

**Systematics of the Hersiliidae (Araneae) of the Afrotropical Region**

by

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### **Disclaimer**

This PhD thesis comprises a number of chapters prepared for submission to a range of journals. Consequently, chapter formats and contents contain some inconsistencies and overlap in order to secure publishable entities.

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### Summary

The Hersiliidae of the Afrotropical Region is revised and the phylogenetic positions of taxa within the family cladistically analysed. The following genera have been newly erected: *Tyrotama* gen. nov. for *Tama arida* and seven additional species, and *Prima* gen. nov. for *P. ansieae* spec. nov. and one additional species. The genera *Murricia* Simon and *Neotama* Baehr & Baehr are recorded for the first time from the Afrotropical Region. All valid species are redescribed. The following 20 species are newly described: *Hersilia beva*, *H. bubu*, *H. caronae*, *H. dilumen*, *H. eloetsensis*, *H. moheliensis*, *H. plara*, *H. salda*, *H. taita*, *H. tamatavensis*, *H. unca*, *H. woutrinae*, *Murricia emlynae*, *M. uva*, *Prima ansieae*, *P. syda*, *Tyrotama gamkasiensis*, *T. taris*, *T. makalaliensis*, *T. namibia*. The males of *T. arida* and *T. bicava* are described for the first time.

The following species have been synonymized: *Hersilia segeregata* Benoit with *H. occidentalis* Simon, *Hersilia nossibeensis* Strand with *H. insulana* Strand, *Tama obscura* Smithers with *Tyrotama arida* (Smithers). For *Hersilia insulana* Strand a lectotype and paralectotype have been designated; a neotype has been designated for *H. vinsoni* Lucas. *Hersilia corticola* Lawrence was transferred to *Neotama* and *Hersiliopsis madagascariensis* Wundelich was transferred to *Hersilia* Audouin. The following species remain doubtful: *Hersilia kauderni* Strand, *H. stumpfi* Strand, *H. fossulata* Karsch.

A total of 47 hersiliid species are recorded for the Afrotropical Region. Keys are provided to the six genera of the Afrotropical Hersiliidae and the species of *Hersilia* and *Tyrotama*. A cladistic analysis based on 48 characters and 22 species inferred the following phylogeny: ((*Hersiliola Tyrotama*) (*Neotama* (*Prima* (*Murricia Hersilia*)))). Morphological data supports the monophyly of *Tyrotama* and the phylogeny suggests that the genus is not closely related to *Tama*. The new genus *Prima* is weakly supported as the sister taxon of *Neotama*. Support for the genus *Hersilia* is weak and synapomorphies that unite five identified species groups within the genus are much more consistent than those that unite *Hersilia*. However, the genus *Hersilia* is retained until a comprehensive generic level analysis for the world is conducted.

## CHAPTER ONE

**A Cladistic Analysis of the Family Hersiliidae (Arachnida, Araneae) of the Afrotropical Region****Abstract**

The family Hersiliidae consists of six genera in the Afrotropical region, two of these taxa are newly discovered viz. *Tyrotama* gen. nov. and *Prima* gen. nov. *Murricia* Simon and *Neotama* Baehr & Baehr are newly recorded for the region. Of the three original genera, *Tama*, *Hersilia*, and *Hersiliola*, the latter two remain. A cladistic analysis based on 48 characters and 22 species, which included nine species that are not Afrotropical, inferred the following phylogeny: ((*Hersiliola Tyrotama*) (*Neotama* (*Prima* (*Murricia Hersilia*))))). Morphological data supports the monophyly of *Tyrotama* and the phylogeny suggests that the genus is closely related to *Hersiliola*. The new genus *Prima* is weakly supported as the sister taxon of *Neotama*. Support for the genus *Hersilia* is weak and synapomorphies that unite six identified species groups within the genus are much more consistent than those that unite *Hersilia*. However, the genus *Hersilia* is retained until a comprehensive generic level analysis for the world is conducted. A key to the genera of the Afrotropical Region is provided.

Key words: Hersiliidae, phylogeny, Afrotropical Region

## Introduction

The Hersiliidae is a small spider family with 141 species and 10 genera excluding results from this study (Platnick 2004; Rheims & Brescovit 2004). The group is characterized by conspicuously long posterior lateral spinnerets, elongated legs and is limited to the tropical and subtropical regions of the world. All hersiliids are arboreal except for the representatives of *Hersiliola* Thorell, 1870 and *Tama* Simon, 1882. The latter two genera are ground active, inhabiting arid regions of Africa, the Mediterranean and the western parts of the Oriental Region.

The family has recently been the focus of extensive revisionary studies in the Australian (Baehr & Baehr 1987), Oriental (Baehr & Baehr 1993a), and Neotropical Regions (Rheims & Brescovit 2004). Baehr & Baehr's 1987 revision of Australian hersiliids resulted in the description of 29 species, of which 93% were new to science. Subsequent publications doubled the number of species known for the Australian Region to 55 in total (Baehr & Baehr 1988b, 1989, 1992, 1993b, 1995). In their revision of the Oriental Region, Baehr & Baehr (1993a) described 27 new species out of a total of 33 taxa and proposed a tentative phylogeny for the family. Rheims & Brescovit (2004) described six new species, redescribed five species, and proposed three new genera, *Yabisi*, *Iviraiva*, and *Ypypuera* for the Neotropical Region.

Members of the family Hersiliidae are found throughout the Afrotropical Region and include both arboreal and ground active genera. Before this study the Afrotropical Region had 30 species in three genera, *Hersilia* (22), *Hersiliola* (4), and *Tama* (4). Descriptive work was done between 1827 and 1976. Smithers (1945) revised the three genera of Hersiliidae of southern Africa and Benoit (1967) revised the genus *Hersilia* of the Afrotropical Region excluding Madagascar. None of these studies made an attempt to determine the phylogenetic relationships of hersiliid taxa.

Both *Tama* and *Hersiliola* occur in the warmer parts of the Afrotropical Regions where they are found under stones (Smithers 1945). *Hersiliola* construct a pholcid-like web and *Tama* construct a circular shaped retreat of closely woven webbing plastered with small pebbles, chips and vegetable debris. Anchor threads attached to the substratum warn the spider of approaching prey (Smithers 1945; Dippenaar-Schoeman *et al.* 1999).

They move at great speed overpowering their prey and dragging it back to their retreat where they are fed on (Lawrence 1964). Their egg sacs are attached to the underside of rocks and covered with stone chips (Dippenaar-Schoeman & Jocqué 1997).

Platnick (2004) catalogues the following ranges for *Hersilia*: Afrotropical, Oriental, and Australian Regions, although one species penetrates into the Palaeartic. All Afrotropical species of this genus live on the trunks of trees. When at rest they are well camouflaged with their flattened bodies, ad-pressed to the bark. They move at great speed when disturbed. Although specimens are very cryptic the reflection of sunlight on the guide threads they leave on trunks is a good indicator of their presence (Dippenaar-Schoeman & Jocqué 1997). Females cover their eggs with an oval shaped layer of silk camouflaged with bits of bark. She holds guard over the eggs in an upside down position above the silk patch until the young hatch (pers. obs.).

Petrunkevitch (1963), Schawaller (1981) and Wunderlich (2004) have described several fossil genera, whose relationship with extant Hersiliidae remains uncertain. Recent work on fossil spiders also suggests that the family is an ancient taxon, and predict the presence of Hersiliidae in the Cretaceous (Penney, 2002). Evidence point to a much wider distribution in Europe during the Oligocene and Miocene (Penney 1999). Lehtinen (1967) considered the Hersiliidae to be related to the Oecobiidae based on similarity of genital structures, modification of the carapace, eye pattern and spinnerets. Coddington & Levi (1991), in a cladistic analysis of all spider families, grouped the hersiliids with the oecobiids based on the similarity of the elongated posterior lateral spinnerets, and the distinct prey capture behaviour of the two families. Here the spider rapidly encircles the prey by facing away from it and ensathes it with silk from the spider's long posterior lateral spinnerets. Although Coddington & Levi (1991) placed the hersiliids in the Eresoidea (Hersiliidae, Oecobidae and Eresidae), basal within the Entelegenae, representative species of the Hersiliidae was not included in their analysis.

Baehr & Baehr (1993a) did not consider these relationships well supported and based their phylogenetic analysis on morphoclines. Baehr & Baehr's first attempt at inferring phylogenetic relationships for hersiliids in 1993, included representatives of the family from Australia, the Oriental Region and New Guinea. They subsequently also proposed a phylogeny for *Hersilia* from Australia and New Guinea (Baehr 1998). Their

hersiliid phylogeny has *Hersiliola* basal, based on the following plesiomorphic characters: short legs, shorter posterior lateral spinnerets, a convex abdomen and no flexible zone on the metatarsi of the legs. *Tama* is defined by longer legs, long posterior lateral spinnerets as well as the presence of a flexible zone on the metatarsi of legs I, II, and IV whereas *Hersilia* have a biarticulate metatarsus, very long I, II, and IV legs, and armed chelicerae. Rheims and Brescovit (2004) suggested the use of *Uroctea* as an outgroup based on the proposal by Lehtinen (1967) that Hersiliidae is a sister group of ecribellate Oecobiids belonging to the genus *Uroctea* and followed the principles set forth by Nixon & Carpenter (1993) for outgroup selection. In spite of the differences in approach, their proposed phylogeny correspond with that of Baehr & Baehr (1993a) except for placing *Neotama* and *Hersilia* as sister groups next to *Tamopsis*.

It is evident from these analyses, that Africa could be considered the place of origin of the family Hersiliidae. This could be based on the presence of the plesiomorphic hook-shaped median apophysis found on the male palp in some Afrotropical *Hersilia* species and the occurrence of the ground dwelling genera of Hersiliidae in Africa. Further questions include Baehr & Baehr's (1993a) suggestion that the southern African species presently listed in *Tama* might need to be transferred to *Neotama*. The taxonomic status of two Oriental genera, *Murricia* Baehr & Baehr and *Promurricia* Baehr & Baehr has also been brought into doubt (Rheims & Brescovit 2004). Only females are known for these two genera and both Baehr & Baehr (1993a) and Rheims & Brescovit (2004) suggested that *Murricia* is a junior synonym of *Hersilia* and *Promurricia* a morphological intermediate between these two genera.

However, clarification of these questions would only be possible after a worldwide revision of the Hersiliidae. The Afrotropical Region represents the last region for which no contemporary revision has been done. Such a revision will shed more light on generic delimitations in the family Hersiliidae (e.g. *Hersilia*, *Murricia* Simon and *Promurricia* Baehr & Baehr). This thesis will therefore (1) describe, differentially diagnose, illustrate, and characterise phylogenetically the genera and species of Afrotropical Hersiliidae, summarising their geography, and natural history (2) reconstruct the phylogeny of Afrotropical hersiliid species, using quantitative cladistic methods. In

this paper a phylogeny for the Hersiliidae from the Afrotropical Region is proposed based on 47 species after 920 specimens were examined.

### Methods

A data matrix with 59 characters was constructed for 36 Afrotropical species and five non-Afrotropical hersiliid species viz. *Neotama cunhabebe* (Vellard) from the Neotropical Region, *Hersilia tibialis* Baehr & Baehr and *Hersilia jajaj* Rheims & Brescovit from the Oriental Region, *Tamopsis eucalypti* Baehr & Baehr and *Tama edwardsi* Lucas from the Mediterranean (Appendix A). *Murricia uva* is an artificial amalgamation of *M. emlynae* males and *M. uva* females. An outgroup consisting of one species of *Uroctea* sp. indet. from Namibia was included in the matrix based on Lehtinen (1967), Coddington & Levi (1991) and Rheims & Brescovit (2004).

All species with more than 10 ambiguities were excluded from the analysis as were all species with one of the sexes unknown. An exemplar was chosen from a set of species that were similar in terms of phylogenetically informative characters (Rheims & Brescovit 2004). Eleven characters became uninformative because of the exclusion of above taxa. The inclusion of these characters would lead to an artificial increase in the consistency and retention indices these eleven characters were also excluded from the analysis (Prendini 1999). These characters are, however, retained in the matrix published here, as they are informative of relationships with some of the species excluded from the analysis (Appendix). Excluded species are included in the summary cladogram (Fig. 2). The resulting matrix of 48 characters and 22 taxa was subjected to the analysis.

Analyses of the unweighted and unordered characters were subjected to heuristic searches in Nona (Goloboff 1997). Nona was done with h/1000, mult\*1000, jump50. Successive weighting with the squared CI was also done in NONA entering the following command sequence: run swt.run h10000 h/1000 mult\*1000 jump 50. Pee-Wee 2.6 (Goloboff 1997) was used to obtain trees that maximise implied weights across all characters (Goloboff 1993a), with all characters equally weighted (wt = 1) and for both ordered and unordered multi-states (h10000;h/1000;mult\*1000;jump50;). Pee-Wee maximises total fit  $F = \sum f_i$  where  $f_i = k/(k + ESi)$ ; k is a constant of concavity and can be varied between 1 and 6 with the “concN” command, allowing less (1) or more (6)

influence for homoplasious charactes. Concavity constants 1, 3 and 6 were used in this analysis.

Phylogenetic signal was assessed with branch support indices (Bremer 1994). Branch support was calculated with NONA 1.8 (Goloboff 1993b) using the options h10000; bsupport 100. The Bremer Support for a given node in the shortest unconstrained tree is the number of additional steps required in the shortest trees for which that node collapses. A branch present in one of the most parsimonious trees is more strongly supported by the data if a large increase in length of additional trees is required before that branch is lost in the consensus. Branch support was truncated at values of 100 and Bremer support values reported range from 0 and or greater. The preferred tree must be the shortest, most resolved tree possible i.e. make the most predictions that can be tested given only unambiguous branch support (Griswold & Ledford 2001). Preference is, therefore, given to synapomorphic characters in the construction of a phylogeny as they have the largest predictive power (Farris 1985).

#### **Character descriptions and interpretations**

Character 1. — tibia/patella male palp (l=1; uninformative)

0 = short, close to one

1 = elongate, more than two

This character is a synapomorphy for *Neotama cunhabebe* and two other Neotropical species (Rheims & Brescovit 2004) but is uninformative in this cladogram and is an autapomorphy of *Neotama cunhabebe*.

Character 2. — Male palpal tibia form (l = 2; ci = 50; ri = 88).

0 = absent, palpal tibia cylindrical (Chap. 2, Fig. 9b).

1 = present, palpal tibia with angular dorsal projection, (Chap. 2, Fig. 15b).

Presence of such an angular dorsal projection arises as a synapomorphy for *Hersilia tibialis*, *H. incompta* and *H. nicolae* and an autapomorphy of *H. plara*.

Character 3. — Palpal tibia, dorsal spines (l = 5; ci = 20; ri = 75)

0 = absent (Chap. 2, Fig. 9b)

1 = present (Chap. 2, Fig. 15b)

Most Hersiliidae have no spines dorsally on their palps. The presence of these spines is very homoplasious and arises several times independently.

Character 4. — Cymbium and alveolus shape (l = 2; ci = 50; ri = 0).

0 = short cymbium with circular alveolus (Rheims & Brescovit 2004: fig. 32).

1 = elongate cymbium with oval alveolus (Chap. 2, Fig. 2a; Rheims & Brescovit 2004: fig. 34).

An elongate cymbium with oval alveolus arise independently in *Tamopsis* and *Prima*.

Character 5. — Cymbium (l = 2; ci = 50; ri = 0)

0 = narrows gradually (Rheims & Brescovit 2004: fig. 33).

1 = narrows abruptly (Chap. 5, Fig. 2a; Rheims & Brescovit 2004: fig. 31).

Rheims & Brescovit (2004) found that this character unites *Neotama cunhabebe* and two other *Neotama* species. It also is an autapomorphy for *Prima*.

Character 6. — Lamellar modification of the bulbus (l = 2; ci = 50; ri = 66)

0 = absent

1 = present (Chap. 2, Figs. 4b & 19a)

The bulbus form laminar projections that surround the median apophysis. The character is homoplasious and arises twice as a synapomorphy for the *Hersilia incompta* species group and an autapomorphy for *H. arborea*.

Character 7. — Sperm duct (l = 5; ci = 100; ri = 100).

0 = no basal modifications (Rheims & Brescovit 2004; fig. 35)

1 = with basal curvature (Chap. 1, Fig. 6a)

2 = with single basal loop (Chap. 1, Fig. 6b)

3 = with two basal loops (Rheims & Brescovit 2004; fig. 38)

4 = repeated curvature (Chap. 1, Fig. 6c)

5 = basal loop and medial curvature (Chap. 1, Fig. 6d)

This character is ambiguous at nodes A, B, C and E. A sperm duct with a basal curvature is synapomorphic at node H. A single basal loop is homoplasious, derived for *Hersiliola* and at node E. A meandering sperm duct is apomorphic for *Tyrotama* whereas a sperm duct with a basal loop and medial curvature unites *Hersilia jajaj* and *Murricia uva* at node P.

Character 8. — Bulbus with a basal swelling (l = 1; ci = 100; ri = 100).

0 = absent.

1 = present (Chap. 2, Fig. 26i).

The presence of a basally swollen bulbus unites all taxa in the *Hersilia baforti* species group.

Character 9. — Median apophysis (l = 4; ci = 25; ri = 40)

0 = present (Chap. 2, Fig. 2a).

1 = absent (Chap. 3, Fig. 5a).

Rheims and Brescovit (2004) suggested that the presence of a median apophysis is plesiomorphic based on Griswold *et al.* (1999) assessment of the secondary repeated loss of the median apophysis in several spider families e.g. Eresidae and Filistatidae. This character is ambiguous at node B and C, and is lost twice: as an autapomorphy for *Neotama corticola* and a synapomorphy for the *Hersilia baforti* species group.

Character 10. — Median apophysis, shape (l = 4; ci = 100; ri = 100).

0 = hooks-shaped (Chap. 2, Fig. 2a)

1 = bifid (Chap. 5, Fig. 2a)

2 = complex with two or more projections (Rheims & Brescovit 2004; fig. 48)

3 = concave and complex (Chap. 2, Fig. 19a).

A simple hook-shaped median apophysis is considered to be plesiomorphic (Baehr & Baehr 1993a). Although Rheims and Brescovit (2004) suggested that it might be derived based on their tree topology. A bifid median apophysis is an autapomorphy of *Prima ansiae*, while a complex median apophysis with two or more projections represents an

autapomorphy for the genus *Tamopsis*. The synapomorphy for *Hersilia incompta* species group is a concave and complex median apophysis.

Character 11. — Hook-shaped median apophysis, insertion (l = 3; ci = 100; ri = 100)

0 = basal (between five and seven o'clock) (Rheims & Brescovit 2004: fig. 103)

1 = medially (Chap. 2, Fig. 2a)

2 = retrolateral (between two o'clock and four o'clock) (Chap. 2, Fig. 17a & 26f; Rheims & Brescovit 2004: fig. 84)

3 = distally (between eleven and one o'clock) (Chap. 5, Fig. 2a)

This character is ambiguous at node A. A distally originating median apophysis is an autapomorphy for *Prima* and a retrolaterally originating median apophysis is synapomorphic at node K.

Character 12. — Conductor (l = 1; ci = 100; ri = 100).

0 = present (Chap. 2, Fig. 3b).

1 = absent (Chap. 2, Fig. 2a).

Griswold *et al.* (1999) and Rheims & Brescovit (2004: 198, character 19) suggested that the presence of a conductor is plesiomorphic. Rheims & Brescovit (2004) found that the loss of a conductor is apomorphic for the family Hersiliidae. However the character is ambiguous at node A and has been retained in the *Hersilia baforti* species.

Character 13. — Conductor size (l = 1; ci = 100; ri = 100).

0 = large, longer than width of bulbus (Chap. 2, Fig. 3a).

1 = small, shorter than width of bulbus (Chap. 2, Fig 5a)

As the loss of the conductor is considered derived (Character 7) the progressive reduction in size is also considered derived. The reduction in the size of the conductor varies considerably within the *Hersilia baforti* species group.

Character 14. Conductor with hyaline projection distally (uninformative).

0 = absent.

1 = present (Chap 2, Fig. 3a)

This character is synapomorphy for *Hersilia alluaudi* and *H. bubi*.

Character 15. — Conductor with ventral furrow distally (uninformative).

0 = absent.

1 = present (Chap. 2, Fig. 26i).

A ventral furrow arises as a synapomorphy of *Hersilia salda* and *H. dilumen*.

Character 16. — Sclerotized tegular projection (l = 1; ci = 100; ri = 100).

0 = absent.

1 = present (Chap 2, Fig. 21b).

This straight projection arises medially on the bulbus and is an autapomorphy of *H. plara*.

Character 17. — Slide-like tegular projection (l = 3; ci = 33; ri = 84).

0 = absent

1 = present (Chap. 2, Fig. 26a-e, g, h)

A slide-like tegular projection is homoplasious and unite all Afrotropical *Hersiliola* species as well as *Neotama* species and is a synapomorphy of *Hersilia caudata* and *H. sigillata* species groups.

Character 18. — Embolus, position from which embolus originate on bulbus (l = 7; ci = 42; ri = 77).

0 = prolateral (between eight and ten o'clock) (Chap. 2, Fig. 19a).

1 = apical (between eleven and one o'clock) (Chap. 3, Fig. 5a).

2 = basal (between five and seven o'clock)

3 = retrolateral (between two o'clock and four o'clock) (Chap. 2, Fig. 3a).

An embolus with an apical origin is very homoplastic. The retrolateral originating embolus is a synapomorphy for *Hersilia baforti*.

Character 19. — Embolus length (l = 5; ci = 40; ri = 50)

0 = short, not exceeding half the total length of the bulbus or do not complete circle around median apophysis (Chap. 2, Fig. 2a).

1 = long, equal or slightly longer than bulbus length or complete a circle around median apophysis (Chap. 2, Fig. 19a).

2 = very long, at least 1.5 times bulbus length or circles at least 1.5 times around median apophysis (Chap. 3, Fig. 2a).

Reihms and Brescovit (2004) suggested that short emboli are plesiomorphic and long emboli are a highly homoplasious character for four taxa: *T. eucalypti*, *N. cunhabebe*, and nodes M. Very long emboli are a synapomorphy for the genus *Hersiliola*.

Character 20. — Embolus shape (l = 3; ci = 100; ri = 100).

0 = filiform, round (Chap. 3, Fig. 5a; Chap. 2, Fig. 2a).

1 = laminar (Rheims & Brescovit 2004: figs. 19-22).

2 = three-cornered (Chap. 2, Fig. 19-22).

3 = cylindrical (Rheims & Brescovit 2004: figs. 47 & 48).

A cylindrical embolus is synapomorphic for all *Tamopsis* species and three-cornered emboli are derived character for the *Hersilia incompta* species group.

Character 21. — Embolus projection (l = 1; ci = 100; ri = 100).

0 = absent.

1 = present (Chap. 2, Fig. 26a-b)

Embolic projections are absent from most Afrotropical Hersiliidae except for *Hersilia caudata*, *H. occidentalis* and *H. albicomis*.

Character 22. — Embolus distally (l = 2; ci = 50; ri = 85).

0 = acute.

1 = furcated (Chap. 2, Fig. 13a).

The cladogram suggest that a furcate embolus arise twice in some representatives of the *Hersilia baforti* species group and in *Hersilia madagascariensis*,

Character 23. — Epigynal plate (l = 5; ci = 20; ri = 75).

0 = entire (Chap. 2, Fig. 21f).

1 = median plate with pair of lateral borders (Chap. 2, Fig. 2f).

Rheims & Brescovit (2004) tree topology suggested that an entire epigynal plate is plesiomorphic whereas a divided epigynal plate is apomorphic.

Character 24. — Median plate (l = 3; ci = 33; ri = 50).

0 = partially covered by lateral borders (Chap. 2; Fig. 8f).

1 = free (Chap. 2, Fig. 15f).

This character was also proposed by Rheims & Brescovit (2004). Their optimization of this character were ambiguous at certain nodes but suggested that this character is an autapomorphy for *Hersiliola* and *N. corticola* and a synapomorphy for the *Hersilia incompta* species group.

Character 25. — Median plate (l = 2; ci = 100; ri = 100).

0 = smooth.

1 = with lateral sclerotizations or fixing structures (Chap. 2, Fig. 2f).

2 = rippled (Chap 2, Fig. 19e).

A rippled lateral border of the median plate is a synapomorphy of *H. incompta* species group. Fixing structures laterally on the median plate is a synapomorphy at node P for *Hersilia caudata* and *H. sigillata* species groups.

Character 26. — Epigynal plate with atrium surrounded by projecting rim (l = 1; ci = 1; ri = 1)

0 = absent.

1 = present (Chap. 3, Fig. 5f).

This character is synapomorphic for *Tyrotama*.

Character 27. — Epigynal plate medially with transverse unpigmented plate (l = 1; ci = 100; ri = 100).

0 = absent.

1 = present (Chap. 2, Fig. 21f).

A medially transverse unpigmented plate is derived for the *H. baforti* species group.

Character 28. — Copulatory openings.

0 = posterior (Chap. 2, Fig. 2g).

1 = median (Chap. 5, Fig. 2g)

2 = anterior (Chap. 3, Fig. 4g)

Copulatory openings open anteriorly of the spermathecae form a synapomorphy for *Tyrotama* and copulatory openings that open mesad are derived for *Prima*.

Character 29. — Copulatory openings (l = 2; ci = 100; ri = 100).

0 = inconspicuous.

1 = conspicuous as oval unsclerotized openings (Chap 2, Fig. 12f).

2 = conspicuous as circular sclerotizations (Chap. 2, Figs. 4f & 17f).

Conspicuous circular sclerotizations around the copulatory openings are derived at node O.

Character 30. — Length of copulatory duct (l = 2; ci = 100; ri = 100).

0 = very long, at least three times spermathecae length (Chap. 3, Fig. 2g).

1 = median, twice as long as spermathecae length (Chap. 4, Fig. 1b).

2 = short, equal (Chap 2, Fig. 8g).

A short copulatory duct is derived at node F, while a median copulatory duct is synapomorphic at node N and for *Hersilia incompta* species group.

Character 31. — Copulation ducts (l = 1; ci = 100; ri = 100).

0 = narrow.

1 = wide, exceed diameter of fertilization ducts (Chap. 5, Fig. 1g).

Wide copulation ducts are synapomorphic for the genus *Neotama*.

Character 32. — Number of spermathecae (l = 5; ci = 40; ri = 40).

0 = several spermathecae, more than 30 (Chap. 4, Fig. 1b).

1 = several small and one large (Chap. 2, Fig. 27g).

2 = one large spermathecae (Chap. 2, Fig. 2g).

Forster (1980) suggested a possible evolutionary sequence starting with *Grandungula sorenseni* where the invagination of bursal wall with several small spermathecae forms a stable bilobed arrangement of the spermathecae and a seminal receptacle. The possible loss of these secondary spermathecae would then give rise to the bilobed structure found in *Hersilia sigillata* group. The presence of multiple, more than 30, small spermathecae are most apparent in *Murricia uva* (Chap. 4, Fig. 2b). The tree topology suggests that that character is ambiguous at node A. several small spermathecae and one large spermathecae unites the *Hersilia sigillata* species group.

Character 33. — Spermathecae shape (l = 5; ci = 40; ri = 62).

0 = globose (Chap. 2, Fig. 2g).

1 = cylindrical (Chap. 2, Fig. 5g).

2 = kidney-shaped (Chap. 2, Fig. 27g).

Character 34. — Spermathecae stalk (l = 4; ci = 25; ri = 40).

0 = absent (Chap. 2, Fig. 5g).

1 = present (Chap. 2, Fig. 2g).

Rheims & Brescovit (2004) proposed stalked spermathecae as synapomorphies for *Hersilia* and *Hersiliola* respectively. The tree topology, however, suggests that this does not hold true for *Hersilia* where several taxa retained the plesiomorphic state.

Character 35. — Number of seminal receptacles (l = 3; ci = 100; ri = 100).

0 = more than two.

1 = two.

2 = one, large hyaline (Chap. 3, Fig. 5g).

3 = one, small sclerotized (Chap. 2, Fig. 2g).

4 = none.

This character is ambiguous at node A. The definition of a seminal receptacle here is taken from Rheims & Brescovit (2004) sensu (Sierwald 1999) as opening directly into the spermathecae and its stalk with no connection to the fertilisation duct or copulatory duct. Forster (1980) suggested that the presence of large unsclerotized, membranous hyaline

seminal receptacle is plesiomorphic (*Tyrotama australis* and *T. bicava*, Chap. 3, Figs. 6g & 6g). The reduction in number, size and sclerotization of the seminal receptacle is considered derived. The presence of a large hyaline seminal receptacle is synapomorphic for the genus *Tyrotama*.

Character 36. — Seminal receptacle shape (l = 7; ci = 28; ri = 44).

0 = globose (Chap. 2, Fig. 2a).

1 = cylindrical (Chap. 4, Fig. 1b).

2 = kidney-shaped (Chap. 2, Fig. 8g).

Character 37. — Position of seminal receptacle (l = 4; ci = 25; ri = 57).

0 = laterally of spermathecae (Chap. 2, Fig. 2g).

1 = medially of spermathecae (Chap. 2, Fig. 13g).

The cladogram suggests that a seminal receptacle laterally positioned in relation to the spermathecae is plesiomorphic.

Character 38. — Seminal receptacle borders (l = 2; ci = 50; ri = 90).

0 = smooth.

1 = with distal tubercle, often with glandular parts covered by threads.

Baehr & Baehr (1993a) referred to this character as glandular parts covered by threads.

This character is synapomorphic for all *Hersilia*. It reverses at node Q.

Character 39. — Clypeus length (l = 5; ci = 40; ri = 72).

0 = short, less than median ocular quadrangle length (Chap. 2, Fig 10d).

1 = long, less than twice median ocular quadrangle length (Chap. 2, Fig. 9d).

2 = very long, more than twice median ocular quadrangle length (Chap. 3, Fig. 5d).

A long clypeus unites all ground dwelling hersiliids.

Character 40. — ALE/AME (uninformative).

0 = <0.6.

1 = >0.7 (Chap. 2, Fig. 27g).

Rheims and Brescovit (2004: 194, character 2) identified the enlarged ALE, that is usually small and barely conspicuous, as an apomorphy of the genus *Yabisi*. In this tree topology it is autapomorphic for *H. sigillata*.

Character 41. — Interdistance AME-ALE (uninformative).

0 = equal or smaller than 1.5 AME diameter.

1 = more than twice AME diameter (Chap. 2, Fig. 27c).

Rheims and Brescovit (2004: 194, character 3) observed the projection of the AME anteriorly on the carapace and that it arised as a synapomorphy for all members of *Yabisi*. In this tree topology it is autapomorphic for *H. sigillata*.

Character 42. — Lateral eyes (l = 2; ci 50; ri = 0).

0 = on slightly conspicuous tubercles.

1 = on prominent tubercles (Chap. 4, Fig. 2d).

Baehr & Baehr (1993: 84, character 4) proposed that eyes on prominent tubercles are apomorphy for the genus *Murricia*. Rheims & Brescovit (2004: 194, character 1) cladogram suggests that it is a synapomorphy for *Yabisi*. In this analysis it is an autapomorphy of *H. sigillata* and *M. uva*.

Character 43. — cheliceral teeth on promargin (l = 1; ci =100; ri = 100).

0 = present (Fig. 5c).

1 = absent.

If present, there are usually three large cheliceral teeth on the promargin. The loss is derived for all groundliving hersiliids (node B).

Character 44. — cheliceral teeth on retromargin (l = 1; ci =100; ri = 100).

0 = present (Fig. 5c).

1 = absent.

According to Griswold et al. (1999) the presence of cheliceral teeth on the pro- and retromargin is plesiomorphic. Rheims and Brescovit (2004) interpreted a cheliceral groove as a reversal in Hersiliidae. In this analysis the cheliceral groove is retained as a plesiomorphic character.

Character 45. — Abdomen: pattern on dorsum (l = 2; ci = 100; ri = 100).

0 = lancet-shaped heart mark (Chap. 1, Fig 4a).

2 = rectangular (Chap. 4, Fig. 4b).

1 = heart mark heart mark broadens distally, form triangle (Chap 2. Fig. 5e).

Character 46. — Female abdomen with two pairs of tubercles laterally (l = 1; ci = 100; ri = 100).

0 = absent.

1 = present (Chap2, Fig. 19c).

The presence of two pairs of tubercles laterally on the abdomen is a synapomorphy for *Hersilia nicolae* and *H. incompta*. A smooth abdomen is considered plesiomorphic.

Character 47. — Dorsal muscular pit number (l = 3; ci = 66; ri = 50).

0 = <4 (Chap. 3, Fig. 6e).

1 = 4 (Chap. 2, Fig. 2e).

2 = 5 (Chap. 4, Fig. 5e).

The conspicuous dorsal muscular pits found in most hersiliids give rise to a dorso-ventrally flattened abdomen in all arboreal hersiliids uniting them as a group.

Character 48. — Relative length of leg III to leg I (l = 2; ci = 50; ri = 66).

0 = more than 0.6.

1 = less than 0.4.

The cladogram suggests that a long leg III is plesiomorphic and relative shortening of leg III is derived. There is, however, uncertainty whether it was due to a shortening of leg III or lengthening of leg I, II, and IV (Baehr & Baehr 1993a; Rheims & Brescovit 2004). The character is ambiguous at nodes A and B.

Character 49. — Relative length of leg IV to leg I (l = 1; ci = 100; ri = 100)

0 = leg IV longer than both leg I and II

1 = leg IV shorter than both leg I and II

Elongate leg I and II is a synapomorphy for all arboreal hersiliids at node E.

Character 50. — Metatarsi articulation of leg I, II, and III (l = 4; ci = 75; ri = 83).

0 = uniarticulate.

1 = elongate flexible zone (Fig. 5f).

2 = narrow flexible zone.

3 = biarticulate (Fig. 5e).

Baehr (1998) suggested a possible evolutionary sequence in which an elongate flexible zone is reduced in length to form a narrow flexible zone and ultimately develop into a biarticulation. A biarticulate metatarsus is synapomorphic at node K whereas a narrow flexible zone is derived for *Neotama*. The uniarticulate legs of *Hersiliola* and *Tyrotama* is a reversal.

Character 51. — Metatarsus/tarsus (l = 2; ci = 50; ri = 60).

0 = Less than four.

1 = More than six.

This character is also ambiguous at nodes A and B.

Character 52. — Leg spine microstructure (l = 1; ci = 100; ri = 100).

0 = Scale-like projections (Fig. 3e,g & h).

1 = longitudinal grooves dorsally (Fig. 3f).

Electron microrgraphs of large spines on the legs of specimens suggest that scale-like projections on the surface of these spines are plesiomorphic as it is also found in *Uroctea*. The longitudinal grooves dorsally on the spines of *Hersiliola* and *Tyrotama* are derived.

Character 53. — Metatarsal trichobothria (uninformative).

0 = one to two.

1 = four.

Griswold (2004: 56, character 5) noted that the presence of more than two metatarsal trichobothria is derived for entelegyne spiders. The presence of four trichobothria distad on the metatarsi of hersiliids represents a synapomorphy for the family.

Character 54. — Claw tuft hairs (uninformative).

0 = absent.

1 = present (Fig. 3d).

Rheims & Brescovit (2004: 195, character 8) considered the thick claw tufts found in all hersiliids to be a synapomorphy for the family.

Character 55. — Legs spination, ventral surface (l = 2; ci = 100; ri = 100).

0 = pair of parallel rows of strong spines along the entire leg.

1 = pair of parallel rows of strong spines only along femora strong spines absent.

2 = strong spines absent.

Rheims & Brescovit (2004) noted the presence of two rows of strong spines ventrally along the entire length of *Uroctea* legs. In the ground active representatives of Hersiliidae these rows are restricted to the femora and they are absent in arboreal hersiliids (node E).

Character 56. — Feathery hairs (uninformative).

0 = absent.

1 = present (Fig. 3a).

Griswold et al. (1999: 56, character 18) considered the presence of feathery hairs as derived. This character is a synapomorphy for all hersiliids.

Character 57. — PLS: tS/bS

0 = Close to one.

1 = more than three times.

A synapomorphy for all arboreal hersiliids (node E) is the terminal segment of the posterior lateral spinnerets that are very elongate, at least three times the length of the basal segment (Baehr & Baehr 1993a: 84, character 21).

Character 58. — Anal tubercle (uninformative).

0 = large.

1 = small.

Griswold *et al.* (1999: 56, character 80) suggest that a small anal tubercle is plesiomorphic. However the polarity proposed by Rheims & Brescovit (2004) is accepted in this analysis where a large anal tubercle is plesiomorphic. The small anal tubercle of all hersiliids is therefore derived.

Character 59. — Habitat (I = 1; CI = 100; RI = 100).

0 = ground-dwelling.

1 = arboreal.

Both Baehr & Baehr (1993a) and Rheims & Brescovit (2004) suggested that ground active behaviour is plesiomorphic in Hersiliidae. The latter authors also noted that *Tama edwardsi* has elongated spinnerets and modified metatarsi, suggesting that this species were pre-adapted for an arboreal life style. An alternative could be that arboreal habits are plesiomorphic and ground-dwelling in the arid regions of the Afrotropical and Palearctic Regions are derived. A compelling argument for it is the absence of ground active representatives of Hersiliidae in the Neotropical, Australian and Oriental Regions.

### Discussion

Heuristic searches of the matrix in NONA with characters unweighted resulted in two most parsimonious trees (L = 126; CI = 59; 71). Successive weighting of the unordered multi-state matrix in NONA, generated one most parsimonious tree of 126 steps that corresponds with results obtained with implied weights where k values were 1, 3, and 6 (Table 1). All four trees resemble one of the trees found in the unweighted search; this is the preferred tree (Fig. 1). The second tree differs only in the placement of the *Hersilia sigillata* species group.

The proposed phylogeny is largely congruent with that of Baehr & Baehr (1993a) and Rheims & Brescovit (2004) except that the groundliving hersiliids form a sister group to the arboreal hersiliids based on the absence of cheliceral teeth on the pro- and retromargin of the chelicerae and the longitudinal grooves dorsally on their spines. *Tama edwardsi* is basal in this sister group, not *Hersiliola* as is the case in the tree topologies of both Baehr & Baehr (1993a) and Rheims & Brescovit (2004). The Afrotropical species of *Tama* appear in a distinct clade, which is not closely related to the genus *Tama*. This excludes *Tama* from the Afrotropical region and confirms Baehr & Baehr's (1993)

suggestion. As such, the genus new *Tyrotama* is described to include *Hersiliola australis*, *H. fragilis*, *Tama arida*, *T. bicava*, *T. incerta* and the new species *T. gamkasiensis*, *T. makaliensis* and *T. taris*. The new genus is based on the following synapomorphies: epigynal plate with an atrium, copulatory openings that open anteriorly of the spermathecae and large hyaline seminal receptacles.

The Afrotropical species, *Hersilia corticola* is closely related to *Neotama* based on the presence of a narrow flexible zone on the metatarsi and a wide copulatory duct. Therefore *H. corticola* were transferred to *Neotama*. Two new species *Prima ansiae* and *P. syda* appear as a separate clade because the following synapomorphic characters: a bifid median apophysis that originate distally on the bulbus, median copulatory openings, an elongate cymbium with an oval alveolus, and a cymbium that narrows abruptly.

The remaining Afrotropical species were placed in a distinct clade based on the possession of a biarticulation on their metatarsi I, II, and IV. This clade appears subdivided into six species groups. *H. baforti* species group which consist of *H. alluaudi*, *H. bubu*, *H. clarki*, *H. dilumen*, *H. ferra*, *H. plara*, *H. salda*, *H. unca*, *H. vanmoli*, *H. woutrinae*. This taxon forms a monophyletic group based on the presence of a basal swelling on the bulbus, an embolus that originate retrolaterally on the bulbus, the presence of a transverse unpigmented area posteriorly on the median plate and a heart mark that broadens posteriorly to form a triangle. The new species *Murricia uva* and the Oriental species *Hersilia jajaj* appear as sister groups based on the sperm duct that has a basal loop and a medial curvature and the possession of smooth seminal receptacles. *Hersilia incompta*, *H. nicolae* and the Oriental species *H. tibialis* form a monophyletic unit due to the presence of a concave and complex median apophysis, a three cornered embolus, the median plate of the epigynum that has ripples laterally and the embolus that originate prolaterally on the bulbus. *H. madagascariensis* and *H. arborea* group together because of a concave median apophysis, the retrolateral origin of the median apophysis and the presence of conspicuous sclerotizations around the copulatory openings. The monophyletic unit consisting of *Hersilia caronae*, *H. insulana*, *H. sigillata* and *H. vinsoni* has the following synapomorphic character: The possession of several small spermathecae basally on a large spermathecae. The remaining species, *Hersilia albicomis*,

*H. caudata*, *H. occidentalis*, *H. pungwensis*, *H. sericea*, *H. setifons* and *H. tamatavensis* is monophyletic evidenced by the triangular projection distad on the embolus.

