near Prince Albert (33°13'S 22°1'E), old lands, 1 male, 22.vi.1989, R. Dean (NCA 91/1603); Tussen die riviere Nature Reserve, Bethulie (30°30' S26°0'E), under stones, 1 female, 9.ii.1994, M. de Jager (NCA 94/223); same data, under stones egg sacs constructed from stone chips (NCA 94/213); Du Toits Kloof Pass, 10 km east of Paarl (33°43'S 19°11'E), 5.i.1985, C. Griswold, T. Meikle (NM); KwaZulu-Natal: Ingwavuma (27°07'S 31°58'E), 2 females, 2.xi.1951, R.F, Lawrence (NM 5565); 10 km west of Ladysmith, Natal Midlands, Klip River Farm, Dawns Pride, alt 1200m (28°33'S 29°47'E), 1 female, xi. 1980, H.D. Shaw-Copeland (MRAC 166562); same data, 1 male, (MRAC 166496).

Distribution. Endemic to South Africa recorded from Eastern, Northern and Western Cape Provinces, KwaZulu-Natal and the Free State (Fig. 12).

Natural history. Most specimens, especially males, in museum collections were caught in pitfall traps. Males were collected between February and April, females between November and February.

***Tyrotama bicava* (Smithers 1945) comb. n. (Figs. 7 & 12)**

Tama bicava Smithers, 1945: 14.

Types. Female holotype, Namibia: Kaoko Otavi (18°18'S 13°42'E), i-iv.1926, Museum Expedition (SAM B6940) (examined).

Diagnosis. Medium-sized spiders, clypeus very long (Fig. 7d); epigyne with copulatory openings adjacent to each other, surrounded by circular sclerotizations; copulatory ducts with medial curve (Fig. 7b). Males with palp simple; bulbus, globose, pear-shaped (Fig. 7a); sperm duct meandering (Fig. 7b); embolus short, straight, arise distally on bulbus, apex acute (Fig. 7b).

Description. Female. Size (n=3). TL 6.83 (5.8 – 7.5); CL 2.51 (2.4 - 2.63); CW 2.52 (2.4 – 2.63); CI 1; CLL 0.75 (0.58 – 1); OAL 0.1 (0.08 – 0.11); CLI 1.64. MOQ-AW 0.54; MOQ-PW 0.38; CHI 2.5. Colour: carapace pale yellow; eye area with MOQ dark brown; dorsum grey, lateral border with dark serrated pattern; heart mark hour glass-

shaped; posteriad with chevron markings (Fig. 7e); venter pale. Carapace: eye ratio: 1: 0.44: 0.77: 1. Abdomen (Fig. 7d): dorsal sigilla not visible; posterior lateral spinnerets 0.6 × abdomen length, 0.95 × carapace width; tS 1.94 × bS. Legs: leg ratio: 1: 1.11: 0.53: 1.15; metatarsus I, 2.05 × length of tarsus I; leg measurements: I- Fe 3.9, Pat + Tib 4.31, Mt I 3.58, Ta 1.8, total 13.76; II-4.15, 4.91, 4.59, 1.5, total 15.77; III-6.73, 1.96, 1.9, 0.8, total 6.73; IV-4.35, 5.26, 4.93, 1.5, total 16.64; Palp-1.28, 1.2, 1.28, total 3.76. Epigyne (Figs. 7a,b): as wide as long (el/ew 1); epigyne with copulatory openings sclerotized, adjacent to each other; copulatory ducts elongate with medial curve; spermathecae large, hyaline; fertilization ducts very short, simple.

Male. Size (n=2). TL 4.9; CL 2.1; CW 2.3; CI 0.91; CLL 0.26; OAL 0.09; CLI 0.8; MOQ-AW 0.4; MOQ-PW 0.25; CHI 2.5. Males resemble females except smaller, clypeus shorter; leg measurements: I- Fe 3.78, Pat + Tib 5.49, Mt I 4.3, Ta 1.6, total 15.16; II-4.7, 5.5, 5.2, 1.7, total 17.1; III-2.26, 2.01, 2.1, 0.9, total 5.03; IV-4.25, 5.59, 6.5, 1.7, total 18.5. Palp-0.9, 0.98, 0.68, total 2.55 (Figs. 7a,b): tibia elongate, twice as long as wide; cymbium digitate, 1.8 × longer than wide; bulbus globose, simple; sperm duct meandering; embolus short, straight, arise distally on bulbus, apex acute.

Remarks. The two sexes were not collected together but their sympatric distribution suggests that they are conspecifics.

Additional material examined. Namibia: 1 female, Etanga district, Opura (17°51'S 13°02'E), vii-ix 1982, J. Coetzer (NCA 84/69); 1 female, Windhoek (22°34'S 17°05'E), 17.xi.1972, Schadlhof (SMN 35661); 1 male, Windhoek, Regenstein (22°34'S 17°05E), 3.xii.1974, S. Endrody-Younga (TM 18919); 1 male Otjiku 192, Otjwarongo district (21°16'S 16°49'E), present in bait traps, 16-29.xii.1988, E. Marais (SMN 42101).

Distribution. Namibia (Fig. 12).

Natural History. Females were collected from July to November and males in December.

Tyrotama fragilis (Lawrence, 1928) comb. n. (Figs. 8 & 12)

Hersiliola fragilis Lawrence, 1928: 242; Smithers, 1945: 18

Types. Female holotype, Namibia: Outjo (20°07'S 16°09'E), (SAM 6729) (examined); - paratypes: same data, 1 female, (SAM); Kaross (19°30'S 14°20'E), 1 female, (SAM 6745) (examined); Sesfontein (19°08'S 13°37'E), 1 female, SAM 6663 (not examined).

Diagnosis. Small spiders; clypeus very long (Fig. 8d); epigyne with round concave depression; laterally darker projections of internal structures (Fig. 8f); male palp with bulbus large, globular; distal tegular projection hook-shaped, embolus hook-shaped (Fig. 8a).

Description. Female. Size (n=6). TL 5.38 (4.5 – 6.48); CL 2.04 (1.73 – 2.48); CW 2.17 (1.95 – 2.52); CI 0.94; CLL 0.63 (0.52 – 0.8); OAL 0.07 (0.05 – 0.08); CLI 1.68; MOQ-AW 0.49; MOQ-PW 0.32; CHI 3.05.

Colour: carapace pale brown to pale orange with isolated dark spots laterally; clypeus pale brown, laterally with broad, dark oblique markings; eye area dark; abdomen: pale yellow; antero-lateral border dark; heart mark deeply serrated laterally (Fig. 8e). Carapace: eye ratio: 1: 0.39: 0.68: 0.92. Abdomen (Fig. 8e): four pairs of small round dorsal sigilla; posterior lateral spinnerets 0.47 × total body length, 0.72 × carapace width; tS 1.58 × bS. Legs: leg ratio: 1: 1.07: 0.56: 1.24; metatarsus I, 2.02 × longer than tarsus I; leg measurements: I- Fe 2.19, Pat + Tib 2.65, Mt I 2.32, Ta 1.05, total 8.37; II-2.16, 3.06, 2.34, 1.06, total 9.01; III-1.31, 1.46, 1.07, 0.67, total 4.76; IV-2.54, 3.09, 3.28, 1.16, total 10.42; Palp-0.75, 1.02, 0.78, total 2.54. Epigyne (Figs 8f,g): wide (el/ew 0.69); narrow sclerotized rim with round concave depression, laterally with darker projection of internal structures; spermathecae large, hyaline (Fig. 7g); fertilization ducts short, simple, medially directed.

Male. Size (n=3). TL 4.63 (4.2 – 5.4); CL 2.03 (1.73 – 2.2); CW 2.03 (1.73 – 2.2); CI 1; CLL 0.53 (0.52 – 0.56); OAL 0.08 (0.07 – 0.1); CLI 1.44; MOQ-AW 0.5; MOQ-PW 0.31; CHI 2.49. Males resemble females except, smaller; leg measurements: I-Fe 2.94, Pat + Tib 3.45, Mt I 2.82, Ta 1.5, total 10.64; II-3.18, 4.08, 3.63, 1.45, total 11.37; III-1.66, 1.89, 1.48, 0.73, total 5.51; IV-3.2, 4.21, 5.91, 1.19, total 12.81; Palp-0.98, 1.05, 1.03, total 3.06. Palps (Figs 8a,b): tibia stout, as long as wide; cymbium compact, 1.4 × longer than wide, not projecting much beyond bulbus, two apical spines;

bulbus unmodified, large round; regularly curved sperm duct; distal tegular projection hook-shaped, embolus hook-shaped, apex acute.

Additional material examined. Angola, Espaniera, Iona district, 1 female, 1 male,13.vii.1996, R. Harris, (NCA 96/592); **Namibia**, Upper Ostrich Gorge (22°59'S 14°59'E), under stones and zebra dung, 1 female, ix.1984, E. Griffin (SMN 39016); Arandis, Rossing Mine Survey (22°28'S 14°59'E), under stone (stone chips), 1 female, 30.vi.1984, E. Griffin (SMN 38959); Arandis Control Site; Rossing Mine Survey (22°22'S 14°59'E), pitfall traps, 1 male, iv-v. 1984, E. Griffin (SMN 37045); same data, under stone with web along outside, 1 male, 11.iv.1984, E. Griffin, SMN 38842; Arandis, gravel plain near township (22°27'S 14°59'E), 1 female, 28.x.1987, E. Griffin & R. Jocqué (MRAC 168.622); Brandberg, east side (21°5'S 14°12'E), stony area with low shrubs, 1 female, 24.iv.1999, R. Jocqué (MRAC 208.76).

Distribution. Namibia, new record: Angola (Fig. 12).

Natural history. Collected by hand from under stones, Zebra dung and with pitfalls. Adult females were collected between April and October and adult males between April and July.

***Tyrotama gamkasiensis* sp. n. (Figs 9a-e & 12)**

Types. Female holotype, South Africa: Western Cape Province, Swartberg Nature Reserve, Gamkas *K*loof (33º21'S 21º40'E), 15.iii.2003, Z. van der Walt, (NCA); - paratypes: 1 female, Karoo National Park near Beaufort West (32º50'S 28º05'E), 3.iv.1989, A. le Roy (NCA 89/715); 2 females, Blousyfer near Williston (31°21'S 20°55'E), 19.xii.1981, A. le Roux (NCA 81/139).

Etymology. The specific epithet refers to the type locality.

Diagnosis. Medium-sized spiders; clypeus very long (Fig. 9d); epigyne with round atrium surrounded by chitinous projecting rim, lateral borders large lobiform (Figs. 9a,b). Male unknown.

Description. Female. Size (n= 3). TL 9.06 (7.13 – 12.05); CL 3.43 (3.2 – 3.8); CW 3.5 (3 – 3.9); CI 0.99; CLL 1.05 (1 – 1.1); OAL (0.12)-0.13-(0.13); CLI 2.02. MOQ-AW 0.62; MOQ-PW 0.5; CHI 1.95. Colour: carapace pale brown, covered with patches of dark setae; border dark; clypeus pale brown; eye tubercle dark around eyes; abdomen

dark brown with pale brown markings; dorsum: heart mark broad dark, hour glass-shaped (Fig. 9e), sometimes with thick transverse lines posteriorly. Carapace: eye ratio: 1: 0.43: 0.78: 1.05. Abdomen (Fig. 9e): three pairs of small, round dorsal sigilla; posterior lateral spinnerets 0.57 × abdomen length, 0.91 × carapace width; tS 2.14 × bS. Legs: leg ratio: 1: 1.14: 0.6: 1.22; metatarsus I, 2.22 × length of tarsus I; leg measurements: I- Fe 4.5, Pat + Tib 4.83, Mt I 4.1, Ta 1.9, total 15.7; II-4.8, 5.71, 5.6, 1.9, total 17.6; III-3, 3.04, 2.6, 1.2, total 10.2; IV-5.2, 5.63, 6, 2.18, total 18.3; Palp-1.88, 1.77, 1.88, total 5.64. Epigyne (Figs. 9a,b): as wide as long (el/ew 0.94); lobiform lateral borders; medially with round atrium, anteriorly surrounded by chitinous rim; copulatory ducts simple, straight; fertilization ducts simple, straight, medially directed.

Male. Unknown.

Distribution. South Africa, endemic to Western Cape Province (Fig. 12).

Natural history. Adult females were collected from March to July.

***Tyrotama incerta* (Tucker, 1920) comb. n. (Figs. 9f-j & 12)**

Tama incerta Tucker, 1920: 476; Smithers, 1941: 9.

Types. Female holotype, South Africa: Western Cape Province, Calvinia, Bokkeveld Mountains , Niewoudtville (31°23'S 19°06'E), ix.1898, C.L. Leipoldt, (SAM 4298) (examined).

Diagnosis. Medium-sized spiders; clypeus elongate (Fig. 9g); epigyne with convex chitinous rim antero-laterally around atrium (Fig 9i). Male unknown.

Description. Female. Size (n=1). TL 9.45; CL 3.75; CW 3.75; CI 1; CLL 1.24; OAL 0.13; CLI 2.07; MOQ-AW 0.66; MOQ-PW 0.57; CHI 2.07. Colour: carapace pale yellow with isolated dark markings; clypeus pale, laterally dark; eye area dark; abdomen pale with grey shading; heart mark hourglass-shaped (Fig. 9h). Carapace: eye ratio 1: 0.56: 1: 1.11. Abdomen: no dorsal sigilla visible; posterior lateral spinnerets 0.94 × carapace width; tS 2.13 × bS. Legs: metatarsus I, 2.14 × length of tarsus I; leg measurements: I- Fe 4.88, Pat + Tib 5.63, Mt I 4.5, Ta 2.1, total 17.1; II- absent, III- absent; IV- absent; palp- absent. Epigyne (Figs. 9f,gi,j): wider than long (el/ew 0.78);

lateral lobes lobiform; convex chitinous rim antero-laterally around atrium; copulatory ducts elongate curved; fertilization ducts medially directed, straight, simple.

Male. Unknown.

Distribution. South Africa, endemic to the Western Cape Province (Fig. 12).

Natural history. Holotype female was collected in September.

***Tyrotama makalaliensis* sp. n. (Figs. 10a,b & 12)**

Types. Male holotype, South Africa: Limpopo Province, Makalali (24°09'S 30°42'E), ii-xii.1999, C. Whitmore (DNSM ARA 412).

Etymology. The specific epithet refers to the type locality.

Diagnosis. Small spiders; clypeus long; male palp with large globose bulbus, distally tapering; embolus short and stout, directed anti-clockwise (Figs. 10a,b). Female unknown.

Description. Male. Size (n=1). TL 5.1; CL 1.95; CW 2.25; CLL 0.53; CI 0.87; OAL 0.09; CLI 1.41; MOQ-AW 0.49; MOQ-PW 0.33; CHI 2.28. Colour: carapace mottled dark brown; clypeus and eye area dark; chelicerae pale; dorsum dark with isolated, pale brown areas. Carapace: eye ratio: 1: 0.23: 0.69: 0.92. Abdomen: one pair of round dorsal sigilla; posterior lateral spinnerets 0.83 × carapace width; tS 1.5 × bS. Legs: leg ratio: 1: 1.23: 0.6: 1.17; metatarsus I, twice the length of tarsus I; leg measurements: I- Fe 3.08, Pat + Tib 3.75, Mt I 3, Ta 1.5, total 11.33; II-3.75, 4.58, 4.13, 1.5, total 13.95; III-2.25, 2.33, 1.73, 0.53, total 6.83; IV-3.6; Palp-1.05, 1.43, 0.98, total 2.4. Palps (Figs. 10a,b): tibia stout, 0.83 × wider than long; cymbium compact, 1.86 × longer than wide, three apical spines; bulbus large, round, distally narrowing into small projection; sperm duct regularly curved; embolus stout, thick, directed anti-clockwise.

Female. Unknown.

Distribution. Known only from type locality in Limpopo Province part of Savanna Biome (Fig. 12).

Natural History. Caught in pitfall.

***Tyrotama taris* sp. n. (Figs. 10c-g & 12)**

Type. Holotype female**, South Africa:** Northern Cape Province: Richtersveld (28º18'S 17º10'E), 7.ix.1992, S. Neser (NCA 92/568).