Synapomorphies that unite these species groups are more consistent than those that unite all these species it would be preferable to erect a genus for each of these. I do however feel that to erect these genera in the absence of other species groups within *Hersilia*, notably those from the Oriental Region, is premature. Cladistic support for the *Hersilia caudata* and *H. sigillata* species groups is also weak.

The paucity of hersiliid species with biarticulate metatarsi in the Neotropical and Australian Regions except for representatives of *Hersilia* in the far northern parts of Australia, suggest that the group had its origins before the break up of Gondwanaland. The distribution of *Hersilia incompta* and *Hersilia caudata* species groups as well as *Murricia* throughout the Oriental and Afrotropical Region point to the colonisation, presumably repeatedly, of hersiliid species from the Afrotropical Region after the closure of the Thetys sea (Sierwald 1997).

Although some of the species groups in *Hersilia* are supported by several synapomorphies, their basal relationships are uncertain. The monophyly of the genus *Hersilia* is questioned as it is based on weak evidence that includes the possession of glandular parts covered by threads on seminal receptacles. The current classification is, however, retained until a world-wide revision of the family is completed.

### **Taxonomy**

#### **Family Hersiliidae Thorell 1870 (Figs. 4,5)**

*Herséliensis* Simon, 1864: 343 (Lycosiformes, in part)

Hersilioidea Thorell, 1870: 109, 114; Ausserer, 877: 110

Chalinuroidea Thorell, 1873: 605; Kaston, 1938: 640 (Chalinuroidea = Hersiliidae)

Hersilidae Simon, 1874: 14, 15 (*lapsus*)

Hersiliidae Simon, 1882: 255; Lucas, 1869: 1; Simon, 1893: 440; Smithers, 1945: 1;

Benoit, 1967: 1; Baehr & Baehr, 1987: 351; 1993a: 3; Dippenaar-Schoeman & Jocqué, 1997: 181; Levi, 2003: 1; Rheims & Brescovit, 2004: 202; Wunderlich 2004: 814.

Type genus: *Hersilia* Audouin, 1827.

### Diagnosis

Three-clawed, ecribelate, entelegyne spiders; posterior lateral spinnerets long, terminal segment tapering, longer than basal segment; legs very long, longest leg at least 1.4× times total body length. Hersiliidae differs from Oecobiidae in the reduced anal tubercle; plumose setae that cover cephalothorax and abdomen; modified claw tufts surrounding tarsal claws (Fig. 3d); 3-5 trichobothria distad on metatarsi.

### Description

Size: small to medium (3-13 mm).

Colour: varies from golden brown to white to almost black with mottled appearance

Carapace: ovoid and flattened, as wide as long; narrow longitudinal fovea with three pairs of radiating striae; densely covered with plumose setae. Cephalic region moderately elevated, thoracic region inclined (Chap. 3, Fig. 8c) or raised, higher than thoracic region and thoracic region flattened. Eyes: eight in two strongly recurved rows (Fig. 4); anterior median eyes often largest; lateral eyes on inconspicuous (Chap. 2, Fig. 31c,d) or conspicuous tubercle (Chap. 4, Fig. 2d). Clypeus length variable, short (Chap. 5, Fig. 1d) or very elongate (Chap. 3, Fig. 6d) Chelicerae: unarmed (*Tyrotama Tama*, and *Hersiliola*); armed with three large teeth on promargin and 5-11 minute teeth on retromargin (*Hersilia*, *Murricia*, *Neotama*, and *Prima*); labium free with rounded tip; endites oblique often touching each other. Sternum: heart-shaped, anterior edge straight or slightly convex.

Abdomen: dorsoventrally flattened, with 4-5 distinct dorsal muscular pits (*Hersilia*, *Murricia*, *Neotama*, *Prima*, and *Tama*) (Fig. 4a) or convex with four or less indistinct dorsal muscular pits (*Tyrotama*, *Hersiliola*) (Fig. 4b); abdomen oval to triangular in shape; densely covered with plumose setae (Fig. 3a); respiratory system: two booklungs; tracheal spiracle opening close to spinnerets; anal tubercle small, reduced. Spinnerets: six spinnerets; posterior lateral spinnerets longer than cephalothorax width

(*Hersilia*, *Murricia*, *Neotama*, and *Prima*), shorter than cephalothorax width (*Tyrotama*, *Tama*, and *Hersiliola*); cylindrical with elongated and tapering terminal segment; inner surface with series of long spinules producing the thin silk threads (Figs. 5b,c).

Legs: three claws with modified claw tufts surrounding claws (Fig. 3d); unpaired claw simple with two teeth; paired claws with 5-12 minute teeth, legs very long; leg III shortest; All legs, except leg III with metatarsi uniarticulate (*Tyrotama*, *Hersiliola*, and *Yabisi*), elongate flexible zone distad (*Prima*, *Tama*, *Tamposis* and *Iviraiva*), narrow flexible zone (*Neotama*), biarticulate (*Hersilia* and *Murricia*); 3-5 trichobothria distad on metatarsi; legs with few spines of which scale-like projections covering spine surface (Fig. 3e,g) (*Hersilia*, *Murricia*, *Neotama*, *Prima*), or spines dense, longitudinal grooves dorsally (Fig. 3f) (*Tyrotama*, *Tama*, and *Hersiliola*); autospasy occurs at patella-tibia joint.

Epigyne: Epigynal plate entire (Chap. 2, Fig. 13f) or longitudinally divided into three parts, a median plate and two lateral borders (Chap. 2, Fig. 2f); median plate free (Chap. 2, Fig. 14a) or slightly covered by lateral borders (Chap. 3, Fig. 2f); median plate smooth (Chap. 3, Fig. 2f) with sub-triangular (Chap.2, Fig. 24f), sickle-shaped fixing structures laterally (Chap. 2, Fig. 8f), atrium surrounded by a sclerotized rim (Chap. 3, Fig. 5f) or semicircular pockets (Chap. 2, Fig. 19f). Copulation openings posterior (Chap. 2, Fig. 2g), medial (Chap. 5, Fig. 2g) or anterior (Chap. 3, Fig. 5g); copulatory ducts simple short (Chap. 2, Fig. 2g), simple, elongate, as long as epigynal plate (Chap. 2, Fig. 19e) or coiled (Chap. 3, Fig. 2g). Spermathecae large, hyaline (Chap. 3, Fig. 5g), small sclerotized (Chap. 2, Fig. 2g); spermathecae shape varies from globose (Chap. 2, Fig. 2f), cylindrical (Chap. 2, Fig. 5g; Chap. 4, Fig. 1b) to subtriangular (Chap. 2, Fig. 27g). Seminal receptacles, absent (Chap. 3, Fig. 5g), unique (Chap. 2, Fig. 2g), several and small (Chap. 2, Fig. 8g) several and large (Chap. 4, Fig. 1b); fertilization ducts short, curved (Chap. 2, Fig. 2g) elongate, straight (Chap. 2, Fig. 19e), elongate with medial curve (Chap. 2, Fig. 13g)

Palps: tibiae short as long as patellae, apophysis and modified structures absent; cylindrical (Chap. 2; Fig. 2a,b) or with dorsal projection (Chap. 2, Fig. 19a,b) spines absent (Chap. 2, Fig. 2a,b) or two to seven strong spines present on promargin (Chap. 2, Figs. 19a,b & Fig. 24b); Ventrally with several setae that extends in front of bulbus

(Chap. 2, Fig. 2a). Cymbium covered with short setae; elongate setae laterally extends in front of bulbus (Chap. 2, Fig. 24b; Chap. 5, Fig. 1a); 2-7 strong spines apically; cymbium compact, not projecting much beyond bulbus (Chap. 3, Fig. 5a); apex narrowing abruptly beyond bulbus (Chap. 4, Fig. 1a), digitate, (Chap. 3, Fig. 2a); bulbus, globose (Chap. 3, Fig. 5a), flattened (Chap. 3, Fig. 2a), round (Chap. 2, Fig. 2a) or basally swollen (Chap. 2, Fig. 3a); subtegulum semicircular, sclerotized and entire; tegulum with tegular projection (Chap. 2, Fig. 3a) or basal embolar process that accompanies the embolus (Chap. 2, Fig. 3a & 6a) or slide like tegular projection of varying sizes that accompany embolus often forming a fulcrum in which the embolus lies (Chap. 2, Fig. 26h); embolus stout, hook-shaped (Chap. 3, Fig. 5a), filiform (Chap. 2, Fig. 2a); angular (Chap. 2, Fig. 19a); embolic projections usually absent, when present subapical (Chap. 2, Fig. 26a,c); origin apical (Chap. 2, Fig. 2a), basal (Chap. 3, Fig. 2a), or prolateral (Chap. 2, Fig. 19a); sperm duct regularly curved (Chap. 2, Fig. 2a); repeated curvature (Chap. 3, Fig. 6a); incurved (Chap. 2, Fig. 3a,b); complexly coiled (Chap. 4, Fig. 2a). Median apophysis, if present, hook-shaped, sclerotized, convex, apex acute (Chap. 2, Fig. 2a) (Chap. 2, Fig. 2a), hook-shaped, sclerotized, concave, apex acute with (Chap. 2, Fig. 8a) or without basal projection (Chap. 2, Fig. 16a); or apex truncate (Chap. 2, Fig. 28a,b), complex, sclerotized (Chap. 2, Fig. 19a), bifid (Chap. 5, Fig. 2a); insertion medial (Chap. 2, Fig. 2a) or distal (Chap. 5, Fig. 3a; Chap. 4, Fig. 2a).

**Composition.** *Hersilia* Audouin, 1826 – 73 species; *Hersiliola* Thorell, 1870 – seven species; *Murricia* Simon, 1882 – 5 species; *Tama* Simon, 1882 – 1 species; *Tamopsis* Baehr & Baehr, 1987 – 49 species; *Neotama* Baehr & Baehr, 1993 – 1 species; *Ypypuera* Rheims & Brescovit, 2004 – three species; *Ivivraiva* Rheims & Brescovit, 2004 – two species; *Yabisi* Rheims & Brescovit, 2004 – two species; *Tyrotama* – nine species; *Prima* – two species.

**Distribution.** Tropical and subtropical zones worldwide. The genus *Hersilia* from the Palearctic, Afrotropical, Oriental and Australian Regions; *Hersiliola* from the Palearctic and Afrotropical Regions; *Murricia* from the Oriental and Afrotropical Regions; *Prima* from the Afrotropical Region; *Promurricia* from the Oriental Region; *Neotama* from the Oriental and Afrotropical Regions; *Tama* from the Palearctic region;

*Tyrotama* from the Afrotropical Region; *Ypypuera* and *Iviraiva* from the Neotropical Region; *Yabisi* from the Nearctic and Neotropical Regions.

**Phylogenetics.** The family Hersiliidae forms a monophyletic unit based on the elongate cylindrical terminal segment of the posterior lateral spinnerets. The presence of tarsal claw tufts, a small anal tubercle, four trichobothria distad on the metatarsi and the presence of feathery hairs that cover most of the body.

**Key to the genera of Hersiliidae from the Afrotropical Region**

1. Chelicerae unarmed; posterior lateral spinnerets < carapace width; leg IV longest; thoracic region of carapace sloping (Chap.3; Fig. 4c).....2
  - Chelicerae armed; posterior lateral spinnerets > carapace width; leg I or II longest; thoracic region of carapace dorso-ventrally flattened (Chap.3; Fig. 3c).....4
  
2. Metatarsi with elongate flexible zone in distal third; leg III < 0.4× leg I.....
  - .....*Tama* (Simon)
  - Metatarsi uniarticulate, leg III > 0.5 times leg I.....3
  
3. Seminal receptacle, small and sclerotized; bulbus flattened with regularly curved sperm duct; embolus coiled, elongate, filiform; median apophysis hook-shaped (Chap. 3; Fig. 2a,b).....*Hersiliola* (Thorell)
  - Seminal receptacle large, unsclerotized; bulbus globose, sperm duct meandering; embolus short, stout, originate distally on bulbus; tegular apophysis, if present, , short stout distad on bulbus (Chap. 3; Fig. 5a).....*Tyrotama* gen. nov.
  
4. Metatarsi distally with flexible zone on legs I, II, and IV.....5
  - Metatarsi biarticulate in legs I, II, and IV.....6
  
5. Distal third of metatarsus I,II, IV flexible.....*Prima* gen. nov.
  - Narrow flexible zone in distal third of metatarsi I, II, and III.....
    - .....*Neotama* Baehr & Baehr
  
6. Five pairs of dorsal muscular pits, second pair small, postero-mesad of first pair (Chap. 4; Fig. 2e); abdomen sub-triangular to sub-quadrate; dorsal surface of eye area concave; segment.....*Murricia* Simon
  - Four pairs of dorsal muscular pits; abdomen ovoid to obovate; dorsal surface of eye area convex; distal segment of metatarsi variable in >0.3 and <0.8 times proximal segment.....*Hersilia* Audouin

### References

- AXELROD, D.I., RAVEN, P.H. 1978. Late Cretaceous and Tertiary vegetation history of Africa. pp. 77-130. In: Werger, M.J.A. (ed.). *Biogeography and ecology of southern Africa*. The Hague. Dr. W. Junk Publishers.
- BAEHR, B. & BAEHR, M. 1987. The Australian Hersiliidae (Arachnida: Araneae): Taxonomy, phylogeny, zoogeography. *Invertebrate Taxonomy* **1**: 351-437.
- BAEHR, B. & BAEHR, M. 1988. On Australian Hersiliidae from the South Australian Museum (Arachnida: Araneae). Supplement to the revision of the Australian Hersiliidae. *Records of the Australian Museum* **22**: 13-20.
- BAEHR, B. & BAEHR, M. 1989. Three new species of genus *Tamopsis* Baehr & Baehr from Western Australia (Arachnida, Araneae, Hersiliidae). Second supplement to the revision of the Australian Hersiliidae. *Records of the Australian Museum* **14**: 309-320.
- BAEHR, B. & BAEHR, M. 1992. New species and new records of genus *Tamopsis* Baehr & Baehr (Arachnida, Araneae, Hersiliidae). Third supplement to the revision of the Australian Hersiliidae. *Records of the Australian Museum* **16**: 61-77.
- BAEHR, M. & BAEHR, B. 1993a. The Hersiliidae of the Oriental Region including New Guinea. Taxonomy, phylogeny, zoogeography (Arachnida, Araneae). - *Spixiana*, Supplement **19**: 1-95.
- BAEHR, B. & BAEHR, M. 1993b. New species and new records of Hersiliidae from Australia, with an updated key to all Australian species (Arachnida: Araneae: Hersiliidae). Fourth supplement to the revision of the Australian Hersiliidae. *Records of the Australian Museum* **16**: 347-391.
- BAEHR, B & BAEHR, M. 1995. New species and new records of Hersiliidae (Arachnida, Araneae, Hersiliidae) from Australia. Fifth supplement to the revision of the Australian Hersiliidae. *Records of the West Australian Museum Supplement* **52**: 107-118.
- BAEHR, B. 1998. The genus *Hersilia*: phylogeny and distribution in Australia and New Guinea (Arachnida, Araneae, Hersiliidae). - Proc. 17th European Coll. Arachnology 1997. *Bulletin of the British Arachnological Society* : 61-65.

- BENOIT, P.L.G. 1967. Révision des espèces africaines du genre *Hersilia* Sav. et Aud. (Aran.-Hersiliidae). *Revue de zoologie et de botanique africaines* **76**: 1-36.
- BREMER, K. 1994. Branch support and tree stability. *Cladistics* **10**: 295-304.
- CODDINGTON, J.A. & LEVI, H.W. 1991. Systematics and evolution of spiders (Araneae). *Annual Review of Ecology and Systematics* **22**: 565-92.
- DIPPENAAR, A.S., JOCQUÉ, R. 1997. *African Spiders: An identification manual*. Plant Protection Research Institute Handbook no. 9. Agricultural Research Council, Pretoria.
- FARRIS, J.S. 1985. On the boundaries of phylogenetic systematics. *Cladistics* **1**:14-27.
- FELSENSTEIN, J. 1985. Confidence limits on phylogenetics: An approach using the bootstrap. *Evolution* **39**: 783-791.
- FORSTER, R.R. 1980. Evolution of the tarsal organ, the respiratory system and the female genitalia in spiders. *Verhandlungen der Internationale Arachnologische Kongres* **8**: 269-284.
- GRISWOLD, C.E., LEDFORD, J. 2001. Contributions to the study of the Biodiversity of Madagascar nr.1: A monograph of the migid trap door spiders of Madagascar and review of the world genera ( Aranaeae, Mygalomorphae, Migidae). California Academy of Sciences, San Francisco, California, 120pp.
- GRISWOLD, C.E., CODDINGTON, J.A., PLATNICK, N.I., FORSTER, R.R. 1999. Towards a phylogeny of entelegyne spiders (Araneae, Araneomorphae, Entelegynae). *The Journal of Arachnology* **27**: 53-63.
- GOLOBOFF, P.A. 1993a. Estimating character weights during tree search. *Cladistics* **9**: 83-92.
- GOLOBOFF, P.A. 1993b. Nona 1.6. Computer program available from J.M. Carpenter, Dept. Entomology, American Mus. Natural History, Central Park West at 79<sup>th</sup>, New York, New York 10024 USA.
- GOLOBOFF, P.A. 1997. Pee-Wee 2.6. Computer program available from J.M. Carpenter, Dept. Entomology, American Mus. Natural History, Central Park West at 79<sup>th</sup>, New York, New York 10024 USA.
- KASTON, B.J. 1938. Checklist of the spiders of Connecticut. *Bulletin State of*

- Connecticut Geological and Natural History Survey* 60: 175-201
- LAWRENCE, R. F. 1928. Contributions to a knowledge of the fauna of South-West Africa VII. Arachnida (Part 2). *Annals of the South African Museum* **25**: 217-312.
- LAWRENCE, R.F. 1964. *A conspectus of South African spiders*. Department of Agriculture Technical Services, South Africa. Science Bulletin **369**, 64pp.
- LEHTINEN, P.T. 1967. Classification of the cribellate spiders and some families with notes on the evolution of the suborder Araneomorpha. *Annales Zoologici Fennici* 4, 468 pp.
- LUCAS, H. 1869. Quelques remarques sur les articles additionnels observés dans les palpes des *Actinopus*, les pattes des *Hersilia* et description d'une nouvelle espèce d'aranéide appartenant à cette dernière coupe générique. *Revue Magasin de Zoologie*. (2) **21**: 160-170.
- MEYER, M.K.P. (SMITH), RODRIQUES, M.C. (1966). Acari associated with cotton in South Africa. *Garcia de Orto* **13**:1-33.
- NIXON, K.C. 1999a. The parsimony ratchet, a new method for rapid parsimony analysis. *Cladistics* **15**: 407-414.
- NIXON, K.C. 1999b. Winclada (beta) ver. 0.9. Published by the author, Ithaca, NY. [Available at <http://www.cladistics.com>]
- PRENDINI, L. 2001.** Species or supraspecific taxa as terminals in cladistic analysis? Ground plans versus exemplars revisited. *Systematic Biology* **50**: 290-300.
- PETRUNKEVITCH, P.T. 1963. Chiapas amber spiders. *University of California Publications in Entomology* **31**: 1-40.
- PENNEY, D. 1999. Hypothesis for the recent hispaniolan spider fauna based on the Dominican Republic amber spider fauna. *Journal of Arachnology* **27**: 64-70.
- PENNEY, D. 2002. Spiders in Upper Cretaceous Amber from New Jersey (Arthropoda: Araneae). *Palaeontology* **45**:709-724.
- PLATNICK, N.I. 2004. *The world spider catalog*. American Museum of Natural History. Internet: <http://research.amnh.org/entomology/spiders/catalog/HERSILIIDAE.html>.
- RHEIMS, C.A. & BRESCOVIT, A.D. 2004. Revision and cladistic analysis of the

- spider family Hersiliidae (Arachnida, Araneae) with emphasis on Neotropical and Nearctic species. *Insect Systematics and Evolution* **35**: 189-239.
- SCHAWALLER, W. 1981. Die Spinnenfamilie Hersiliidae in Dominikanischem Bernstein (Stuttgarter Bernsteinsammlung: Arachnida, Araneae). *Stuttgarter Beitrage zur Naturkunde. B Geologie und Palaeontologie* **79**: 1-10.
- SIERWALD, P. 1997. Phylogenetic analysis of pisaurine nursery web spiders, with revisions of *Tetragonophthalma* and *Perenethis* (Araneae, Lycosoidea, Pisauridae). *Journal of Arachnology* **25**: 361-407.
- SIMON, E. 1864. *Histoire naturelle des araignées* (aranéides). Paris, pp. 1-540.
- SIMON, E. 1882. II Etude sur les Arachnides du Yemen méridional. In Viaggio ad Assab nel Mar Rosso dei signori C. Doria ed O. Beccari con il r. Aviso esploratere del 16 nov. 1879 ad 26 feb. 1881. *Annali Del Museo civico di storia naturale di Genova* **18**: 207-260.
- SMITHERS, R.H.N. 1945. The Hersiliidae (Araneae) of South Africa. *Transactions of the Royal Society of South Africa* **31**: 1-18.
- THORELL, T. 1870. On European spiders. *Nova Acta Regiae Societatis Scientarium Upsaliensis* **3(7)**: 109-242.
- THORELL, T. 1873. Remarks on synonyms of European spiders. Part IV. *Uppsala*, pp. 375-645.
- WARD, J.D., SEELY, M.K., LANCASTER, N. 1983. On the antiquity of the Namib. *South African Journal of Science* **79**: 175-183.
- WUNDERLICH, J. 2004. *Fossil spiders in amber and copal*. Beitrage zur Araneologie 3(A).

**Table 1.** Summary of statistical and topological differences among the most parsimonious trees (MPTs) obtained by analysis with equal weights (EW), Successive weights (SW and Implied weights (IW) with three values for the Concavity Constant ( $k$ ).

	MPTs	Steps	CI	RI
EW <sub>u</sub>	2	126	59	71
SW <sub>Nu</sub>	1	126	59	71
IW <sub>u</sub> = 1	1	126	59	71
IW <sub>u</sub> = 3	1	126	59	71
IW <sub>u</sub> = 6	1	126	59	71



<i>Hersilia salda</i>	0 0 1 0 0 0 1 1 1 - - 0 0 0 1 1 0 3 0 0 0 1 0 - - 0 0 0 1 1 0 2 0 1 3 0 1 1 1 0 0 0 0 0 2 0 1 1 1 3 1 0 1 1 2 1 1 1 1
<i>Hersilia scopulae</i>	0 0 1 0 0 0 1 0 0 1 1 1 - - - 0 1 1 0 0 0 0 - 1 0 0 0 0 0 0 - 1 1 1 3 1 0 1 1 2 1 1 1 1
<i>Hersilia sericea</i>	0 0 1 0 0 0 1 0 0 0 1 1 - - - 0 1 1 0 0 0 0 1 0 1 0 0 0 0 2 0 2 0 1 3 0 0 1 1 0 0 0 0 0 0 0 1 1 1 3 1 0 1 1 2 1 1 1 1
<i>Hersilia setifrons</i>	0 0 0 0 0 0 1 0 0 0 1 1 - - - 0 1 1 0 0 0 0 1 0 1 0 0 0 0 2 0 2 0 1 3 0 0 1 1 0 0 0 0 0 0 0 1 1 1 3 1 0 1 1 2 1 1 1 1
<i>Hersilia sigillata</i>	0 0 0 0 0 0 1 0 0 0 1 1 - - - 0 1 1 0 0 0 0 1 0 1 0 0 0 0 2 0 1 2 0 3 2 0 1 0 1 1 1 0 0 0 0 1 1 1 3 1 0 1 1 2 1 1 1 1
<i>Hersilia tamatavensis</i>	0 - - 0 0 0 1 0 0 0 1 1 - - - 0 1 1 0 0 0 0 - 0 0 0 0 0 0 0 - 1 1 1 3 1 0 1 1 2 1 1 1 1
<i>Hersilia unca</i>	0 - - 0 0 - 0 - - 0 1 0 1 2 0 2 1 0 3 1 1 1 1 0 0 0 0 0 2 0 1 1 1 3 1 0 1 1 2 1 1 1 1
<i>Hersilia vanmoli</i>	0 1 0 0 0 0 1 1 1 - - 0 1 0 0 0 0 3 0 0 0 0 0 - - 0 1 0 0 1 0 2 1 0 3 1 1 0 0 0 0 0 0 0 2 0 1 1 1 3 1 0 1 1 2 1 1 1 1
<i>Hersilia vinsoni</i>	0 - - 0 0 - 1 0 1 0 0 0 0 2 0 1 1 0 3 2 0 1 1 0 0 0 0 0 0 0 1 1 1 3 1 0 1 1 2 1 1 1 1
<i>Hersilia woutrinae</i>	0 0 0 0 0 0 1 1 1 - - 0 1 0 0 0 0 3 0 0 0 0 0 - - 0 1 0 0 2 0 2 1 0 3 1 1 1 0 0 0 0 0 0 2 0 1 1 1 3 1 0 1 1 2 1 1 1 1
<i>(Hersilia tibialis)</i>	0 1 1 0 0 1 1 0 0 4 1 1 - - - 0 0 0 1 2 0 0 1 1 2 0 0 0 0 1 0 2 0 1 3 0 - 1 1 0 0 0 0 0 0 0 1 1 1 3 1 0 1 1 2 1 1 1 1
<i>(Neotama cunhabebe)</i>	1 0 0 0 1 0 2 0 0 0 1 1 - - - 0 1 2 1 0 0 0 1 0 0 0 0 0 0 2 1 2 1 0 1 1 - 0 0 0 0 0 0 0 0 0 1 1 1 2 1 0 1 1 2 1 1 1 1
<i>(Tamopsis eucalypti)</i>	0 0 0 1 0 0 2 0 0 3 1 1 - - - 0 0 2 1 3 0 0 0 - - 0 0 0 0 0 0 2 1 0 3 0 - 0 0 0 0 0 0 0 0 0 1 1 1 1 1 0 1 1 2 1 1 1 1
<i>(Hersilia jajaj)</i>	0 0 0 0 0 0 5 0 0 - - 1 - - - 0 0 1 1 1 0 0 1 0 0 0 0 0 0 1 0 2 0 0 3 1 1 0 0 0 0 0 0 0 0 0 1 1 1 3 1 0 1 1 2 1 1 1 1
<i>(Tama edwardsi)</i>	0 0 0 0 0 0 0 0 1 - - 1 - - - 0 0 0 0 0 0 0 0 - - 0 0 0 0 0 0 2 0 0 3 1 - 0 2 0 0 0 1 1 0 0 1 1 0 1 1 1 1 1 1 1 1 0 1 0

**List of characters**

- 1 tibia/patella male palp
- 2 Palpal tibia: angulate dorsal projection
- 3 Palpal tibia: dorsal spines
- 4 Cymbium and alveolus shape
- 5 Cymbium narrows
- 6 Lamellar modifications
- 7 Sperm duct form
- 8 bulbus: basal swelling
- 9 Median apophysis
- 10 Median apophysis shape
- 11 Median apophysis origin
- 12 Conductor
- 13 Conductor: size
- 14 Conductor, hyaline projection distally
- 15 Conductor with ventral furrow distally
- 16 Sclerotized tegular projection
- 17 lateral tegular projection

- 18 Embolus, position from which embolus originate
- 19 Embolus length
- 20 Embolus shape
- 21 embolus with a triangular projection distally
- 22 Embolus apex
- 23 Epigyne plate
- 24 Median plate: lateral lobespartially\_covered\_by\_lateral\_borders free;
- 25 median plate form
- 26 Epigynal plate: atrium
- 27 Epigynum medially transverse unpigmented plate
- 28 Copulatory openings position relative to spermathecae
- 29 Copulatory openings sclerotizations
- 30 Length of copulatory duct
- 31 Copulation ducts shape
- 32 Number of spermathecae
- 33 Spermathecae shape
- 34 Spermathecae stalk
- 35 Seminal receptacle number
- 36 seminal receptacle shape
- 37 Position of seminal receptacle relative to spermathecae
- 38 Seminal receptacle borders
- 39 Clypeus length
- 40 ALE/AME
- 41 Interdistance AME-ALE
- 42 Lateral eyes on tubercles
- 43 cheliceral teeth on retromargin
- 44 cheliceral teeth on promargin
- 45 Abdomen: patter on dorsum
- 46 Female abdomen with two pairs of tubercles laterally
- 47 Dorsal muscular pit number
- 48 Relative length of leg III to leg I
- 49 Relative length of leg IV to leg I  $>1 <1$
- 50 Metatarsi articulation of leg I, II, and III
- 51 Metatarsus/tarsus
- 52 Leg spine microstructure

- 53 Claw tuft
- 54 Metatarsal trichobothria
- 55 Legs spination, ventral surface
- 56 Feathery hairs
- 57 PLS: tS/bS
- 58 Anal tubercle
- 59 Habit

## Appendix 2 Index of species

### Chapter 2

*Hersilia* Audouin, 1826

1. *Hersilia albicomis* Simon, 1887 (Figs. 2, 26a & 33)
2. *Hersilia alluaudi* Berland, 1919 (Figs. 3 & 34)
3. [\*Hersilia arborea\* Lawrence, 1928](#) (Figs. 4 & 38)
4. [\*Hersilia baforti\* Benoit, 1967](#) (Figs. 5 & 34)
5. *Hersilia beva* sp. nov. (Figs. 6 & 34)
6. *Hersilia bubi* sp. nov. (Figs. 7 & 34)
7. *Hersilia caudata* Audouin, 1826 (Figs. 9, 26b & 33)
8. [\*Hersilia caronae\* sp. nov.](#) (Figs. 8, 26g & 35)
9. [\*Hersilia clarki\* Benoit, 1967](#) (Figs. 10 & 34)
10. *Hersilia dilumen* sp. nov. (Figs. 11 & 34)
11. *Hersilia eloetsensis* sp. nov. (Figs. 12 & 36)
12. *Hersilia ferra* sp. nov. (Figs. 13 & 34)
13. *Hersilia hildebrandti* Karsch, 1878 (Figs. 14 & 38)
14. *Hersilia incompta* Benoit, 1971 (Figs. 15 & 37)
15. *Hersilia insulana* Strand, 1907 (Figs. 16 & 35)
16. [\*Hersilia madagascariensis\* \(Wunderlich 2004\)](#) (Figs. 17, 26a & 36)
17. *Hersilia moheliensis* sp. nov. (Figs. 18 & 36)
18. *Hersilia nicolae* sp. nov. (Figs. 19 & 38)
19. *Hersilia occidentalis* Simon, 1907 (Figs. 20, 26c & 33)
20. *Hersilia plara* sp. nov. (Figs. 21 & 34)
21. *Hersilia pungwensis* Tucker, 1920 (Figs. 22 & 33)
22. *Hersilia salda* sp. nov. (Figs. 23, 26i & 34)
23. *Hersilia sericea* Pocock, 1898 (Figs. 24, 26d & 33 )
24. *Hersilia setifrons* Lawrence, 1928 (Figs. 25, 26e & 33)
25. *Hersilia sigillata* Benoit, 1967 (Figs. 27, 26h & 36)
26. *Hersilia taita* sp. nov. (Figs. 28 & 36)
27. *Hersilia tamatavensis* sp. nov. (Figs. 29a-d & 33)

28. *Hersilia unca* sp. nov. (Figs. 29e-i & 34)
29. *Hersilia vanmoli* Benoit, 1971 (Figs. 30 & 34)
30. *Hersilia vinsonii* Lucas, 1869 (Figs. 31 & 35)
31. *Hersilia woutrinae* sp. nov. (Figs. 32 & 34)

### Chapter 3

*Hersiliola* Thorell, 1870

1. *Hersiliola macullulata* (Dufour, 1831) (Figs 2 & 11)
2. *Hersiliola simonii* (O.P.-Cambridge, 1872) (Figs. 3 & 11)
3. *Hersiliola versicolor* Blackwall, 1865 (Figs. 4 & 11)

*Tyrotama* gen. nov.

1. *Tyrotama arida* (Smithers, 1945) comb. nov. (Figs. 5 & 12)
2. *Tyrotama australis* (Simon, 1893) comb. nov. (Figs 6 & 12)
3. *Tyrotama bicava* (Smithers 1945) comb. nov. (Figs. 7 & 12)
4. *Tyrotama fragilis* (Lawrence, 1928) comb. nov. (Figs. 8 & 12)
5. *Tyrotama gamkasiensis* sp. nov. (Figs. 9a-e & 12)
6. *Tyrotama incerta* (Tucker, 1920) comb. nov. (Figs. 9f-j & 12 )
7. *Tyrotama makalaliensis* sp. nov. (Figs. 10a,b & 12)
8. *Tyrotama taris* sp. nov. (Figs. 10c-g & 12)

### Chapter 4

*Murricia* Simon, 1882

1. *Murricia uva* sp. nov. (Figs. 1 & 3)
2. *Murricia emlynae* sp. nov. (Figs. 2 & 3)

### Chapter 5

*Neotama* Baehr & Baehr, 1993.

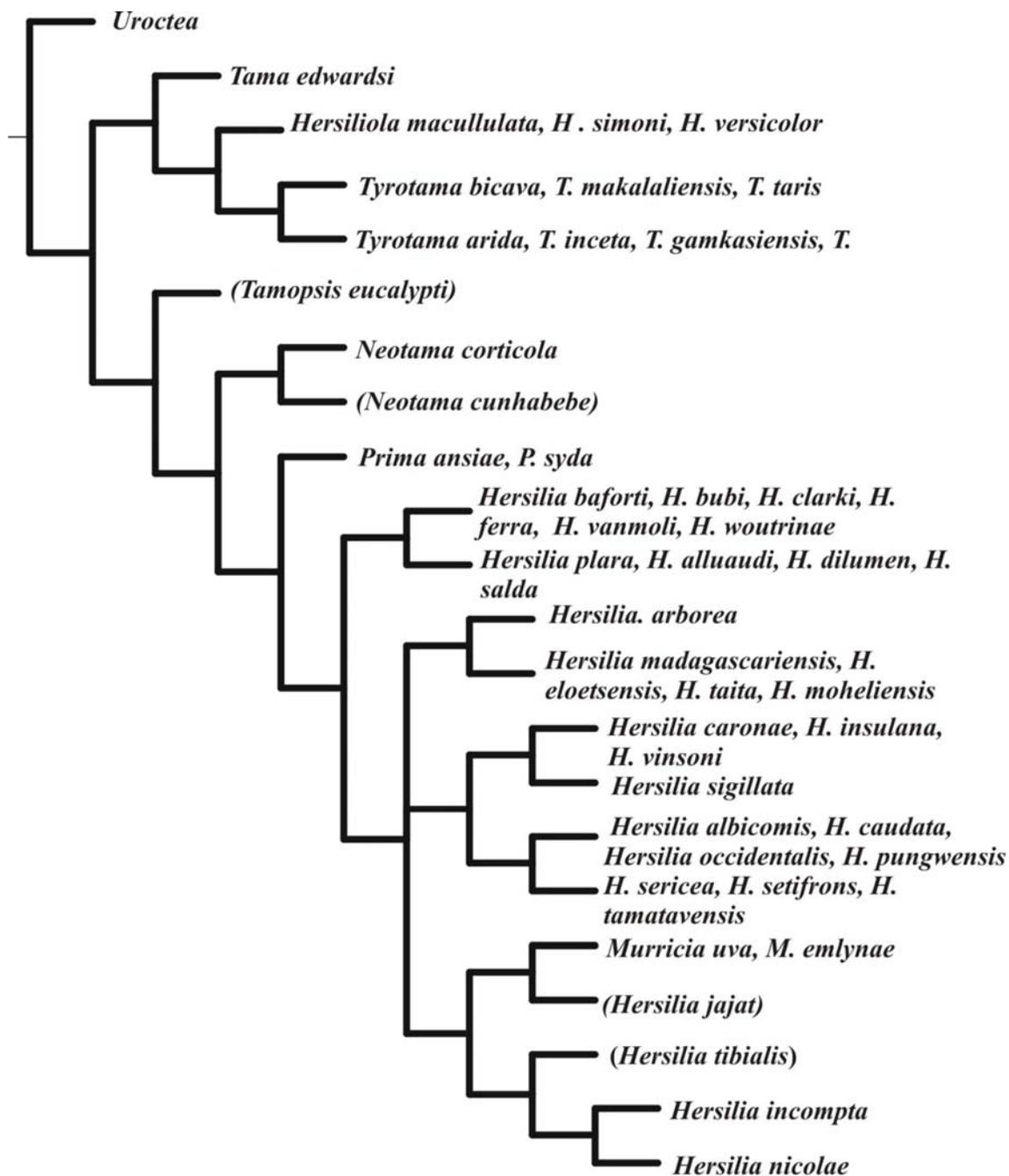
1. *Neotama corticola* (Lawrence, 1937) comb. nov. (Figs. 1 & 4)

*Prima* gen. nov.