Etymology. The specific epithet is an arbitrary combination of letters.

Diagnosis. Medium-sized spiders; clypeus long (Fig. 10f); epigyne with copulatory openings adjacent to each other; crescent-shaped ridge medially between copulatory openings (Fig. 10c); copulatory ducts simple, short (Fig. 10d). Male unknown.

Description. Female. Size (n=1). TL 8; CL 3.44; CW 3.44; CI 1; CLL 1.04; OAL 0.53; CLI 1.95; MOQ-AW 0.66; MOQ-PW 0.48; CHI 2. Colour: carapace pale brown, border intermittently pale and dark; clypeus pale, oblique line laterally; eye area dark brown with pale brown spot posterad; abdomen pale brown, dark antero-lateral border; dorsum with heart mark broadening posteriorly; isolated brown patches laterally (Fig. 10g); dorsum posteriorly with broad transverse lines. Carapace: eye ratio 1: 0.28: 0.67: 0.83; chelicerae very elongate, twice as long as wide. Abdomen: longer than wide, convex; one pair of dorsal sigilla; posterior lateral spinneret 1.16 × carapace width; tS 2.8 × bS. Legs: leg IV longest, 2.63 × abdomen length; leg ratio 1: 1.11: 0.63: 1.28; metatarsus I, 2.5 × tarsus I length; leg measurements: I- Fe 4.88, Pat + Tib 5.26, Mt I 4.5, Ta 1.8, total 16.44; II-5.3, 6.01, 5.1, 1.88, total 18.29; III-3.15, 3.35, 2.63, 1.2, total 10.33; IV-5.4, 6.68, 7.05, 1.88, total 21.01; Palp-1.35, 1.58, 1.5, total 4.43. Epigyne (Fig. 10c,d): as long as wide (el/ew 1); epigyne with two openings laterally; copulatory duct simple, short; spermathecae simple, round, hyaline; fertilization duct medially curved.

Male. Unknown.

Distribution. Known only from the type locality in the Northern Cape Province part of the Succulent Karoo (Fig. 12).

Natural history. Female holotype was collected in September.

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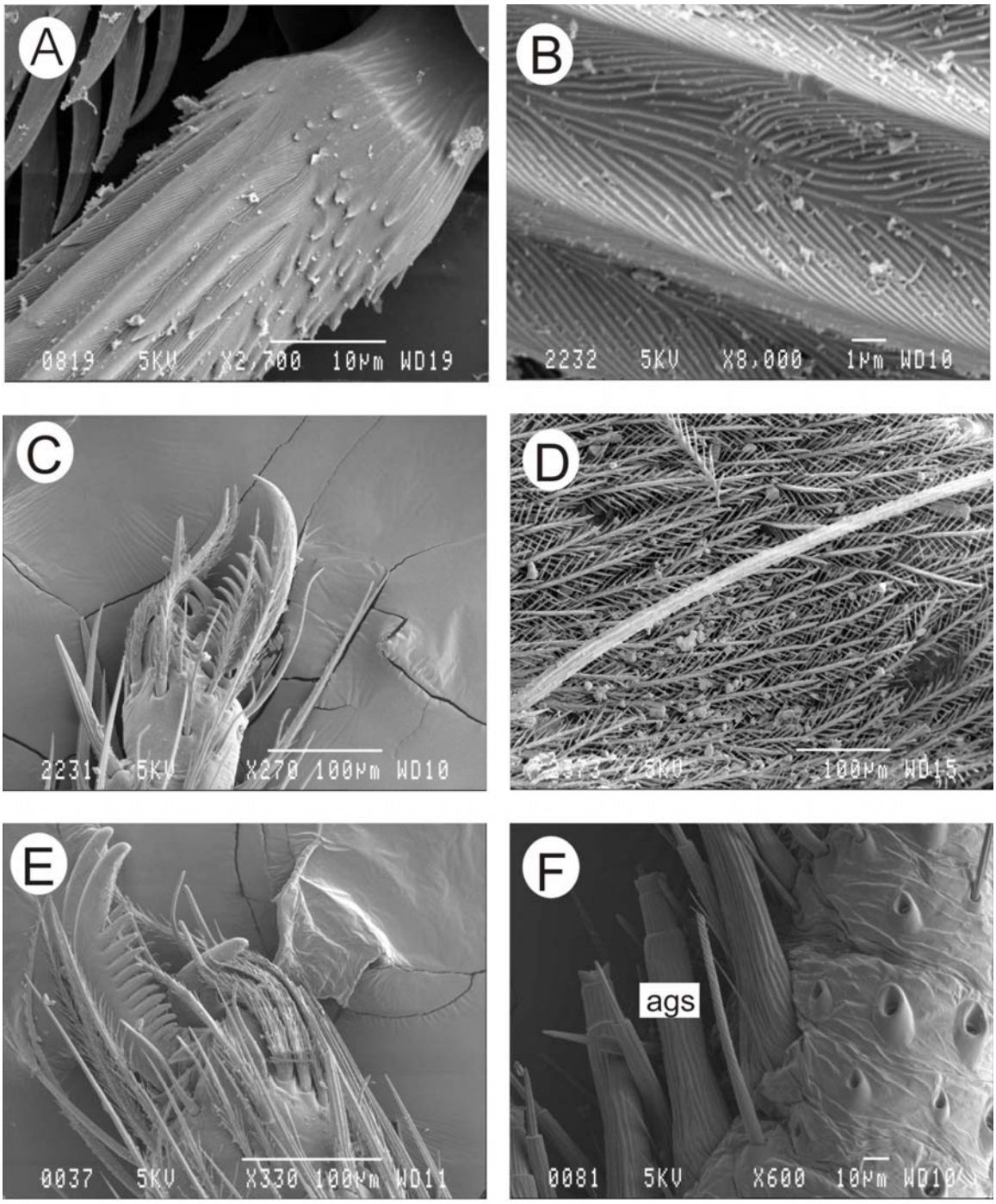

Figure 1. Electron micrographs of *Tyrotama fragilis* (Lawrence). **A, B.** Leg spine. **C.** Tarsal claws. *T. gamkasiensis* sp. n. **D.** Plumose and isolated setae on abdomen. **E.** Tarsal claws. **F.** Posterior lateral spinnerets; ags = aciniform gland spigots.

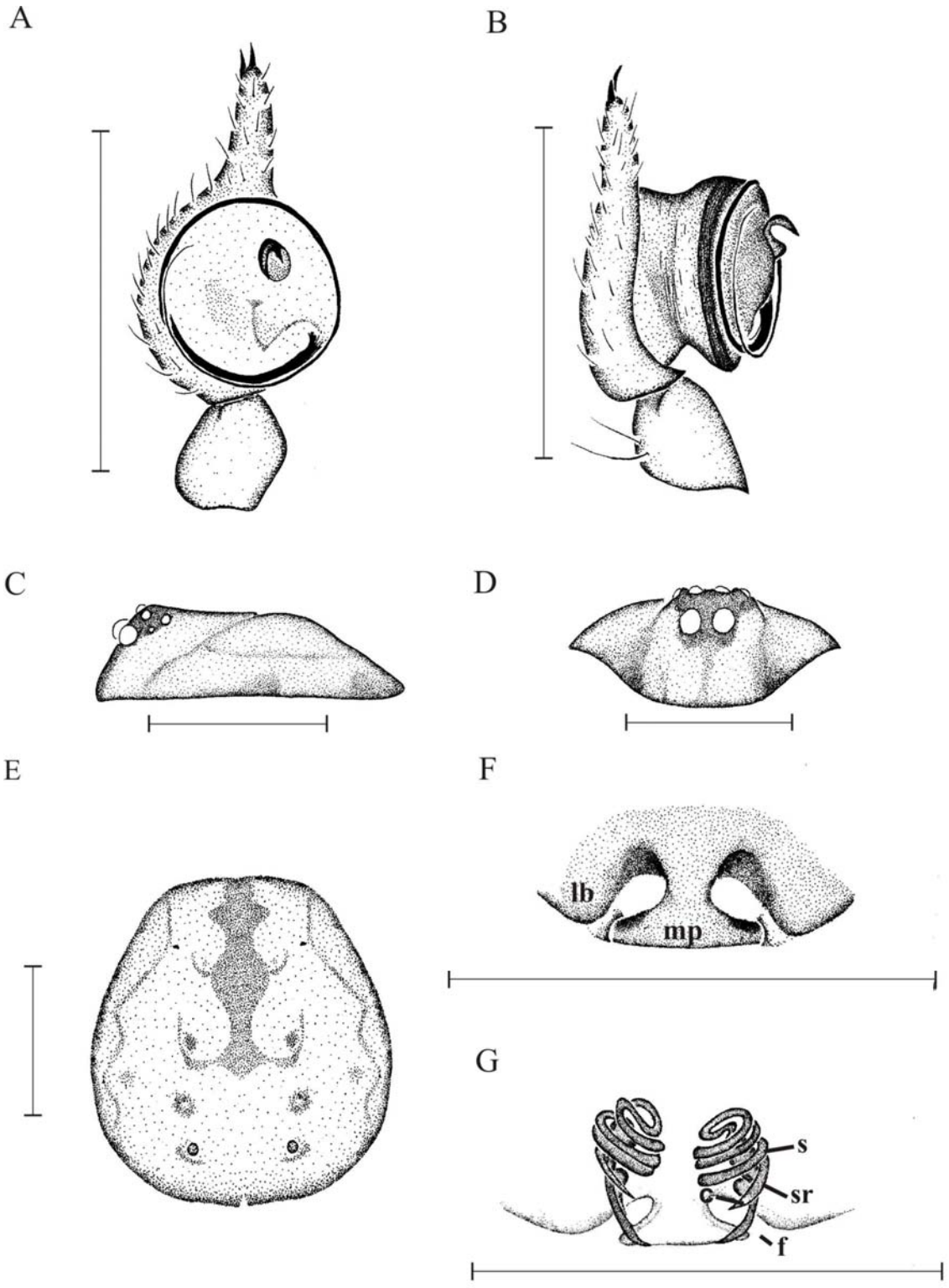

Figure 2. *Hersiliola macullulata*(Dufour); Palp, **A**, Ventral, **B**, Prolateral; Cephalothorax, **C**, Lateral, **D**, anterior; **E**, Abdomen dorsal; Epigyne, **F**, Ventral, **G**, Dorsal.

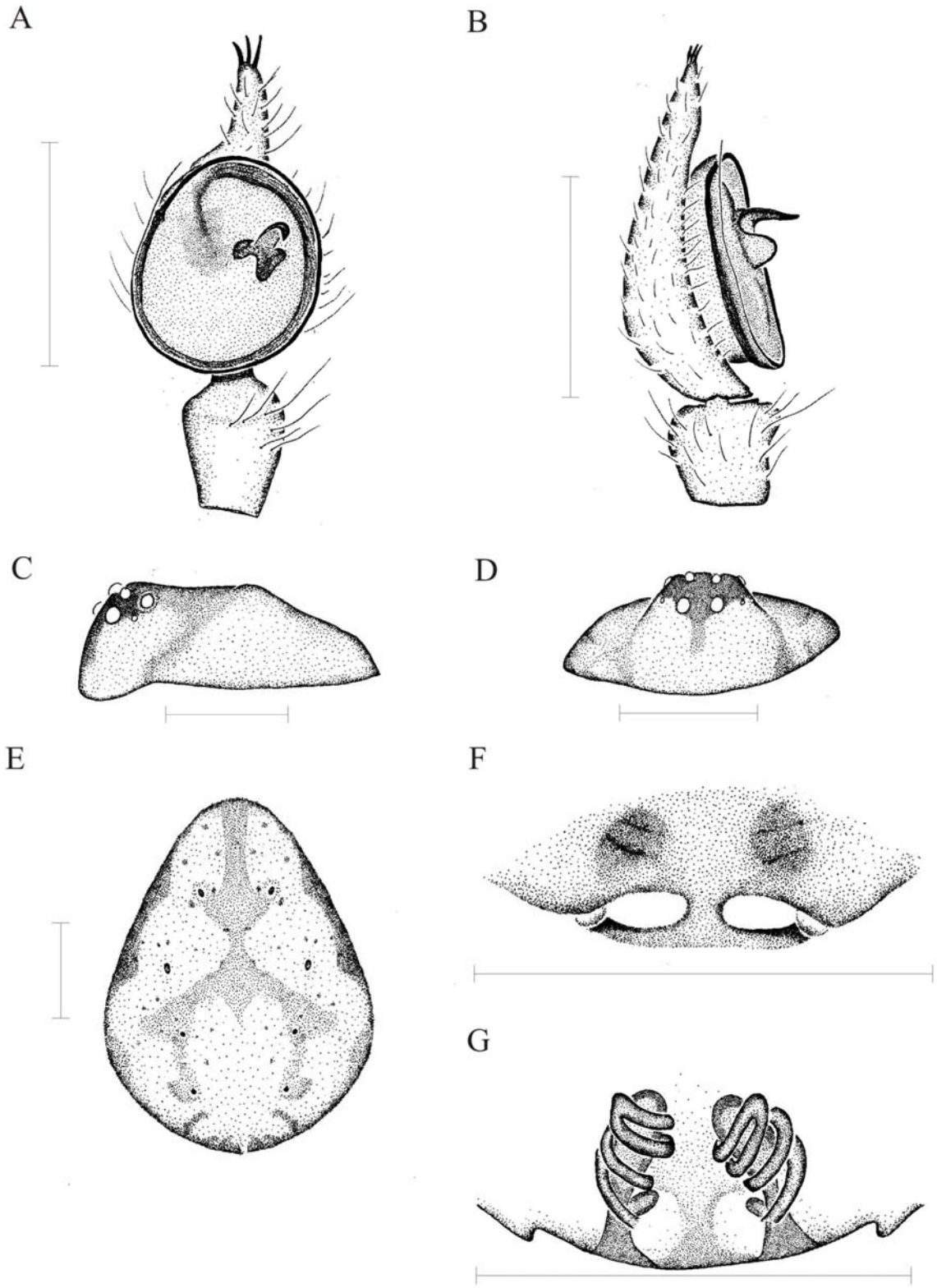

Figure 3. *Hersiliola simoni* (O.P.-Cambridge); Palp, **A**, Ventral, **B**, Prolateral; Cephalothorax, **C**, Lateral, **D**, Anterior, **E**, Abdomen dorsal; Epigyne, **F**, Ventral, **G**, Dorsal.

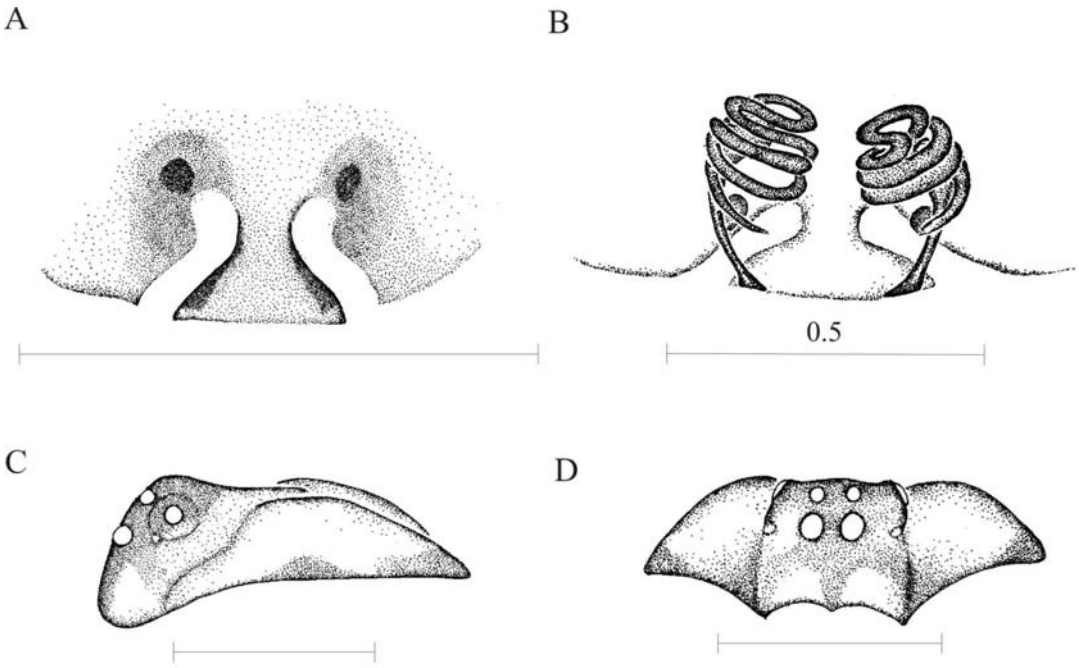

Figure 4. *Hersiliola versicolor* Blackwall, 1865; Epigyne, **A**, Ventral, **B**, Dorsal; Cephalothorax, **C**, Lateral, **D**, Anterior.