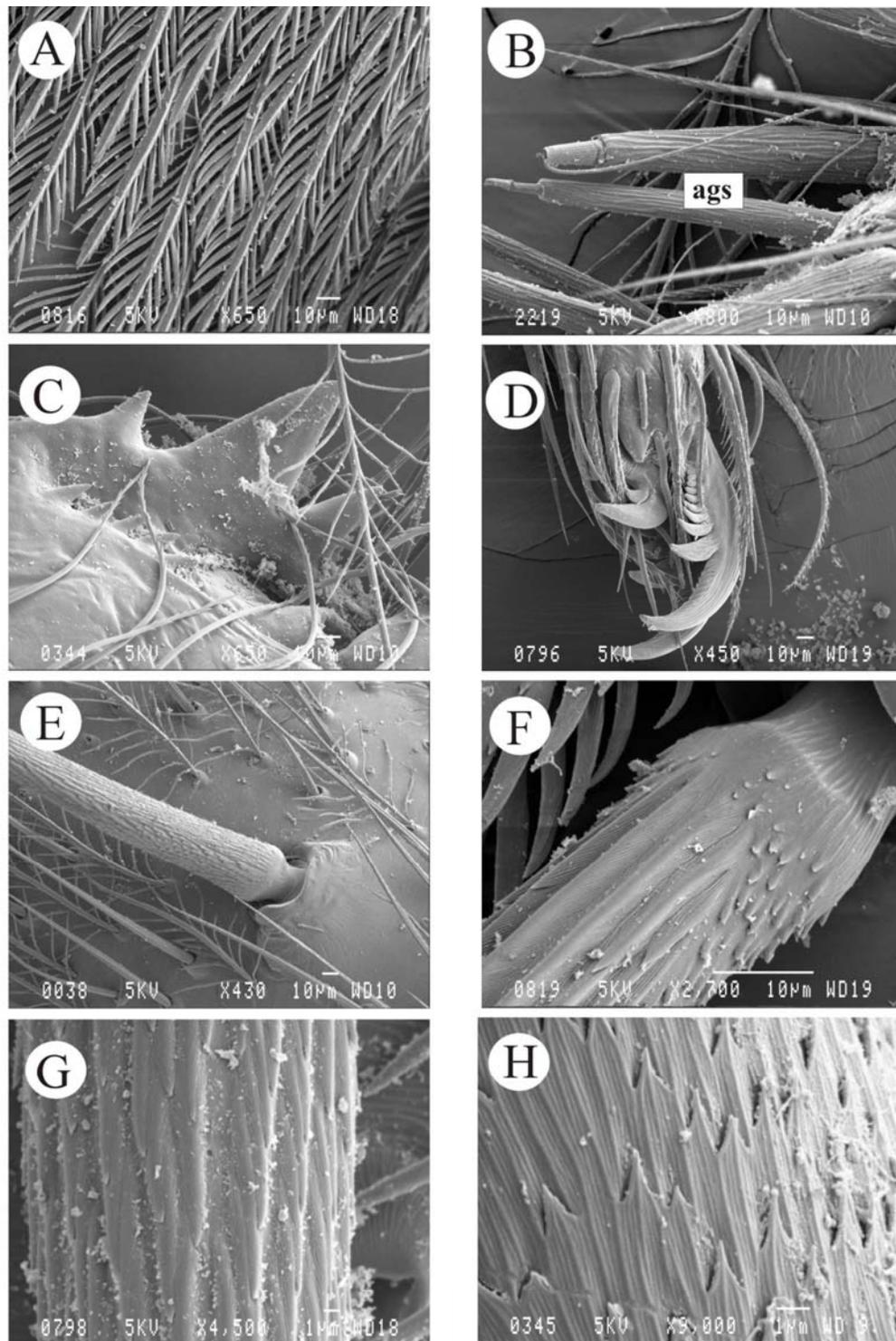
1. *Prima ansieae* sp. nov. (Figs. 2 & 4)

2. *Prima syda* sp. nov. (Figs. 3 & 4)

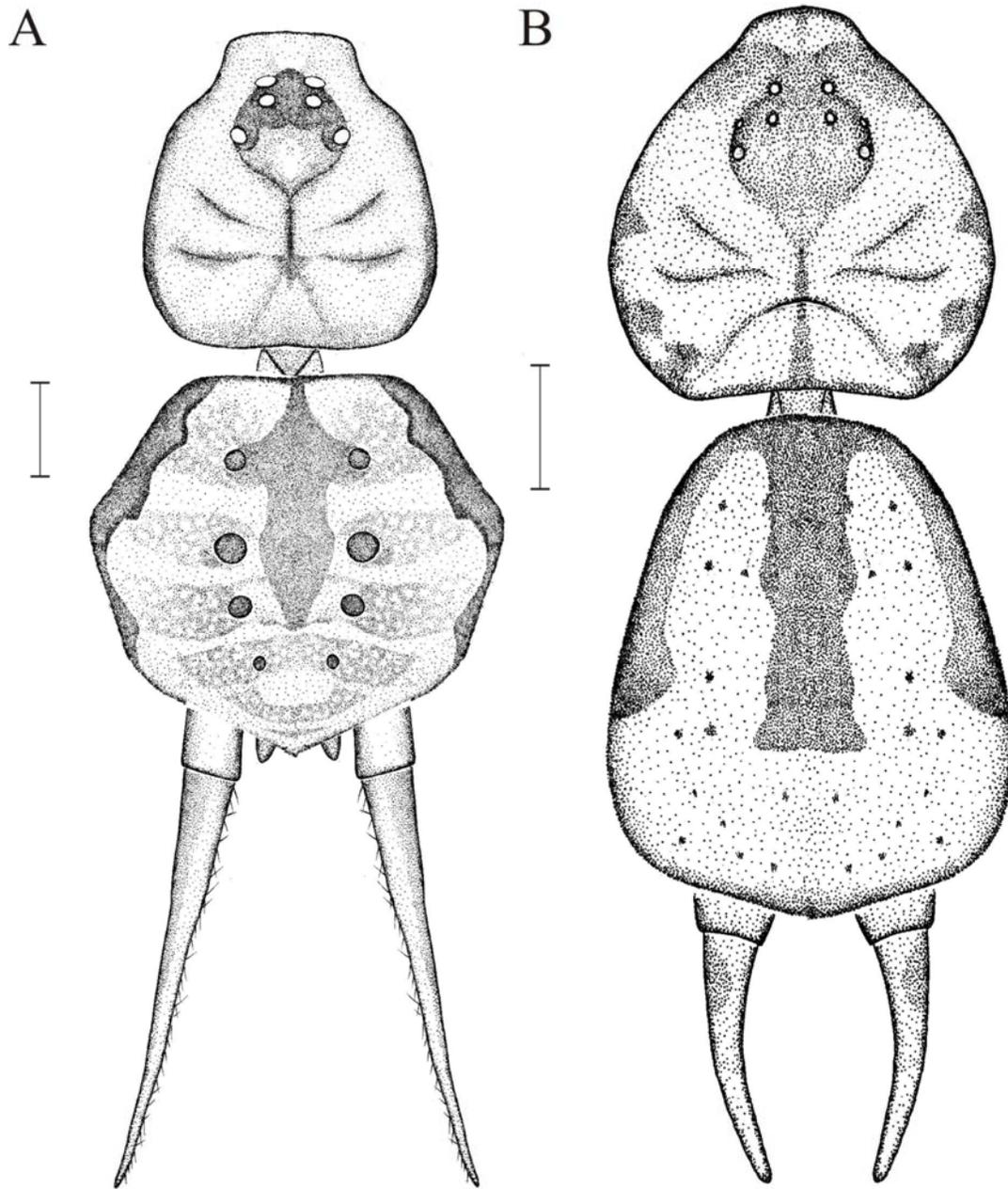




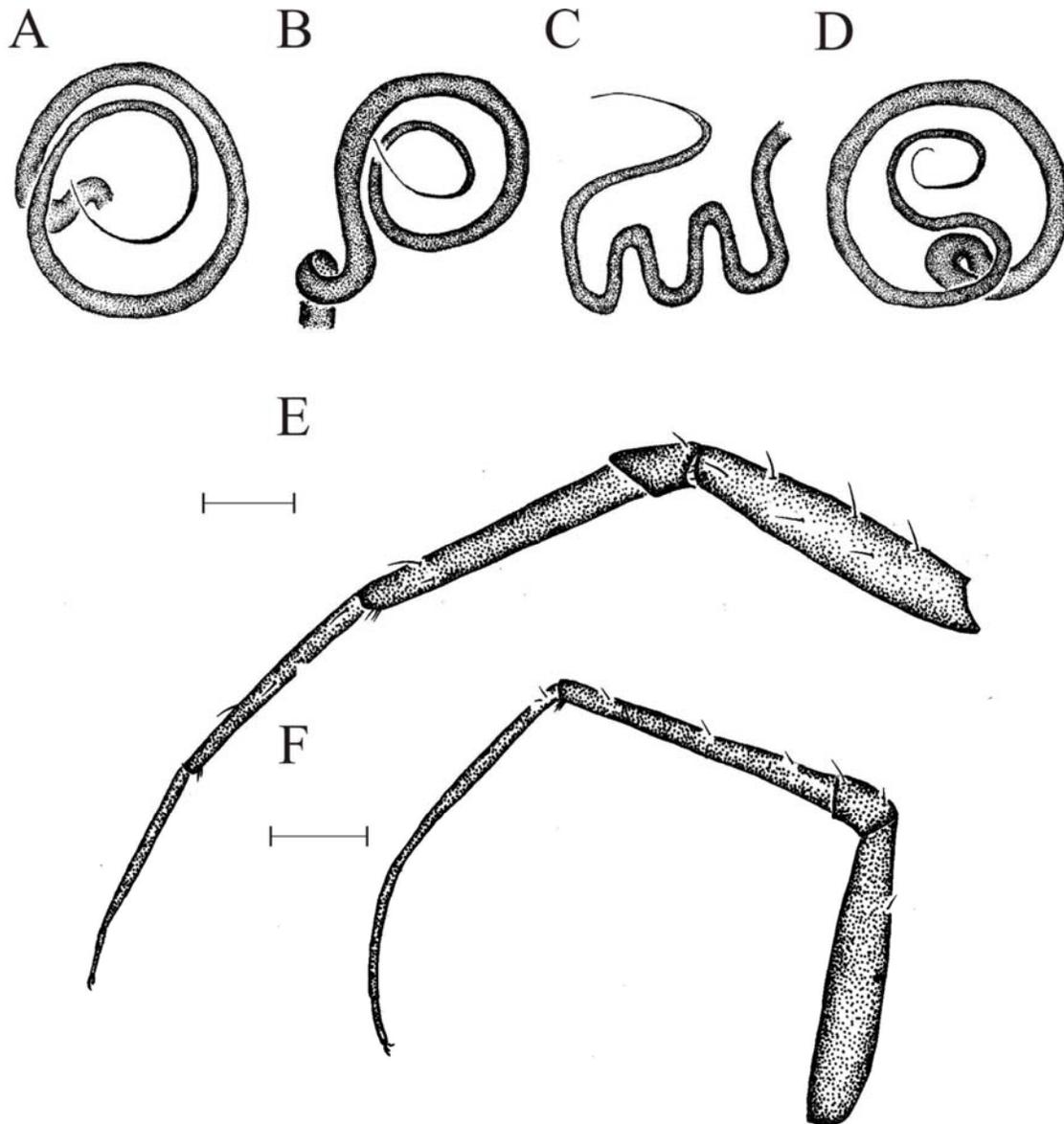
**Figure 2.** Summary cladogram for all Hersiliidae examined in this study (structure derived from preferred tree, Fig. 1).



**Figure 3.** Scanning electron micrographs. *Hersilia sericea* Pocock, **A.** Plumose setae, **B.** posterior lateral spinnerets, ags = aciniform gland spigots, **C.** Cheliceral teeth, **D.** Tarsal claw, **E.** Microstructure on surface of leg spines; *Tyrotama gamkasiensis* sp. n., **F.** Microstructure on surface of leg spines; *Prima ansiae* sp. n., **G.** Microstructure on surface of leg spines; *Uroctea* sp., **H.** Microstructure on surface of leg spines.



**Figure 4.** Dorsal view. **A.** *Hersilia caudata* Audouin. **B.** *Tyrotama gamkasiensis* sp. nov.



**Figure 5.** *Hersilia sericea* Pocock, **A.** sperm duct; *Neotama corticola* (Lawrence), **B.** sperm duct; *Tyrotama australis* (Simon), **C.** sperm duct; *Murricia emlynae* sp. nov., **D.** sperm duct; *Hersilia sericea* Pocock, **E.** leg I, lateral view; *Prima ansieae* sp. nov., **F.** leg I, lateral view.

## CHAPTER TWO

**A Revision of the Afrotropical species of *Hersilia* Audouin (Araneae: Hersiliidae)****Abstract**

The genus *Hersilia* from the Afrotropical Region is revised. All valid species were fully redescribed. Fourteen new species are described: *Hersilia beva*, *H. bubu*, *H. caronae*, *H. dilumen*, *H. eloetsensis*, *H. ferra*, *H. moheliensis*, *H. nicolae*, *H. plara*, *H. salda*, *H. taita*, *H. tamatavensis*, *H. unca*, *H. woutrinae*. The following names have been synonymized: *H. segregata* Benoit with *H. occidentalis* Simon and *H. nossibeensis* Strand with *H. insulana* Strand. A neotype was designated for *H. vinsonii* Lucas. *Hersiliopsis madagascariensis* Wunderlich is transferred to *Hersilia*. *H. kauderni* Strand, *H. stumpfi* Strand and *H. fossulata* are doubtful because the descriptions are poor, specimens immature, and type(s) are lost or could not be received for examination. A key is provided for all the *Hersilia* species from the Afrotropical Region and the species are grouped into five monophyletic species groups.

**Key words:** Afrotropical Region, Araneae, Hersiliidae, *Hersilia*

## Introduction

With 58 species distributed throughout the Afrotropical, Oriental (Baehr & Baehr 1993) and Australian Regions (Baehr & Baehr 1987), *Hersilia* is the largest and most diverse hersiliid genus (Platnick 2004). Members of the genus are arboreal and recognised by the very long posterior lateral spinnerets and biarticulations on metatarsi I, II and IV of the legs. Their chelicerae are armed with teeth on the pro- and retromargin, lateral eyes on slight tubercles and abdomens have four pairs of conspicuous muscular pits dorsally.

To date, there were 22 species of *Hersilia* known from the Afrotropical Region. The type species, *Hersilia caudata*, described by Audouin (1826) was recorded from Egypt. Between 1865 and 1900, five species were described from the Afrotropical Region viz. *H. vinsonii* Lucas, 1869, *H. hildebrandti* Karsch, 1878, *H. fossulata* Karsch, 1881, *H. albicomis* Simon, 1887, and *H. sericea* Pocock, 1898. The first three species are only known from the type specimens whereas numerous synonyms have been proposed for the latter two species as well as several new localities were recorded.

Simon (1907) described *H. occidentalis* from the central parts of West Africa, while Strand, described four species from Madagascar, viz. *H. insulana* (1907a), *H. kauderni* (1908), *H. nossibeensis* (1916), and *H. stumpfi* (1916). Lawrence (1928) described two species, *H. setifrons* and *H. arborea* from Namibia, and Tucker (1920) described *H. pungwensis* from Zimbabwe. Benoit (1967) described four species: *H. baforti*, *H. segregata*, *H. clarki*, and *H. sigillata* from the eastern parts of central Africa and in 1971 he described two additional species, *H. vanmoli*, and *H. incompta* from West Africa.

Knowledge of the natural history of *Hersilia* is still rudimentary. They are cryptic and remain with their bodies adpressed to the substrate when at rest, moving at great speed when disturbed (Dippenaar-Schoeman & Jocqué 1997). Prey is rapidly encircled and enswathed with silk released from the long posterior lateral spinnerets. Although specimens are not easily located, reflections of sunlight on the guide threads they leave on trunks, are good indicators of their presence on a tree (Dippenaar-Schoeman & Jocqué 1997). The females construct a flat, oval-shaped eggsac that she covers with bits of bark.

Smithers (1945) reported on the hersiliid taxa from South Africa and Benoit (1967) revised the *Hersilia* from Africa, excluding Madagascar. Both made significant contributions to the understanding of the group. However, the present status of the genus is still not resolved. Several species are only known from one sex and most descriptions are incomplete lacking drawings especially of the internal genitalia of the female.

The Afrotropical Region represents the last biogeographical region for which no contemporary revision exists. In the present study the Afrotropical species of *Hersilia* are revised. All available material of *Hersilia* from North Africa and the Afrotropical Region housed in southern African, European and American institutions, was studied. A total of 412 *Hersilia* specimens were examined, the 22 known species were re-examined, three were listed as *nomina dubia* and 16 were redescribed and figured. Since series of specimens were available, it was possible to study intraspecific morphological variation and critically evaluate diagnostic characters used in the separation of the species. This resulted in the transfer of *Hersilia corticola* to the genus *Neotama* Baehr & Baehr, the transfer of *Hersiliopsis madagascariensis* Wunderlich to *Hersilia* and the synonymy of two species the description of 15 new species. A key to the 31 recognized species from the Afrotropical Region was prepared.

### Materials and Methods

**Study area:** The area covered by this study is the Afrotropical Region, including the following islands in both the Indian and Atlantic oceans: St. Helena, Comoros, Madagascar, the Seychelles, Zanzibar, Yemen, Aldabra Islands and Cape Verde. Reference is made to the distribution of species from the North Africa (countries outside the Afrotropical Region) only if such species also occur, at least partly, in the Afrotropical Region. Where possible, locality co-ordinates are given for localities of species.

**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). References to illustrations in this publication are capitalised whereas references to figures from other papers are noted in lower case.

Abbreviations: The following abbreviations are used in this paper:

ALE - anterior lateral eye; AME - anterior median eye; bS - basal segment of posterior lateral spinneret; c - copulatory duct; CI - carapace index; CL - carapace length; CLL - clypeus length; CW - carapace width; el - epigyne length; ew - epigyne width; Fe - femur; MOQ - median ocular quadrangle; MOQ-AW - MOQ anterior width; MOQ-PW - MOQ posterior width; MOQL - MOQ length; Mt - metatarsus; Pat - patella; PER - posterior eye row; PLE - posterior lateral eyes; PME - posterior median eyes; Ta - tarsus; Tib - tibia; tS - terminal segment of posterior lateral spinneret.

Measurements: Where enough material was available, 10 specimens of both sexes were measured for each species. Measurements were made under a stereomicroscope using an ocular micrometer with up to 50× magnification. All measurements are given in millimetres with the observed ranges in parentheses.

The following measurements were taken and indexes determined.

Carapace: CI - carapace index (derived by dividing the length of carapace by its width); CL - carapace length (measured from clypeal edge to posterior edge); CW – carapace width (measured over widest part of the carapace); CLL - clypeus length (measured from outer edge of AME to anterior edge of clypeus).

Size of eyes is given as relative to AME in the following order: AME: ALE: PME: PLE.

Legs - length of leg (each segment from the femur to tarsus was measured and the sum of the measurements given as the leg length).

Ratio of leg length is relative to leg I. All *Hersilia* spp., have a biarticulation on metatarsus I, II, and IV; the length of the proximal and distal segments of the metatarsi are given under the headings of metatarsus i and metatarsus ii respectively.

Abdomen: length (measured from anterior edge to posterior edge of abdomen) and width (measured over widest part of abdomen); total spinneret length and lengths of basal segment and terminal segment.

Epigyne: length and width of sclerotized area.

Drawings: the left palps of males were drawn if available; otherwise the right palp was drawn and specified as such. Drawings of the carapace include a lateral view and an

anterior view. The abdomen of the female was drawn if available, otherwise the male abdomen was drawn. In some type specimens the abdomen was damaged to such an extent that no drawings could be made. Drawings of the epigyne include a ventral and dorsal view.

Material was received on loan from the following institutions:

AMNH - American Museum of Natural History, New York, USA; BMNH - The Natural History Museum, London, UK; CASC - California Academy of Sciences, Golden Gate Park, San Francisco, California, USA; DNSM - Durban Natural Science Museum, Durban, South Africa; MNHU - Museum für Naturkunde der Humboldt Universität, Berlin, Germany; MNHN - Museum National d'Histoire naturelle, Paris, France; MRAC - Koninklijk Museum voor Midden- Afrika, Tervuren, Belgium; MSNG - Museo Civico di Storia Naturale Giacomo Doria, Genoa; NCA - National Collection of Arachnida, Agricultural Research Council -Plant Protection Research Institute, Pretoria, South Africa; NM - Natal Museum, Pietermaritzburg, South Africa; NMB - National Museum, Bloemfontein, South Africa; NRM - Swedish Museum of Natural History; QM - Queensland Museum, Brisbane, Australia; SAM – Iziko Museum of Cape Town, South Africa; SMFD - Forschungsinstitut und Naturmuseum Senckenberg, Federal Republic of Germany; SMN - State Museum, Windhoek, Namibia; TMP -Northern Flagship Institute -Transvaal Museum, Pretoria, South Africa;

### **Systematics**

#### ***Hersilia* Audouin, 1826**

*Hersilia* Audouin, 1826: 317; Lucas, 1869: 1; Simon, 1893: 440; Smithers, 1945: 1; Benoit, 1967: 1; Baehr & Baehr, 1987: 351; 1993: 3; Levy, 2003: 1.

Type species by monotypy: *Hersilia caudata* Audouin, 1826.

## Diagnosis

A group of spiders characterized by very long posterior lateral spinnerets, longer than carapace width; very long legs,  $> 2 \times$  total body length; metatarsi of leg I, II, and IV biarticulate (Fig. 1e); lateral eyes on slight tubercles (Fig. 10c); chelicerae armed with three large cheliceral teeth on promargin and one row of 3-9 minute teeth on retromargin; spermathecae globose or cylindrical.

## Description

**Female.** Size: small to medium (range 4.81 - 13.42).

Colour: carapace varies from pale yellow to dark brown, edge with dark border of varying thickness; clypeus pale with dark or white markings; MOQ dark, white marks posteriad of eye tubercle in some species; sternum, labium and endites pale; abdomen: dorsum mottled white, antero-lateral border dark brown, lancet-shaped heart mark dark, extends up to third pair dorsal muscular pit (Fig. 2e); ventrum pale to mottled white; legs: femora and tibiae pale with faint to dark annulation and lateral stripes.

Carapace: varying in length between longer than wide to wider than long; thoracic region widest; dorso-ventrally flattened; fovea longitudinal with radial striae; covered with plumose setae; lateral borders with row of conspicuous setae (Fig. 1f); clypeus truncate in dorsal view, sloping, varies in length from  $0.4 - 1.5 \times$  MOQ length; eye tubercle of variable height. Eyes: PER recurved from above, straight from front; AER recurved from above and in front; AME</>PME</>PLE>>ALE with ratio range AME: ALE: PME: PLE = 1: 0.23-0.7: 0.54-1.2: 0.5-1.27; MOQ wider than long, widest anteriorly; chelicerae: stout to elongate, retromargin with row of 3 - 9 minute teeth, promargin with three large teeth. Sternum: heart-shaped, sparsely covered with plumose setae. Labium: triangular- to crescent-shaped; two-thirds the length of endites; endites elongate, rectangular.

Abdomen: longer than wide, widest in posterior third; dorso-ventrally flattened; densely covered with plumose setae (Fig. 1b); four pairs of distinct dorsal muscular pits that vary in size (Figs. 1b & 2e); ventrum with muscular pits in V-shaped pattern. Spinnerets: posterior lateral spinnerets long, at least longer than cephalothorax width; terminal segment  $>2 \times$  length of basal segment; rows of numerous elongate tapering spinules ventrally on posterior lateral spinnerets (Fig. 1a), terminating distally in conical

apophyses with a truncate or acute apex; spinules on basal segment and entire length of terminal segment.

Legs: either leg I or II longest; leg I at least  $1.5 \times$  longer than total length of body; leg III very short,  $<0.4 \times$  length of leg I; metatarsus I  $>6 \times$  longer than tarsus I; distal segment of metatarsus  $<0.6 \times$  length of proximal segment. Legs I and II are one-third shorter than male's legs and legs III and IV are one-fifth shorter. Relative length of segments varies slightly between species. Femur slightly longer than tibia; length ratio of biarticulate metatarsi is 1 : 0.6. Leg spines similar between species. Femur, patella, and metatarsus with spines; spine formula similar between species and variations of: I- Fe 1r1p-1d-1r1p-1d-1r1p-1d, Pat 1r, Tib 1r1p-1d-1r1p-1d-1r1p-1d, Mt 1p1r-1d-1r1p-1d; II- Fe 1r1p-1d-1r1p-1d-1r1p-1d, Pat 1r, Tib 1r1p-1d-1r1p-1d-1r1p-1d, Mt 1p1r-1d-1r1p-1d-1r1p-1r1p; III- Fe 1d-1d-1d-1r1p, Pat 1d-1r-1d, Tib 1d-1r1p, Mt 1r1p-1d; IV- Fe 1p-1d-1p-1d-1p1r-1d-1p1r, Pat 1d-1r-1d, Tib 1d-1r1p-1d-1r1p-1d, Mt 1r1p-1r1p-1d; spines covered with irregular pattern of lancet-shaped scales (Figs. 1c, d). Four trichobothria distally on metatarsi; tarsal claw three clawed with 3 - 8 teeth on paired claws.

Epigyne: either with longitudinal division into median plate and lateral borders (Fig. 2f) or entire (Fig. 3f); epigynes with latter arrangement characterised by transverse white plate posteriad on epigyne (Fig. 3f); large median plate varies in shape from subquadrate (Fig. 9f), narrowing anteriorly to varying degrees (Fig. 2f) or T-shaped (Fig. 14a); presence of fixing structures that are triangular or sickle-shaped sclerotized outgrowths laterad on median plate (Fig. 2f), varies between some species in size and shape; lateral borders vary in size and shape (Figs. 2f & 8f). Spermathecae: copulatory openings usually posteriad or medially on epigynal plate ; spermathecae and seminal receptacle sclerotized, vary from globose to cylindrical, (Fig. 13g); fertilization ducts simple, short to elongate.

**Male.** Size: Small to medium (3.84 - 8.40). Resembles female in shape and colour but differs structurally as follows: smaller in size; abdomen more slender, widest medially; legs much longer in relation to body length; metatarsus in some males can be up to  $1.7 \times$  longer than femur; length ratio of biarticulate metatarsi is 1:0.5.

Palps: tibia short, some species with strong spines dorsally on tibia (Figs. 16b, 20b & 28b), or numerous elongate setae present in front of bulbus (Fig. 2a); sperm duct

shape varies between species groups; hook-shaped median apophysis usually present (Figs. 2a & 8a); conductor sometimes present (Figs. 21a); sclerotized tegular projection present in some species (Fig. 3a); embolus either long and filiform (Fig. 2a) or short and stout with apex acute or furcated (Fig. 21b).

**Phylogenetics.** The genus *Hersilia* forms a monophyletic unit based on the presence of glandular parts covered by threads on the seminal receptacles of the epigyne.

**Species groups.** Based on the material studied, most species of *Hersilia* fall into species groups, primarily based on male and female genital structures. The groups referred to can be defined as follows:

*HERSILIA CAUDATA* GROUP (Fig. 33). This is a large monophyletic group, with weak support based on a cladistic analysis of hersiliid relationships. The only characters supporting the monophyly of the group: the presence of fixing structures laterad on the median plate (Figs. 2f, 8f) varying in shape from triangular to sickle-shaped and the longitudinally angled, hook-shaped median apophysis in males (Figs 2a & 8a). Other ambiguous characters include epigyne with broad median plate; border of septum in line with epigastric furrow; lateral borders of epigyne visible externally (Fig. 9f); copulatory ducts simple, vary from short to elongate; spermathecae globose, on a stalk (Fig. 16g); male palp with hook-shaped median apophysis, sperm duct regularly curved; embolus circular, apex acute (Figs. 9a). Composition: *H. albicomis*, *H. caudata*, *H. pungwensis*, *H. occidentalis*, *H. sericea*, *H. setifrons*, *H. tamatavensis*.

*HERSILIA BAFORTI* GROUP (Fig. 34). Monophyletic group defined by the following synapomorphies: male palp with bulbus basally swollen (Fig. 11b), sperm duct incurved (Fig. 11a); absence of median apophysis; straight or slightly curved embolus with laterally produced basal process (Figs. 3a,b); epigyne entire with transverse oval or sub-quadrangle unpigmented area mesad on epigynal plate (Fig. 6f). Composition: *H. alluaudi*, *H. baforti*, *H. beva*, *H. bubu*, *H. clarki*, *H. dilumen*, *H. ferra*, *H. plara*, *H. salda*, *H. unca*, *H. vanmoli*, *H. woutrinae*.

*HERSILIA SIGILLATA* group (Fig. 35). Paraphyletic group based on the following ambiguous characters: spermathecae globose or subtriangular, several small seminal receptacles basally on epigynal plate, one large subtriangular seminal receptacle;

Spermathecae not on a stalk. Median apophysis transversely directed. Composition: *H. vinsoni*, *H. insulana*, *H. caronae*, *H. sigillata*.

**HERSILIA MADAGASCARIENSIS GROUP** (Fig. 36). Monophyletic group defined by the following autapomorphies: male palp with median apophysis broad, angled transversely, embolus hidden behind median apophysis for most of its length (Fig. 17a); epigyne of female with heavily sclerotized, oval copulatory openings (Fig. 17f); large basal bulbus (Figs. 17g). Composition: *H. madagascariensis*, *H. arborea*, *H. moheliensis*, *Hersilia taita*, *Hersilia eloetsensis*.

**HERSILIA INCOMPTA GROUP** (Fig. 37). Monophyletic group defined by the following synapomorphies: female epigyne with conspicuous striae laterally on median plate (Figs. 19e); two pairs of well separated elongate spermathecae on very long copulatory ducts (Fig. 19e). Male palp with compact palpal tibia with angular dorsal projection and at least four very strong dorsal spines; bulbus with lamellar modifications; embolus angular sides; median apophysis hollowed, complexly modified (Fig. 19a). Composition: *H. hildebrandti*, *H. incompta*, *H. nicolae*.

### Key to the Afrotropical species of *Hersilia* Audouin

- |  |                         |
|--|-------------------------|
| 1. Males.....  | 2                       |
| — Females.....   | 29                      |
| 2. Bulbus with lamellar modifications (Figs. 4b, 19a).....   | 3                       |
| — Bulbus simple, unmodified.....   | 5                       |
| 3. Bulbus with lamellar modification forming bifid projection distally, median apophysis absent; palpal tibia simple, dorsal spines absent (Fig. 4a); Namibia, Zimbabwe.....                       | <i>arborea</i> Lawrence |
| — Bulbus with lamellar modification forming a simple round opening with complex median apophysis within; palpal tibia angulate, with row of 4-5 short, very strong spines dorsally (Fig. 19a)..... | 4                       |

4. Apophyses form two large basal concavities and end in two lateral acute spines at opposite sides; four dorsal spines on tibial palp (Figs. 15a,b); Ivory Coast.....  
.....*incompta* Benoit
- Ventral concavity of apophyses end in broad projection distally; five dorsal spines on tibial palp (Figs. 19a,b); Kenya..... *nicolae* sp. nov.
  
5. Bulbus circular, sperm duct regularly curved, embolus circular, median apophysis present, usually hook-shaped (Fig. 2a).....6
- Bulbus ovoid, basally swollen, sperm duct incurved, embolus curved or straight, median apophysis absent (Figs. 5a & 6a) .....19
  
6. Median apophysis flap-like broadening distally, embolus irregularly shaped, embolus hidden behind median apophysis for some of its length (Figs. 17a,b); Comoros, Madagascar.....*madagascariensis* (Wunderlich)
- Median apophysis hook-shaped, embolus simple, visible for entire length (Fig. 2a,b).....7
  
7. Median apophysis angled longitudinally, apex basally directed (Fig. 2a).....8
- Median apophysis angled transversely, apex directed prolaterally (Figs. 16a).....16
  
8. Embolus with or without projections medially, median apophysis basally thick (Figs. 2a & 26a-c).....9
- Embolus without medial projections, median apophysis hollowed basally (Figs. 12a,b & 18a).....15
  
9. Embolus with triangular projections medially.....10
- Embolus without triangular projections medially.....12
  
- 10 Median apophysis elongate, extends beyond embolus curve, distal part of median

- apophysis curved prolaterally (Figs. 9a & 26b); North, East, and West Africa..... *caudata* Audouin
- Median apophysis short, does not extend beyond embolus curve, distal part of median apophysis straight (Figs. 2a & 26a)..... 11
11. Embolus distally with small triangular projection, median apophysis hook-shaped in medial view, distal part longer, medium-sized spiders >6mm; Central and East Africa (Figs. 20a & 26c).....*occidentalis* Benoit
- Embolus with broad medial projection, median apophysis triangular in medial view, compact, distal part short, small spiders, <6mm; West Africa (Figs. 2a,b & 26a).  
.....*albicomis* Simon
12. Median apophysis simple hook-shaped, distal part straight..... 13  
Median apophysis curved distally..... 14
13. Median apophysis thin, straight in ventral view, apex acute (Fig. 29a), two large spines dorsally on palpal tibia (Fig. 29b); Madagascar.....*tamatavensis* sp. nov.
- Median apophysis broad, triangular in ventral view, with apex rounded (Figs. 25a & 26e), spines absent on palpal tibia; South Africa, Namibia  
..... *setifrons* Lawrence
14. Median apophysis filiform with distal coil (Figs. 24a & 26d), two very strong spines dorsally on palpal tibia, (Fig. 24b); South and East Africa.....*sericea* Pocock
- Median apophysis with apex truncate, short curve in distal part of median apophysis; dorsal spines on palpal tibia absent (Fig. 22a); Zimbabwe.....  
..... *pungwensis* Tucker
15. Median apophysis with distal part abruptly acute, convex medially (Fig. 12a,b), cymbium compact, three spines dorsally on palpal tibia; small spiders, < 6mm; Madagascar.....*eloetsensis* sp. nov.
- Median apophysis hollowed basally with simple distal flap, apex acute; cymbium

- digitate, dorsal spines absent, medium-sized spiders, > 6mm (Fig. 18a,b); Comoros  
 ..... *moheliensis* sp. nov.
16. Median apophysis with apex acute (Fig. 16a).....17  
 — Median apophysis with apex rounded (Figs. 25h & 26a).....18
- 17 Median apophysis simple, hook-shaped with two very strong dorsal spines on palpal tibia (Fig. 16a,b); Madagascar..... *insulana* Strand  
 — Median apophysis medially convex, abruptly acute apex, medially convex, basal margin projecting, three dorsal spines on palpal tibia not as strong (Figs. 8a,b); Comoros.....*caronae* sp. nov.
18. Median apophysis short, scoop-shaped with broad hollow base in medial view, apex broad, embolus, simple filiform, apex acute (Figs. 28a,b); Kenya.....  
 .....*taita* sp. nov.  
 — Median apophysis long, triangular in medial view, apex rounded, embolus and slide like tegular projection elongate (Figs. 26h & 27a,b); Central Africa.....*sigillata* Benoit
19. Conductor absent (Figs. 10a,b); Zimbabwe..... *clarki* Benoit  
 — Conductor present (Figs. 3a & 5a).....20
20. Conductor very small (Fig. 5a), whole length of embolus visible; Central Africa.....*baforti* Benoit  
 — Conductor, larger, embolus hidden for part of its length.....21
21. Conductor proximad of embolus (Figs. 6a & Fig. 30b).....22  
 — Conductor distad or above embolus (Figs. 12a & 3a).....23
22. Conductor circular thin (Fig. 6a); West, Central Africa.....*beva* sp. nov.  
 — Conductor broad, stout (Fig. 30a); West Africa..... *vanmoli* Benoit

23. Conductor distally of embolus, embolus broad, deeply furcate (Fig. 13a); Democratic Republic of the Congo.....*ferra* sp. nov.  
 — Conductor cover embolus for part or most of its length (Figs. 13a & 32a)..  
 .....24
24. Conductor small, cover only base of embolus, embolus apex acute (Fig. 32a).....*woutrinae* sp. nov.  
 Conductor large, cover embolus for most of its length, embolus apex bifurcate (Fig. 13a).....25
25. Sclerotized tegular projection absent (Fig. 13a), conductor shorter than bulbus width, distally with round chitinous projection; central Africa.....*bubi* sp. nov.  
 — Sclerotized tegular projection present; conductor as long as or longer than bulbus width, chitinous projection may or may not be present (Fig. 3a).....26
26. Conductor with broad chitinous projection distally; apex broad (Fig. 3a); Kenya.....*alluaudi* Berland  
 — Conductor tapering distally, apex rounded (Fig. 21a).....27
27. Conductor distally without ventral furrow, apex simple, round, embolus broad and thin basally, seven strong spines dorsally on palpal tibia (Fig. 21a); Cameroon.....*plara* sp. nov.  
 — Conductor with ventral furrow distally, apex rounded, embolus filiform, with or without dorsal spines (Figs. 11a & 23a).....28
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 — Short, stout sclerotized tegular projection, three thin dorsal spines on tibial (Figs. 23a,b); east, central Africa.....*salda* sp. nov.

29. Epigyne clearly divided by longitudinal fold in median plate with lateral borders (Fig. 2f), heart mark lancet-shaped, abdomen with faint transverse bands; female abdomen always longer than wide (Fig. 9e).....30
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30. Fixing structures laterad on median plate (Fig. 9f).....31
- Fixing structures absent laterad on median plate (Fig. 4f).....38
31. Fixing structures sub-triangular (Figs. 9f, 24f).....32
- Fixing structures sickle-shaped, elongate, basally swollen (Fig. 17f).....34
32. Anterior part of fixing structures obliquely, laterad directed (Fig. 9f), seminal receptacles much larger than spermathecae, medial spermathecae widening posteriorly (Fig. 9g); North Africa.....*caudata* Audouin
- Fixing structures not as above, spermathecae equal in size, spermathecae clearly separated from ducts.....33
33. Fixing structures with acute medial apex, lobiform lateral lobes, tips inward pointing; median plate with medial protuberance on distal border (Figs. 24f,g); East, South Africa.....*sericea* Pocock
- Fixing structures with round medial apex, angulate lateral borders not projecting much beyond border, median plate with distal border straight (Figs. 25f,g); southern Africa.....*setifrons* Lawrence
34. Seminal receptacles and spermathecae sub-triangular to cylindrical in shape, several seminal receptacles posteriad on epigyne (Fig. 16g), spermathecae narrowed basally.....35
- Spermathecae and seminal receptacles globose, several small seminal receptacles

- posteriad on epigyne, absent (Fig. 2g).....37
35. Abdomen obovate, very large, oval dorsal muscular pits (Fig. 27e), legs short, eye tubercle conspicuously low, clypeus very short (Figs. 27c,d); central Africa.....  
.....*sigillata* Benoit  
— Not as above.....36
- 36 Spermathecae cylindrical, with medial curve (Fig. 8g); Comoros..... *caronae* sp. nov.  
Spermathecae cylindrical, with medial curl (Fig. 16g); Madagascar.....  
.....*insulana* Strand
37. Epigyne with spiniform, downward pointing lateral borders (Fig. 2f), copulatory ducts elongate; west Africa.....*albicomis* Simon  
— Epigyne externally with angulate lateral borders, copulatory ducts short (Fig. 20g); east, central Africa.....*occidentalis* Benoit
38. Epigyne with small spiniform, inward pointing lateral borders (Figs. 4f,g), broad median plate, elongate apophysis distally on seminal receptacle, spermathecae larger than seminal receptacle (Fig. 4g); Namibia.....*arborea* Lawrence  
— Epigyne with large lateral borders, median plate narrowed anteriorly, broadening posteriorly, spermathecae similar in size (Figs. 14a, 15f, 19d).....39
39. Median plate with striae basally on lateral borders, spermathecae simple, round, copulatory and fertilization ducts short (Figs. 14a,b); Tanzania.....  
.....*hildebrandti* Karsch  
Lateral borders without striae, spermathecae cylindrical, small, copulatory and fertilization ducts elongate (Figs. 15f, 19d,e).....40
40. Epigyne with elongate lateral borders and median plate, producing M-shaped pattern (Figs. 17d,e); Kenya.....*nicolae* sp. nov.  
— Epigyne with median plate broadening distally, very narrow anteriorly (Fig. 15f);

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— Epigyne not as above.....	44
42. Epigyne heavily sclerotized around copulatory openings.....	43
— Epigyne with tear- shaped lateral openings, subtriangular seminal receptacles, spermathecae tubular, S-shaped, several seminal receptacles posteriad on epigyne (Figs. 31a,b); Madagascar.....	<i>vinsonii</i> Lucas
43 Epigyne with oblique, oval openings laterally (Fig. 17f), spermathecae round, seminal receptacles complexly coiled (Fig 17g); Comoros .....	<i>madagascariensis</i> (Wunderlich)
— Epigyne with round openings laterally (Fig. 3f), seminal receptacle sub-quadrated; Tanzania, Democratic Republic of Congo.....	<i>alluaudi</i> Berland
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Spermathecae elongate tubular (Fig. 32g) east Africa.....	<i>woutrinae</i> sp. nov.
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- 21f).....48
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49. Sclerotization anterior of transverse unpigmented plate, narrow; subtriangular impression of spermathecae anteriorly of sclerotisation (Fig. 30f); West Africa.....*vanmoli* Benoit
- Epigynal patterns not as above.....50
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- Spermathecae and seminal receptacles form a pair of comma-shaped and arrow-shaped impressions medially on epigynal plate (Fig. 5f); east, central Africa.....*baforti* Benoit
51. V-shaped sclerotization medially, sclerotisation absent from oval lateral openings (Fig. 23f); east Africa.....*salda* sp. nov.
- Faint V-shaped sclerotization, dark cresecent shaped sclerotization anterior of oval lateral openings (Fig. 13f); central Africa.....*ferra* sp. nov.

### 1. *Hersilia albicomis* Simon, 1887 (Figs. 2, 26a & 33)

*Hersilia albicomis* Simon, 1887: 273; 1893: 443; Benoit, 1967: 26.

*H. decellei* Benoit, 1967: 17; first synonymized by Benoit 1971:152.

**Types.** *Hersilia albicomis*, female holotype, **Ivory Coast:** no locality specified, C.H. Alluaud, MNHN 10055 (examined); - paratypes: 1 male, same data (examined); 1 female, **Ghana:** Accra (05°33'N 00°15'W), 20.vii.1964, G. Marlier, MRAC 127235 (not examined).

**Diagnosis.** Small spiders (5.25 - 5.6); legs very long; eye tubercle slightly raised (Fig. 2c); clypeus long (Fig. 2d); epigyne: fixing structures elongate, sickle-shaped, lateral borders spiniform downward pointing (Fig. 2f), elongate copulatory ducts (Fig. 2g); male palp with embolus broadening basally (Fig. 2a); median apophysis hook-shaped, angled longitudinally, short not extending beyond curve of embolus, basally broad, triangular in lateral view (Fig. 2b), tapering, apex acute (Figs. 2a & 26a), prolaterally directed. The hook-shaped median apophysis of male palp and sickle-shaped fixing structures of epigyne resemble those of *H. occidentalis*. However, this species differs from *H. occidentalis* in the triangular shape of the median apophysis (in lateral view), presence of two dorsal tibial spines instead of three, smaller size, and the elongate fixing structures.