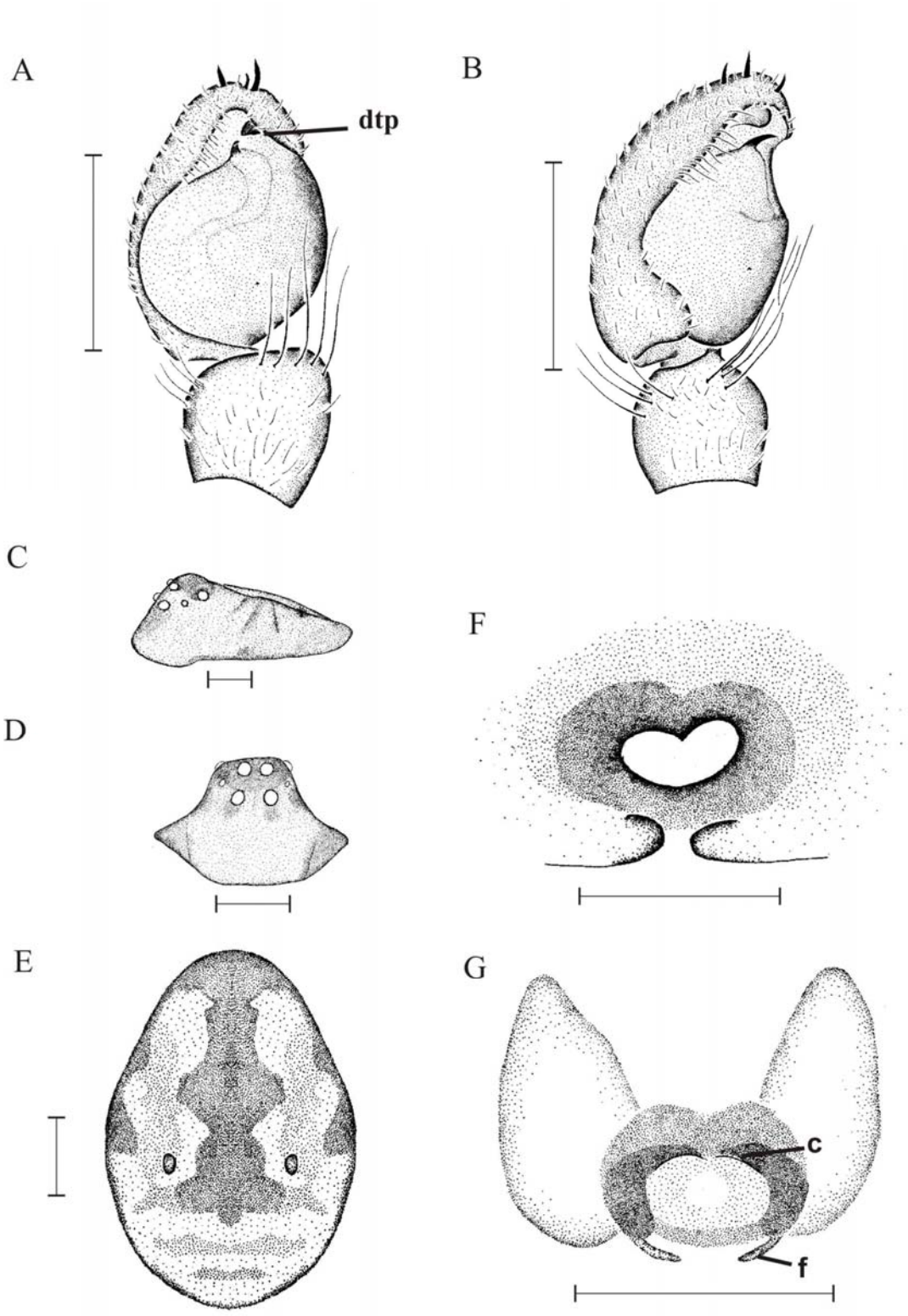

Figure 5. *Tyrotama arida* (Smithers); Palp, **A**, Ventral, **B**, Prolateral; Cephalothorax, **C**, Lateral, **D**, anterior; Abdomen **E**, Dorsal; Epigyne, **F**, Ventral, **G**, Dorsal; c = copulatory duct; dtp = distal tegular projection; f = fertilization duct.

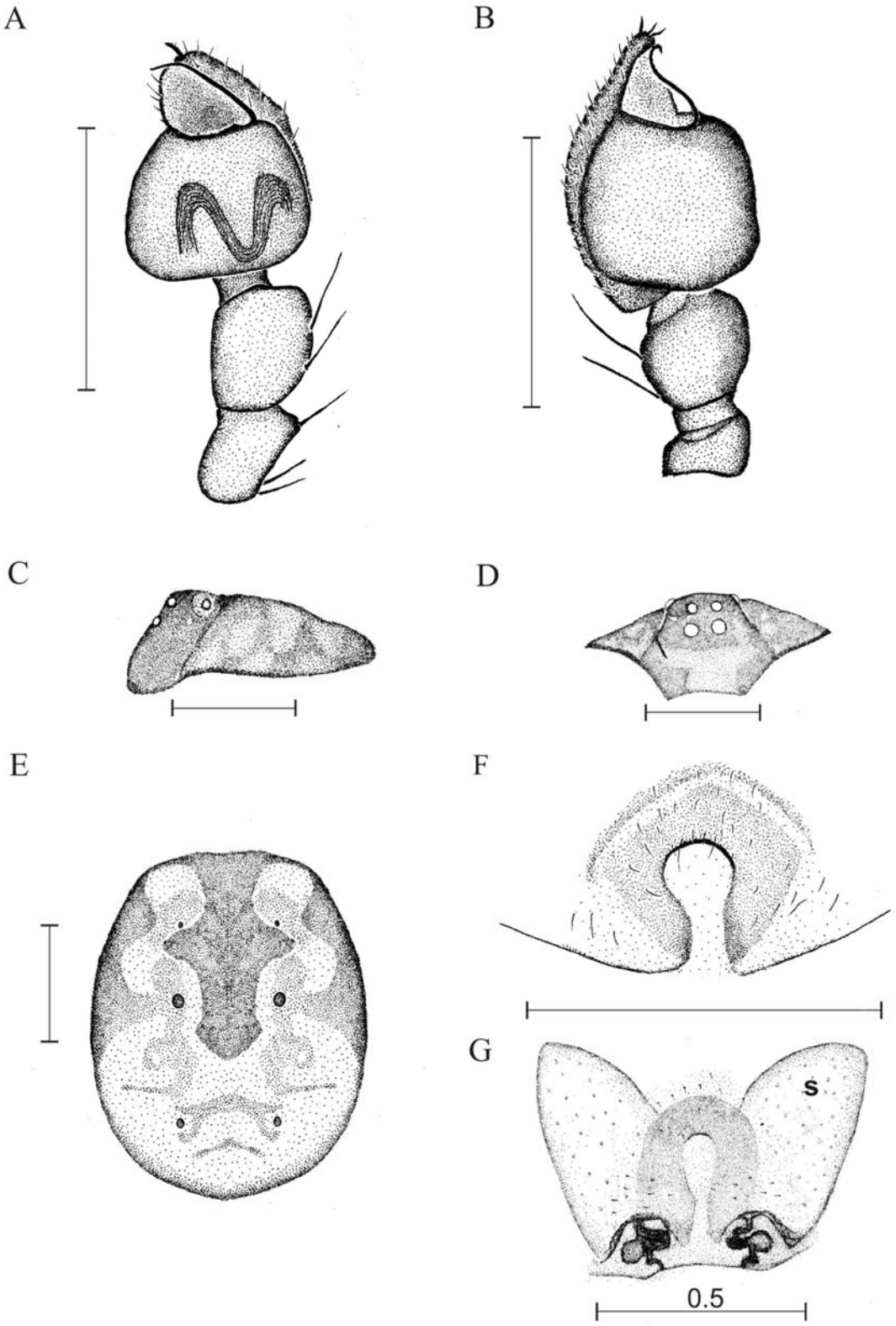

Figure 6. *Tyrotama australis* (Simon); Palp; **A**, Ventral; **B**, Prolateral; Cephalothorax; **C**,. Lateral; **D**, anterior; **E**, Abdomen dorsal; Epigyne; **F**, Ventral, **G**, Dorsal.