**Redescription. Female.** Size(n=7). TL 5.45 (5.25 - 5.6); CL 2.32 (1.76 - 3.15); CW 2.24 (1.76 - 3.15); CLL 0.47 (0.3 - 0.59); OAL 0.46 (0.39 - 0.52). AME diameter 0.16; AME-AME 0.17; ALE 0.18; MOQ-AW 0.48; ALE diameter 0.07; PME-PME 0.17; PME diameter 0.16; PME-PLE 0.22; MOQ-PW 0.5; PLE diameter 0.18.

Colour: carapace varies from pale yellow to pale brown with broad dark border; clypeus pale yellow to pale with white pilosity anteriorly; eye area with dark patch, white longitudinal line posterior on eye tubercle in some specimens; abdomen (Fig. 2e) white to pale white, with or without serrated dark antero-lateral border extending up to 2/3 of abdomen, sometimes absent; heart mark extends up to third pair of dorsal muscular pit; ventrum mottled white; spinnerets with no or vague annulation; legs: pale yellow to pale brown; no or faint annulation on femora; patellae dark; palps with dark annulation at base and distal tip of tarsus.

Carapace: as wide as long (CI 1.05); lateral border with row of conspicuous setae; clypeus long,  $1.02 \times$  MOQ length, sloping; eye tubercle raised sides vertical; PLE largest; eye ratio 1: 0.46: 1: 1.17; MOQ-AW = MOQ-PW; chelicerae elongate,  $1.78 \times$  longer than wide.

Abdomen: longer than wide, varies in shape from obovate to widest in posterior third; dorsal muscular pits round, second pair largest; posterior lateral spinnerets as long as abdomen,  $1.68 \times$  cephalothorax width; tS  $3.3 \times$  length of bS.

Legs: leg II longest,  $2.6 \times$  total length of body; leg ratio 1: 1.03: 0.33: 0.91; metatarsus I,  $6.8 \times$  longer than tarsus I; distal part of metatarsus half the length of the proximal part; leg measurements: I- Fe 5.13, Pat + Tib 4.45, Mt I 3.83, II 2.48, Ta 0.8, total 16.5; II-4.65, 4.37, 3.75, 2.25, 0.8, total 15.45; III-1.76, 1.59, 1.18, 0.62, total 4.81; 3.68, 3.84, 3.32, 1.37, 0.46, total 12.8; Palp-0.88, 1.09, 0.55, total 2.52.

Epigyne (Figs. 2f,g): wide (el/ew 0.45); lateral borders spiniform, directed downward; median plate sub-quadrate, posterior border straight; sickle-shaped fixing structures laterally on median plate; copulatory ducts simple, elongate; spermathecae simple, round, similar in size; spermathecae broadening basally; seminal receptacle with glandular parts covered by threads; fertilization ducts curve dorsally (Fig. 2g).

**Male.** Size (n=3). TL 4.68 (4.35 - 5); CL 1.77 (1.4 - 2.03); CW 1.77 (1.4 - 2.03); CLL 0.55 (0.52 - 0.6); OAL 0.46 (0.39 - 0.52). AME diameter 0.16; AME-AME 0.16; ALE 0.19; MOQ-AW 0.5; ALE diameter 0.07; PME-PME 0.16; PME diameter 0.17; PME-PLE 0.21; MOQ-PW 0.49; PLE diameter 0.19.

Structurally similar to females except legs longer,  $4.34 \times$  longer than total length of body; posterior lateral spinnerets long,  $1.4 \times$  length of abdomen,  $2.8 \times$  carapace width; leg measurements: I- Fe 5.77, Pat + Tib 6.32, Mt I 5.09, II 2.83, Ta 0.74, total 20.74; II- 5.36, 6.27, 5.04, 2.53, 0.72, total 19.91; III-1.99, 1.9, 1.79, 0.58, total 6.26; 4.55, 4.42, 4.09, 2.1, 0.64, total 15.09; Palp-0.95, 0.78, 0.73, total 2.46.

Palp (Figs. 2a,b & 26a): tibia elongate,  $1.39 \times$  longer than wide,  $0.59 \times$  cymbium length; two strong, long dorsal spines; cymbium elongate,  $1.73 \times$  longer than wide; four apical spines on cymbium; bulbus circular; sperm duct regularly curved; embolus circular broadening basally, median apophysis hook-shaped, angled longitudinally angled, distally tapering, apex acute.

**Additional material examined. Equatorial Guinea:** Bioko, 8 km West of Luba, (3°27'N 8°29'E), 1 female, M. Boko, D.K. Dabney, R.W. Tomos, D. Ubick, J.V. Vindum, CASC; **Ghana:** Legon (05.39°N 00°11'W), 1 female, 14.iii.1972, J. Edmunds, MRAC 14401; **Ivory Coast:** Kossou (06°57'N 04°58'W), 1 female, 1 male, 19.v.1975,

R. Jocqué, MRAC 149811; **Nigeria:** Benin (6°20'N 5°38'E), 1 female, x-xi.1975, C.B. Powell, MRAC 155475; Rivers state, Oguta Lake (05°24'N 06°48'E), 1 male, 10-24.ii.1992, H. Segers, MRAC 174627.

**Distribution.** Ghana, Ivory Coast, new records: Equatorial Guinea, Nigeria (Fig. 33).

**Natural history.** Females were caught from March to November and males between February and May.

## 2. *Hersilia alluaudi* Berland, 1919 (Figs. 3 & 34)

*Hersilia alluaudi* Berland, 1919: 348; 1920: 123; Benoit, 1967: 22.

**Types.** Male holotype, **Tanzania:** Kilimandjaro, Neu-moschi (3°21'S 37°21'E), 4-12.iv.1912, MNHN 10042 (examined); - paratypes: 1 female, **Democratic Republic of the Congo:** District Ituri: Kinawa (0°41'N 29°51'E), foot of Ruwenzori, 25.ii.1940, Lepersonne-Warnant, MRAC 26824 (examined).

**Diagnoses.** Small spiders (5), legs very long eye tubercle slightly raised (Fig. 3c), and clypeus short (Fig. 3d); male palp with sclerotized tegular projection (stp), apex truncate (Fig. 3b); basal embolar projection distally opaquely transparent, apex broad (Fig. 3a); epigyne with two round adjacent openings, spermathecae large (Figs. 3f,g). The males of this species resemble that of *H. plara* in the large basal projection of the embolus that hide the embolus for most of its length, furcated apex of the embolus and straight sclerotized tegular projection. The palp differs from *H. plara* in the absence of the angulate tibial palp and strong dorsal spines; presence of a broad apex of basal projection of embolus and stout sclerotized tegular projection.

**Redescription. Male.** (Size = 1). TL 5; CL 1.4; CW 1.44; CLL 0.44; OAL 0.2; AME diameter 0.24; AME-AME 0.2; ALE 0.2; MOQ-AW 0.68; ALE diameter 0.07; PME-PME 0.2; PME diameter 0.13; PME-PLE 0.13; MOQ-PW 0.46; PLE diameter 0.22.

Colour: carapace with border dark; clypeus dark brown; chelicerae dark; eye area dark brown; dorsum of abdomen dark with dark wavy antero-lateral border; heart mark

broad, continuous with darker posterior half of abdomen (Fig. 3e); ventrum pale; posterior lateral spinnerets faintly annulate; legs pale brown; femora and palps faintly annulate.

Carapace (Figs. 3c,d): as wide as long (CI 1.01); clypeus short,  $0.77 \times$  median ocular quadrangle length, almost vertical; eye tubercle slightly raised, sides sloping; AME very large; eye ratio 1: 0.36: 0.57: 0.82; MOQ-AW > MOQ-PW; chelicerae elongate,  $1.7 \times$  longer than wide.

Abdomen (Fig. 3e): longer than wide, widest in anterior third with four pairs of dorsal muscular pits, second pair largest, oval; posterior lateral spinnerets  $1.22 \times$  length of abdomen,  $3.6 \times$  carapace width; ts four  $\times$  bs.

Legs: leg I longest,  $6.25 \times$  longer than total body length; leg ratio 1: 1.01: 0.33: 0.89; metatarsus I,  $12.9 \times$  longer than tarsus I; distal part of metatarsus  $0.63 \times$  length of proximal part; leg measurements: I- Fe 8.16, Pat + Tib 9.6, Mt I 7.6, II 4.8, Ta 0.96, total 31.12; II-7.7, 9.6, 7.6, 4.8, 0.96, total 30.66; III-3.8, 3.6, 2.8, 0.8, total 11; IV-6.8, 8.24, 7.2, 4.4, 1.2, total 27.84; Palp-1, 1.06, 0.91, total 2.97.

Palps (Figs. 3a,b): tibia compact, as wide as long,  $0.51 \times$  cymbium length; four short, slender spines dorsally; cymbium compact,  $1.75 \times$  longer than wide, four apical spines; bulbous ovoid with basal swelling; sperm duct incurved; embolus straight, apex furcate; stout sub-triangular sclerotized tegular projection (stp) with truncate apex; basal projection of embolus distally opaquely transparent, broad.

**Female.** (Size =1). CL 2.85; CW 2.78; CLL 0.52; OAL 0.13; AME diameter 0.29; AME-AME 0.18; ALE 0.16; MOQ-AW 0.75; ALE diameter 0.08; PME-PME 0.13; PME diameter 0.22; PME-PLE 0.22; MOQ-PW 0.57; PLE diameter 0.16.

Females structurally resemble males; leg measurements: I- Fe 4.88, Pat + Tib 5.33, Mt I 3.83, II 2.63, Ta 0.98, total 17.63; II-5.18, 5.85, 4.13, 2.85, 0.68, total 18.68; III-2.25, 2.55, 2.03, 0.83, total 7.65; IV-4.73, 5.03, 4.28, 2.4, 0.75, total 17.18; Palp-1.13, 1.28, 0.98, total 3.38.

Epigyne (Figs. 3f,g): abdomen absent; figures of the epigynes redrawn from Benoit (1967).

**Additional material examined.** Tanzania: UDSM campus in Zoology Building (6°48'S 39°17'E), 1male, 25.ix.1971, K.M. Howell, MRAC 159.265

**Distribution.** Democratic Republic of Congo, Tanzania (Fig. 34).

**Natural history.** Adults were caught between February and April.

### 3. *Hersilia arborea* Lawrence, 1928 (Figs. 4 & 37)

*Hersilia arborea* Lawrence, 1928: 239; Benoit, 1967: 24.

**Types.** Female lectotype (here designated) **Namibia:** Kaoko Otavi (18°18'S 13°42'E), i-iv.1926, Museum expedition, R. Lawrence, SAM B6944; - paralectotypes: 3 males, 4 females, same data, SAM B6941 (examined); 1 male, Warmbad (28°27'S 18°44'E), SAM B7141 (not examined); 1 male, 1 female, Outjo (20°07S 16°09E), SAM B6726 (not examined).

**Diagnoses.** Small to medium-sized spiders (4.8 - 7.5); legs long; eye tubercle raised (Fig. 4c); clypeus very long (Fig. 4d); epigyne with broad median plate; seminal receptacle with elongate distal apophysis, smaller than seminal receptacle (Fig. 4g); male palp with median apophysis broad, bifid (Figs. 4a,b); embolus short, stout, apex acute. The epigyne of this species resembles those of the *caudata*-group in the presence of two pairs of round spermathecae, short copulatory ducts and medially curved fertilization ducts.

**Redescription. Female.** Size (n=2). TL 6.15 (4.8 - 7.5); CL 2.2 (1.77 - 2.63); CW 2.16 (1.77 - 2.55); CLL 0.7 (0.56 - 0.85); OAL 0.1 (0.9 - 0.12); AME diameter 0.16; AME-AME 0.14; ALE 0.12; MOQ-AW 0.4; ALE diameter 0.05; PME-PME 0.13; PME diameter 0.14; PME-PLE 0.11; MOQ-PW 0.42; PLE diameter 0.13.

Colour: carapace pale with brown streaks and patches; clypeus and eye area pale; dorsum mottled white with pattern on antero-lateral border faint; heart mark lancet-shaped; posterior half of dorsum with broad, dark, transverse lines (Fig. 4e); ventrum and posterior lateral spinnerets pale; legs pale brown, annulation on femora and palps.

Carapace: as long as wide (CI 1.01); clypeus very long,  $1.73 \times$  MOQ length, sloping; eye tubercle raised (Fig. 4c), AME largest; eye ratio 1: 0.35: 0.93: 0.82; chelicerae elongate,  $1.73 \times$  longer than wide; seven minute cheliceral teeth on retromargin.

Abdomen (Fig. 4e): longer than wide, widest in middle; four pairs of round dorsal muscular pits, second pair largest; posterior lateral spinnerets  $0.94 \times$  abdomen length,  $1.76 \times$  carapace width; tS  $4.29 \times$  bS.

Legs: leg IV longest,  $2.78 \times$  total body length; leg ratio 1: 0.98: 0.37: 1.01; metatarsus I  $13.75 \times$  tarsus I; distal part of metatarsus  $0.57 \times$  length of proximal part; leg measurements: I- Fe 4.5, Pat + Tib 6.23, Mt I 5.25, II 3, Ta 0.6, total 20.33; II-4.4, 6.23, 5.25, 3, 0.6, total 20.33; III-2.63, 2.33, 1.88, 0.68, total 7.5; IV-4.51, 5.7, 4.82, 2.23, 0.56, total 16.94; Palp-1.16, 0.99, 0.84, total 2.99.

Epigyne (Figs. 4f,g): wide (el/ew 0.5); lateral borders spiniform (Fig. 4f); copulatory openings widely spaced; copulatory ducts short; spermathecae simple, round, well separated from copulatory ducts; seminal receptacle with elongate, linear distal apophysis, smaller than spermathecae; fertilization ducts curved dorsally.

**Male.** Size (n=3). TL 4.68 (4.3 - 5.25); CL 2.02 (1.8 - 2.25); CW 1.7 (1.4 - 1.9); CLL 0.55 (0.35 - 0.72); OAL 0.11 (0.09 - 0.12); AME diameter 0.18; AME-AME 0.1; ALE 0.07; MOQ-AW 0.46; ALE diameter 0.05; PME-PME 0.11; PME diameter 0.13; PME-PLE 0.1; MOQ-PW 0.38; PLE diameter 0.15.

Smaller in size but structurally similar to female except: longer legs with leg I longest; longer posterior lateral spinnerets; carapace red-brown, abdomen clearly longer than wide, widest in anterior third, narrower than carapace; dorsum dark brown; leg measurements: I- Fe 4.83, Pat + Tib 5.65, Mt I 4.7, II 2.73, Ta 0.62, total 18.53; II-4.52, 5.66, 4.73, 2.55, 0.59, total 18.04; III-2.03, 2.01, 1.79, 0.62, total 6.46; IV-4.62, 5.48, 5.59, 2.29, 0.6, total 18.88; Palp-1.12, 1.03, 0.78, total 2.97.

Palps (Figs. 4a,b): tibia elongate,  $1.85 \times$  longer than wide,  $0.79 \times$  cymbium length; cymbium elongate,  $1.73 \times$  longer than wide, three apical spines; bulbus round; sperm duct regularly curved; embolus circular, short and stout; median apophysis hollow, broad base, apex bifid.

**Additional material examined. Namibia:** Lower Ostrich Gorge (22°30' S 14°58'E), 1 male, 11.ii-11.iii.1985, J. Irish, H. Rust, SMN 38681; Annabis Farm (20°0'S 14°58'E), 2 females, 23-24.ii.1969, B. Lamoral, NM 11549; 1 male, same data, NM 11557; **Zimbabwe:** Victoria Falls (17°56'S 25°50'E), female, 1-8.ii.1995, W.J. Pulawski, CASC.

**Distribution.** Namibia (Fig. 37).

**Natural history.** Specimens caught between January and February.

#### **4. *Hersilia baforti* Benoit, 1967 (Figs. 5 & 34)**

*Hersilia baforti* Benoit, 1967: 19.

**Types.** Female holotype, **Democratic Republic of the Congo:** District Tanganyika, Kapoma (7°10'S 29°8E), iii.1966, J. Baforti, MRAC 129811; -paratypes: 1 male, same data, MRAC 130774 (examined); 1 female, Shaba, Kisenge (10°40'S 23°10'E), A. Regnard, 1965, MRAC 128011 (examined).

**Diagnoses.** Small spiders; legs very long; eye tubercle slightly raised (Fig. 5c); clypeus short (Fig. 5d); epigyne with distinct impression of spermathecae and seminal receptacles visible through integument; central unpigmented transverse plate posteriorly (Fig. 5f), spermathecae with elongate distal apophyses (Fig. 5g); male palp without any apophyses; embolus filiform, straight with apex acute (Figs. 5a,b). This species resembles *H. woutrinae* and *H. bubi* in size, legs, colour, and genitalia; *H. baforti* differ in the smaller conductor and presence of transverse sclerotization anterad of central white plate.

**Redescription. Female.** Size (n=5). TL 5.74 (4.88 - 6.72); CL 2.15 (1.76 - 2.64); CW 2.15 (1.92 - 2.4); CLL 0.42 (0.35 - 0.52); OAL 0.13 (0.12 - 0.13). AME diameter 0.17; AME-AME 0.15; ALE 0.16; MOQ-AW 0.5; ALE diameter 0.07; PME-PME 0.; PME diameter 0.19; PME-PL 0.19; MOQ-PW 0.48; PL 0.13.

Colour: carapace red-brown with dark border; clypeus pale, faint oblique lateral lines; eye area dark; white spot posteriorly on eye tubercle; dorsum whitish with wavy antero-lateral border; heart mark brown; broad dark transverse line posteriorly (Fig. 5e);

posterior lateral spinnerets with distinct annulation; legs pale brown; femora and palps conspicuously annulate.

Carapace: longer than wide (CI 1.1); clypeus short,  $0.81 \times$  MOQ length, sloping; eye tubercle slightly raised, sides sloping; AME = PME; eye ratio 1: 0.4: 1: 0.68; MOQ-AW = MOQ-PW; posterior eyes on small tubercles (Fig. 5c); chelicerae elongate, twice as long as wide.

Abdomen (Fig. 5e): distinctly wider than long, widest in posterior third; four pairs of round dorsal muscular pits, second pair largest; posterior lateral spinnerets elongate,  $1.16 \times$  longer than abdomen,  $1.72 \times$  cephalothorax width; tS,  $5.53 \times$  bS.

Legs: leg II longest;  $2.5 \times$  total length of body; leg ratio 1: 1.08: 0.38: 0.92; metatarsus I,  $8.19 \times$  the length of tarsus I; distal part of metatarsus  $0.62 \times$  proximal part; leg measurements: I- Fe 3.49, Pat + Tib 3.92, Mt I 2.96, II 2.08, Ta 0.64, total 13.71; II- 3.61, 4.27, 3.28, 2.4, 0.56, total 14.75; III-1.59, 1.59, 1.23, 0.47, total 5.44; IV-3.22, 3.3, 2.87, 1.63, 0.62, total 12.56; Palp-0.75, 0.91, 0.53, total 2.19.

Epigyne (Figs. 5f,g): as wide as long (el/ew 0.92); broad sclerotization anterior of transverse unpigmented central plate; epigyne with distinctive impression of spermathecae visible through integument (Fig 5f); copulatory ducts short (Fig. 5g); spermathecae and seminal receptacles elongate, tubular; fertilization ducts directed dorsally with medial curve.

**Male.** Size (n=2). TL 4.88 (4.80 - 4.96); CL 2.28 (2.16 - 2.4); CW 2.04 (2 - 2.08). CLL 0.46 (0.43-0.49); OAL 0.48 (0.45-0.51). AME diameter 0.19; AME-AME 0.146; AME-ALE 0.13; MOQ-AW 0.52; ALE: 0.1; PME-PME: 0.15; PME diameter: 0.16; PME-PLE: 0.16; MOQ-PW: 0.48; PLE diameter: 0.13.

Structurally similar to female except for longer carapace (CI 1.15); AME larger than PME; eye ratio 1: 0.47: 0.85: 0.82; abdomen longer than wide, widest in middle; posterior lateral spinnerets  $1.5 \times$  length of abdomen, twice cephalothorax width; legs comparatively longer,  $4 \times$  total body length; leg ratio 1: 1.07: 0.37: 0.9; leg measurements: I- Fe 4.8, Pat + Tib 6, Mt I 4.48, II 2.48, Ta 0.8, total 18.56; II-5.04, 6.08, 4.8, 3.2, 0.8, total 19.92; III-2.4, 2.24, 1.76, 0.48, total 6.88; IV-4.4, 4.8, 4.4, 2.4, 0.72, total 16.72; Palp-absent (no measurement taken).

Palps (Figs. 5a,b): tibia compact, as long as wide,  $0.38 \times$  cymbium length; cymbium elongate,  $3.25 \times$  longer than wide, three apical spines; bulbus with basal swelling, sperm duct incurved; embolus filiform, straight, apex acute.

**Additional material examined. Uganda:** District Masindi, Budongo Forest, Sonso ( $01^{\circ}46'N$   $31^{\circ}33'E$ ), 2 females, 1-10.vii.1995, T.Wagner, QM T.R.16; 1 male, same data, QM C.a.1.; **Democratic Republic of the Congo:** Ituri, Faradje ( $3^{\circ}43'N$   $29^{\circ}43'E$ ), 1 female, 14.xiii.1938, H. du Bois, MRAC 137.388.

**Distribution.** Democratic Republic of the Congo; new record: Uganda (Fig. 34).

**Natural history.** Forest inhabiting species; adults were caught in March.

### 5. *Hersilia beva* sp. nov. (Figs. 6 & 34)

**Types.** Holotype male, **Cameroon:** South-West Province, Fako Division, Limbe Subdivision, 1.4 km NE of Etome ( $04^{\circ}02'N$   $09^{\circ}31'E$ ), 13-19.i.1992, J. Coddington, C. Griswold, Wansie, CASC; paratypes: 1 female, same data, CASC; **Ivory Coast:** 1 female, Appouesso, FC Bossematie, route nr. 1 ( $06^{\circ}35'N$   $03^{\circ}28'W$ ) rain forest along lagoon, night catch, 12.ii.1997, R. Jocqué, L. Baert, MRAC 205393; 1 female, Adiopo Doume' ( $5^{\circ}20'N$   $4^{\circ}20'W$ ), 17.xi.1995, R. Jocqué, MRAC 202570; **Equatorial Guinea:** Bioko, 3.5 km N Luba ( $3^{\circ}29'N$   $8^{\circ}35'E$ ), swampy forest at night, 13.x.1998, D.K. Dabney, D. Ubick, CASC.

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

**Diagnosis.** Small spiders; legs long; eye tubercle slightly raised (Fig. 6c); clypeus short (Fig. 6d); epigyne with sclerotization anteriorly of transverse unpigmented plate, narrowing medially (Fig. 6f); spermathecae elongate (Fig. 6g); male palp with conductor hook-shaped (Fig. 6b), embolus straight, apex acute. The palp of this species resembles that of *H. baforti* (Fig. 6a) in the horizontal filiform embolus. It differs from it in the presence of a hook-shaped conductor, a feature absent in *H. baforti*; epigyne resemble that of *H. plara* (Fig. 21f), except for the sclerotization anteriorly of central white plate narrowing medially.

**Description. Male.** Size (n=1). TL 4.4; CL 2; CW 1.6; CLL 0.26; OAL 0.07; AME diameter 0.195; AME-AME 0.169; ALE 0.065; MOQ-AW 0.56; ALE diameter 0.091; PME-PME 0.18; PME diameter 0.13; PME-PLE 0.156; MOQ-PW 0.54; PLE diameter 0.08.

Colour: carapace pale brown, border pale; clypeus pale; eye area black with white spot on posterior part of eye tubercle; dorsum black, mottled white, antero-lateral border wavy; heart mark rectangular broadens posteriorly into dark sub-quadrangle area (Fig. 6e); posteriorly with faint transverse lines; ventrum pale; posterior lateral spinnerets annulate; legs pale brown with dark annulation; palps faintly annulate.

Carapace: longer than wide (CI 1.25); clypeus short,  $0.67 \times$  MOQ length; eye tubercle slightly raised; AME largest; eye ratio 1: 0.47: 0.67: 0.41; MOQ-AW = MOQ-PW; chelicerae elongate more than twice as long as wide.

Abdomen: longer than wide, slender, widest in middle; four pairs of round dorsal muscular pits; posterior lateral spinnerets long,  $1.2 \times$  longer than abdomen;  $1.9 \times$  cephalothorax width; tS  $3.1 \times$  bS.

Legs: leg II longest,  $4 \times$  total body length; leg ratio 1: 1.03: 0.36: 0.88; metatarsus I,  $8.6 \times$  longer than tarsus I; distal part of metatarsus  $0.65 \times$  length of proximal part; leg measurements: I- Fe 4.4, Pat + Tib 5.28, Mt I 4.16, II 2.72, Ta 0.8, total 17.36; II-4.48, 5.28, 4.4, 2.96, 0.8, total 17.92; III-2.0, 2.0, 1.6, 0.72, total 6.32; IV-3.76, 4.56, 4, 2.16, 0.8, total 15.28; Palp-0.83, 0.68, 0.85, total 2.36.

Palp (Figs. 6a,b): tibia compact, as long as wide,  $0.36 \times$  cymbium length; two short, stout spines dorsally; cymbium elongate,  $1.9 \times$  as long as wide; four apical spines; bulbus with basal swelling; sperm duct incurved; embolus with broad base, narrows abruptly distally, apex acute; hook-shaped conductor curve across embolus, apex acute.

**Female.** Size (n=3). TL 5.5 (5.03 - 5.76); CL 2.07 (1.88 - 2.25); CW 2.04 (1.88 - 2.25); CLL 0.37 (0.35 - 0.39); OAL 0.13 (0.12 - 0.13). AME diameter 0.21; AME-AME 0.19; ALE 0.13; MOQ-AW 0.61; ALE diameter 0.1; PME-PME 0.19; PME diameter 0.18; PME-PLE 0.19; MOQ-PW 0.55; PLE diameter 0.21.

Structurally resemble male except for: abdomen larger, widest in posterior third (Fig. 6e); spinnerets short, as long as abdomen; legs short; leg measurements: I- Fe 3.55, Pat + Tib 3.93, Mt I 2.93, II 2.15, Ta 0.69, total 13.25; II-3.78, 4.03, 2.86, 1.85, 0.67,

total 13.02; III-1.57, 1.82, 1.28, 0.64, total 5.3; IV-3.22, 3.42, 3.22, 1.82, 0.69, total 12.4; Palp-0.95, 0.98, 0.75, total 2.48.

Epigyne (Figs. 6f,g): wider than long (el/ew 0.75); epigyne ventrally with sclerotizations anteriorly of transverse white plate (Fig. 6f); simple elongate copulatory ducts, spermathecae and seminal receptacle elongate, cylindrical; fertilization ducts directed dorsally with medial curve (Fig. 6g).

**Distribution.** Cameroon, Ivory Coast (Fig. 34).

**Natural history.** Active at night, collected from forest area along lagoon; adults collected between November and February.

### 6. *Hersilia bubii* sp. nov. (Figs. 7 & 34)

**Types.** Male holotype, **Equatorial Guinea:** Bioko, Moca (3°21'N 8°39'E) ca. 1300m, 1-7.x.1998, D.K. Dabney, R.W. Tomos, D. Ubick, CASC; - paratypes: 1 male, 1 female, same data, CASC; 1 female, **Uganda:** Masindi District, Budongo Forest, north of Sonso (1°45'N 21°35'E), 1-10.vii.1995, T. Wagner, MNHU R.a. 38.

**Etymology.** The specific epithet refers to the Bubi people whose spiritual center is Moca, the type locality.

**Diagnoses.** Small to medium-sized; legs vary from short to very long, eye tubercle slightly raised (Fig. 7c); clypeus short (Fig. 7d); male palp with median apophysis absent; basal embolar projection tapers obliquely, small chitinous projection distally (Fig. 7a); embolus furcate (Fig. 7b); elongate copulatory duct (cd); spermathecae chambered (Fig. 7g). This species resembles *H. alluaudi*, *H. baforti*, and *H. unca* in size, legs, shape of abdomen and epigynes. *H. bubii* differs from *H. alluaudi* by the absence of a sclerotized tegular process and *H. baforti* in the presence of conductor.

**Description. Male.** Size (n=2). TL: 4.25 (4.1 - 4.4). CL 2 (1.9 - 2.08); CW: 1.95 (1.9 - 2). CLL 0.33; OAL 0.43. AME diameter 0.186; AME-AME: 0.195; ALE: 0.091; ALE diameter: 0.13; MOQ-AW: 0.59; PME-PME: 0.195; PME diameter: 0.13; PME-PLE: 0.182; MOQ-PW: 0.46; PLE diameter: 0.091.

**Colour.** Carapace dark brown; clypeus dark brown with broad transverse paler area on promargin and pale lateral lines extending up to PME; longitudinal white line

posteriorly on eye tubercle; dorsum dark brown with dark serrate anterolateral border; heart mark triangular (Fig. 7e), broadening posteriorly; posteriorly with faint transverse lines; ventrum pale; legs pale; femora I, II, III, and posterior lateral spinnerets conspicuously annulate.

Carapace: as long as wide (CI 1); clypeus short,  $0.75 \times$  MOQ length; eye tubercle slightly raised, sides sloping; AME largest; eye ratio 1: 0.36: 0.78: 0.78; MOQ-AW >> MOQ-PW; chelicerae elongate, more than twice as long as wide; retromargin with seven minute cheliceral teeth.

Abdomen: short, slightly longer than wide, sub-quadrate; four pairs of small round dorsal muscular pits; posterior lateral spinnerets long, almost twice as long as abdomen,  $6 \times$  carapace width; tS  $3.4 \times$  bS.

Legs: leg II longest,  $4.76 \times$  total body length; leg ratio 1: 1.02: 0.38: 0.89; metatarsus I,  $8.5 \times$  longer than tarsus I; distal part of metatarsus 0.75 time length of proximal part; leg measurements: I- Fe 4.96, Pat + Tib 6.4, Mt I 4.96, II 3.2, Ta 0.96, total 20.48; II-5.2, 6.48, 5.04, 3.36, 0.8, total 20.88; III-2.32, 2.56, 2, 0.8, total 7.68; IV-4.32, 6.16, 4.56, 2.4, 0.8, total 18.24; Palp-0.83, 0.87, 0.84, total 2.54.

Palps (Fig. 7a,b): tibia stout, as long as wide,  $0.5 \times$  cymbium length; three spines dorsally (Fig. 7b); cymbium elongate,  $2.4 \times$  as long as wide, 6-9 spines apically; bulbus ovoid with basal swelling; sperm duct incurved; embolus straight, apex asymmetrically furcate, with ventral part longer than thick dorsal part; conductor cover embolus for most of its length; chitinous projection distally on process.

**Female.** Size (n=2). TL 6.8. CL 2.46 (2.28 - 2.64); CW 2.1 (2.04 - 2.16). CLL 0.41 (0.36-0.46); OAL 0.5 (0.48-0.52). AME diameter 0.16; AME-AME 0.195; ALE 0.091; ALE diameter: 0.13; MOQ-AW 0.57; PME-PME 0.195; PME diameter 0.195; PME-PLE 0.19; MOQ-PW 0.59; PLE diameter 0.169.

Similar to male except: larger, paler in appearance; carapace longer than wide (CI 1.24); eye area depressed (Fig. 7c); tridentate white marking posterior of PER; PME largest; eye ratio: 1: 0.4: 1.33: 0.87; abdomen as wide as long, sub-triangular with widest part in posterior third (Fig. 7e). Leg II longest; leg ratio: 1: 1.04: 0.4: 0.94; leg measurements: I- Fe 3.84, Pat + Tib 4.08, Mt I 2.96, II 2.16, Ta 0.8, total 14.4; II-3.6,

4.48, 3.2, 2.32, 0.8, total 14.4; III-1.6, 1.92, 1.44, 0.64, total 5.6; IV-3.2, 3.84, 3.2, 2, 0.8, total 13.84; Palp-1.1, 0.96, 0.9, total 2.96.

Epigyne (Figs. 7f,g): wider than long (el/ew 0.7); no lateral borders visible; transverse white plate (Fig. 7f), spermathecae visible as paired circular impressions externally on epigyne, copulatory openings widely spaced; elongate copulatory ducts; spermathecae chambered; seminal receptacle globose; fertilization duct (f) form dorsally directed circular curve (Fig. 7g).

**Distribution.** Equatorial Guinea: Bioko, Uganda (Fig. 34).

**Natural history.** None noted. Holotype male was collected in October and female paratypes in June from a Forest Biome.

### 7. *Hersilia caronae* sp. nov. (Figs. 8, 26g & 35)

**Types.** Female holotype, **Aldabra Island Group:** Malabar island, (9°22'S 46°21'E), 1970, G. Hamadian, MRAC 141121; - paratypes: 1 male, same data; 1 female; **Comoros:** Mayotte, Sazile (12°10'S 44°15'E), 26.ii.1999, Jocqué & De Smet, MRAC 208654; 1 female, 2 juveniles, same data, night catch, MRAC208596.

**Etymology.** Specific epithet named after the wife of author.

**Diagnosis.** Medium-sized spiders; legs long; clypeus long (Fig. 8d); eye tubercle slightly raised (Fig. 8c); epigyne with spermathecae S-shaped (Fig. 8g); male palp with median apophysis transversely angled (Fig. 8b), basally hollowed with proximad margin projecting (Fig. 8a & 26g). This species resemble *H. insulana* and *H. vinsonii* in shape of the seminal receptacle of the epigyne and presence of several secondary spermathecae. However, the two species differ from it in the fine, triangular, transversely angled median apophysis in *H. insulana* and absence of fixing structures in *H. vinsonii*.

**Description. Female.** (Size=2). TL 7.2 (6.9 - 7.5); CL 3.04 (2.93 - 3.15); CW 2.66 (2.63 - 2.7); CLL 0.65; OAL 0.18 (0.17 - 0.2). AME diameter 0.24; AME-AME 0.21; ALE 0.27; MOQ-AW 0.68; ALE diameter 0.1; PME-PME 0.2; PME diameter 0.2; PME-PLE 0.27; MOQ-PW 0.61; PLE diameter 0.24.

Colour: carapace black to grey; clypeus pale anteriorly, dark lateral lines, chelicerae dark medially, with thin longitudinal lines; chelicerae dark medially; eye area dark around PME and PLE white line posteriorly on eye tubercle; abdomen white with broad wavy transverse bands (Fig. 8e); femora with dark annulation; palps are dark distally on segments, apex brown.

Carapace: longer than wide (CI 1.14); clypeus long,  $1.05 \times$  MOQ length; eye tubercle slightly raised; AME largest, eye ratio: 1: 0.48: 0.88: 1; MOQ-AW = MOQ-PW; chelicerae elongate, 1.95 times longer than wide.

Abdomen: length 3.94; width: 3.38; four pairs of round dorsal muscular pits; posterior lateral spinneret  $1.3 \times$  abdomen length,  $1.97 \times$  carapace width; ts  $3.83 \times$  bS.

Legs: leg I longest,  $2.94 \times$  total body length; leg ratio 1: 0.99: 0.34: 0.91; metatarsus I,  $8.32 \times$  length of tarsus I; distal part of metatarsus  $0.51 \times$  length of proximal part; leg measurements: I- Fe 5.93, Pat + Tib 6.68, Mt I 4.95, II 2.55, Ta 0.9, total 21.01; II-6.19, 6.38, 4.73, 2.48, 0.68, total 19.9; III-2.25, 2.25, 1.69, 0.71, total 6.9; IV-5.44, 5.48, 5.18, 2.33, 0.72, total 19.14; Palp-1.2, 1.28, 0.83, total 3.3.

Epigyne (Figs. 8f,g): sickle-shaped fixing structures laterad on median plate; copulatory duct short, simple; several small secondary spermathecae posteriad of bilobed spermathecae; spermathecae S-shaped; seminal receptacle subtriangular, distally with glandular parts covered by threads; fertilization duct, short, curved medially.

**Male.** (Size = 1) TL 6. CL 2.63. CW 2.1. CLL 2.63 mm. OAL 0.12. AME diameter 0.22; AME-AME 0.1; ALE 0.2; MOQ-AW 0.55; ALE diameter 0.07; PME diameter 0.16; PME-PLE 0.22; MOQ-PW 0.57; PLE diameter 0.17.

Males structurally resemble females except smaller, legs longer; leg measurements: I- Fe 6.75, Pat + Tib 7.88, Mt I 5.25, II 2.63, Ta 0.75, total 23.25; II-6, 6.9, 6, 2.63, 0.75, total 22.28; III-1.88, 2.03, 1.65, 0.6, total 6.15; IV-5.25, 5.18, 5.25, 2.25, 0.75, total 18.68; Palp-1.13, 1.28, 0.45, total 3.15.

Palp (Figs. 8a,b & 27g): tibia elongate,  $2.4 \times$  longer than wide, three slender spines dorsally; cymbium elongate 1.67 times longer than wide, four apical spines; bulbus round; sperm duct regularly curved; median apophysis transversely angled, basally hollowed with proximad margin projecting.

**Distribution.** Aldabra Island Group; Comoros (Fig. 35).

**Natural history.** Adults caught in February.

**8. *Hersilia caudata* Audouin, 1826 (Figs. 9, 26b & 33)**

*Hersilia caudata* Audouin, 1826: 318; Walckenaer, 1837: 371; C.L. Koch, 1843: 103; O. P.-Cambridge, 1876: 560; Simon, 1882: 227; 1893: 446; Kulczyński, 1901a: 18; Benoit, 1967: 34; 1971: 152; Baehr & Baehr, 1993: 17; Baehr, 1998: 63; Levy, 2003: 21.

*Hersilia hirtiventris* Benoit, 1967: 22; first synonymized by Benoit, 1971: 152.

*Hersilia diversa* O. P.-Cambridge, 1876: 576; first synonymized by Benoit, 1967: 34.

**Types.** *Hersilia caudata*, 21 females, 8 males among which is a female neotype, designated by Benoit (1967: 34), **Burkina Faso:** Ouagadougou (12°21'N 1°31'W), iv-v.1965, B. Roman, MRAC 128065 (not examined). *Hersilia hirtiventris*, female holotype, **Sudan:** Reuk (10°45'N 32°50'E), 4.xii.1961, J.L. Cloudsley-Thompson, MRAC 120833 (examined), - paratypes: 1 female, Kawa (13°43'N 32°30'E), 200 km south of Khartoum, 2.xii.1961, J.L. Cloudsley-Thompson, MRAC 120872 (examined); 1 juv. male, Bahr-el-Ghazal, Rumbek, (6°47'N 29°40'E), 11.iii.1964, G. Lewis, MRAC 126486 (not examined). *Hersilia diversa*, juvenile female holotype, **Egypt:** Cairo, (30° 3' N 31° 15' E), i.1864, O. Pickard-Cambridge (not examined).

**Diagnosis.** Medium-sized spiders, legs long, eye tubercle slightly raised (Fig. 9c); clypeus long (Fig. 9d); epigyne with anterior part of triangular-shaped fixing structures obliquely laterally directed (Fig. 9f); spermathecae significantly smaller than seminal receptacle, subtriangular in shape (Fig. 9g); male palp with median apophysis hook-shaped, conspicuously long, prolaterally directed, distal curve, embolus with triangular projection distally (Figs. 9a,b & 26b). This species resembles *H. albicomis* and *H. occidentalis* in the general shape of the male palp, the hook-shaped median apophysis and the triangular embolar projection. It differs from them in the much longer median apophysis; laterally oblique epigynal fixing structures and large seminal receptacle.

**Redescription. Female.** Size (n=11). TL 9.1 (7.04 - 11.44); CL 3.49 (2.55 - 4.08); CW 3.32 (2.4 - 4.32); CLL 0.82 (0.64 - 1.2); OAL 0.2 (0.12 - 0.26). AME diameter 0.22; AME-AME 0.24; ALE 0.26; MOQ-AW 0.69; ALE diameter 0.09; PME-PME 0.21; PME diameter 0.2; PME-PLE 0.27; MOQ-PW 0.61; PLE diameter 0.22.

Colour: carapace varies from pale orange to red brown to dark brown with narrow dark border; clypeus pale, anteriorly with white pilosity; eye area with dark patch; faint white spot on posterior part of eye tubercle in some specimens; dorsum pale white, mottled white with dark brown background; antero-lateral border with dark serrated pattern, heart mark lancet-shaped extending up to third pair of dorsal muscular pits, laterally with faint, broad transverse bands (Fig. 9e); ventrum mottled white; spinnerets pale with or without annulation; legs pale orange to brown with or without annulation; palpal femur and tibia with striations on lateral border.

Carapace: as long as wide (CI 1.06); lateral border with row of conspicuous setae; clypeus long,  $1.33 \times$  MOQ length, sloping; eye tubercle raised, sides vertical; AME largest; eye ratio 1: 0.41: 0.89: 0.98; MOQ-AW > MOQ-PW; chelicerae elongate,  $1.7 \times$  longer than wide.

Abdomen (Fig. 9e): longer than wide, widest in posterior third; four pair of round dorsal muscular pits, second pair largest; posterior lateral spinnerets  $1.1 \times$  length of abdomen,  $1.8 \times$  carapace width; tS  $3.87 \times$  bS.

Legs: leg I longest,  $2.5 \times$  total body length; leg ratio 1: 1: 0.31: 0.85; metatarsus I,  $7.7 \times$  length of tarsus I; distal part of metatarsus  $0.55 \times$  length of proximal part; leg measurements: I- Fe 6.82, Pat + Tib 7.41, Mt I 5.55, Mt II 3.03, Ta 1.1, total 23.38; II- 6.58, 7.44, 5.72, 3.07, 0.82, total 23.33; III-2.33, 2.51, 1.97, 0.83, total 7.26; IV-5.76, 6.52, 6.71, 2.93, 0.88, total 22.5; Palp-1.36, 1.45, 1.07, total 3.88.

Epigyne (Figs. 9f,g): wide (el/ew 0.47); lateral borders angulate not projecting beyond border; median plate sub-quadrangle, posterior border rounded, laterally with sub-triangular fixing structures; anterior part of fixing structures obliquely laterally directed, copulatory openings widely spaced; copulatory ducts short, simple; two pairs of spermathecae; seminal receptacle large, round, with glandular parts covered by threads; spermathecae smaller, sub-triangular; fertilization ducts short, curved dorsally (Fig. 9g).

**Male.** Size (n=5). TL 7.64 (5.25 - 9.3); CL 3.34 (2.25 - 3.84); CW 3.05 (2.18 - 3.45); CLL 0.81 (0.51 - 1.04); OAL 0.64 (0.46 - 0.78). AME diameter 0.23; AME-AME 0.22; ALE 0.26; MOQ-AW 0.69; ALE diameter 0.1; PME-PME 0.21; PME diameter 0.21; PME-PLE 0.27; MOQ-PW 0.64; PLE diameter 0.21.

Males resemble females, except body smaller, legs longer  $4.5 \times$  longer than total length of body; dorsal muscular pits larger, leg measurements: I- Fe 8.75, Pat + Tib 10.65, Mt I 9.48, Mt II 3.31, Ta 0.98, total 33.95; II-7.67, 9.86, 8.42, 3.88, 0.88, total 31.61; III-2.94, 2.9, 2.58, 0.76, total 9.18; IV-7.04, 8.04, 7.34, 0.78, total 26.65; Palp- 1.43, 1.29, 1.04, 3.73.

Palp (Figs. 9a,b): tibia elongate,  $1.3 \times$  longer than wide,  $0.72 \times$  cymbium length, cymbium elongate,  $1.9 \times$  longer than wide with 2-3 apical spines; bulbus unmodified, round; spermatophore channel regularly curved; embolus circular, stout, reaching only medial part of bulbus; median apophysis hook-shaped, medially attached, long extending beyond curve of embolus; embolus filiform with triangular projection distally (Fig. 9a & 26 b).

**Additional material examined. Benin:** Kandi (11°7'N 2°55'E), 2 females, 3 juveniles, 8-27.xi.1948, B. Malkin, AMNH. **Cape Verde Islands:** Ile Fogo, Sao Filipe (14°53'N 24°31'W), 1 male, 6.xi.1998, W. Tavernier, MRAC 208426; 2 females, same data, 8.xi.1998, W. Tavernier, MRAC 208400. **Cameroon:** Yagoua (10°19'N 15°13'E), 5.xiii.1971, F. Puylaert, MRAC 143679. **Chad:** Bebedjia, pre's Moundou (8°41'N 16°34'E), 1 female, 20.ix.1977, G. Ruella, MRAC 151473; 1 male, same data, 1-10.vii.1977, MRAC 151421. **Guinea:** Conakry (9°30'N 13°42'W), 1 female, 2.vii.1957, E.S. Ross & R.E. Leech, AMNH. **Mali:** Bamako (12°40'N 07°59'E), 1 female, v-vi.1977, W.H. Settle, AMNH. **Nigeria:** 22 mi[le] E Damaturu (11°45'N 11°58'E), 400 m, 1 female, 19.ix.1966, E.S. Ross & K. Lorenzen, CASC. **Senegal:** Dakar Peninsula, 1 female, xi.1945, E.H. Newcombe, AMNH; Dakar 15 km, Road Rufisque (14°38'N 17°27'E), 2 males, viii. 1980, W. Settle, CASC; 20 km south of Richard Toll, (16°20'N 15°30'W), 1 male, 9.ix.1991, H. van der Valk, MRAC 200505. **Somalia:** (Abyssinian Somaliland), 1 female, 3-4.xii.1920, Selmahania & Abou Foulau, AMNH. **Togo:** (no exact locality) 1 female, MNHU.

**Distribution.** Egypt, Israel, Burkina Faso, Cape Verde Islands, Chad, Nigeria, Sudan; new records: Cameroon, Guinea, Ivory Coast, Mali, Senegal, Somalia, Togo (Fig. 34), Baehr & Baehr (1993) recorded one enigmatic specimen from the Oriental Region from Turkestan (Singkiang) in western China.

**Natural history.** One male was caught on a tree trunk in Cape Verde Islands, and one male was caught in a pitfall in Senegal. Adult females were caught from November to July and adult males between March and August.

### 9. *Hersilia clarki* Benoit, 1967. (Figs. 10 & 34)

*Hersilia clarki* Benoit, 1967: 20.

**Types.** Male holotype, **Zimbabwe:** Mazoe (17°31'S 30°58'E), 7.iii.1899, BMNH 1899.3.7.54 (examined).

**Diagnosis.** Small spiders; legs long; eye tubercle slightly raised; clypeus short; palp with sperm duct incurved, embolus curved, with acute apex (Figs. 10a,b). This species resembles *H. baforti* and *H. woutrinae* in the incurved sperm duct, the absence of a conductor is unique to the *Hersilia baforti* species group. Female unknown.

**Redescription. Male.** (Size n=1). TL 5.33; CL 2.4; CW 2.33; CLL 0.36; OAL 0.12. AME diameter 0.22; AME-AME 0.17; ALE 0.13; MOQ-AW 0.61; ALE diameter 0.08; PME-PME 0.14; PME diameter 0.18; PME-PLE 0.17; MOQ-PW 0.51; PLE diameter 0.17.

Colour: carapace pale orange with broad, dark lateral border; clypeus dark with distal protuberance; chelicerae pale; eye area dark; abdomen darkly mottled, dorsum with broad heart mark, posteriorly with thin transverse lines (Fig. 10e); ventrum pale; posterior lateral spinnerets pale; legs and palps pale with no annulation.

Carapace: as wide as long (CI 1.03); clypeus short,  $0.7 \times$  MOQ length; eye tubercle slightly raised, sides sloping; AME largest, eye ratio 1: 0.35: 0.82: 0.76; chelicerae elongate, twice as long as wide.

Abdomen (Fig. 10e): longer than wide, sub-quadrate; four pairs of round dorsal muscular pits, second pair largest; posterior lateral spinnerets 1.39 times abdomen length,  $1.61 \times$  carapace width; tS  $3.55 \times$  bS 3.55.

Legs: legs broken; leg IV very long,  $5 \times$  total body length; leg measurements: I-Fe 7.5, absent; II-7.13, 8.78, 6.9, absent; III-3, 2.93, 2.55, 0.75, total 9.23; IV-6.75, 7.95, 6.98, 3.45, 0.98, total 26.1; Palp-0.98, 0.98, 0.83, total 2.78.

Palp (Figs. 10a,b): tibia elongate,  $1.2 \times$  longer than wide,  $0.55 \times$  cymbium length; cymbium elongate,  $1.83 \times$  longer than wide with four apical spines; bulb unmodified, round; spermatophore channel incurved; embolus curved, thick base, filiform distally with apex acute; no apophyses or processes.

**Female.** Unknown.

**Distribution.** Zimbabwe (Fig. 34). Known only from type locality.

**Natural history.** Male caught in March.

## 10. *Hersilia dilumen* sp. nov. (Figs. 11 & 34)

**Types.** Male holotype, **Ivory Coast:** Appouesso, FC Bossematie (06°35'N 03°28'W), modified malaise trap, 1.xii.1994, R. Jocqué, MRAC 200946.

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

**Diagnosis.** Small spiders; legs long; eye tubercle slightly raised (Fig. 11c); clypeus short (Fig. 11d); male palp with sclerotized tegular projection elongate, thin; conductor with basal groove distally (Fig. 11a); embolus straight, apex furcate (Fig. 11b). This species resembles *H. salda* based on the presence of a ventral furrow distally on conductor. Female unknown.

**Description. Male.** Size(n=1). TL 4.35; CL 1.73; CW 2.03; CLL 0.29; OAL 0.09; AME diameter 0.26; AME-AME 0.2; ALE 0.13; MOQ-AW 0.72; ALE diameter 0.07; PME-PME 0.13; PME diameter 0.18; PME-PLE 0.2; MOQ-PW 0.49; PLE diameter 0.21.

Colour: carapace pale brown medially with broad, dark lateral border covered with dark setae; clypeus pale white, dark laterally with oblique border; chelicerae dark; eye area dark; posterior half of dorsum with faint transverse lines (Fig. 11e); ventrum

mottled white; posterior lateral spinnerets with strong annulation; legs basally pale, darker distally; dark striations on femora and palps, patellae dark.

Carapace: wider than long; CI (CL/CW): 0.85; clypeus short,  $0.54 \times$  MOQ length; eye area slightly raised; AME largest; eye ratio 1: 0.25: 0.7: 0.8; MOQ-AW > MOQPW; chelicerae elongate,  $2.35 \times$  longer than wide.

Abdomen (Fig. 11e): abdomen as wide as long, widest in posterior third; four round dorsal muscular pits, second pair largest; posterior lateral spinnerets as long as abdomen,  $1.22 \times$  carapace width; tS  $3.71 \times$  bS.

Legs: leg II longest,  $3.85 \times$  total length of body; leg ratio 1: 1.08: 0.38: 0.81; metatarsus  $112.29 \times$  tarsus I; distal part of metatarsus  $0.59 \times$  proximal part; leg measurements: I- Fe 4.13, Pat + Tib 4.73, Mt I 4.05, II 2.4, Ta 0.53, total 15.83; II-4.13, 5.25, 4.35, 2.63, 0.68, total 17.03; III-1.8, 2.03, 1.5, 0.68, total 6; IV-3.45, 3.68, 3.45, 1.65, 0.6, total 12.83; Palp-1.13, 0.9, 1.05, total 3.08.

Palps (Figs. 11a,b): three spines dorsally on femur; tibia stout,  $0.67 \times$  longer than wide,  $0.29 \times$  cymbium length; five spines dorsally; cymbium digitate; twice as long as wide; four stout apical spines; bulbous with basal swelling; sperm duct incurved; embolus straight, furcate; elongate, straight sclerotized tegular projection arise near embolus base; large conductor with basal groove distally, tapering distally.

**Female.** Unknown.

**Distribution.** Ivory Coast (Fig. 34). Known only from type locality.

**Natural History.** Caught in a modified malaise trap. Male adult was caught in December.

### 11. *Hersilia eloetsensis* sp. nov. (Figs. 12 & 36)

**Types.** Male holotype, **Madagascar:** Toliara Province, Mahafaly, near Eloetse by Lake Tsimanampetsoa ( $18^{\circ}28'S$   $46^{\circ}58'E$ ), el. 1218m, 15-16.ix.1992, V. & B. Roth, CASC.

**Etymology.** The specific epithet refers to the type locality.

**Diagnosis.** Small spiders; legs long; eye tubercle slightly raised (Fig. 12c); clypeus long (Fig. 12d); palp with small, median apophysis angled longitudinally, broad and convex basally, apex acute (Figs. 12a,b), embolus short, filiform. The palp resembles

that of *H. caronae* in the concave hook-shaped median apophysis, but *H. eloetsensis* differs from this species in the smaller size of the median apophysis and short embolus. Female unknown.

**Description. Male.** Size (n=1). TL 4.08; CL 1.68; CW 1.68; CLL 0.39; OAL 0.39; AME diameter 0.13; AME-AME 0.13; AME-ALE 0.2; MOQ-AW 0.39; ALE diameter 0.065; PME-PME 0.16; PME diameter 0.13; PME-PLE 0.17; MOQ-PW 0.42; PLE diameter 0.13.

Colour: carapace pale brown bearing dark setae, border dark; clypeus pale, V-shaped white mark medially extending up to AME; eye area black, longitudinal white line posteriorly of eye tubercle; dorsum (Fig. 12e) white with fine white transverse lines throughout, indistinct brown border antero-laterally, posteriorly with fine transverse lines; ventrum white; posterior lateral spinnerets annulated; legs and palps pale brown without markings.

Carapace: as wide as long (CI 1); row of conspicuous setae on border; clypeus long, as long as MOQ length; slightly raised eye tubercle, sides vertical sides; AME = PME = PLE; eye ratio 1: 0.5: 1: 1; MOQ-AW < MOQ-PW; chelicerae elongate, 1.8 × longer than wide, retromargin with row of five minute teeth.

Abdomen (Fig. 12e): longer than wide, oval, slightly wider in front; dorsal muscular pits round, second pair oval; posterior lateral spinnerets 1.18 × abdomen length; 1.6 × cephalothorax width; tS 2.3 × bS.

Legs: leg I longest, 3.25 × total body length; leg ratio 1: 0.91: 0.3: 0.81; metatarsus I, 12.4 × longer than tarsus I; distal part of metatarsus half the length of proximal part; leg measurements: I- Fe 4, Pat + Tib 4.4, Mt i 3.28, ii 1.68, Ta 0.4, total 13.76; II-3.28, 4.08, 3.04, 1.68, 0.4, total 12.48; III-1.2, 1.28, 1.12, 0.48, total 4.08; IV-3.2, 2.96, 3, 1.5, 0.45, total 11.11; Palp-0.83, 0.94, 0.6, total 2.37.

Palps (Figs. 12a,b): tibia elongate, 1.8 × longer than wide, 0.88 × cymbium length, three dorsal spines; cymbium compact, 1.5 × longer than wide, two apical spines; bulbus round, unmodified; sperm ducts regularly curved; embolus filiform, very short, curved, but curve not reaching apex of median apophysis; median apophysis hook-shaped, angled longitudinally; short (Fig. 12e), convex basally; apex acute, retrolaterad

**Female.** Unknown.

**Distribution.** Madagascar (Fig. 36). Known only from type locality.

**Natural history.** Adult male caught in September.

## 12. *Hersilia ferra* sp. nov. (Figs. 13 & 34)

**Types.** Female holotype, **Democratic Republic of Congo:** Shaba, Luishwishi, (11°31'S 27°27'E), Savannah, 9.xii.1973, F. Malaisse, MRAC 148982; 1 female, 1 male, same data, xi.1973, F. Malaisse, MRAC 149075; 4 females, 1 juv. male, same data, forêt claire brulee, x-xi. 1973, F. Malaisse, MRAC 149117.

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

**Diagnosis.** Medium-sized spiders; eye tubercle slightly raised (Fig. 13c); clypeus short (Fig. 13d); legs long; epigyne laterally with oval copulatory openings, anteriorly sclerotized and faint V-shaped sclerotization medially (Fig. 13f); spermathecae round, similar size (Fig. 13g); male palp with conductor triangular, apex acute; embolus deeply furcated (Figs. 13a,b) This species resemble *H. salda* in the V-shaped sclerotization medially, oval copulatory openings and elongate copulatory ducts. The round spermathecae distinguish it from *H. salda*. The male embolus is unique.

**Description. Female.** Size (n=1). TL 7.94 (7.63 - 8.25); CL 2.93 (2.85 - 3); CW 2.7 (2.63 - 2.78); CLL 0.58 (0.51 - 0.65); OAL 0.14 (0.12 - 0.16); AME diameter 0.24; AME-AME 0.21; ALE 0.2; MOQ-AW 0.69; ALE diameter 0.07; PME-PME 0.16; PME diameter 0.21; PME-PLE 0.16; MOQ-PW 0.58; PLE diameter 0.2.

Colour: carapace brown with dark brown border, cephalic region orange brown; clypeus brown to orange brown; chelicerae orange brown; eye area brown, darker around eyes; abdomen in old preserved specimens, pale brown with isolated dark patches in no particular pattern; heart mark broad; posteriorly mottled with dark spots; posterior lateral spinnerets pale; ventrum pale; legs with annulation and lateral striations on femora; palps with apex dark.

Carapace (Figs. 13c,d): as long as wide (CI 1.08); clypeus short,  $0.98 \times$  MOQ length, sloping; eye area slightly raised; AME largest; eye ratio 1: 0.28: 0.88: 0.83;  $\text{MOQ-AW} > \text{MOQPW}$ ; chelicerae elongate,  $2.05 \times$  longer than wide.

Abdomen (Fig. 13e): longer than wide, widest in posterior third; dorsal muscular pits round, second pair largest; posterior lateral spinnerets  $1.22 \times$  length abdomen;  $2.04 \times$  carapace width; tS  $4.59 \times$  bS.

Legs: leg II longest,  $2.44 \times$  total body length; leg ratio: 1: 0.99: 0.38: 0.99; metatarsus I,  $8.18 \times$  tarsus I; distal part of metatarsus  $0.66 \times$  length of proximal part; leg measurements: I- Fe 5.3, Pat + Tib 5.78, Mt I 4.43, II 2.93, Ta 0.9, total 19.34; II-5.33, 5.58, 4.5, 2.85, 0.98, total 19.24; III-1.88, 2.63, 2.1, 0.75, total 7.36; IV-4.88, 5.78, 4.58, 2.85, 0.98, total 19.07; Palp-1.2, 1.21, 0.75, total 3.16.

Epigyne (Figs. 13f,g): elongate (el/ew 0.72 ); oval copulatory openings widely spaced with anterior edge sclerotized; faint V-shaped sclerotization medially; copulatory ducts elongate; spermathecae simple, round and well separated from copulatory ducts (Fig. 13g); fertilization duct elongate, curved medially, dorsally directed.

**Male.** Size (n=1). TL 6; CL 2.55; CW 2.25; CLL 0.39; OAL 0.17; AME diameter 0.22; AME-AME 0.23; ALE 0.13; MOQ-AW 0.68; ALE diameter 0.07; PME-PME 0.17; PME diameter 0.17; PME-PLE 0.2; MOQ-PW 0.51; PLE diameter 0.17.

Males resemble females except: smaller in size, clypeus shorter,  $0.68 \times$  MOQ length; legs longer; leg measurements: I- Fe 7.35, Pat + Tib 9, Mt I 7.5, II 3.6, Ta 0.9, total 28.35; II-7.13, 8.48, 7.13, 3.38, 1.13, total 27.23; III-3, 2.93, absent (no measurements taken); IV-6.53, absent (no measurements taken). Palp-1.13, 0.83, 0.98, total 2.93.

Palps (Figs. 13a,b): tibia stout,  $0.71 \times$  longer than wide,  $0.38 \times$  cymbium length; cymbium elongate,  $1.63 \times$  longer than wide; bulbus with basal swelling; sperm duct incurved; embolus curved, deeply furcate; conductor triangular, apex acute; median apophysis absent.

**Distribution.** Democratic Republic of Congo (Fig. 34). Known only from type locality.

**Natural History.** Holotype female caught in the Savannah Biome while one of the paratype females was collected from forest; adult females and males collected between June and November.

**13. *Hersilia hildebrandti* Karsch, 1878 (Figs. 14 & 38)**

*Hersilia hildebrandti* Karsch, 1878: 313; Benoit, 1967: 30.

**Type.** Female neotype, designated by Benoit, 1967: 30, **Tanzania:** North Tanganyika, between Lake Mangara and Ngorongoro crater (03°10'S 35°35'E), xi.1963, J.L. Cloudsley-Thompson, MRAC 125954 (examined).

**Diagnosis.** Medium-sized; legs long; eye tubercle slightly raised (Fig. 14d); clypeus long (Fig. 14e); epigyne with T-shaped median plate, narrowing anteriorly; oblique striae medially on lateral borders (Fig. 14a); copulatory openings opens medially of spermathecae; copulatory ducts (cd) with hairpin bend (Fig. 14b). The epigyne of this species is unique, although the simple, round spermathecae, presence of lateral borders, striae medially on lateral borders, anterior narrowing of median plate resemble epigyines of members in *H. incompta*-group. Male unknown.

**Redescription. Female.** Size (n=1). TL 8.4; CL 2.96; CW 2.96; CLL 0.65; OAL 0.55. AME diameter 0.18; AME-AME 0.2; MOQ-AW 0.56; PME-PME 0.13; PME diameter 0.16; MOQ-PW 0.45.

Colour: carapace red brown, border dark covered with dense black setae; clypeus and chelicerae dark; eye area dark; white patch posteriorly on eye tubercle; abdomen (Fig. 14c) mottled white, with short black setae; laterally covered with sparse white setae; lancet-shaped heart mark pale brown; pale wavy transverse lines posterior on dorsum; posterior lateral spinnerets pale; legs pale red; femora and palps pale with no annulation.

Carapace: as wide as long (CI 1); clypeus long,  $1.19 \times$  MOQ length, sloping; eye tubercle slightly raised; AME largest; eye ratio 1: 0.88: 0.95: 0.95; MOQ-AW > MOQPW; chelicerae elongate, twice as long as wide.

Abdomen (Fig. 14c): longer than wide, widest in posterior third; four pairs of round dorsal muscular pits, second pair largest; posterior lateral spinnerets  $0.77 \times$  shorter than abdomen;  $1.35 \times$  cephalothorax width; tS four  $\times$  bS.

Legs: leg II longest,  $2.5 \times$  total body length; leg ratio 1: 1.04: 0.32: 0.95; metatarsus I,  $9.1 \times$  longer than tarsus I; distal part of metatarsus  $0.52 \times$  the length of proximal part; leg measurements: I- Fe 6, Pat + Tib 6.16, Mt I 4.8, II 2.48, Ta 0.8, total

20.24; II-6, 6.32, 5.2, 2.8, 0.8, total 21.12; III-2, 2.32, 1.6, 0.64, total 6.56; IV-5.2, 5.6, 5.2, 2.4, 0.8, total 19.2. Palp- absent.

Epigyne (Figs. 14a,b): triangular, as long as wide (el/ew 1); lateral borders lobiform; striae basally on lateral borders; median plate with narrowed anteriorly, widening posteriorly, T-shaped; copulatory openings widely separated, copulatory ducts elongate, with central bend (cd) (Fig. 14a); spermathecae well separated from copulatory ducts; equally sized, simple and round; glandular parts covered by threads (not visible in Fig. 14); fertilization ducts medially curved.

**Male.** Unkown.

**Distribution.** Tanzania (Fig. 38). Known only from type locality.

**Natural history.** None noted. The adult female was collected in November.

#### 14. *Hersilia incompta* Benoit, 1971 (Figs. 15 & 38)

*Hersilia incompta* Benoit, 1971: 154.

**Types.** Female holotype, **IVORY COAST:** Bondoukou (7°34'N 5°16'W), vii.1968, G. Fraipont, MRAC 136390 (examined); - paratype: male, same data, MRAC 136391 (examined).

**Diagnosis.** Small to medium-sized spiders; legs long; eye tubercle slightly raised (Fig. 15c); clypeus short (Fig. 15d); epigyne with median plate narrowing anteriorly, distal part broad (Fig. 15f); spermathecae elongate, subquadrate (Fig. 15g); male palp with median apophysis large, complex and hollow (Fig. 15a,b); embolus thick, cornered, curved near acute apex. The male resemble *H. nicolae*, and members of the *H. pectinata*-species group from the Oriental Region ( Baehr & Baehr 1993) in the dorsally angulate palpal tibia with row of strong spines; embolus laterally angular and curved; median apophysis large. The epigyne drawn by Benoit (1971) resemble that of *H. nicolae*, but Benoit's drawing of the vulva was without detail and no further statements can be made about the T-shaped median plate of the epigyne with a its rippled lateral border that ties *H. nicolae* with females of the *H. pectinata*-species group. Females of both two species possess two pairs of tubercles laterally on dorsum.

**Remarks.** The female was described by Benoit (1971), however the epigyne of the type specimen was not in the bottle with the female. His figures (figs. 147,148) are redrawn here. The specimen although only collected in 1968 is in a bad condition and markings on the abdomen are faded, therefore the male abdomen is redrawn here.

**Redescription. Female.** Size (n=1). TL 6.6; CL 2.48; CW 2.48; CLL 0.59 mm; OAL 0.13; AME diameter 0.21; AME-AME 0.2; MOQ-AW 0.61; PME-PME 0.2; PME diameter 0.16; PME-PLE 0.2; MOQ-PW 0.51; PLE diameter 0.2.

Colour: carapace pale brown, border dark; clypeus pale with dark border laterally; eye area dark around posterior eye row; abdomen white with dark border; heart mark lancet-shaped, extend up to third pair of dorsal muscular pits; ventrum pale; posterior lateral spinnerets pale without annulation; legs pale without annulation.

Carapace: as long as wide (CI 1); clypeus long,  $1.18 \times$  MOQ length; eye tubercle raised, concave lateral sides; AME largest; eye ratio 1: 0.34: 0.75: 0.94; chelicerae stout,  $1.56 \times$  longer than wide; retromargin with row of 3 minute teeth.

Abdomen: longer than wide, widest in posterior third; four pairs of round dorsal muscular pits, second pair largest; Benoit (1971) mentions the presence of two pairs of tubercles lateral on anterior part of abdomen; posterior lateral spinnerets long, as long as abdomen;  $1.61 \times$  carapace width; tS  $3.08 \times$  bS.

Legs: long,  $2.33 \times$  total body length; leg I longest; leg ratio 1: ? : 0.36: 0.85; metatarsus I, eight  $\times$  longer than tarsus I: distal part of metatarsus  $0.6 \times$  length of proximal part; leg measurements: I- Fe 4.5, Pat + Tib 4.73, Mt I 3.38, II 2.03, Ta 0.68, total 15.3; II-4.5; III-1.65, 1.8, 1.35, 0.68, total 5.48; IV-3.9, 3.53, 3.6, 1.5, 0.53, total 13.05; Palp- 0.98, 1.58, 0.9, total 3.08.

Epigyne (Figs. 15f,g): central septum distally broad; narrowed anteriorly, extends posteriorly beyond border of epigastric furrow (Fig. 15f); copulatory openings widely spaced; copulatory ducts elongate; spermathecae sub-quadrangle, seminal receptacle with glandular part covered by threads; fertilization duct short, straight (Fig. 15g).

**Male.** Size (n=1). TL 4.32; CL 1.88; CW 1.88; CLL 0.44 mm; OAL 0.44; AME diameter 0.16; AME-AME 0.16; AME-ALE 0.13; MOQ-AW 0.48; ALE diameter 0.07; PME-PME 0.16; PME diameter 0.12; PME-PLE 0.2; MOQ-PW 0.39; PLE diameter 0.13.

Males structurally resemble females except: smaller; abdomen longer than wide, widest in middle, at second dorsal muscular pit (Fig. 15e); posterior lateral spinneret very long, twice as long as abdomen; three  $\times$  carapace width; tS  $8.5 \times$  bS; legs  $3.7 \times$  total body length; metatarsus I,  $11 \times$  longer than tarsus I; leg measurements: I- Fe 4.4, Pat + Tib 4.72, Mt I 3.84, II 2.24, Ta 0.56, total 15.76; II-4.32, 4.64, 4, 2.24, 0.56, total 15.76; III- 1.52, 1.52, 1.04, 0.64, total 4.72; IV-3.6, 4, 3.6, 1.6, 0.64, total 13.44; palp- absent.

Palps (Figs. 15a,b): tibia stout, wider than long,  $0.24 \times$  cymbium length, markedly angulate with four very strong spines dorsally; cymbium compact, almost as wide as long, four spines apically; bulbus with lamellar modifications that contain median apophysis; sperm duct not visible; embolus thick, angular, elongate with curve near acute apex; median apophysis with two large basal concavities, both ending in two acute apophyses at opposite sides; ventral concavity with serrated lower edge.

**Distribution.** Ivory Coast (Fig. 38). Known only from type locality.

**Natural history.** None noted. Female collected in July.

### 15. *Hersilia insulana* Strand, 1907 (Figs. 16 & 35)

*Hersilia insulana* Strand, 1907a: 728; 1907b: 26.

*Hersilia nossibeensis* Strand, 1916: 55, new synonym.

**Types.** *Hersilia insulana*, female lectotype (here designated), **Madagascar:** St. Juan Nova ( $17^{\circ}03'S$   $42^{\circ}45'E$ ), vi.1894, Voeltkov, MNHU 32443 (examined); - paralectotype (here designated): 1 male, Majunga ( $15^{\circ}43'S$   $46^{\circ}19'E$ ), vi.1898, Voeltzkov, MNHU 32442 (examined); 1 female, Foret de Zombitsy near Sakahara, el. 650m, 16.xi.1959, E.S. Ross, CASC; 1 female, 1 male, Tulear, Ampanihy ( $24^{\circ}40'E$   $44^{\circ}43'S$ ), iv.1994, A. Pauly, MRAC 201685; 1 male, Ambotulampy, ( $18^{\circ}52'S$   $46^{\circ}42'E$ ), iv.1999, Van Estbroek, MRAC 209097.

**Diagnosis.** Medium-sized spiders; legs long; eye tubercle slightly raised (Fig. 16c), clypeus long (Fig. 16d); spermathecae with medial curl (Fig. 16g); male palp with

hook-shaped median apophysis, transversely angled, apex acute (Fig. 16a); palpal tibia with two strong dorsal spines (Fig. 16b). The epigyne of this species resembles that of *H. sigillata* and *H. caronae* in the broad base of seminal receptacle, tapering distally and sickle shaped fixing structures. The meidal curve of the spermathecae distinguishes *H. insulana* from the previous two species. The transverse angle of the median apophysis corresponds with that of *H. sigillata* and *H. caronae*.

**Redescription. Female.** Size (n=3). TL 9.71 (6.56 - 13.2); CL 3.84 (2.96 - 4.8); CW 3.42 (2.8 - 4.08); CLL 0.86 (0.68 - 1); OAL 0.2 (0.13 - 0.26). AME diameter 0.29; AME-AME 0.22; ALE 0.3; MOQ-AW 0.8; ALE diameter 0.07; PME-PME 0.23; PME diameter 0.26; PME-PLE 0.28; MOQ-PW 0.74; PLE diameter 0.26.

Colour: carapace pale brown; clypeus pale with white medial line; dark rings around posterior eyes, white mark posteriorly on eye tubercle; dorsum white, lancet-shaped heart mark extend up to third pair of dorsal muscular pits; serrated dark antero-lateral border, covered with small white setae; faint broad transverse lines; posterior half of dorsum with faint, thin transverse lines (Fig. 16e); ventrum mottled white; posterior lateral spinnerets with annulation; legs with faint annulation; palps: annulation with dark tarsus.

Carapace: as wide as long (CI 1.05); lateral border with row of conspicuous setae; clypeus long,  $1.15 \times$  MOQ length, sloping; eye tubercle slightly raised, sides vertical; PLE largest; eye ratio 1: 0.46: 1: 1.17; MOQ-AW > MOQ-PW; chelicerae elongate,  $1.78 \times$  longer than wide.

Abdomen: length 5.62, width 4.49; longer than wide, varies in shape from oval to widest in posterior third; dorsal muscular pits round, second pair largest; posterior lateral spinnerets  $1.37 \times$  abdomen length,  $2.21 \times$  times carapace width; tS 4.55 times bS.

Legs: leg I longest,  $2.7 \times$  total body length; leg ratio 1: 0.98: 0.35: 0.93; metatarsus I,  $9.25 \times$  longer than tarsus I; distal part of metatarsus  $0.51 \times$  proximal part; leg measurements: I- Fe 7.24, Pat + Tib 8.28, Mt I 6.2, II 3.16, Ta 1, total 25.88; II-6.68, 7.92, 6.48, 3.4, 1, total 25.48; III-3, 2.88, 2.4, 0.92, total 9.2; IV-6.6, 6.84, 7.08, 2.92, 1, total 24.44; Palp-1.5, 1.58, 1.17, total 4.25.

Epigyne (Figs. 16f,g): wide (el/ew 0.6); lateral borders angular, slightly projecting beyond border; broad median plate, border straight; sickle-shaped fixing structures

laterally; copulatory openings widely spaced; short simple copulatory ducts; several small secondary spermathecae basally on spermathecae; bilobed spermathecae; lateral spermathecae with wide base tapering distally; spermathecae with medial curve; fertilization ducts short, simple.

**Male.** Size (n=3). TL 7.8 (7.13 - 8.4); CL 3.5 (3.15 - 3.75); CW 3.22 (3 - 3.38); CLL 0.88 (0.82 - 0.91); OAL 0.17 (0.13 - 0.2). AME diameter 0.31; AME-AME 0.22; ALE 0.3; MOQ-AW 0.84; ALE diameter 0.07; PME-PME 0.2; PME diameter 0.25; PME-PLE 0.3; MOQ-PW 0.69; PLE diameter 0.23.

Resemble females except: larger in size; MOQ-AW >> MOQ-PW; legs longer,  $4.76 \times$  total body length; leg measurements: I- Fe 9.9, Pat + Tib 12.21, Mt I 11.64, II 4.54, Ta 1.05, total 38.74; II-8.74, 11.13, 9.89, 4.23, 1.09, total 35.06; III-3.49, 3.26, 2.71, 0.85, total 10.31; IV-7.98, 9.25, 9.19, 3.41, 0.89, total 30.72.1.63; Palp-1.81, 1.65, 0.85, total 4.31.

Palps (Figs. 16a,b): tibia elongate, twice as long as wide,  $0.67 \times$  cymbium length with two spines dorsally (Fig. 16b); group of dense, long white setae present in front of bulbus; cymbium elongate  $1.83 \times$  longer than wide with four apical spines; bulbus unmodified; sperm duct regularly curved; embolus long, filiform, completes  $\frac{3}{4}$  of a circle, completely free, apex acute; median apophysis angled transversely, apex acute.

**Additional material examined. Madagascar:** Ambotolanpy (18°52'S 46°42'E), el. 800m, 1 male, iv.1999, Van Estbroek, MRAC 209097; Tulear, Ampanihy (23°21'S 43°40'E), el. 12m, 1 male, 1 female, iv.1994, A. Pauly, MRAC 201685; Nossibe (16°16'S 44°52'E), *Hersilia nossibeensis*, female holotype, 1883, G. Stumpff, SMFD2916 (examined); -paratype: 1 female, same data, 1885, SMFD 2917, (examined).

**Distribution.** Madagascar (Fig. 35).

**Natural history.** None noted. Females were caught between April and November and males between April and June.

### 16. *Hersilia madagascariensis* (Wunderlich 2004) (Figs. 17, 26d & 36)

*Hersiliopsis madagascariensis* Wunderlich, 2004: 822.

**Remarks.** Wunderlich (2004) described *Hersiliopsis madagascariensis*, a new genus and species in copal from Madagascar. The palp of this fossil resembles that of the extant specimens that are described here. The species *Hersiliopsis madagascariensis* is transferred to the genus *Hersilia* because phylogenetic analysis of *Hersilia* suggest that *Hersiliopsis madagascariensis* falls well within what is currently considered to be *Hersilia*.

**Types.** Holotype in copal, Madagascar: northern regions (F52/CM/AR/HER/CJW) not examined.

**Diagnoses.** Small spiders; legs long; slightly raised eye tubercle (Fig. 17c); clypeus long (Fig. 17d); epigyne with oblique, oval copulatory openings laterally (Fig. 17f); large bulbous sac around copulatory openings; seminal receptacle irregularly coiled (Fig. 17g); male palp with median apophysis forming a broad flap-like structure, apex broad (Fig. 17a & Fig 29a); embolus circular, filiform, irregularly shaped; apex acute (Fig. 17b); ventrum with large ventral muscular pits. This species is unique to the Afrotropical Region.

**Description. Male.** Size (n=3). TL 4.61 (4.5 - 4.72); CL 1.9 (1.88 - 1.92); CW 1.79 (1.65 - 1.92); CLL 0.42 (0.39 - 0.52); OAL 0.41 (0.37 - 0.46). AME diameter 0.13; AME-AME 0.14; ALE 0.21; MOQ-AW 0.4; ALE diameter 0.04; PME-PME 0.15; PME diameter 0.17; PME-PLE 0.18; MOQ-PW 0.48; PLE diameter 0.17.

Colour: carapace pale brown, covered by dense white setae, border dark, narrow; clypeus pale; V-shaped white mark medially, white pilosity anteriorly; eye area dark covered with white setae; dorsum mottled white, covered by dense pale setae heart mark lancet-shaped, extend up to third pair of dorsal muscular pits; thin wavy antero-lateral border, posteriorly darker with distinct wavy transverse lines (Fig. 17e); ventrum dark to mottled white; legs pale with annulation on femora; patellae and tibiae distally dark; tarsi dark; spinnerets and palps pale.

Carapace: as long as wide (CI 1.07); clypeus long, 1.23 MOQ length (Fig. 17d); eye tubercle slightly raised (Fig. 17e), sides vertical; PLE largest; eye ratio: 1: 0.3: 1.5: 1.5; MOQ-AW < MOQ-PW; chelicerae rather stout, 1.5 × as long as wide.

Abdomen (Fig. 17e): short, slightly longer than wide, almost square; dorsal muscular pits with first and second pair much larger than third and fourth pair; posterior lateral spinnerets elongate,  $1.34 \times$  longer than abdomen,  $1.81 \times$  carapace width.

Legs: leg II longest; elongate,  $3.57 \times$  total body length; leg ratio: 1: 1.06: 0.3: 0.9; metatarsus I,  $7.4 \times$  the length of tarsus I; distal part of metatarsus  $0.49 \times$  proximal part; posterior lateral spinnerets  $1.4 \times$  longer than abdomen and  $1.5 \times$  longer than CW; leg measurements: I- Fe 4.38, Pat + Tib 4.66, Mt I 3.99, II 1.94, Ta 0.7, total 15.66; II-4.5, 4.88, 4.3, 2.25, 0.7, total 16.63; III-1.55, 1.48, 1.17, 0.43, total 4.62; IV-3.88, 4.03, 3.92, 1.63, 0.63, total 14.07; Palp-0.87, 0.73, 0.83, total 1.94.

Palps (Figs. 17a,b & 26a): tibia stout,  $0.92 \times$  as long as wide,  $0.48 \times$  cymbium length, two spines dorsally; cymbium compact,  $1.75 \times$  longer than wide; four apical spines; bulbus round, sperm duct regularly curved, embolus irregularly shaped (Fig. 17b); median apophysis broad flap-like, apex acute (Fig. 17a & 26a).

**Female.** Size(n=2). TL 4.84 (4.5 - 5.18); CL 1.96 (1.88 - 2.03); CW 1.81 (1.73 - 1.88); CLL 0.54 (0.52 - 0.55); OAL 0.15 (0.13 - 0.16). AME diameter 0.13; AME-AME 0.15; ALE 0.23; MOQ-AW 0.41; ALE diameter 0.05; PME-PME 0.19; PME diameter 0.17; PME-PLE 0.2; MOQ-PW 0.52; PLE diameter 0.15.

Structurally resemble males, except for abdomen widest in posterior third; leg measurements: I- Fe 3.75, Pat + Tib 3.79, Mt I 2.97, II 1.88, Ta 0.6, total 13.03; II-3.75, 4.09, 3.23, 1.84, 0.57, total 13.47; III-1.35, 1.17, 1.02, 0.53, total 4.06; IV-3.31, 3.38, 3.04, 1.65, 0.49, total 11.86; Palp-0.75, 0.84, 0.42, total 2.