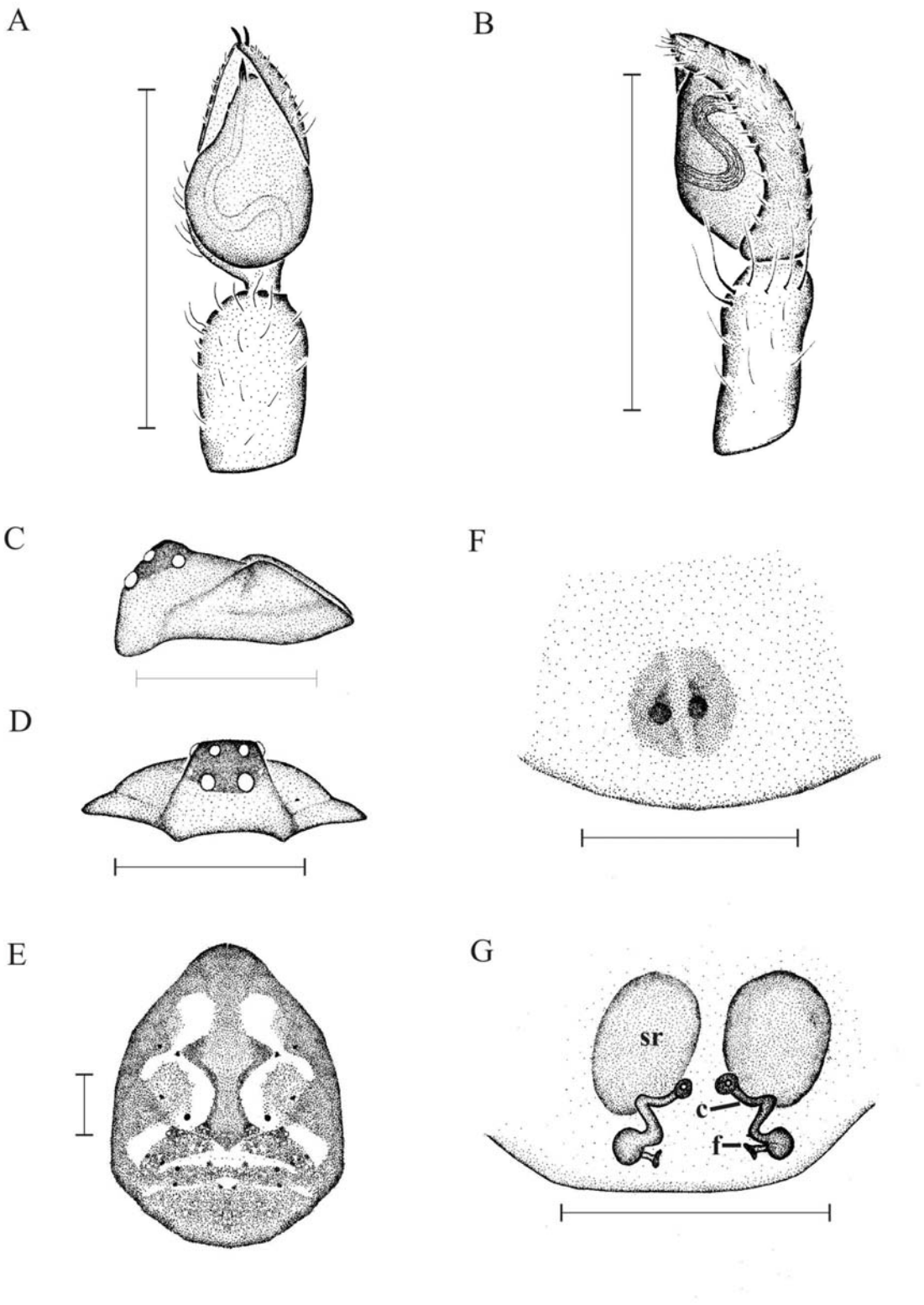

Figure 7. *Tyrotama bicava* (Smithers); Palp, **A**, Ventral, **B**, Prolateral; Cephalothorax, **C**, Lateral, **D**, anterior; Abdomen **E**, Dorsal; Epigyne, **F**, Ventral, **G**, Dorsal; c = copulatory duct; f = fertilization duct; sr = seminal receptacle.

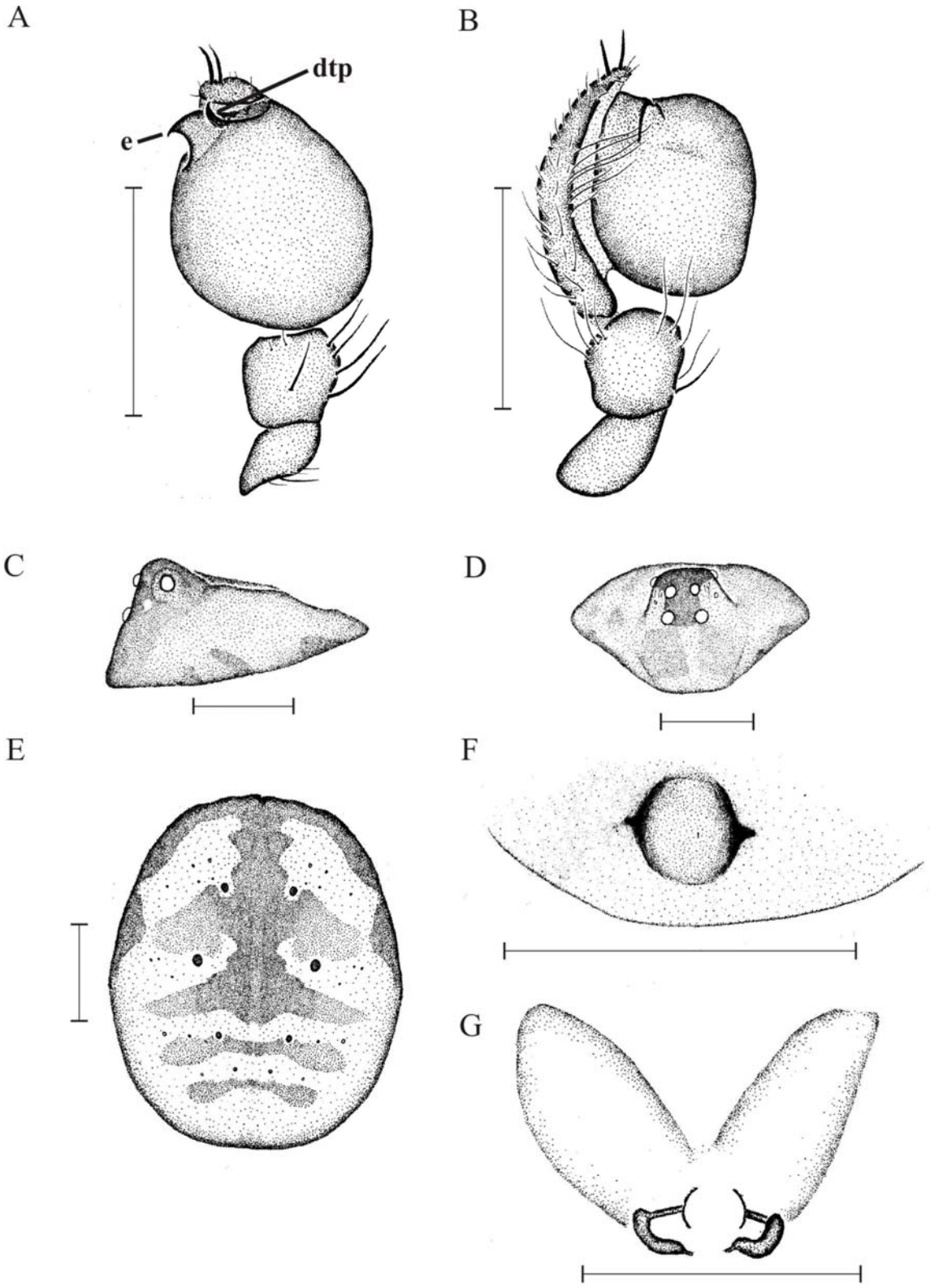

Figure 8. *Tyrotama fragilis* (Lawrence); Palp; **A**, Ventral, **B**, Prolateral; Cephalothorax, **C**, Lateral, **D**, Anterior; **E**, Abdomen dorsal; Epigyne, **F**, Ventral, **G**, Dorsal. e = embolus; dta = distal tegular apophysis; dtp = distal tegular projection; e = embolus.

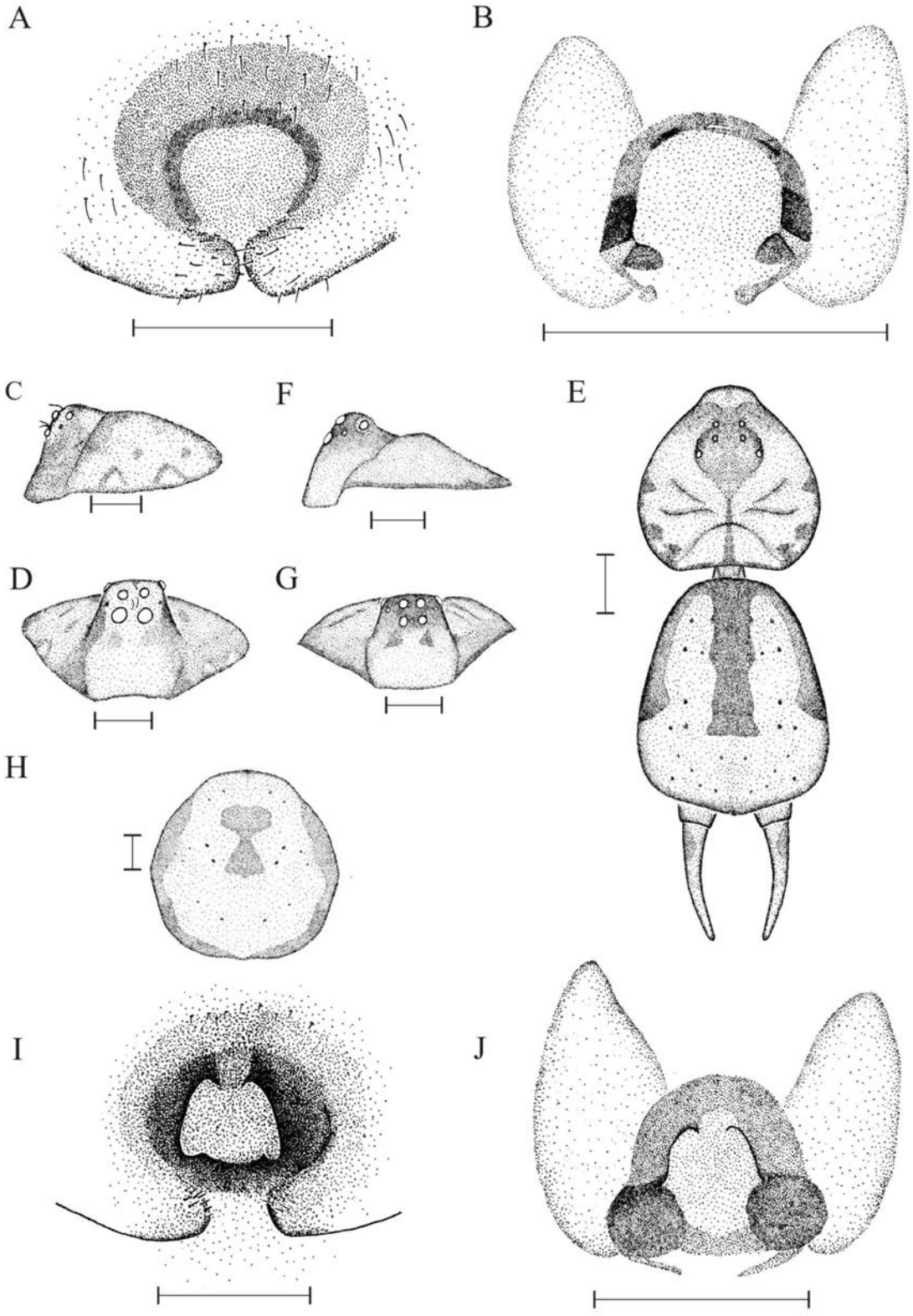

Figure 9. *Tyrotama gamkasiensis* sp. n; Epigyne, **A**, Ventral, **B,** Dorsal; Cephalothorax, **C**, Lateral, **D**, anterior; **E**, spider, dorsal view. *Tyrotama incerta* (Tucker); Cephalothorax, **F**, Lateral, **G**, Anterior; **H**, Abdomen dorsal view; Epigyne; **I**, Ventral, **J**, Dorsal.

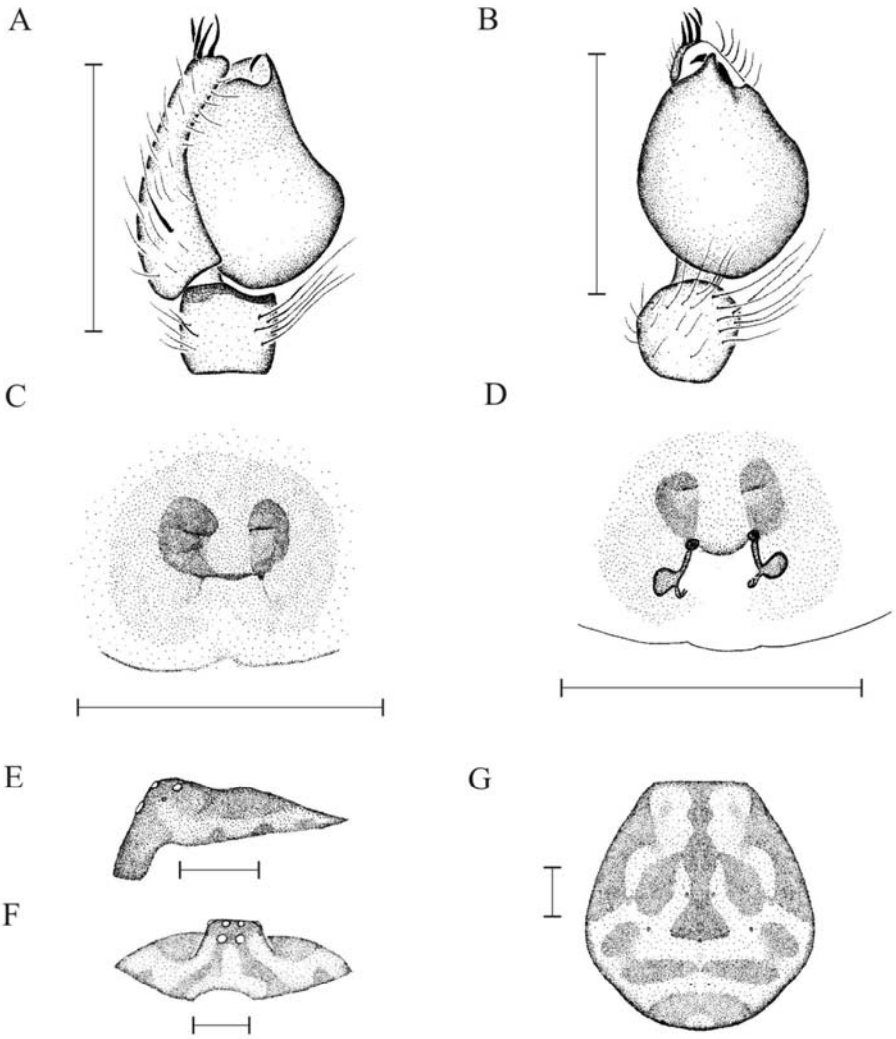

Figure 10. *Tyrotama makalaliensis* sp. n.; Palp **A**, Ventral, **B**, Prolateral; *Tyrotama taris* sp. n.; Epigyne, **C**, Ventral, **D**, Dorsal; Cephalothorax, **E**, Lateral, **F**, Anterior; Abdomen **G**, dorsal view.