Epigyne (Figs. 17f,g): wide (el/ew 0.67); oval, sclerotized copulatory openings, obliquely placed, wide apart, large bulbous sac around openings (Fig. 17f); spermathecae globose, stalk present; seminal receptacle irregularly coiled with glandular parts covered by threads distally; fertilization ducts short, curved medially.

**Additional material examined. Comoros:** Mayotte, Coconi, campus de la DAF (12°49'S 45°10'E), 1 male, 22.vii.1998, R. Jocqué, MRAC 208633; same data, 1 female, MRAC 208633; Anjouan, Cole de Patsi (12°15'S 44°25'E), el. 725m, forest remnants on building, 1 male, 17.v.2003, R. Jocqué, D. van Spiegel, MRAC 213374; 1 male, viii.1903, Voëltzkow, MNHN. **Madagascar:** Tamatave, Foulpointe (17°40'S 49°31'E), laguna forest, 1 female, xi. 1994, A. Pauly, MRAC 205633; Fianarantsoa Prov.

Ranomafana (town) (21°14S 47°27E) el. 933m, on bark of tree, 1 male, 30.iv.1998, C.E. Griswold, D.H. Kavanaugh, N.D. Penny, M.J. Raheirilalao, J.S. Ranorianarisoa, J. Schweikert, D. Ubick, CASC.

**Distribution.** Madagascar; Comoros (Fig. 35).

**Natural history.** Collected from trees in forested areas. Males were collected between April and July, females between June and July.

### 17. *Hersilia moheliensis* sp. nov. (Figs. 18 & 36)

**Types.** Male holotype, **Comoros:** Mohéli, Miringoni, Jardin (12° 15' S 43° 45' E), 6-12.xi.1983, R. Jocqué, Malaise trap, MRAC 160952.

**Diagnosis.** Medium-sized spiders, legs very long; eye tubercle slightly raised (Fig. 18c), clypeus short (Fig. 18d); median apophysis of palp hollowed basally, concave flap distally, apex acute (Figs. 18a,b); embolus elongate, circular apex acute. This species resemble *H. incompta* and *H. nicolae* in having a hollowed but much simpler median apophysis, Female unknown.

**Etymology:** The specific epithet refers to the type locality.

**Description. Male.** Size (n=1). TL 6.38; CL 2.48; CW 2.25; CLL 0.33 mm; OAL 0.61. AME diameter 0.22; AME-AME 0.17; MOQ-AW 0.61; ALE diameter 0.08; PME-PME 0.17; PME diameter 0.26; MOQ-PW 0.69; PLE diameter 0.2.

Colour: carapace pale yellow, narrow dark lateral border; clypeus pale with white line medially; chelicerae dark distally; eye area dark; dorsum white, faint transverse bands; heart mark lancet-shaped, extend up to third pair of dorsal muscular pits; ventrum pale; posterior lateral spinnerets pale with faint annulation; legs pale with faint annulations on femur; palps pale.

Carapace: longer than wide (CI 1.1); clypeus short,  $0.54 \times$  MOQ length, sloping; eye tubercle depressed; PME largest; eye ratio 1: 0.36: 1.18: 0.91; MOQ-AW < MOQ-PW; chelicerae elongate,  $1.83 \times$  longer than wide.

Abdomen: longer than wide, widest in middle; four pairs of round dorsal muscular pits, second pair largest, oval; posterior lateral spinnerets  $1.36 \times$  length of abdomen;  $2.17 \times$  carapace width; tS  $3.98 \times$  bS.

Legs: leg I longest,  $4.55 \times$  total body length; leg ratio 1: 0.86: 0.23: 0.68; metatarsus I,  $14.51 \times$  tarsus I; distal part of metatarsus  $0.45 \times$  proximal part; leg measurements: I- Fe 9.2, Pat + Tib 8.48, Mt I 7.5, II 3.38, Ta 0.75, total 29.31; II-6.75, 8.03, 6.9, 2.93, 0.69, total 25.3; III-2.25, 1.88, 1.88, 0.6, total 6.61; IV-5.25, 5.93, 5.78, 2.4, 0.68, total 20.04; Palp-1.43, 1.05, 0.6, total 3.08.

Palps (Figs.18a,b): tibia elongate,  $1.58 \times$  longer than wide, as long as cymbium; cymbium elongate,  $1.33 \times$  longer than wide; bulbus round; sperm duct regularly curved; embolus elongate, circular, apex acute, extending beyond base of median apophysis; median apophysis hollowed basally with concave flap terminating in acute apex.

**Female.** Unknown.

**Distribution.** Comoros (Fig. 36). Known only from type locality.

**Natural History.** Holotype male has been collected in a Malaise trap in November.

### 18. *Hersilia nicolae* sp. nov. (Figs. 19 & 38)

**Types.** Female holotype, **Kenya:** Kenya coast, Taita Discovery Center ( $03^{\circ}25'S$   $38^{\circ}46'E$ ), 19.viii.2001, E. Selempo, Malaise trap, MRAC 211563; -paratypes: 1 female, same data; 1 male, 1 female, Kenya coast, Taita Discovery Center ( $03^{\circ}25'S$   $38^{\circ}46'E$ ), 2-13.ii.2002, E. Selempo, MRAC 212943; 1 male, same data, MRAC 212888; 1 male, same data, 8-15.i.2002, MRAC 212943.

**Etymology.** Specific epithet refers to the first daughter of the author.

**Diagnosis.** Small spiders; legs long; eye tubercle slightly raised; clypeus short; epigyne with elongate median plate, lateral sclerotizations form two elongate lateral curves (Fig. 19d); median plate with striae laterally (Fig. 19e); male palp with hollowed, complex median apophysis terminating prolaterally in broad truncate apophysis, retrolaterally with acute spine (Figs. 19a,b). This species represent *H. incompta* in the

structure of the epigyne, except for an elongate median plate and the broad retrolateral apophysis on the hollowed median apophysis.

**Description. Female.** Size (n=2). TL 5.07 (4.88 - 5.25); CL 1.96 (1.88 - 2.03); CW 1.99 (1.95 - 2.03); CLL 0.57 (0.52 - 0.61); OAL 0.13. AME diameter 0.18; AME-AME 0.2; ALE 0.15; MOQ-AW 0.56; ALE diameter 0.08; PME-PME 0.19; PME diameter 0.17; PME-PLE 0.2; MOQ-PW 0.52; PLE diameter 0.17.

Colour: carapace red brown with dark border; clypeus pale, medially white, anterior border with white pilosity; dorsum with lancet-shaped heart mark, extend up to third pair of dorsal muscular pits; dorsum posteriorly with V-shaped mark between heart mark and broad transverse bands; legs pale, patellae and tarsi dark, femora and tibiae distally dark.

Carapace: as wide as long (CI 0.98); clypeus long,  $1.21 \times$  MOQ length; eye area raised, AME largest; eye ratio 1: 0.44: 0.93: 0.93; chelicerae very long,  $2.14 \times$  longer than wide.

Abdomen (Fig. 19c): wider than long, widest in middle; four pairs of dorsal muscular pits, second pair largest, oval; dorsum with two pairs of tubercles (t) laterally; posterior lateral spinnerets  $0.93 \times$  abdomen length,  $1.44 \times$  CW; tS  $3.27 \times$  bS.

Legs: leg I and leg II longest,  $2.27 \times$  longer than total body length; leg ratio: 1: 1: 0.34: 0.96; metatarsus I,  $8.56 \times$  longer than tarsus I; distal part of metatarsus  $0.63 \times$  length of proximal part; leg measurements: I- Fe 3.15, Pat + Tib 3.34, Mt I 2.56, II 1.62, Ta 0.49, total 11.15; II-3.08, 3.42, 2.56, 1.65, 0.49, total 11.19; III-1.13, 1.21, 0.98, 0.53, total 3.84; IV-3.01, 2.89, 2.86, 1.47, 0.53, total 10.75; Palp-0.75, 0.76, 0.75, total 2.26.

Epigyne (Figs. 19d,e): large and elongate (el/ew 0.8); lateral borders and median plate elongate, lateral sclerotizations form elongate lateral curves; median plate elongate, broadening slightly posteriorly, laterally with striae; copulatory openings widely spaced; copulatory ducts (c) elongate; one pairs of elongate spermathecae; dorsal spermathecae with glandular parts covered by threads; fertilization ducts (f) short, straight, simple.

**Male.** Size (n=2). TL 4.13 (3.98 - 4.28); CL 1.8 (1.73 - 1.88); CW 1.58 (1.5 1.65); CLL 0.42 (0.39 - 0.46); OAL 0.12; AME diameter 0.16; AME-AME 0.11; ALE 0.12; MOQ-AW 0.42; ALE diameter 0.08; PME-PME 0.16; PME diameter 0.14; PME-PLE 0.15; MOQ-PW 0.44; PLE diameter 0.13.

Males resemble females except: smaller in size, abdomen without two pairs of tubercles laterally on dorsum, posterior lateral spinnerets longer; leg measurements: I- Fe 3.3, Pat + Tib 3.38, Mt I 3.08, II 1.84, Ta 0.45, total 12.19; II-3.19, 3.45, 2.96, 1.76, 0.45, total 12; III-1.24, 1.2, 1.09, 0.64, total 4.16; IV-3, 3.15, 3.08, 1.39, 0.45, total 11.33; Palp-0.75, 0.75, 0.75, total 2.25.

Palps (Figs. 19a,b): tibia compact, as long as wide,  $0.5 \times$  cymbium length; five strong spines dorsally on angular projection of tibia; cymbium wider than long, compact; bulbus with lamellar modifications that contain complex hollowed median apophysis; sperm duct visible prolaterally on bulbus (Fig. 19a); median apophysis with large basal concavity with serrated lower edge, prolaterally ending in a broad apophysis, retrolaterally forming acute, curved process.

**Distribution.** Kenya (Fig. 37). Known only from type locality.

**Natural History.** Type series caught in Malaise traps during February and August.

### 19. *Hersilia occidentalis* Simon, 1907 (Figs. 20, 26c & 33)

*Hersilia occidentalis* Simon, 1907: 248; Benoit, 1967: 28.

*Hersilia brevimamillata* Strand, 1913: 339; first synonymized by Benoit 1967: 28.

*Hersilia segregata* Benoit 1967: 24, new synonym.

**Remarks.** *Hersilia occidentalis* is diagnosed by the sickle-shaped fixing structures externally on the epigyne, the angular lateral borders, short copulatory ducts and similar-sized spermathecae. This corresponds closely with the holotype female of *H. segregata* recorded from Kenya (Benoit 1967). The latter species is only known from the female. Therefore *H. segregata* is considered as a junior synonym of *H. occidentalis*.

**Types.** *Hersilia occidentalis*, male holotype, **Principe Island:** Bahia de Oest, L Fea, MSNG (not examined); - paratype: 1 female, **Democratic Republic of Congo:** Kivu, Territory, Muhinga, Kinazi (02°23'S 29°48'E), 17-18.iv.1949, MRAC 130780 (not examined). *Hersilia brevimamillata*, female holotype, Ituri, SW from Albert-Sea, Kirk Falls (1°05'N 30°08'E), iii.1908, Expedition Hertzog Adolf Friedrich, Z. Mecklenburg,

MNHU 32441 (examined). *Hersilia segregata*, female holotype, **Tanzania**: Kilimanjaro mountain mass (2°45'S 37°55'E), Marangu (3°37'S 38°43S), woodland area and crop-growing district, SE slope, 1800-2000 m, 20-17.vii.1957, P. Basilewski, N. Leleup, MRAC 112028 (examined); - paratypes: 1 juvenile paratype, **Kenya**: Nairobi (01°17'S 36°52'E), xi.1963, J.L. Cloudsley-Thompson, MRAC 125894 (examined); 2 females, same data, MRAC 125906 (examined).

**Diagnosis.** Medium-sized spiders; legs long; eye tubercle raised (Fig. 20c), clypeus long (Fig. 20d); median plate of epigyne laterally with sickle-shaped fixing structures (Fig. 20f); male palp with slender, longitudinally angled, hook-shaped median apophysis, short not extending beyond curve of embolus with apex acute, embolus with triangular projection distally (Figs. 20a,b & Fig. 26c). This species resemble *H. caudata* based on the presence of a triangular projection distally on embolus. It is distinguished from the latter species by the shorter hook-shaped median apophysis.

**Redescription. Male.** Size (n=3). TL 7.08 (6.8 - 7.35); CL 2.86 (2.72- 3); CW 2.44 (2.4 - 2.48); CLL 0.76 (0.68 - 0.85); OAL 0.61 (0.59 - 0.64). AME diameter 0.21; AME-AME 0.21; ALE 0.26; MOQ-AW 0.63; ALE diameter 0.07; PME-PME 0.21; PME diameter 0.19; PME-PLE 0.28; MOQ-PW 0.59; PLE diameter 0.18.

Colour: carapace varies from pale brown to grey to red brown; dark, broad band around border, bearing white and black setae; clypeus pale with a faint medial white spot, dark, oblique lateral lines (Fig. 20d), white pilosity on anterior border; eye area pale, covered with white setae, dark patch over eye area; faint white spot on posterior part of eye tubercle; chelicerae pale, with dark pilosity distally; dorsum with short dark setae, white pilosity anteriorly, and posteriorly; dark lateral border all around and broad transverse bands; heart mark lancet-shaped, extending up to fourth pair of dorsal muscular pits (Fig. 20e); posterior lateral spinnerets pale with annulation; legs pale brown, patellae dark, femora dark brown with annulation, tibiae with broad annulation; base of palpal segments with dark brown annulation.

Carapace: longer than wide (CI 1.12); clypeus long,  $1.24 \times$  median ocular quadrangle length, sloping; eye tubercle raised, sides vertical; AME largest; eye ratio: 1: 0.46: 0.85: 0.88; MOQ-AW > MOQ-PW; five long setae between PME; chelicerae elongate,  $1.67 \times$  longer than wide; retromargin with row of five minute teeth.

Abdomen: longer than wide, widest medially; four pairs of dorsal muscular pits, second pair oval, largest; posterior lateral spinnerets  $1.34 \times$  length of abdomen,  $2.11 \times$  cephalothorax width; tS  $4.66 \times$  bS.

Legs: leg I longest,  $4.35 \times$  longer than length of body; leg ratio: 1: 0.87: 0.3: 0.73; metatarsus I,  $10.73$  length of tarsus I; distal part of metatarsus  $0.43 \times$  length of proximal part; leg measurements: I- Fe 8.62, Pat + Tib 10.41, Mt I 8.09, II 3.49, Ta 1.09, total 27.48; II-7.32, 8.83, 6.7, 3.22, 0.74, total 26.79; III-2.55, 2.41, 2.25, 0.75, total 7.85; IV-6.04, 7.56, 6.31, 2.41, 0.82, total 19.96; Palp-1.44, 1.32, 0.9, total 3.66.

Palps (Figs. 20a,b): tibia elongate,  $1.8 \times$  longer than wide,  $0.86 \times$  cymbium length; two spines dorsally; cymbium elongate,  $1.5 \times$  longer than wide, four apical spines; bulbus unmodified, round; sperm duct regularly curved, embolus elongate, filiform, circular with triangular projection distally; median apophysis hook-shaped, short, prolaterad directed, apex acute.

**Female.** Size (n=8). TL 9.9 (8.08 - 11.2); CL 3.8 (3.2 - 4.8); CW 3.8 (3.3 -5.12); CLL 0.88 (0.72 - 1); OAL 0.63 (0.52 - 0.74). AME diameter 0.23; AME-AME 0.24; ALE 0.28; MOQ-AW 0.69; ALE diameter 0.1; PME-PME 0.24; PME diameter 0.2; PME-PLE 0.32; MOQ-PW 0.63; PLE diameter 0.25.

Females similar to males but larger in size; PLE largest; eye ratio 1: 0.42: 0.95: 1.06; legs shorter,  $2.56 \times$  longer than length of body; leg measurements: I- Fe 7.1, Pat + Tib 7.62, Mt I 5.68, II 3.09, Ta 1.02, total 24.51; II-6.83, 7.61, 5.7, 2.83, 0.9, total 23.89; III-2.26, 2.38, 2.01, 0.76, total 7.41; IV-4, 4.5, 4.14, 1.93, 0.62, total 20.25; Palp-1.33, 1.49, 1.03, total 3.84.

Epigyne (Figs. 20f,g): wide (el/ew 0.52); lateral borders angulate, not projecting much beyond border; median plate narrower anteriorly, broadening slightly distally, border straight; fixing structures sickle-shaped (Fig. 20f); copulatory openings widely spaced; copulatory duct short, simple; spermathecae and seminal receptacle globose, similar in size; spermathecae broadening posteriorly; fertilization ducts short, curved dorsally (Fig. 20g).

**Additional material examined: Botswana:** Okavango Delta, Xabaxaba Camp (19°30S 23°10'E), 1 female, T. Bestelink, U. Wilmot, NM; **Cameroon:** Lake Barombimbo, lowland rainforest, 1 female, 13.iii.1981, Bosmans & Van Stalle, MRAC

162551; **Democratic Republic of Congo:** Equateur, Bamanian (00°01'N 18°19'E), 1 female, no date, P. Hulstaert, MRAC 155496; Katanga, Luiswishi (11°31'S 27°27'E), 5 females, 1 male, 9.x.1974, F. Malaisse, MRAC 146220; **Kenya:** Shimba Hills Nature Reserve, 45 km SW Mombassa (04°03'S 39° 41'E), S. Kwale, Hunter's Camp Site, 1 female, 31.iii.1989, Coyle & Bennett, AMNH; Nairobi (01°17'S 36°52'E), 1 female, vi.1951, N.L.H. Krauss, AMNH; Rift Valley Province, Marich Pass Field studies Centre 3000ft (1°32'S 35°27'E), 4 females, 3 males, 7.vi.1999, W.J. Pulawski, J.S. Schweikert, CASC; **Liberia:** Monrovia, (06°20'N 10° 46'W), 1 female, vi.22.1958, E.S. Ross & R.E. Leech, CASC; **Rwanda:** Butare (02°36'S 29°44'E), 1 female, vi.1971, P. Nyalaguka, MRAC 139158; **Tanzania:** Matema, Guesthouse, lake beach by night (09°30'S 34°03'E), 1 female, 11.xi.1991, R Jocqué, MRAC 173648;

**Distribution.** Kenya, Tanzania; new records: Democratic Republic of Congo, Liberia, Rwanda (Fig. 33).

**Natural history.** One female was caught in a lowland rainforest. Females were caught between March to November and males between April and June.

## 20. *Hersilia plara* sp. nov. (Figs. 21 & 34)

**Types.** Female holotype **Cameroon:** South-West Province, Fako Division, Limbe Subdivision, 1.4 km NE of Etome, ca. 400m (04°02'N 09°31'E), 13-19.i.1992, Larcher, G. Hormiga, J. Coddington, C. Griswold, Wansie, CASC; - paratypes: 3 females, 4 males, same data, CASC; 1 female, Barombi, Mbo (4°40'N 9°22'E), lowland tropical rain forest, 13.iii.1981, Bosmans, Van Stalle, MRAC 162551; 2 females, Kounden (5°42'N 10°40'E), 12.xii.1975, F. Puylaert, MRAC 148.388; 1 male, **Democratic Republic of Congo:** 36 km N of Matadi (6°6'S 23°2E) (4°40'S 17°19E), el. 661m, vii.28.1975, CASC.

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

**Diagnosis.** Medium sized spiders; legs very long; eye tubercle slightly raised (Fig. 21c); clypeus short (Fig. 21d); epigyne with transverse white plate and transverse sclerotization anteriorly, thickening medially (Fig. 21f); palp with broad, straight and distally oblique sclerotized tegular projection (Fig. 21b), horizontal conductor with

rounded apex (Fig. 21a); embolus filiform, apex furcate (Fig. 21b). The epigyne is almost identical to that of *H. beva* except for lateral pilosity on spermathecae and sclerotization anterior of central white area, thickened medially; the male palp resemble that of *H. alluaudi*, except for thick medial spines on tibia; elongate cymbium that are twice as long, broad, elongate median apophysis and rounded apex of the conductor.

**Description. Female.** Size (n=1). TL 8.4; CL 3.2; CW 3.2; CLL 0.59 mm; OAL 0.74; AME diameter 0.39; AME-AME 0.23; ALE 0.16; MOQ-AW 1.01; ALE diameter 0.13; PME-PME 0.26; PME diameter 0.234; PME-PLE 0.26; MOQ-PW 0.73; PLE diameter 0.2.

Colour: Carapace pale brown, border dark; clypeus pale, white anteriorly, dark laterally; chelicerae brown, darker medially; eye area dark; dorsum white, darkly mottled, with thick transverse lines narrowing posteriorly (Fig. 21e); posterior lateral spinnerets with faint annulation; ventrum mottled white; legs and palps pale brown;

Carapace: as long as wide (CI 1), clypeus short,  $0.79 \times$  MOQ length, sloping; eye tubercle slightly raised; AME largest; eye ratio: 1: 0.33: 0.6: 0.5; MOQ-AW > MOQ-PW; chelicerae elongate,  $1.6 \times$  longer than wide.

Abdomen: slightly longer than wide; four pairs of round dorsal muscular pits, first pair well separated from the last three pairs, second pair largest; posterior lateral spinnerets elongate,  $1.5 \times$  length of abdomen,  $2.5 \times$  cephalothorax width; tS  $4 \times$  bS.

Legs: leg II longest,  $3.5 \times$  longer than total length of body; leg ratio 1: 1.06: 0.38: 0.94; metatarsus I,  $8.7 \times$  longer than tarsus I; distal part of metatarsus  $0.72 \times$  length of proximal part; leg measurements: I- Fe 7.2, Pat + Tib 8.56, Mt I 6.08, II 4.4, Ta 1.2, total 27.44; II-7.2, 8.88, 6.64, 5.12, 1.12, total 28.96; III-3.2, 3.36, 2.8, 1.04, total 10.4; IV- 6.56, 7.44, 6.64, 3.92, 1.2, total 25.76; Palp-1.58, 1.28, 0.9, total 3.76.

Epigyne (Figs. 21f,g): wider than long (el/ew 0.84); convex sclerotization anterior of transverse white plate, thickening medially; subquadrate dark impression of spermathecae anterad of sclerotization (Fig. 21f); copulatory ducts short; spermathecae irregularly shaped, elongate; seminal receptacle cylindrical with glandular parts covered by threads; spermathecae laterally with pilosity; fertilization ducts incurved.

**Male.** Size (n=2). TL 7.04 (6.88 - 7.2); CL 2.9 (2.8 - 3); CW 2.8 (2.8); CLL 0.46 (0.4 - 0.52); OAL 0.78 (0.75 - 0.8); AME diameter 0.43; AME-AME 0.18; ALE 0.12;

MOQ-AW 1.03; ALE diameter 0.13; PME-PME 0.24; PME diameter 0.31; PME-PLE 0.17; MOQ-PW 0.85; PLE diameter 0.29.

Closely resembles female except for longer legs; spinnerets more than twice length of abdomen (Fig. 21e); leg measurements: I- Fe 10.4, Pat + Tib 12.88, Mt I 12, II 6.4, Ta 1.2, total 42.88; II-9.2, 12.64, 10.4, 6.4, 1.2, total 39.84; III-4.4, 4.16, 3.6, 1.04, total 13.2; IV-7.6, 10.08, 9.76, 5.2, 1.2, total 33.84; Palp-1.73, 1.43, 1.65, total 4.81.

Palps (Figs. 21a,b): tibia compact, as long as wide,  $0.41 \times$  cymbium length; angular projection with seven spines dorsally (Fig. 21b); cymbium elongate,  $1.9 \times$  longer than wide, four apical spines; bulbus ovoid with basal swelling; sperm duct incurved; embolus basally broad and flat, much wider than thick with parallel sinewy lines, apex furcate (Fig. 21b); sclerotized tegular projection straight, elongate with rounded apex; form oblique angle away from bulbus; conductor with apex round (Fig. 21a).

**Distribution.** Cameroon, Democratic Republic of the Congo (Fig. 34).

**Natural history.** Females were collected between December and March, males between March and July.

## 21. *Hersilia pungwensis* Tucker, 1920 (Figs. 22 & 33)

*Hersilia pungwensis* Tucker, 1920: 475; Benoit, 1967: 36.

**Types.** Male holotype, **Zimbabwe:** Umtali ( $18^{\circ}57'S$   $32^{\circ}25'E$ ), Pungwe, 1903, D.L. Patrick, SAM 13639 (examined).

**Diagnosis.** Small spiders; legs long; eye tubercle strongly raised (Fig. 22c); clypeus long (Fig. 22d); male palp with hook-shaped median apophysis, swelling at the base and curved distally with apex truncated (Fig. 22a). This species resembles *H. sericea* in the curved distal part of median apophyses, but differs from it in the truncate apex. Female unknown.

**Remarks.** Both the type specimens collected in 1903 were in poor condition as noted by Tucker (1920) and Smithers (1945). Tucker (1920) included the female (SAM 12509) as part of the type series although this specimen was collected 7km south-east of

the holotype. However, I am of the opinion that the paratype female (SAM 12509) belongs to *H. sericea*, this observation was supported by Smithers (1945).

**Redescription. Male.** Size (n=1). TL 4.8; CL 2.08; CW 2.08; CLL 0.56; OAL 0.13. AME diameter 0.18; AME-AME 0.16; MOQAW 0.52; ALE diameter 0.053; PME-PME 0.18; PME diameter 0.16; MOQPW 0.5; PLE diameter 0.18.

Colour: carapace with narrow dark border; clypeus pale; eye tubercle pale brown with dark border; dorsum with heart mark lancet-shaped, faint transverse lines posteriorly; ventrum and posterior lateral spinnerets pale; legs and palps pale, no annulation

Carapace: as wide as long (CI 1); clypeus long,  $1.2 \times$  MOQ length, eye tubercle strongly raised, sides vertical; eye ratio: 1: 0.29: 0.89: 1; MOQ-AW = MOQ-PW; chelicerae  $1.6 \times$  longer than wide.

Abdomen: longer than wide, widest in middle; four pairs of round dorsal muscular pits; posterior lateral spinnerets  $0.93 \times$  length of abdomen,  $1.43 \times$  carapace width; tS  $4 \times$  bS.

Legs: all legs were damaged to such an extent that measurements were impossible.

Palps (Figs. 22a,b): tibia elongate,  $1.7 \times$  longer than wide; cymbium elongate,  $1.7 \times$  longer than wide, three spines apically; bulbus round; sperm duct regularly curved; embolus filiform, circular, completing  $3/4$  of a circle, apex acute; median apophysis hook-shaped, curved distally, apex truncate.

**Distribution.** Zimbabwe (Fig. 33). Known only from type locality.

**Natural History.** None noted.

## 22. *Hersilia salda* sp. nov. (Figs. 23, 26i & 34)

**Types.** Female holotype, **Kenya:** Shimba Hills National Reserve, 45km SW Mombassa (04°03'S 39° 41E), Makadora Forest, 9.iv.1975, A.J. Penniman, B.D. Valentine, AMNH; - paratypes: 1 male, same data; 1 male, 1 female, Mount Kasigau, Jora Village (3°49'S 38°38'E), xi. 2001, E. Selempo, MRAC 213037; 1 female, Kwale (4°10'S 39°27'E),

450m a.s.l., 11.v.1957, E.S. Ross, R.E. Leech, CASC; 1 female, **Tanzania:** Amani (05°06'S 38°38'E), 850m a.s.l., 9.xi.1957, E.S. Ross, R.E. Leech, CASC; 2 females, **South Africa:** Limpopo Province, Kruger National Park, Soutpansberg, Pafuri Camp (22°26'S 31°11'E), 11.i.1989, L. Lotz, NMBA 3150; 1 female, same data NMBA3152; 1 female; 2 females, Klein Kariba, ca. 7 km W of Warmbad, el. 1140m (24°50'S 28°20'E), lush bushveld, 24-28.xi.1996, C.E. Griswold, CASC; 1 female, **Malawi:** Chinteche (11°50'S 33°13'E), ii.1977, R. Jocqué, MRAC 152372; 1 female, Zomba (15°22'S 35°22'E), 28.xi.1981, R. Jocqué, MRAC 155663.

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

**Diagnoses.** Small to medium-sized spiders; legs long; eye tubercle slightly raised (Fig. 23c); clypeus short (Fig. 23d); epigyne with V-shaped sclerotization posteriorly (Fig. 23f); male palp with large conductor, apex rounded (Fig. 23b) with ventral groove distally. The V-shaped sclerotization on epigyne resemble that of *H. ferra*; males resemble *H. dilumen* in presence of ventral furrow distally on conductor.

**Description. Female.** Size (n=4). TL 6.4 (5.48 - 7.6); CL 2.33 (2.04 - 2.64); CW 2.38 (1.92) - 2.8); CLL 0.45 (0.4 - 0.52); OAL 0.49 (0.4 - 0.59); AME diameter 0.22; AME-AME 0.2; ALE 0.1; MOQAW 0.63; ALE diameter 0.09; PME-PME 0.16; PME diameter 0.16; PME-PLE 0.19; MOQPW 0.48; PLE diameter 0.18.

Colour: carapace red brown, border pale brown; clypeus brown, anteriorly pale; chelicerae dark; eye area dark, tridentate white mark posteriorly on eye tubercle; dorsum mottled white, heart mark broad, extend just beyond second pair of dorsal muscular pits, posterior half with transverse lines breaking up medially, forming triangular pattern (Fig. 23e); ventrum mottled white; posterior lateral spinnerets with annulation; legs pale brown; femora and palps with strong annulation.

Carapace: as wide as long (CI 0.99); clypeus short,  $0.94 \times$  MOQ length, sloping; eye tubercle slightly raised; AME largest; eye ratio 1: 0.36: 0.72: 0.69; chelicerae stout;  $1.4 \times$  longer than wide.

Abdomen: wider than long, widest in middle; four pairs of round dorsal muscular pits, second pair largest (Fig. 23e); posterior lateral spinnerets as long as abdomen,  $1.73 \times$  carapace width; tS  $3.6 \times$  bS.

Legs: leg II longest;  $2.5 \times$  longer than total length of body; leg ratio 1: 1.03: 0.36: 0.94; metatarsus I,  $7.2 \times$  longer than tarsus I; distal part of metatarsus  $0.71 \times$  length of proximal part; leg measurements: I- Fe 4.4, Pat + Tib 4.72, Mt I 3.36, II 2.4, Ta 0.8, total 17.65; II-4.4, 5.12, 3.6, 2.4, 0.8, total 17.65; III-2, 2.08, 1.52, 0.72, total 6.05; IV-4.08, 4.16, 3.52, 2.32, 0.8, total 16.08; Palp-1.2, 0.96, 0.84, total 3.

Epigyne (Figs. 24f,g): elongate (el/ew 1.25); V-shaped sclerotization posteriorly; oval copulatory openings widely spaced laterally; two pairs of spermathecae not well separated from copulatory ducts; seminal receptacle cylindrical, elongate; fertilization duct elongate, paired fertilization ducts form v-shaped pattern.

**Male.** Size (n=2). TL 3.98 (3.84 - 4.13); CL 1.78 (1.68 - 1.88); CW 1.67 (1.65 - 1.68); CLL 0.3 (0.28 - 0.33); OAL 0.11. AME diameter 0.21; AME-AME 0.15; ALE 0.1; MOQ-AW 0.57; ALE diameter 0.08; PME-PME 0.15; PME diameter 0.16; PME-PLE 0.17; MOQ-PW 0.46; PLE diameter 0.16.

Males resemble females except smaller in size; larger AME; legs five  $\times$  longer than total length of body; leg measurements: I- Fe 5.25, Pat + Tib 6.15, Mt I 4.95, II 2.93, Ta 0.68, total 20.02; II-5.1, 5.93, 4.95, 2.85, 0.75, total 20.11; III-2.4, 2.4, 1.88, 0.53, total 6.76; IV-4.65, absent, total absent; Palp-1.05, 0.68, 0.68, total 2.4.

Palps (Figs. 24a,b): tibia compact,  $0.44 \times$  cymbium length, two spines dorsally; cymbium elongate,  $1.8 \times$  longer than wide, bulbus ovoid with basal swelling; embolus straight, filiform, apex furcated; incurved sperm duct; median apophysis short; conductor with ventral groove distally; embolus acute.

**Distribution.** Kenya, Malawi, South Africa, Tanzania (Fig. 34).

**Natural history.** None noted. Males and females collected from November to April.

### 23. *Hersilia sericea* Pocock, 1898 (Figs. 24, 26d & 33 )

*Hersilia sericea* Pocock, 1898: 214; Lawrence 1937: 228; Benoit, 1967: 26.

*Hersilia bicornis* Tucker, 1920: 472; Smithers, 1945: 5; first synonymized by Benoit, 1967: 26.

*Hersilia hanstroemi* Kauri, 1950: 8; first synonymized by Benoit 1967: 26.

**Types.** *Hersilia sericea*, female holotype, **South Africa**: KwaZulu- Natal: Estcourt (29°00'S 29°53'E), G.A.K. Marshall, BMNH (not examined). *H. bicornis*, female holotype, Krantzkloof (24°53'S 30°36'E), xii .1914, W. Bell-Marley, SAM B864 (examined); - paratypes: 1 male, same data, SAM B864 (not examined); 1 female, Mpumalanga: Kaapmuiden (25°32'S 31°19'E), xi. 1918, R. Tucker, SAM B4255 (examined). *H. hanstromi*, female holotype, Kruger National Park, Pretorius Kop Camp (25°10'S 31°16'E), 4.xi.1948, B. Hanström, H. Kauri (not examined).

**Diagnosis.** Small to medium-sized spiders; legs long; eye tubercle raised (Fig. 24c), clypeus long (Figs. 24d); epigyne with sub-triangular fixing structures laterad on median plate, lateral borders digitate, pointing inward (Fig. 24f); male palp with hook-shaped median apophysis, transversely angled, retrolaterally directed, distally coiled, filiform, apex acute (Fig. 24a & 26d). This species resemble *H. setifrons* and *H. pungwensis* in shape, abdomen, and palpal structures. The triangular fixing structures of the epigyne closely resemble that of *H. setifrons*. It differs from these species in the, prolaterad curve of the hook-shaped median apophysis and two large dorsal spines on the palpal tibia.

**Redescription. Female.** Size (n=10). TL 7.4 (5 - 8.6); CL 2.95 (2.4 - 3.4); CW 2.83 (1.9 - 3.3); CLL 0.77 (0.53 - 0.91); OAL 0.18 (0.13 - 0.21). AME diameter 0.2; AME-AME 0.23; AME-ALE 0.23; MOQAW 0.59. ALE diameter 0.08; PME-PME 0.21; PME diameter 0.19; PME-PLE 0.26; MOQPW 0.59; PLE diameter 0.18.

Colour: carapace pale brown, covered with dark setae, narrow dark lateral border; clypeus pale, with white pilosity anteriorly; no clypeal markings (some females have white V-shaped medial mark that extends up to PME); eye tubercle dark with white spot posteriorly; dorsum darkly mottled on white background; dark, wavy antero-lateral border around most of abdomen; lancet-shaped heart mark extends up to third pair of dorsal muscular pits; wavy, broad, and dark transverse bands; ventrum varies from pale to mottled; posterior lateral spinnerets and palps with annulation.

Carapace: as wide as long (CI 1.05); lateral border with row of conspicuous setae; clypeus long,  $1.45 \times$  MOQ length, sloping; eye tubercle raised, sides concave (Fig. 24d);

AME largest; eye ratio 1: 0.48: 0.97: 0.91; MOQ-PW = MOQ-AW; chelicerae elongate, 1.5 × longer than wide.

Abdomen (Fig. 24e): almost circular, as long as wide, usually widest in posterior third of abdomen; four pairs of round dorsal muscular pits; posterior lateral spinnerets 1.14 × length of abdomen, 1.7 × cephalothorax width.

Legs: leg II longest, 2.6 × length of body; leg ratio 1: 1.02: 0.33: 0.93; metatarsus I, 9 × length of tarsus I; distal part of metatarsus half length of proximal part; leg measurements: I- Fe 5.33, Pat + Tib 5.69, Mt I 4.72, Mt II 2.21, Ta 0.77, total 18.72; II- 5.34, 5.86, 4.85, 2.34, 0.74, total 19.13; III-2.07, 1.69, 1.64, 0.71, total 6.37; 4.91, 5.1, 4.12, 2.29, 0.75, total 17.86; Palp-1.3, 1.55, 0.97, 2.87.

Epigyne (Figs. 24f,g): wide (el/ew 0.45); lateral borders digitate, pointing inward; median plate sub-quadrate; copulatory openings widely spaced; copulatory ducts short, simple; spermathecae and seminal receptacle globose, similar in size; fertilization ducts short, dorsally curved.

**Male.** Size (n=11). TL 5.82 (5.2 - 6.9); CL 2.48 (2.03 - 2.8); CW 2.45 (1.95 - 3); CLL 0.59 (0.47 - 0.72); OAL 0.16 (0.13 - 0.22). AME diameter 0.19; AME-AME 0.18; ALE 0.18; MOQ-AW 0.56; ALE diameter 0.08; PME-PME 0.19; PME diameter 0.16; PME-PLE 0.21; MOQ-PW 0.51; PLE diameter 0.18.

Similar to female except for: smaller size, eye ratio: 1: 0.41: 0.85: 0.94; leg I longest four × longer than total body length; leg ratio 1: 0.96: 0.31: 0.84; metatarsus I, 12 × longer than tarsus I; distal part of metatarsus 0.37 time length of proximal part; leg measurements: I- Fe 6.1, Pat + Tib 6.64, Mt I 6.72, II 2.52, Ta 0.76, total 22.67; II-5.68, 6.63, 6.25, 2.52, 0.7, total 21.79; III-2.23, 2.16, 1.96, 0.64, total 6.98; 4.99, 5.47, 6.5, 2.6, 0.8, total 19.08; Palp-1.16, 1.1, 0.88, 3.11.

Palps (Figs. 24a,b & 26d): tibia elongate, 1.3 × longer than wide, 0.69 × cymbium length, two strong spines dorsally, small tibial apophysis prolaterally; cymbium elongate, 1.7 × longer than wide, three apical spines; bulbus circular, round; sperm duct regularly curved; embolus long filiform, circular, apex acute; median apophysis hook-shaped, retrolaterally angled with distal filiform coil (Figs. 24a & 26d).

**Additional material examined. Kenya:** Kenya Coast, Taita Discovery Center (3°25'W 38°46'E), malaise trap, 29.vii – 5.viii.2001, E. Selempo, MRAC 211535.

**Mozambique:** Chicombera, South bank Limpopo flood plain opposite Jao Bello (25°01'S 33°32'E), on bark of tree, 1-4.vi.1971, F. Farquharson, NM. **South Africa:** Mpumalanga: Glenwood farm (25°44'S 27°45'E), macadamia orchards, 7 km NW of Nelspruit, 1 male, 17.xii.1997, M. vd Berg, NCA 98/555; same locality, 1 female, NCA 98/555; Agricultural College, Nelspruit (25°28'S 30°58'E), pit traps in grapefruit orchard, 1 male, 22.xii.1998, P. Stephen, NCA 99/205; Loskopdam Nature Reserve (25°26'S 29°18'E), on tree bark, 1 male, 10.x.1989, SA Spider Club, NCA 90/94; Gauteng: Roodeplaatdam Nature Reserve (25°37'S 28°19'E), 1 male, 1 female, 18.x.1997, A.S. Dippenaar-Schoeman, NCA 97/1026; Sinoville (25°40'S 28°14'E), Pretoria, 1 male, 1989, P. van Niekerk, NCA 90/431; Limpopo Province: Nylsvley Nature Reserve (24°39'S 28°42'E), 1 female, 7.ii.1998, A.S. Dippenaar-Schoeman, NCA 98/446; Shabalala, Thabazimbi (24°39'S 27°23'E), 1 female, 7.i.1989, D. Louw, NCA 89/341; Levubu, Groblar's Farm, Tropical Bushveld (23°55'S 30°21'E), el. 600 m, 1 male, 2.xii.1996, C.E. Griswold, CASC, Blyde River Canyon, Bourke's Luck Potholes, Drakensberg Mountains (24°35'S 30°49'E), 1 female, 23-25.xii.1990, V.D. Roth, B. Roth, CASC; KwaZulu-Natal: St. Lucia, Fannies Island (28°6'S 32° 27'E), 22.vii.1990, M. Alderweireldt, R. Jocqué, MRAC; Pietermaritzburg (29°37'S 30°23'E), 1 female, viii.1964, J.Y. Lawrence, NM 6308; Umhlali, Chakas Rock (Chakas kraal: 29°27'S 31°13'E), 1 male, 1951, R.F. Lawrence, NM 5610; Pietermaritzburg (29°37'S 30°23'E), 1 male, ix.1964, L. Kelsal, NM 9417; Mtunzini (28°57'S 31°45'E), 1 female, 1 male, vi.1954, R.F. Lawrence, NM 6308; Port St. Johns (31°38'S 29°32'E), xi.1980, M. Baddeley, MRAC 166572. **Tanzania:** Dar es Salaam, Ilala (6°48'S 39°17'E), 1 male, 23.ii.1971, D.M. Pearson, K.M. Howell, MRAC 159413; 1 female, same data, 1977, K.M. Howell, MRAC 159421. **Zimbabwe:** Victoria Falls (17°56'S 25°50'E), 1 female, 1 male, 19-22.xii.1995, W. Pulawski, CASC; Bulawayo (20°7'S 28°35'E), 2 males, xi.1990, V.D. Roth, B. Roth, CASC.

**Distribution.** South Africa. New records: Kenya, Mozambique, Tanzania, Zimbabwe, (Fig. 33).

**Natural History.** Adults were found on the bark of a variety of trees, including orchards. They do not seem to prefer specific tree species, although size of tree trunk seems to play a role. Specimens also preferred moist riparian and irrigated habitats (pers.

obs.). Females construct flat ovalish egg sacs on the surface of tree trunks that is camouflaged with bits of bark. She holds guard over the eggs in an upside down position until young emerge (pers. obs.). Some specimens were collected from walls in built up areas.

**Phenology.** Females were caught throughout the year and males from April through to December.

#### 24. *Hersilia setifrons* Lawrence, 1928 (Figs. 25, 26e & 33)

*Hersilia setifrons* Lawrence, 1928: 241; Benoit, 1967: 32.

**Types.** Female lectotype (here designated), **Namibia:** Sesfontein (19°09'S 13°38'E), SAM B6665 (examined); - paralectotypes: four females, 1 male, same data); 1 male, Kaoko Otavi (18°18'S 13°40'E), 1926, Museum Expedition, SAM B7140 (examined); two females, Warmbad (28°30'S 17°30'E), SAM B6653 (not examined).

**Diagnosis.** Medium-sized spiders; legs long; eye tubercle raised (Fig. 25c); clypeus long (Fig. 25d); epigyne with sub-triangular fixing structures laterad of median plate (Fig. 25f); lateral borders angular not projecting much beyond border; spermathecae similar-sized, round (Fig. 25g); male palp with stout, compact, hook-shaped median apophysis, longitudinally angled and triangular in ventral view, apex acute (Fig. 25a & 26e).

**Redescription. Female.** Size (n=10): TL 8.27 (5.7 - 10.4); CL 3.13 (2.2 - 3.8); CW 3.11 (2.2 - 3.8); CLL 0.79 (0.46 - 1.2); OAL 0.18 (0.13 - 0.2). AME diameter 0.2; AME-AME 0.23; AME-ALE 0.25; MOQ-AW 0.62; ALE diameter 0.08; PME-PME 0.22; PME diameter 0.18; PME-PLE 0.28; MOQ-PW 0.57; PLE diameter 0.16.

Colour: carapace varies from pale to dark brown; covered with setae that vary from white to dark brown; clypeus pale brown, some specimens with V-shaped mark medially; eye area dark brown or with dark brown patches around eyes; white spot posteriorly on eye tubercle; sternum pale or mottled white; dorsum (Fig. 25e) dark brown, darker laterally; lancet-shaped heart mark; faint broad transverse lines on both

sides of heart mark; posteriorly with short transverse markings; ventrum pale or mottled white; posterior lateral spinnerets pale brown to dark with or without annulation; legs dark brown femora, palps annulate.

Carapace: as wide as long (CI =1); lateral border with row of conspicuous setae; clypeus long,  $1.42 \times$  MOQ length, sloping; eye tubercle strongly raised; sides vertical; AME largest; eye ratio 1: 0.34:0.88:0.69. MOQ-AW > MOQ-PW; chelicerae elongate,  $1.6 \times$  longer than wide.

Abdomen (Fig. 25e): slightly longer than wide, widest medially; four pairs of round dorsal muscular pits, except for oval, second pair larger; posterior lateral spinnerets  $1.2 \times$  length of abdomen,  $1.8 \times$  cephalothorax width; tS four  $\times$  bS.

Legs: leg I longest,  $2.7 \times$  total length of body; leg ratio 1: 0.98: 0.3: 0.93; metatarsus I,  $10 \times$  length of tarsus I; distal part of metatarsus  $0.5 \times$  length of proximal part; leg measurements: I- Fe 6.34, Pat + Tib 7, Mt I 5.46, Mt II 2.94, Ta 0.82, total 22.91; II-5.95, 6.72, 5.38, 3.16, 0.78, total 22.46; III-2.08, 2.18, 1.79, 0.67, total 5.87; 5.24, 5.53, 5.1, 2.61, 0.67, total 19.46; Palp-0.9, 1.6, 0.75, 3.25.

Epigyne (Figs. 25f,g): wider than long (el/ew 0.6); lateral borders angulate; median plate sub-quadrate, distal border straight; copulatory openings widely spaced; copulatory ducts short, simple; spermathecae and seminal receptacle globose, similar in size; dorsally curved fertilization duct (Fig. 27g).

**Male.** Size (n=10). TL 6.55 (4.9 - 7.44). CL 2.85 (2.4 - 3.12); CW: 2.73 (2.5 - 3); CLL 0.72; OAL 0.57. AME diameter: 0.24. AME-AME: 0.22; AME-ALE: 0.36. MOQ-AW: 0.7. ALE diameter: 0.08. PME-PME: 0.2. PME diameter: 0.2. PME-PLE: 0.28. MOQ-PW: 0.59. PLE diameter: 0.2.

Similar to female, however abdomen longer than wide, almost rectangular, dorsal muscular pits larger; posterior lateral spinnerets  $1.5 \times$  abdomen length,  $1.88 \times$  cephalothorax width; leg measurements: I- Fe 8.09, Pat + Tib 9.92, Mt I 8.46, Mt II 3.62, Ta 0.95, total 31.2; II-7.29, 8.99, 7.85, 3.47, 0.86, total 29.02; III-2.6, 2.57, 2.31, 0.76, total 8.09; 6.35, 7.22, 7.55, 3.07, 0.81, total 25.14; Palp-1.37, 1.17, 0.92, total 3.43.

Palps (Figs. 25a,b & 26e): tibia elongate,  $1.25 \times$  longer than wide (Fig. 25a),  $0.77 \times$  cymbium length, dorsal spines absent; cymbium elongate, twice as long as wide, 2-4 apical spines; bulbus circular; sperm duct regularly curved; embolus filiform, circular,

apex acute, not extending much beyond medial part of bulbous, ending at base of median apophysis; median apophysis stout hook-shaped, triangular in ventral view, apex acute.

**Additional material examined. Angola:** 5 mile N Luanda, 1 male, 1 female, 1-2 xii.1966, E.S. Ross, K. Lorenze, CASC; Luanda (8°49'S 13°15'E), 1 female, 22.viii.1949, Malkin, CASC; **Namibia:** Halali (19°02'S 16°28'E), 1 female, ii-iv.1987, M. Paxton, SMN 41317; 1 female, 1 male, Aasvoëlnes (19°25'S 20°15'E), 15.iv.1991, V. & B. Roth, QM S.34972SA; Brandberg, Upper Hungarob ravine (21°11'S 14°31'E), 1 female, 30.viii.2002, K. Meakin, 1127m, SMN 45353; Namutoni (18°48'S 16°59'E), 1 male, 29.ix.1986, C. Ficq, SMN 41210. **South Africa:** Gauteng: Pretoria (25°45'S 28°12'E), 1 male, 18.iv.1993, S. vd Sandt, M. Lotter, NCA 93/276; Pretoria, 1 male, 29.iii.1987, G. Gelderblom, on tree trunk, NCA 89/50; Pretoria, Hazelwood, 1 male, 17.iii.1987, M. Vogt, NCA 88/163; Pretoria (25°45'S 28°12'E), 1 male, 1 female, iii.1987, D. Louw, NCA 87/469. KwaZulu-Natal: farm Vergeval (28°55'S 31°21'E), district Ngotsche, Pongola, 1 male, 3.v.1967, A.S. Dippenaar-Schoeman, NCA 84/797; Limpopo Province: Nylsvley Nature Reserve (24°39'S 28°42'E), on *Acacia karroo* in wetland, 1 male, 1 female, 18.iii.2001, S.H. Foord, NCA 2002/1025; North West Province: Rustenburg Nature Reserve (25°40'S 27°15'E), 1 male, 1 female, 5.ii.1980, M. Stiller, NCA 92/525.

**Distribution.** Namibia. New records: Angola, South Africa (Fig. 33).

**Natural history.** Found to have similar habitat preferences to *H. sericea*. These two species were also found sympatrically in the Highveld region of South Africa. They have been collected from wetland and on various trees e.g. *Acacia karroo* and *A. luderitzi*. Also found on walls. Females were caught from February to August and males from September to May.

## 25. *Hersilia sigillata* Benoit, 1967 (Figs. 27, 26h & 35)

*Hersilia sigillata* Benoit, 1967: 15.

**Types.** Female holotype, **Ivory Coast:** Bingerville (5°20'N 3°53'W, v-vi.1962, J. Decelle, MRAC 122322 (examined); -male paratype, **Democratic Republic of Congo:** Sankuru, Komi (3°22'S 23°46'E, iv.1930, J. Ghesquiere, MRAC 30820 (examined).

**Diagnosis.** Medium-sized spiders; legs short; eye tubercle low (Fig. 27c); clypeus short (Figs. 27d); abdomen obovate (Fig. 27e); three pairs of anterior dorsal muscular pits very large, oval; median plate of epigyne with border convex, elongate, sickle-shaped fixing structures laterally; spermathecae sub-triangular (Fig. 27g), several small secondary spermathecae basally; male palp with median apophysis angled transversely, hollowed medially, apex round; embolus long, filiform, circular, deeply furcate (Fig. 27a,b & 26h). The transversely angled median apophysis, sub-triangular seminal receptacle as well as several small seminal receptacles posteriad on epigyne resemble that of *H. insulana* and *H. caronae*

**Redescription. Female.** Size (n=3). TL 8.52 (8.16 - 8.88); CL 3.12 (2.88 - 3.36); CW 2.88 (2.64 - 3.12); CLL 0.2 (0.2 - 0.2); OAL 0.48 (0.48 - 0.48). AME diameter 0.13; AME-AME 0.32; ALE-AME 0.33; MOQ-AW 0.61; ALE diameter 0.09; PME-PME 0.36; PME diameter 0.13; PME-PLE 0.29; MOQ-PW 0.48; PLE diameter 0.13.

Colour: carapace pale yellow-brown, dark lateral border with row of conspicuous setae, sparsely covered with dark setae; clypeus yellow-brown with dark medial line; chelicerae pale brown; eyes with dark borders; dorsum dark brown with white around dorsal muscular pits; grey-brown to brown border with brown pilosity on anterior and posterior border; heart mark broad, extend up to third pair of dorsal muscular pits; posterior half of dorsum with few transverse lines; spinnerets faintly annulate, base with dense setae; ventrum pale; legs pale brown; femora and palp with no distinctive markings.

Carapace: longer than wide (CI 1.08); clypeus short,  $0.43 \times$  MOQ length, sloping; eye tubercle depressed; AME largest; eye ratio 1:0.71: 1:1; MOQ-AW > MOQ-PW; very elongate chelicerae,  $2.3 \times$  longer than wide.

Abdomen (Fig. 27e): elongate, twice as long as wide, obovate; four pairs of very large, oval dorsal muscular pit, first three pairs much larger than fourth pair; posterior lateral spinnerets elongate,  $1.7 \times$  longer than abdomen,  $3.2 \times$  carapace width; tS  $3.6 \times$  bS

Legs: leg I longest; legs short,  $1.67 \times$  total body length; leg ratio 1: 0.92: 0.32: 0.89; metatarsus I,  $9 \times$  longer than tarsus; distal segment of metatarsus  $0.64 \times$  length of proximal part; leg measurements: I- Fe 4.13, Pat + Tib 4, Mt I 3.3, II 2.1, Ta 0.6, total 14.6; II-3.8, 3.75, 2.75, 1.75, 0.55, total 12.6; III-1.3, 1.35, 1.1, 0.75, total 4.45; IV-3.58, 3.5, 2.7, 1.7, 0.7, total 12.95; Palp-1.1, 1.05, 0.53, total 2.68.

Epigyne (Figs. 27f,g): wide (el/ew 0.8); large spiniform lateral borders; median plate broad anteriorly, posteriorly with convex border, elongate fixing structures laterally; copulatory openings widely spaced, copulatory ducts short; seminal receptacles wide basally, tapering distally, spermathecae sub-triangular, tapering distally; several small seminal receptacles basally; fertilization ducts short, curved medially.

**Male.** Size (n=1). TL 6.72; CL 2.4; CW 2.24; CLL 0.32 mm; OAL 0.48; AME diameter 0.13; AME-AME 0.26; AME-ALE 2.9; MOQ-AW 0.52; ALE diameter 0.09; PME-PME 0.25; PME diameter 0.13; PME-PLE 0.27; MOQ-PW 0.51; PLE diameter 0.16.

Male is structurally similar to female; leg measurements: I- Fe 4.5, Pat + Tib 4.3, Mt I 3.8, II 1.9, Ta 0.6, total 14.96; II-4.1, 4.1, 3.3, ?,?, total ?; III-1.4, 1.36, 1.13, 0.68, total 4.57; IV-3.53, 3.68, 3.15, 1.6, 0.6, total 12.56; Palp-1.2, 1.12, 0.85, total 3.17.

Palps (Figs. 26h & 27a,b): tibia stout, as long as wide,  $0.62 \times$  cymbium length (Fig. 27a), no dorsal spines; cymbium compact  $1.6 \times$  longer than wide, four apical spines; bulbus circular; sperm duct regularly curved; embolus long, filiform, circular, conductor elongate; median apophysis prolaterad, transversely angled, apex round.

**Additional material examined: Gabon:** Ntoun (0°22'N 9°46'E), 1 juv., iii.1984, A. Pauly, MRAC 168742. **Ivory Coast:** Bettie, forêt classée de Mabi (6°4'N 3°23'W), 96m a.s.l, forest road, R. Jocqué, MRAC 168742. **Uganda:** District Masindi: 1 female, Budongo Forest, n[ear] Sonso (1°45'N 31°35'E), 1-10.vii.1995, T. Wagner, QM C.a. 28; 1 male, same data, QM R.a. 75N.

**Distribution.** Ivory Coast, Democratic Republic of Congo. New Record: Uganda, Gabon (Fig. 35).

**Natural history.** Collected from trees in forests. Females collected from June to July and male in April and July.

## 26. *Hersilia taita* sp. nov. (Figs. 28 & 36)

**Types.** Male holotype, **Kenya:** Kenya coast, Taita Discovery Center, (03°25'S 38°46'E), 18.vii-3.ix.2001, E. Selempo, Malaise trap, MRAC 211563; - paratypes: 1 male, same data, 19.viii.2001, E. Selempo, Malaise trap, MRAC 211542; 4 males, same data, xii.2001, E. Selempo, MRAC 213131.

**Etymology.** The specific epithet refers to the type locality.

**Diagnosis.** Small spiders; legs long; eye tubercle raised (Fig. 28c), and clypeus long (Fig. 28d); male palp with median apophysis angled transversely, hollowed basally, scopula-shaped distal flap, apex broad (Figs. 28a,b). This species resemble *H. sigillata* and *H. insulana* in the transversely angled median apophysis. Female unknown.

**Description. Male.** Size (n=2). TL 3.87 (3.83 - 3.9); CL 1.69 (1.65 -1.73); CW 1.58 (1.5 - 1.65); CLL 0.44 (0.42 - 0.46); OAL 0.13. AME diameter 0.13; AME-AME 0.18; ALE 0.13; MOQ-AW 0.44; ALE diameter 0.06; PME-PME 0.17; PME diameter 0.12; PME-PLE 0.19; MOQ-PW 0.4; PLE diameter 0.13.

Colour: carapace pale white with grey patterns; clypeus pale with V-shaped mark medially; chelicerae pale; eye area with distinct dark patch around eyes with longitudinal white line posteriorly on eye tubercle; dorsum with four broad transverse bands, posterior half with white V-shaped mark between heart mark and transverse bands (Fig. 28e); posterior lateral spinnerets with lateral lines; legs pale white, dark rings on distal parts of segments; femora and palp with lateral striations.

Carapace: as long as wide (CI 1.08); clypeus long,  $1.18 \times$  MOQ length, sloping; eye tubercle raised; AME largest; eye ratio 1: 0.42: 0.88: 1, MOQ-AW > MOQ-PW; chelicerae very elongate  $2.25 \times$  longer than wide.

Abdomen (Fig. 28e): longer than wide, widest in posterior third; four pairs of round dorsal muscular pits; posterior lateral spinnerets  $1.26 \times$  longer than abdomen,  $1.64 \times$  carapace width; tS  $3.03 \times$  bS.

Legs: leg I longest;  $3.57 \times$  total body length; leg ratio: 1: 0.92: 0.29: 0.84; metatarsus I,  $10.77 \times$  tarsus I; distal part of metatarsus  $0.62 \times$  length of proximal part; leg measurements: I- Fe 3.6, Pat + Tib 3.91, Mt I 3.53, II 2.18, Ta 0.53, total 13.75; II-3.34,

3.75, 3.15, 1.92, 0.45, total 12.6; III-1.39, 1.21, 1.06, 0.38, total 4.03; IV-2.89, 3.27, 3.12, 1.76, 0.49, total 11.52; Palp-0.72, 0.58, 0.32, total 1.37.

Palps (Figs. 28c,d): tibia elongate,  $1.03 \times$  longer than wide,  $0.58 \times$  cymbium length, two spines dorsally; cymbium elongate,  $1.5 \times$  longer than wide, four apical spines; bulbus round; sperm duct regularly curved; embolus filiform, elongate, circular, apex acute; median apophysis form scopula-shaped, broad distal flap.

**Female.** Unknown.

**Distribution.** Known only from type locality (Fig. 36).

**Natural history.** Caught in Malaise trap.

## 27. *Hersilia tamatavensis* sp. nov. (Figs. 29a-d & 33)

**Type.** Holotype male, **Madagascar:** Tamatave Rd ( $18^{\circ}10'S$   $49^{\circ}22'E$ ), 4.iii.1952, V. Tipton, AMNH.

**Etymology.** The specific epithet refers to the type locality.

**Diagnosis.** Medium-sized; legs very long; eye tubercle raised (Fig. 29c); clypeus short (Fig. 29d); palp with hook-shaped median apophysis, long straight distal end, apex acute (Figs. 29a,b). The palp of this species is similar to that of *H. caudata*, with the hook-shaped median apophysis in a medial position on the bulbus, but differs in the distally straight median apophysis and the longer, filiform embolus. Female unknown.

**Description. Male.** Size (n=1). TL 7.2; CL 3.2; CW 2.8; CLL 0.52; OAL 0.13. AME diameter 0.27; AME-AME 0.16; AME-ALE 0.2; MOQ-AW 0.7; ALE diameter 0.065; PME-PME 0.2; PME diameter 0.221; PME-PLE 0.26; MOQ-PW 0.64; PLE diameter 0.24.

Colour: carapace pale orange with broad dark border (specimen damaged, must have dried out at some stage); clypeus pale anteriorly; eye area black around eyes; abdomen damaged; spinnerets dark; legs orange and femora with black striations on promargin.

Carapace: longer than wide (CI 1.14); clypeus short,  $0.83 \times$  MOQ length, sloping; eye tubercle raised; AME largest; eye ratio 1: 0.24: 0.81: 0.88; MOQ-AW > MOQ-PW; chelicerae elongate, twice as long as wide.

Abdomen: damaged to such an extent that meaningful observations, measurements and drawing could not be made, however the presence of dorsal muscular pits are noted; posterior lateral spinnerets elongate,  $2.2 \times$  carapace width; tS  $4.5 \times$  bS.

Legs: leg I longest; leg ratio 1: broken: 0.25: 0.74; metatarsus I,  $13 \times$  longer than tarsus I; distal part of metatarsus  $0.38 \times$  proximal part; leg measurements: I- Fe 10.4, Pat + Tib 12.8, Mt I 11.28, II 4.24, Ta 1.2, total 39.92; II-8.4, 11.2, absent; III-3.2, 3.2, 2.8, 0.8, total 10; IV-8, 8.4, 8.96, 3.2, 0.8, total 29.36; Palp-1.5, 1.48, 1.13, total 4.11

Palps (Figs. 29a,b): tibia elongate, almost twice as long as wide,  $0.56 \times$  cymbium length, two strong spines dorsally; cymbium elongate,  $1.88 \times$  its width, four apical spines; bulbus unmodified; sperm duct regularly curved, embolus very long, filiform, extend beyond base of median apophysis (Fig. 29b); median apophysis hook-shaped distal end long and slender, apex acute.

**Female.** Unknown.

**Distribution.** Madagascar (Fig. 33).

**Natural history.** None noted. Holotype male collected in March.

### **28. *Hersilia unca* sp. nov. (Figs. 29e-i & 34)**

**Types.** Female holotype, **RWANDA:** 60 km W of Astrida (02°34'S 29°43'E), 2400 m, 11.xii.1957, E.S. Ross, R.E. Leech, CASC.

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

**Diagnoses.** Medium-sized spider; legs long; eye tubercle slightly raised (Fig. 29g); clypeus long (Fig. 29h); epigyne with two separated sclerotized, slit-like openings anteriorly removed from epigastric furrow (Fig. 29e); seminal receptacles have apical projections; spermathecae with complex irregular lobes, (Fig. 29f). This species resemble *H. woutrinae* in the complex irregular spermathecae. Male unknown.

**Description. Female.** Size (n=1). TL 8. CL 2.8; CW 2.56. CLL 0.59; AOL 0.53. AME diameter 0.195; AME-AME 0.195; ALE 0.195; MOQ-AW 0.59; ALE diameter 0.065; PME-PME 0.234; PME diameter 0.156; PME-PLE 0.234; MOQ-PW: 0.55; PLE diameter: 0.13.

Colour: carapace pale brown; lateral border wide, bearing dark setae; clypeus pale with two dark spots laterally (Fig. 29h); eye area pale, dark between AME, tridentate white spot posteriorly on eye tubercle; dorsum dark brown, mottled white, heart mark indistinct, posterior half with transverse lines forming a chevron pattern (Fig. 29i); ventrum pale, mottled white; legs pale, femora and palps with conspicuous annulation.

Carapace: longer than wide (CI 1.09); clypeus long,  $1.1 \times$  MOQ length, sloping; eye tubercle slightly raised, sloping sides; AME largest; eye ratio: 1: 0.33: 0.8: 0.67; elongate chelicerae, twice as long as wide, retromargin with seven minute teeth.

Abdomen (Fig. 29i): elongate oval, longer than wide, widest in posterior third; four pairs of round dorsal muscular pits, second pair oval and large; posterior lateral spinnerets as long as abdomen, twice carapace width; tS 2.25 longer than bS.

Legs: leg I longest, elongate,  $2.7 \times$  total body length; leg ratio: 1: 0.98: 0.38: 0.9; metatarsus I,  $6.7 \times$  length of tarsus I; distal part of metatarsus  $0.66 \times \times$  length of proximal part; leg measurements: I- Fe 5.6, Pat + Tib 6.8, Mt I 4.8, II 3.2, Ta 1.2, total 21.6; II-5.2, 6.72, 4.96, 3.36, 0.96, total 21.2; III-2.4, 2.8, 2.16, 0.8, total 8.16; IV-5.2, 5.6, 4.8, 2.8, 0.96, total 19.36; Palp-1.35, 1.45, 1, total 3.8.

Epigyne (Figs.30e,f): wide (el/ew 0.8); epigyne border simple, transverse central plate; copulatory openings widely spaced, copulatory ducts short, curved; seminal receptacles with apical projections with glandular parts covered by threads; fertilization ducts medially curved (Fig. 29f).

**Male.** Unknown.

**Distribution.** Rwanda (Fig. 34). Known only from type locality.

**Natural history.** None noted. Female holotype collected in December.

## 29. *Hersilia vanmoli* Benoit, 1971 (Figs. 30 & 34)

*Hersilia vanmoli* Benoit, 1971: 156.

**Types.** Female holotype, **Ivory Coast:** Lamto, viii.1968, J.J. van Mol, MRAC 134634 (examined); male paratype, same data, MRAC 136843 (examined); female paratype, **Togo:** Missahohé (6°0'N 0°0'E), 6.viii.1969, F. Puylaert, MRAC 136080 (not examined).

**Diagnosis.** Small spiders; legs long; eye tubercle slightly raised (Fig. 30c); clypeus short (Fig. 30d); epigyne with linear sclerotization anterior of epigastric furrow (Fig. 30f); male palp with conductor broad, stout (Fig. 30a,b), embolus straight, apex acute. The straight embolus with acute apex and hook-shaped conductor resembles that of *H. beva* except that the conductor are more robust and epigyne compact.

**Redescription. Female.** Size (n=4). TL 5.27 (5.1 - 5.48); CL 1.82 (1.65 - 1.95); CW 1.84 (1.65 - 2.1); CLL 0.4 (0.3 - 0.46); OAL 0.1 (0.08 - 0.13). AME diameter 0.16; AME-AME 0.17; ALE 0.11; MOQ-AW 0.49; ALE diameter 0.07; PME-PME 0.15; PME diameter 0.18; PME-PLE 0.18; MOQ-PW 0.51; PLE diameter 0.17.

Colour: carapace dark; clypeus with dark medial line, pale border; chelicerae dark brown, red brown distally; eye area dark; dorsum dark brown, faint lateral border; heart mark faint, broadening posteriorly, triangular pattern of thin transverse lines posteriorly (Fig. 30e); ventrum pale; posterior lateral spinnerets with strong annulation; legs dark, distinct annulation on femora and tibia; palps dark, annulation basally on segments.

Carapace: as wide as long (CI 0.99); clypeus short,  $0.79 \times$  MOQ length; eye tubercle slightly raised, concave sides; PME largest; eye ratio 1: 0.43: 1.17: 1.09;  $MOQAW \leq MOQPW$ ; chelicerae very elongate,  $1.76 \times$  longer than wide.

Abdomen (Fig. 30e): distinctly wider than long, widest in posterior third; four pairs of small, round dorsal muscular pits; posterior lateral spinnerets  $0.87 \times$  length of abdomen;  $1.61 \times$  carapace width;  $tS 3.57 \times bS$ .

Legs: leg II longest,  $2.43 \times$  total body length; leg ratio 1: 1.08: 0.41: 0.92; metatarsus I,  $7.04 \times$  longer than tarsus I; distal part of metatarsus,  $0.72 \times$  length of proximal part; leg measurements: I- Fe 3.43, Pat + Tib 3.63, Mt I 2.58, II 1.85, Ta 0.63, total 12.13; II-3.49, 3.98, 2.88, 1.98, 0.65, total 13.01; III-1.56, 1.58, 1.24, 0.51, total 4.91; IV-3.19, 2.31, 2.03, 1.16, 0.42, total 11.09; Palp-0.78, 0.78, 0.58, total 2.14.

Epigyne (Figs. 30f,g): wide (el/ew 0.59); linear sclerotization near epigastric furrow, sub-triangular impression of spermathecae anteriorly (Fig. 30f); copulatory

openings widely spaced; copulatory ducts form continuous loop with fertilization duct; spermathecae elongate comma-shaped, tapering medially into short curve (Fig. 30g); seminal receptacle smaller, elongate; fertilization ducts medially curved.

**Male.** Size (n=2). TL 4.28 (4.05 - 4.5); CL 1.88; CW 1.65 (1.5 - 1.8); CLL 0.34 (0.33 - 0.35); OAL 0.12. AME diameter 0.2; AME-AME 0.14; ALE 0.07; MOQ-AW 0.54; ALE diameter 0.1; PME-PME 0.09; PME diameter 0.16; PME-PLE 0.13; MOQ-PW 0.43; PLE diameter 0.17.

Males resemble females except smaller and more slender, carapace longer than wide (CI 1.15); AME largest; MOQ-AW > MOQ-PW; abdomen much longer than wide, elongate; second dorsal muscular pit largest; very long legs, five × length of body; leg measurements: I- Fe 5.07, Pat + Tib 5.89, Mt I 4.73, II 2.66, Ta 0.64, total 18.98; II-4.76, 5.82, 4.61, 2.66, 0.6, total 18.46; III-1.65, 1.91, 1.46, 0.45, total 5.48; IV-4.2, 5.22, 4.28, 2.55, 0.68, total 16.92; Palp-0.9, 0.72, 0.72, total 2.3.

Palps (Figs. 30a,b): tibia stout, 0.89 × as long as wide, 0.47 × cymbium length, no dorsal spines; cymbium elongate, 1.76 × longer than wide with four apical spines; bulbus with basal swelling; sperm duct incurved; embolus horizontal, apex acute; broad conductor, apex acute (Fig. 30b).

**Additional material examined. Ivory Coast:** North of Korhogo, Bandama River (09°27'N 05°38'W) riverine forest on river edge, 1 females, ii.1980, J. Everts, MRAC 172149; 1 female, same data, MRAC 172148; 1 female, same date, MRAC 172150; 1 male, same data, MRAC 172147; Mankono, Ranch de la Marahoue (8°27'N 6°52'W) riparian forest, 2 females, iii. 1980, J Everts, MRAC 172151-2; North of Korhogo, Bandama River (09°27'N 05°38'W) center of riverine forest, 1 male, i.1980, J. Everts, MRAC 172147. **Togo:** Bassari (09°15'N 00°47'E) pitfalls, 1 female, v-vii.1984, P. Douben, MRAC 174250;

**Distribution.** Togo, Ivory Coast (Fig. 34).

**Natural History.** Females were caught in pitfalls in riparian forest and males in the centre of a forest. Type series were collected in August.

### 30. *Hersilia vinsonii* Lucas, 1869 (Figs. 31 & 35)

*Hersilia vinsonii* Lucas, 1869: 160.

**Types.** Female neotype (here designated), **Madagascar:** G. Schmidts, MRAC 133636 (no more data available).

**Diagnosis.** Medium-sized spiders; eye tubercle slightly raised (Fig. 31c); clypeus long (Fig. 31d); epigyne externally with tear-shaped lateral openings, faint depression laterally on median plate (Fig. 31a); seminal receptacle sub-triangular; spermathecae tubular, elongate, S-shaped (Fig. 31b). This species resemble *H. insulana* and *H. caronae* in size and shape of seminal receptacle but differs in the absence of tear-shaper fixing structures on median plate. Male unknown.

**Redescription. Female.** Size (n=1). TL 10.13; CL 3.38; CW 3.53; CLL 0.85 mm; OAL 0.2; AME diameter 0.26; AME-AME 0.26; ALE 0.34; MOQ-AW 0.78; ALE diameter 0.08; PME-PME 0.2; PME diameter 0.26; PME-PLE 0.26; MOQ-PW 0.72; PLE diameter 0.29.

Colour: carapace dark brown; clypeus pale, white pilosity anteriorly; chelicerae dark, orange apically; abdomen pale brown, mottled white; dorsum with faint broad transverse bands, lancet-shaped heart mark; posterior lateral spinnerets and ventrum pale; legs pale yellow; femora and palps with no annulation.

Carapace: as wide as long (CI 0.96); clypeus long,  $1.18 \times$  MOQ length,  $1.18 \times$  MOQ length, sloping; eye tubercle slightly raised; PLE largest; eye ratio: 1: 0.3: 1: 1.1; chelicerae elongate  $1.64 \times$  longer than wide.

Abdomen (Fig. 31e): longer than wide, widest in the posterior third; four pairs of small dorsal muscular pits, third pair largest, oval, similar sized; ventral muscular pits large; posterior lateral spinnerets  $1.19 \times$  longer than abdomen;  $2.02 \times$  carapace width;  $tS$   $4.59 \times$  bS.

Legs: most of the legs were disarticulated; leg measurements: I- Fe 6.75, Pat + Tib 6.98; II-6.75; III-1.5; IV-5.63.

Epigyne (Figs. 31a,b): wide (el/ew 0.67); externally with two tear-shaped lateral openings; copulatory openings widely spaced; copulatory ducts short, simple; seminal receptacles sub-triangular, wide basally, tapering distally; spermathecae tubular, elongate, S-shaped, several small seminal receptacles basally; fertilization ducts curved medially.

**Male.** Unknown.

**Distribution.** Madagascar (Fig. 35).

**Natural history.** None noted.

### 31. *Hersilia woutrinae* sp. nov. (Figs. 32 & 34)

**Types.** Female holotype, **Kenya:** Kenya coast, Taita Discovery Center (3°25'W 38°46'E), Malaise trap, 8-15.i.2002, E. Selembo, MRAC 212943; - paratype: 1 male, same data.

**Etymology.** The specific epithet is named after the mother of author.

**Diagnosis.** Small spiders; legs long; eye tubercle slightly raised (Fig. 32c); clypeus short (Fig. 32d); epigyne with transverse white plate medially (Fig. 32f), spermathecae lobed, elongate (Fig. 32g); male palp with conductor short, apex rounded (Figs.33a,b), embolus straight, apex acute.

**Description. Size.** TL 4.95; CL 2.03; CW 1.8; CLL 0.36; OAL 0.13; AME diameter 0.2; AME-AME 0.2; ALE 0.17; MOQ-AW 0.59; ALE diameter 0.1; PME-PME 0.2; PME diameter 0.18; PME-PLE 0.22; MOQ-PW 0.56; PLE diameter 0.13.

Colour: carapace pale brown, broad, dark lateral border; clypeus anteriorly white; chelicerae with dark medial line; eye area dark around eyes, tridentate white spot posteriorly on eye tubercle; abdomen broad, dark wavy anterolateral border; dorsally pale, broad heart mark; large white patches laterally (Fig. 32e); ventrum pale; legs: patellae red brown, femora with strong annulation.

Carapace: longer than wide (CI 1.13); clypeus short,  $0.68 \times$  MOQ length,  $0.72 \times$  MOQ length; eye area slightly raised; AME largest; eye ratio: 1: 0.53: 0.93: 0.67; chelicerae long,  $1.8 \times$  longer than wide.

Abdomen (Fig. 32e): wider than long, widest in posterior third, four pairs of round dorsal muscular pits; posterior lateral spinnerets  $1.23 \times$  longer than abdomen,  $1.79 \times$  carapace width; tS  $2.91 \times$  bS  $2.91$ .

Legs: leg II longest,  $2.86 \times$  total body length; leg ratio: 1: 1.04: 0.34: 0.93; metatarsus I  $6.27 \times$  longer than tarsus I; distal part of metatarsus  $0.77 \times$  length of

proximal part; leg measurements: I- Fe 3.6, Pat + Tib 4.13, Mt I 2.93, II 2.25, Ta 0.83, total 13.73; II-3.68, 4.43, 3.08, 2.33, 0.83, total 14.33; III-1.5, 1.28, 1.28, 0.6, total 4.65; IV-3.38, 3.75, 3, 1.88, 0.75, total 12.75; Palp- absent (no measurement taken).

Epigyne (Figs. 32f,g): long (el/ew 0.8); externally with transverse white area; crescent-shaped copulatory openings widely spaced; copulatory ducts short; spermathecae lobed with distal apophyses; seminal receptacle cylindrical, with distal apophysis, glandular parts covered by threads present; fertilization ducts medially curved

**Male.** Size (n=1). TL 4.35; CL 2.03; CW 1.88; CLL 0.33 mm; OAL 0.13; AME diameter 0.2; AME-AME 0.21; ALE 0.13; MOQ-AW 0.6; ALE diameter 0.09; PME-PME 0.2; PME diameter 0.16; PME-PLE 0.2; MOQ-PW 0.51; PLE diameter 0.16.

Males resemble females except smaller, especially abdomen; legs very long; leg measurements: I- Fe 6.6, Pat + Tib 7.28, Mt I 6.38, II 3.83, Ta 1.2, total 25.28; II-4.88, 6.6, 5.33, 3.15, 0.98, total 20.93; III-2.1, 2.03, 1.65, 0.38, total 6.15; IV-4.88, 5.25, 4.65, 2.7, 0.83, total 18.3; Palp-1.05, 0.9, 0.9, total 2.85.

Palps (Figs. 32a,b): tibia stout, as long as wide,  $0.42 \times$  cymbium length, no dorsal spines; cymbium elongate,  $2.4 \times$  longer than wide, four spines apically, bulbus with basal swelling, sperm ducts incurved; embolus horizontal, apex acute; conductor small, apex round.

**Distribution.** Kenya (Fig. 34).

**Natural history.** Caught in Malaise trap; type series collected in January.

### *Nomina dubia*

#### *Hersilia kauderni* Strand, 1908

*Hersilia kauderni* Strand, 1908: 457.

Strand (1908) described the species based on two juvenile females deposited in the Swedish Museum of Natural History (NRM). Examination of the types suggests that it is impossible to make a positive diagnosis of the species.

**Distribution.** Madagascar.

***Hersilia stumpffi* Strand, 1916**

*Hersilia stumpffi* Strand 1916: 57.

Strand (1925) described *H. stumpffi* based on two juvenile females. He noted that these specimens were very similar to *H. nossibeensis*. The type specimens deposited in the Forschungsinstitut und Naturmuseum Senckenberg (SMFD 2918) has no genitalic characters and the identity of this species is uncertain.

**Distribution.** Madagascar.

***H. fossulata* Karsch, 1881**

*Hersilia fossulata* Karsch, 1881: 195.

Karsch (1881) described *H. fossulata* based on a single female. His main collection was deposited in the Museum für Naturkunde der Humboldt Universität, Berlin, Germany (MNHU), the Museum's hersiliid collection did not contain any types. The species could not be positively identified based on the description alone.

**Distribution.** Madagascar.

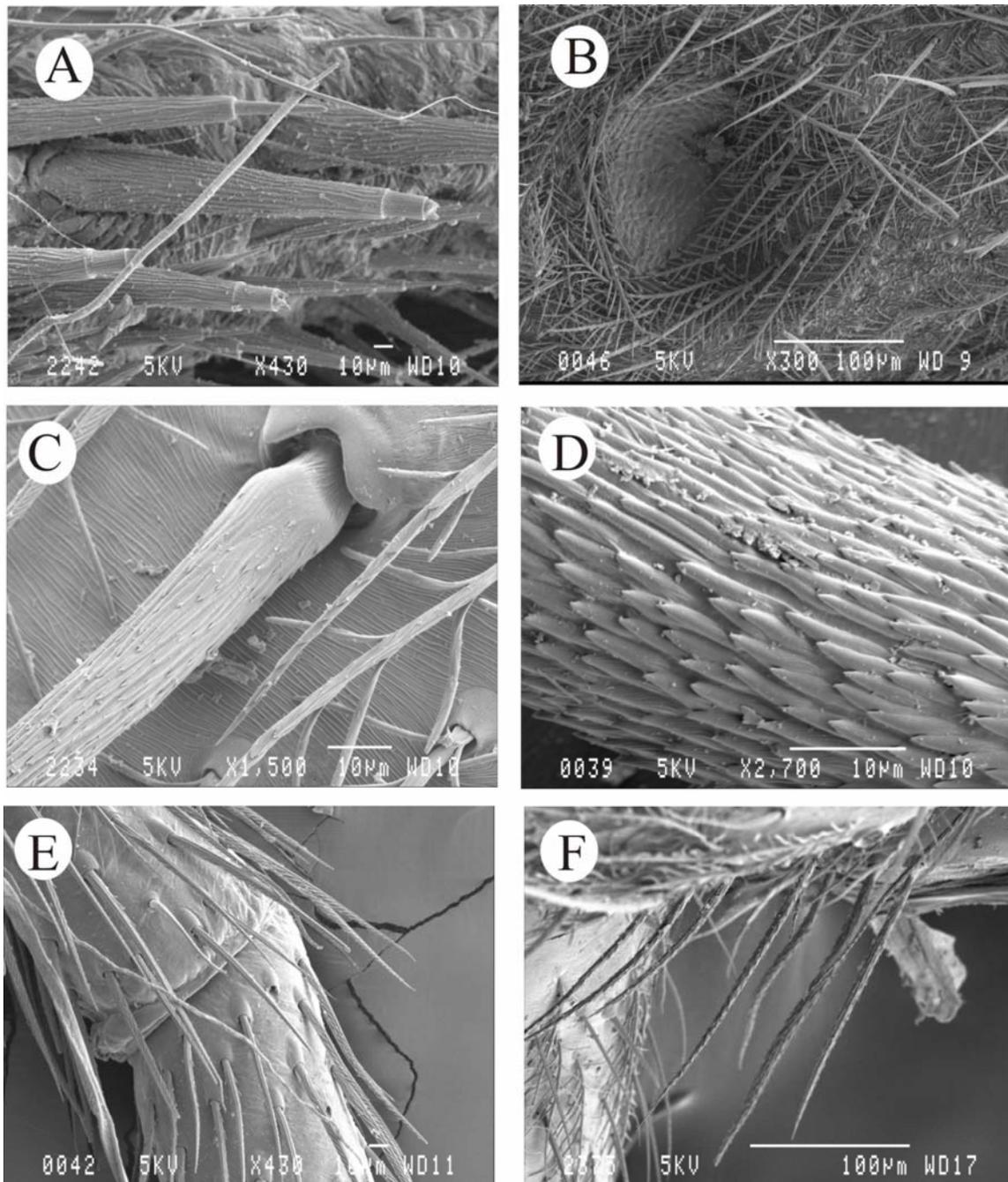
**References**

- AUDOUIN, V. 1826. *Explication sommaire des planches d'araignées de l'Égypte et de la Syrie publiées ... in "Description de l'Égypte..."*. Histoire Naturelle **1**(4): 1-339.
- BAEHR, B. 1998. The genus *Hersilia*: phylogeny and distribution in Australia and New Guinea (Arachnida, Araneae, Hersiliidae). In Seldon, P. A. (ed.), *Proceedings of the 17th European Colloquium of Arachnology, Edinburgh 1997*. Edinburgh, pp. 61-65.