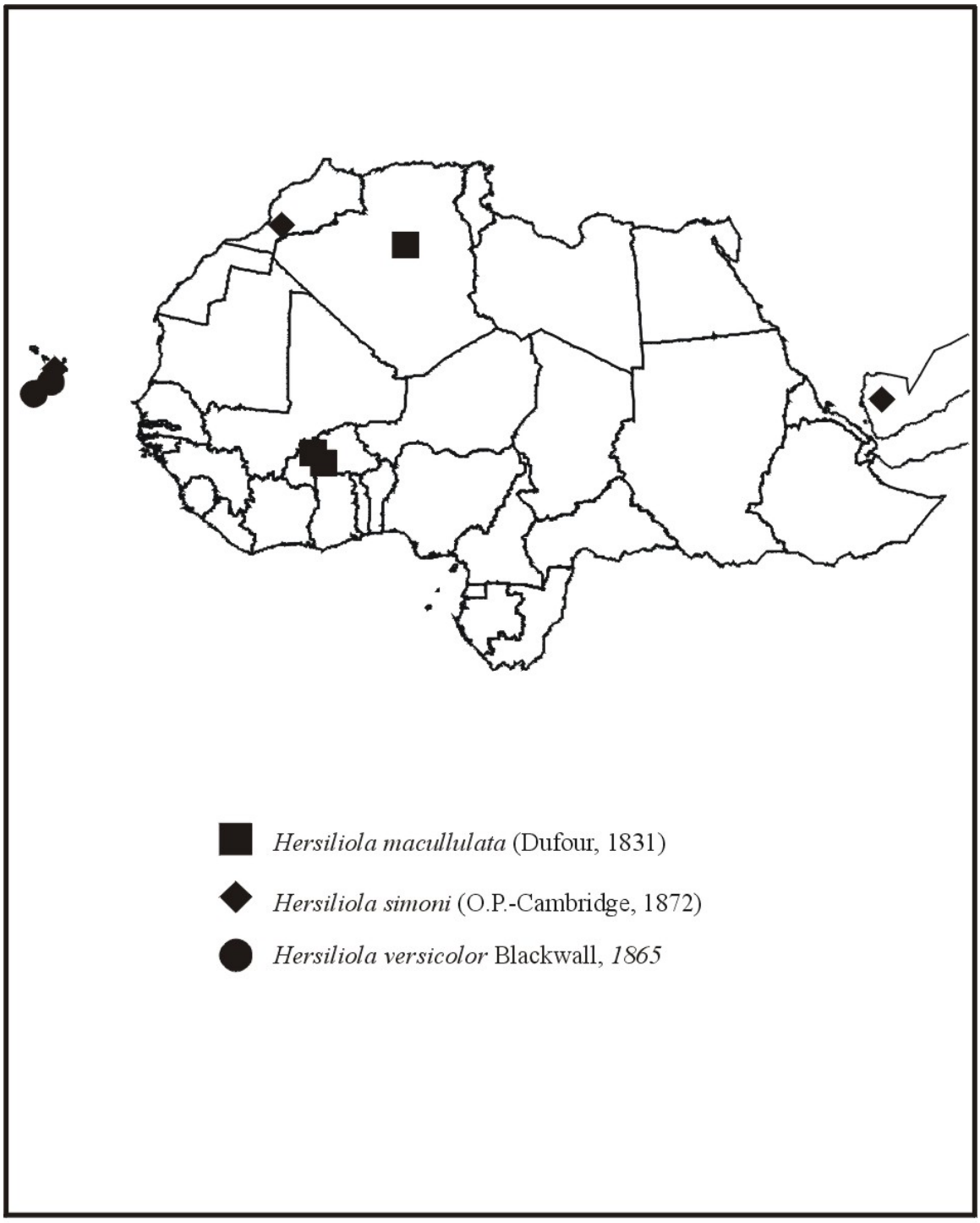

Figure 11. Distribution map for the Afrotropical species of the genus *Hersiliola* (Thorell).

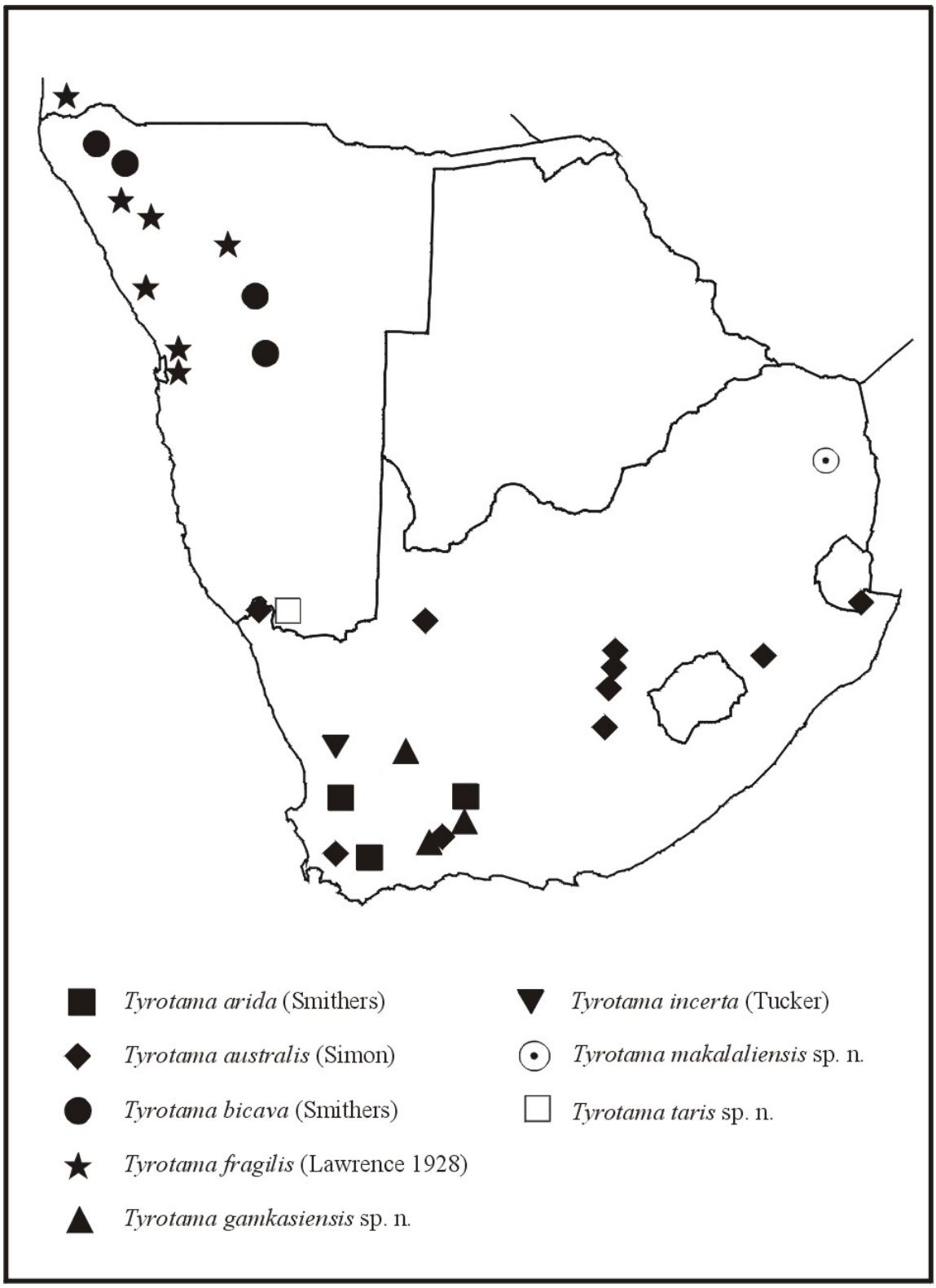

Figure 12. Distribution map for the Afrotropical species of the genus *Tyrotama* gen. n.