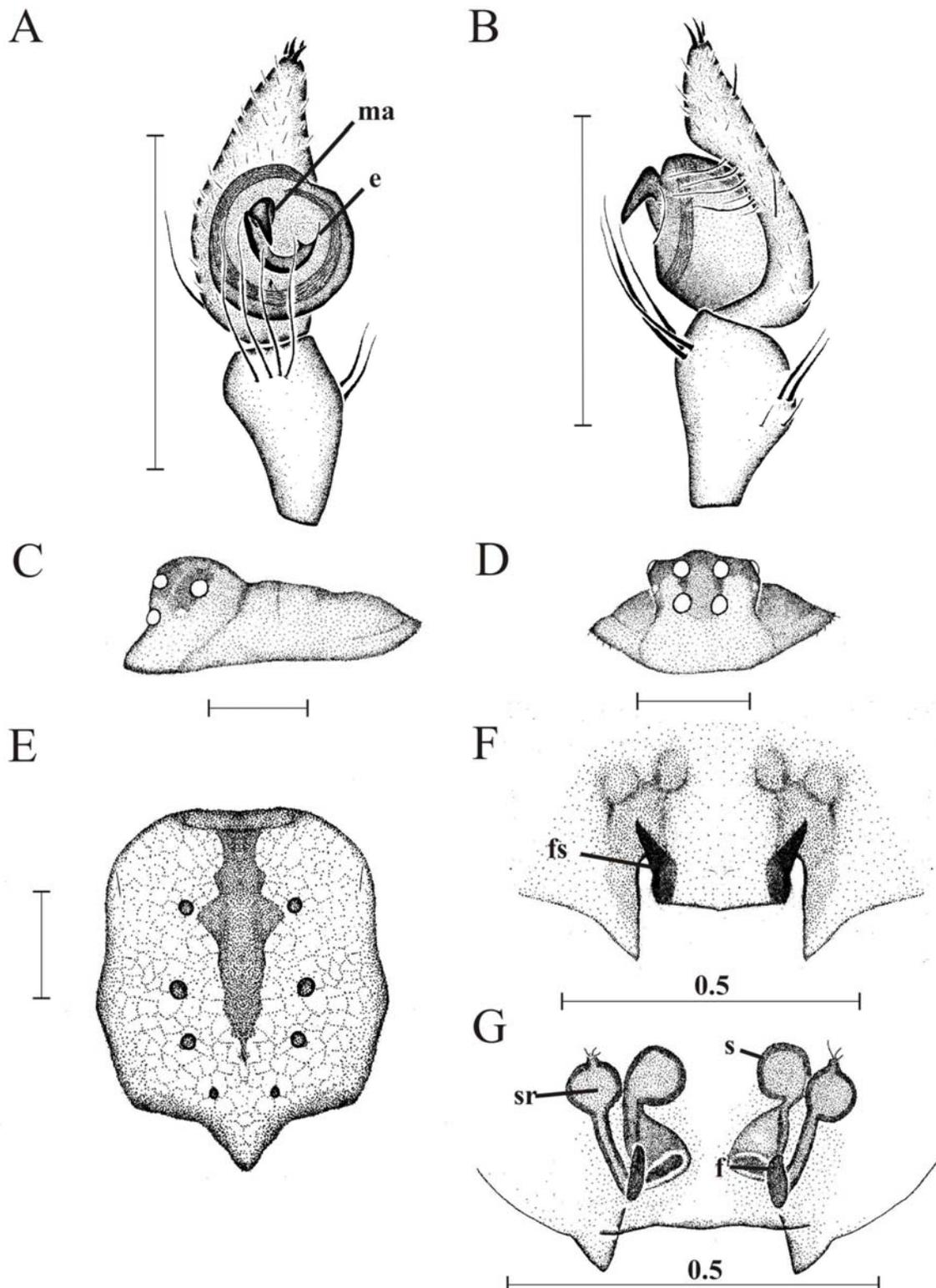
- BAEHR, B. & BAEHR, M. 1987. The Australian Hersiliidae (Arachnida: Araneae): Taxonomy, phylogeny, zoogeography. *Invertebrate Taxonomy* **1**: 351-437.
- BAEHR, M. & BAEHR, B. 1993. The Hersiliidae of the Oriental Region including New Guinea. Taxonomy, phylogeny, zoogeography (Arachnida, Araneae). *Spixiana*, Supplement **19**: 1-95.
- BENOIT, P. L. G. 1967. Révision des espèces africaines du genre *Hersilia* Sav. et Aud. (Aran.-Hersiliidae). *Revue de zoologie et de botanique africaines* **76**: 1-36.
- BENOIT, P. L. G. 1971. Notules arachnologiques africaines I. *Revue de zoologie et de botanique africaines* **83**: 147-158.
- BERLAND, L. 1919. Diagnoses préliminaires d'araignées d'Afrique orientale. Voyage de Ch. Alluaud et R. Jeannel (1re note). *Bulletin Societe Entomologique de France* **1919**: 347-350.
- BERLAND, L. 1920. Araneae (2e partie). In *Voyage de Ch. Alluaud et R. Jeannel en Afrique Orientale (1911-1912): Résultats scientifiques: Arachnida*. Paris, **4**: 95-180.
- CAMBRIDGE, O. P-. 1876. Catalogue of a collection of spiders made in Egypt, with descriptions of new species and characters of a new genus. *Proceedings of the Zoological Society of London* **1876**: 541-630.
- DIPPENAAR-SCHOEMAN, A.S. & R. JOCQUÉ. 1997. *African Spiders: An identification manual*. Plant Protection Research Handbook no. 9. Agricultural Research Council, Pretoria, 392 pp.
- KARSCH, F. 1878. Über einige von Herrn JM Hildebrandt im Zanzibargebiete erbeutete Arachniden. *Zeitschrift für die Gesamte Naturwissenschaften* **51**: 311-322.
- KARSCH, F. 1881. Spinnen. In *Reliquiae Rutenbergianae. Abhandlungen herausgegeben vom Naturwissenschaftlichen Verein zu Bremen* **7**: 191-197.
- KAURI, H. 1950. On some South African spiders and harvest-spiders. *Kungliga Fysiografiska Sällskapetets Lund Förhandlingar* **20**: 1-16.
- KOCH, C. L. 1843. *Die Arachniden*. Nürnberg, Zehnter Band, pp. 37-142.

- KULCZYNSKI, W. 1901. Arachnoidea in Colonia Erythraea a Dre K. M. Levander collecta. *Rozprawy spraw Wydział Matematyki przyroda Akademiya umiej. Cracovia* **41**: 1-64.
- LAWRENCE, R. F. 1928. Contributions to a knowledge of the fauna of South-West Africa VII. Arachnida (Part 2). *Annals of the South African Museum* **25**: 217-312.
- LAWRENCE, R. F. 1937. A collection of Arachnida from Zululand. *Annals of the Natal Museum* **8**: 211-273.
- LAWRENCE, R. F. 1938. A collection of spiders from Natal and Zululand. *Annals of the Natal Museum* **8**: 455-524.
- LAWRENCE, R.F. 1964. A conspectus of South African spiders. Department of Agriculture Technical Services, South Africa. *Science Bulletin* **369**, 64 pp.
- LEVI, G. 2003. Spider families Anyphaenidae, Hahnidae, Ctenidae, Zoridae, and Hersiliidae (Araneae) from Israel. *Israel Journal of Zoology* **49**: 1-31.
- LUCAS, H. 1869. Quelques remarques sur les articles additionnels observés dans les palpes des *Actinopus*, les pattes des *Hersilia* et description d'une nouvelle espèce d'aranéide appartenant à cette dernière coupe générique. *Revue Magasin de Zoologie* (2) **21**: 160-170.
- MEYER, M.K.P. (SMITH). & RODRIQUES, M.C. 1966. Acari associated with cotton in South Africa. *Garcia de Orto* **13**:1-33.
- PLATNICK, N.I. 2004. The World Spider Catalog, Version 3.5.  
<http://research.amnh.org/entomology/spiders/catalog81-87/INTRO1.html>
- POCOCK, R. I. 1898. The Arachnida from the province of Natal, South Africa, contained in the collection of the British Museum. *Annual Magazine of Natural History* (7) **2**: 197-226.
- SIMON, E. 1882. II. Etude sur les Arachnides du Yemen méridional. In Viaggio ad Assab nel Mar Rosso dei signori C. Doria ed O. Beccari con il r. Aviso esploratero del 16 nov. 1879 ad 26 feb. 1881. *Annali Del Museo civico di storia naturale di Genova* **18**: 207-260.
- SIMON, E. 1887. Etudes arachnologiques. 19e Mémoire. XXVII. Arachnides recuillis à Assinie (Afrique occidentale) par MM. Chaper et Alluaud.

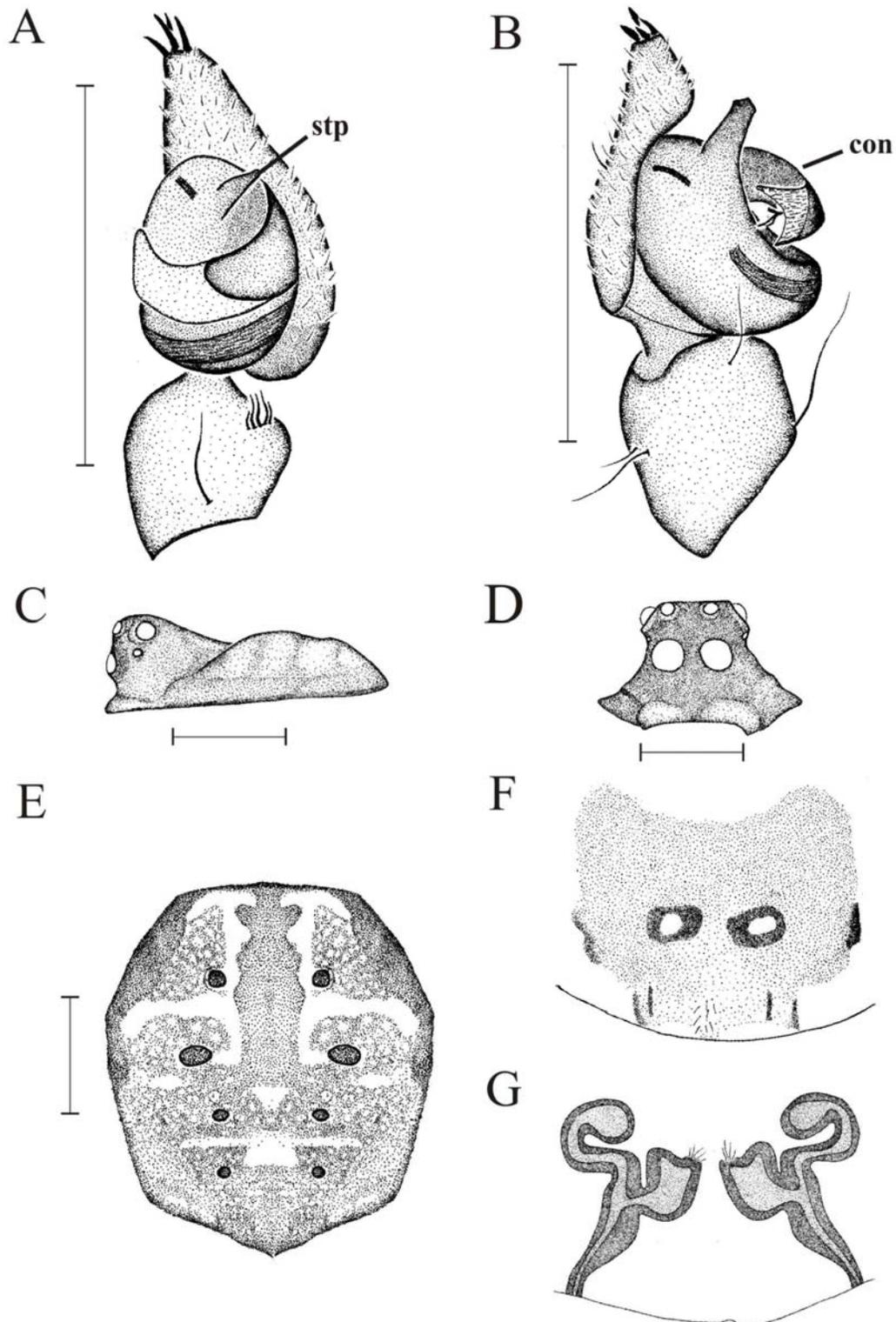
- Annales de la Societe entomologique de France* **(6) 7**: 261-384.
- SIMON, E. 1893. *Histoire naturelle des araignées*. Paris **1**: 257-488.
- SIMON, E. 1907. Arachnides recueillis par L. Fea sur la côte occidentale d'Afrique. 1re partie. *Annali Del Museo civico di storia naturale di Genova* **(3) 3**: 218-323.
- SMITHERS, R. H. N. 1945. The Hersiliidae (Araneae) of South Africa. *Transactions of the Royal Society of South Africa* **31**: 1-18.
- STRAND, E. 1907a. Diagnosen neuer Spinnen aus Madagaskar und Sansibar. *Zool. Anz.* **31**: 725-748.
- STRAND, E. 1907b. Beiträge zur Spinnenfauna Madagaskars. *Nyt Magazin for Naturvidenskaberne Christiania* **46**: 1-96.
- STRAND, E. 1908. Arachniden aus Madagaskar, gesammelt von Herrn Walter Kaudern. *Zoologische Jahrbücher für Systematik* **26**: 453-488.
- STRAND, E. 1913. Arachnida. I. In Wissenschaftliche Ergebnisse der Deutsche Zentral-Afrika Expedition 1907-1908. *Leipzig*, **4(Zool. 2)**: 325-474.
- STRAND, E. 1916. Systematische-faunistische Studien über paläarktische, afrikanische und amerikanische Spinnen des Senckenbergischen Museums. *Archiv für Naturgeschichte* **81(A9)**: 1-153.
- TUCKER, R. W. E. 1920. Contributions to the South African Arachnid Fauna. II. On some new South African spiders of the families Barychelidae, Dipluridae, Eresidae, Zodariidae, Heracliidae, Urocteidae, Clubionidae. *Annals of the South African Museum* **17**: 439-488.
- THORELL, T. 1870. On European spiders. *Nova Acta Regiae Societatis Scientiarum Upsaliensis* **7(3)**: 109-242.
- WALCKENAER, C. A. 1837. *Histoire naturelle des insectes*. Aptères. Paris **1**: 1-682.
- WUNDERLICH, J. 2004. *Fossil spiders in amber and copal*. . Beitrage zur Araneologie 3(A)



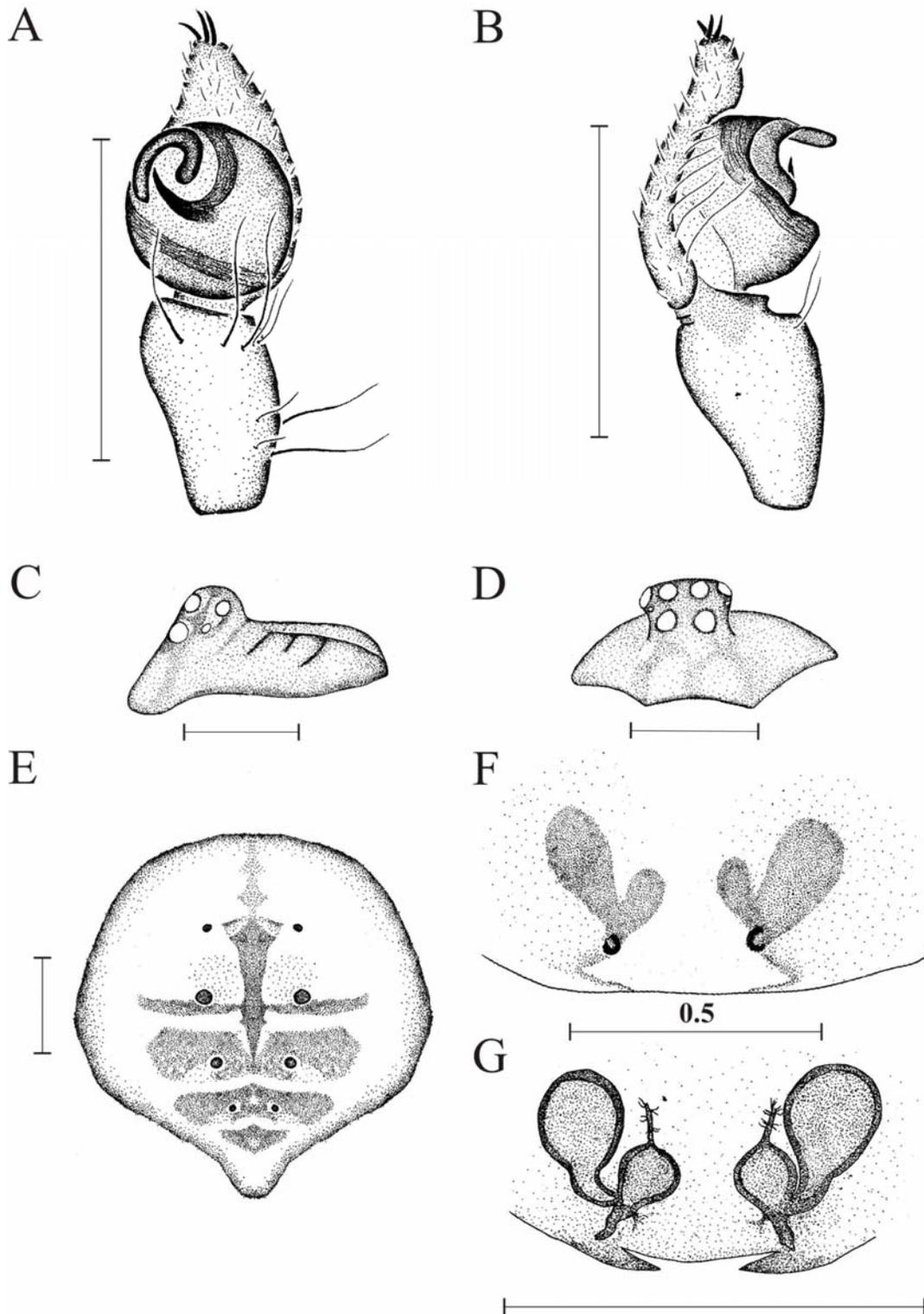
**Figure 1.** Scanning electron micrographs of *Hersilia sericea* from Pretoria, Gauteng, South Africa. **A.** Spinules on posterior lateral spinnerets. **B.** Dorsal muscular pit surrounded by plumose setae. **C.** Plumose setae on femora. **D.** Microstructure on surface of leg spines. **E.** Biarticulation on metatarsi of leg I. **F.** Row of conspicuous setae on border of carapace.



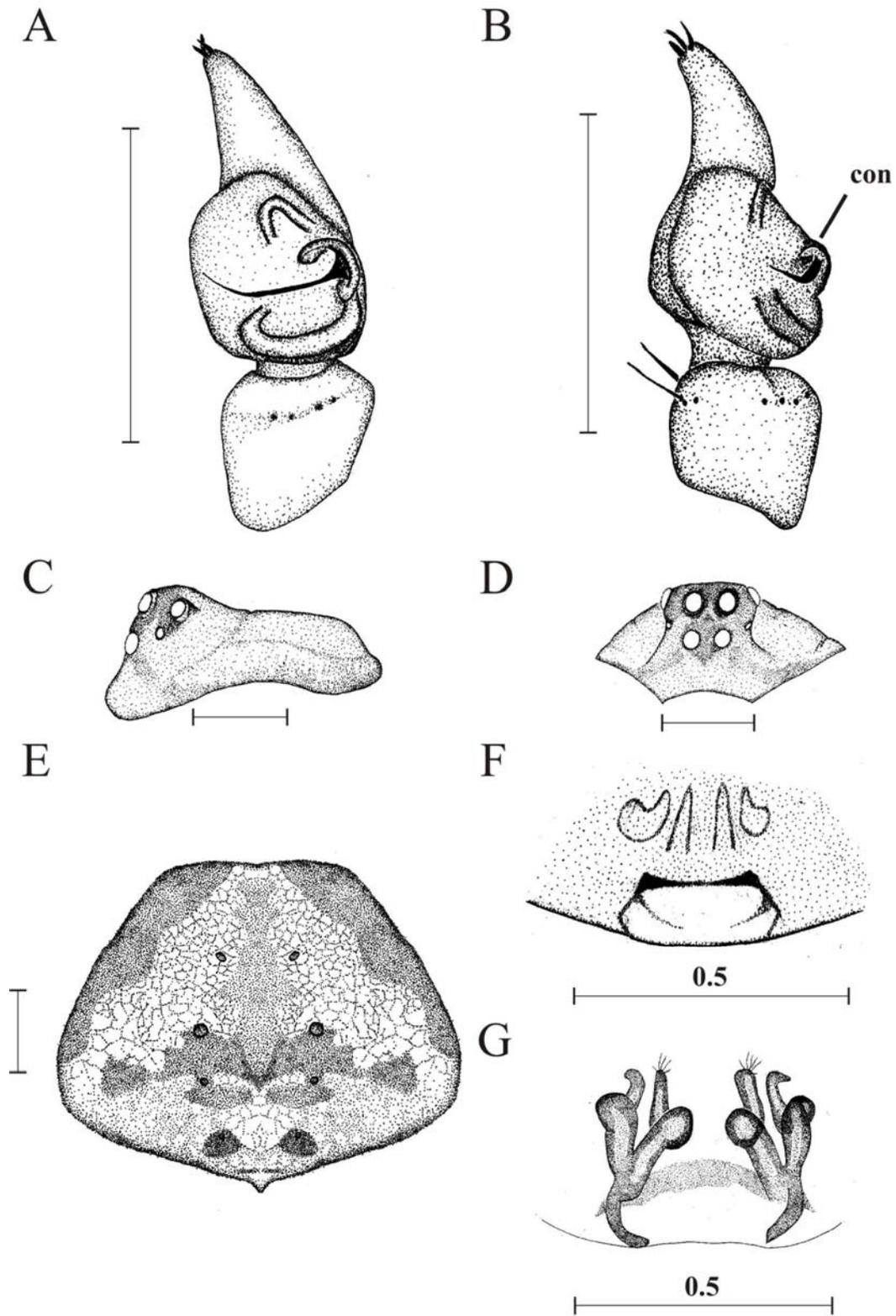
**Figure 2.** *Hersilia albicomis* Simon, 1887. **A.** Right palp ventral view. **B.** Right palp ventral view. **C.** Carapace prolateral view. **D.** Carapace anterior view. **E.** Female abdomen dorsal view. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. e = embolus; ma = median apophysis; fs = fixing structures; s = spermathecae; sr = seminal receptacle; f = fertilization duct. Illustrations by SF.



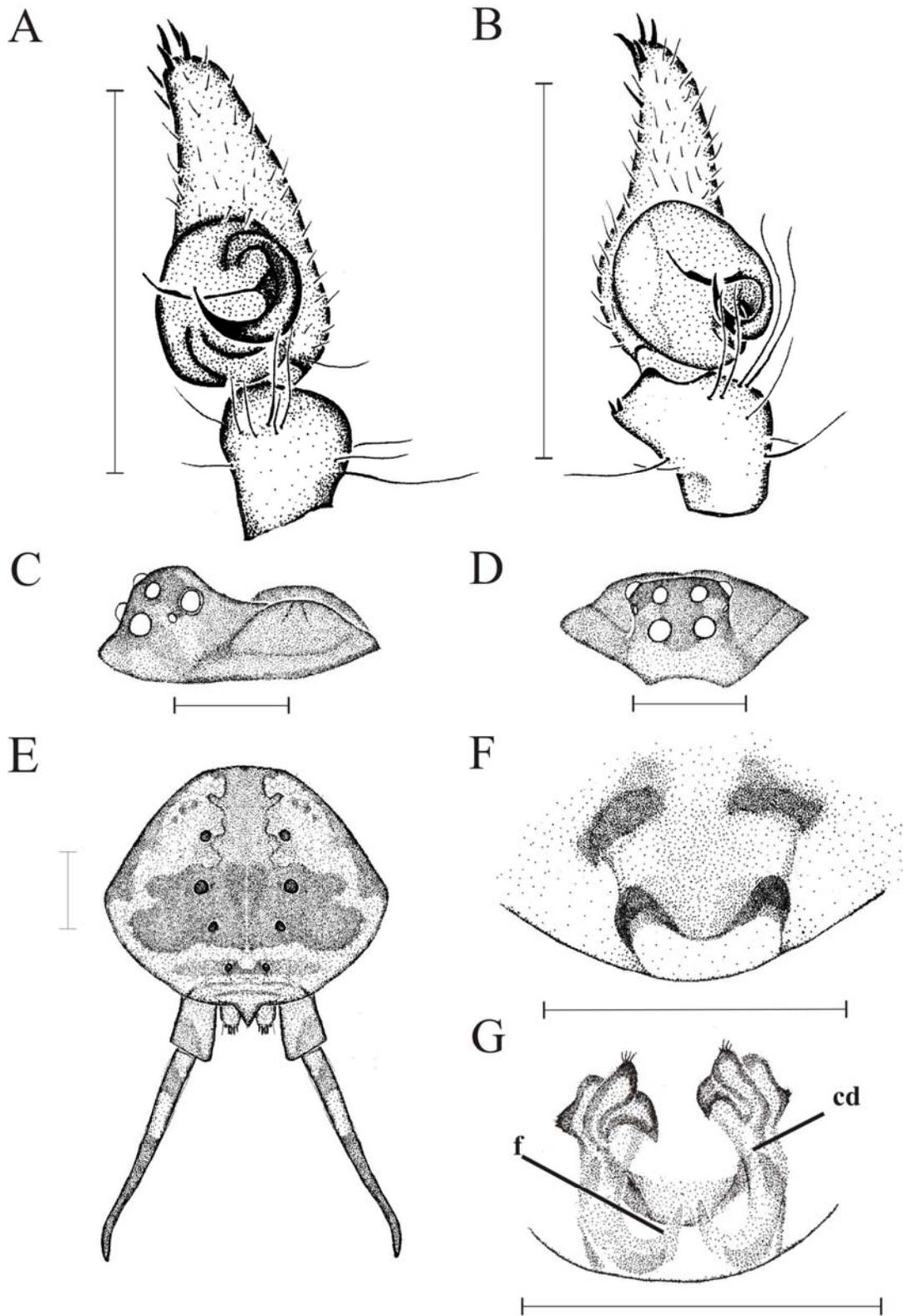
**Figure 3.** *Hersilia alluaudi* Berland, 1919. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Male abdomen dorsal view. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. stp = sclerotized tegular projection; con = conductor. Illustrations by SF. Figures 3f,g after Benoit (1967)



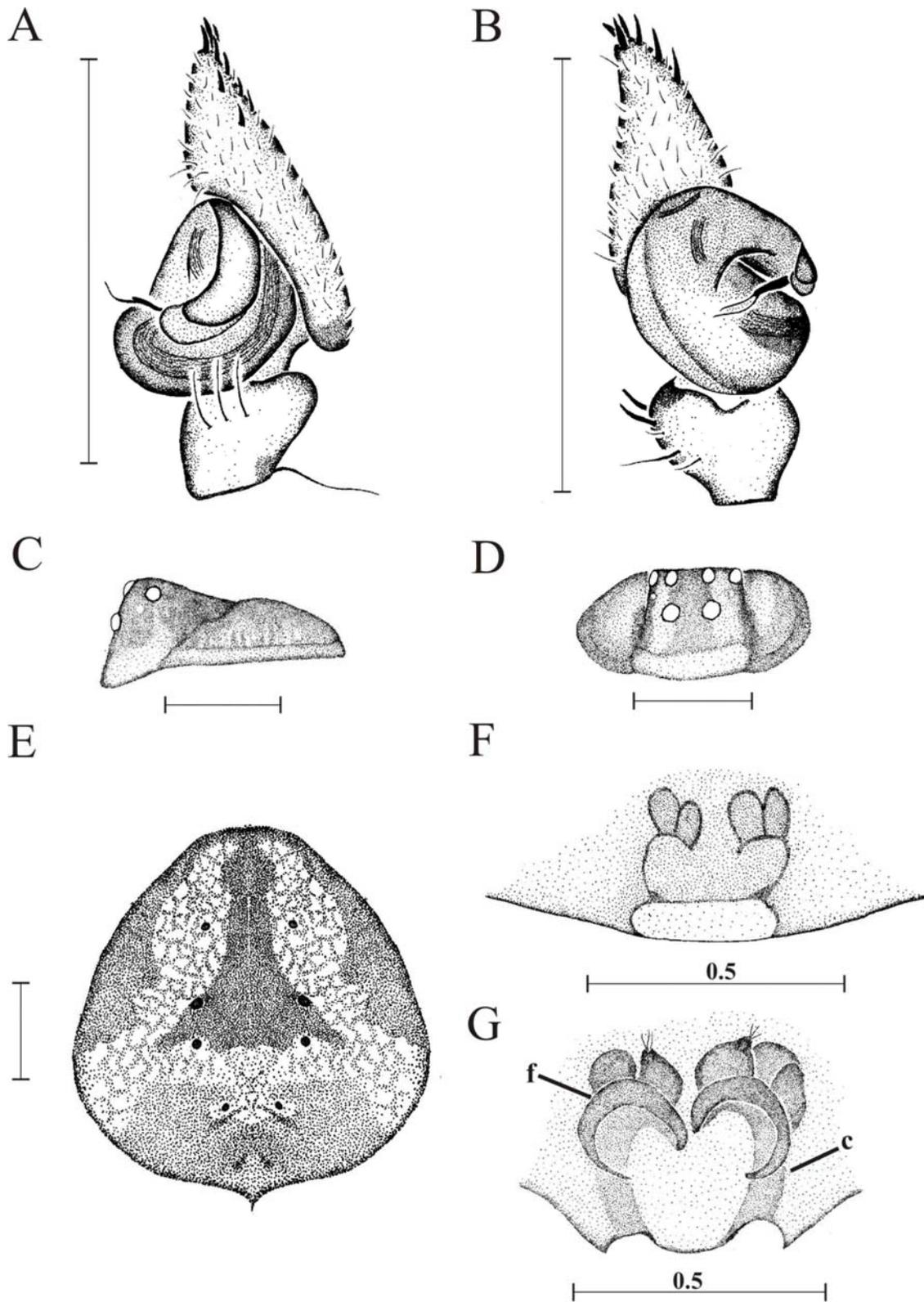
**Figure 4.** *Hersilia arborea* Lawrence, 1928. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view. **D.** Carapace anterior view. **E.** Female abdomen dorsal view. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. Illustrations by SF.



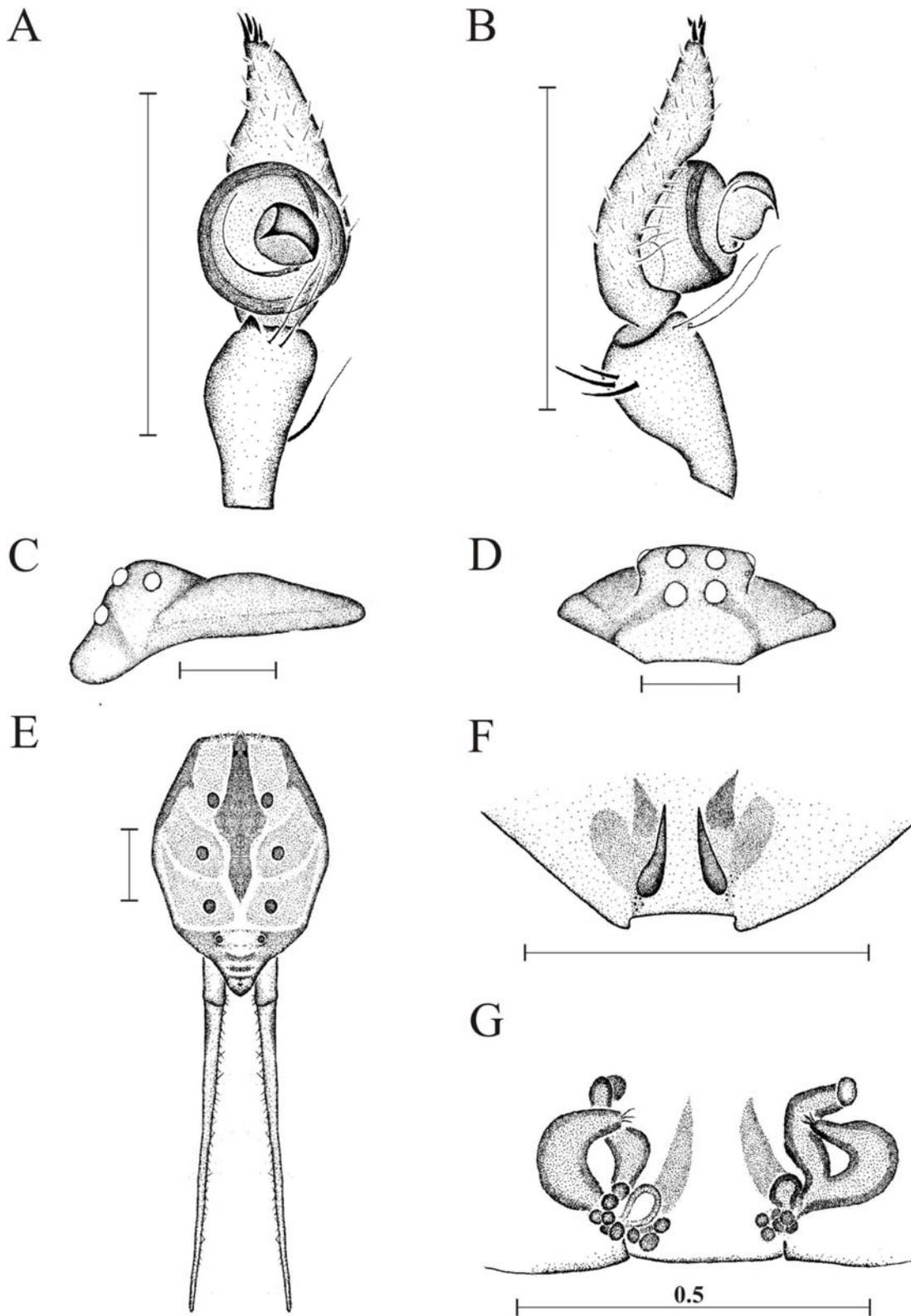
**Figure 5.** *Hersilia baforti* Benoit, 1967. **A.** Left palp ventral view. **B.** Left palp medial view. **C.** Carapace lateral view. **D.** Carapace anterior view. **E.** Female abdomen dorsal view. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. con = conductor. Illustrations by SF.



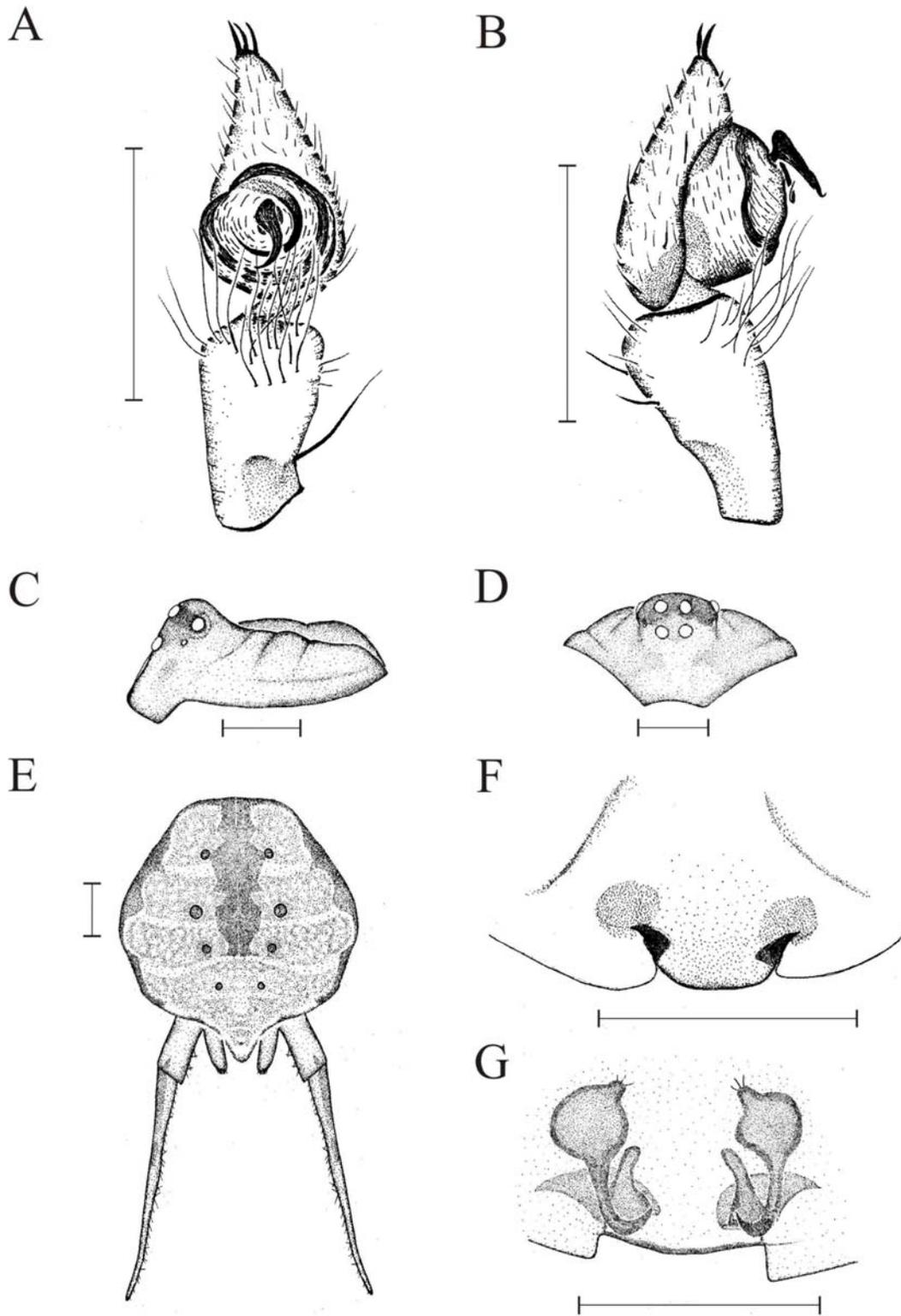
**Figure 6.** *Hersilia beva* sp. nov. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Female abdomen dorsal view with spinnerets. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. f = fertilisation duct; cd =



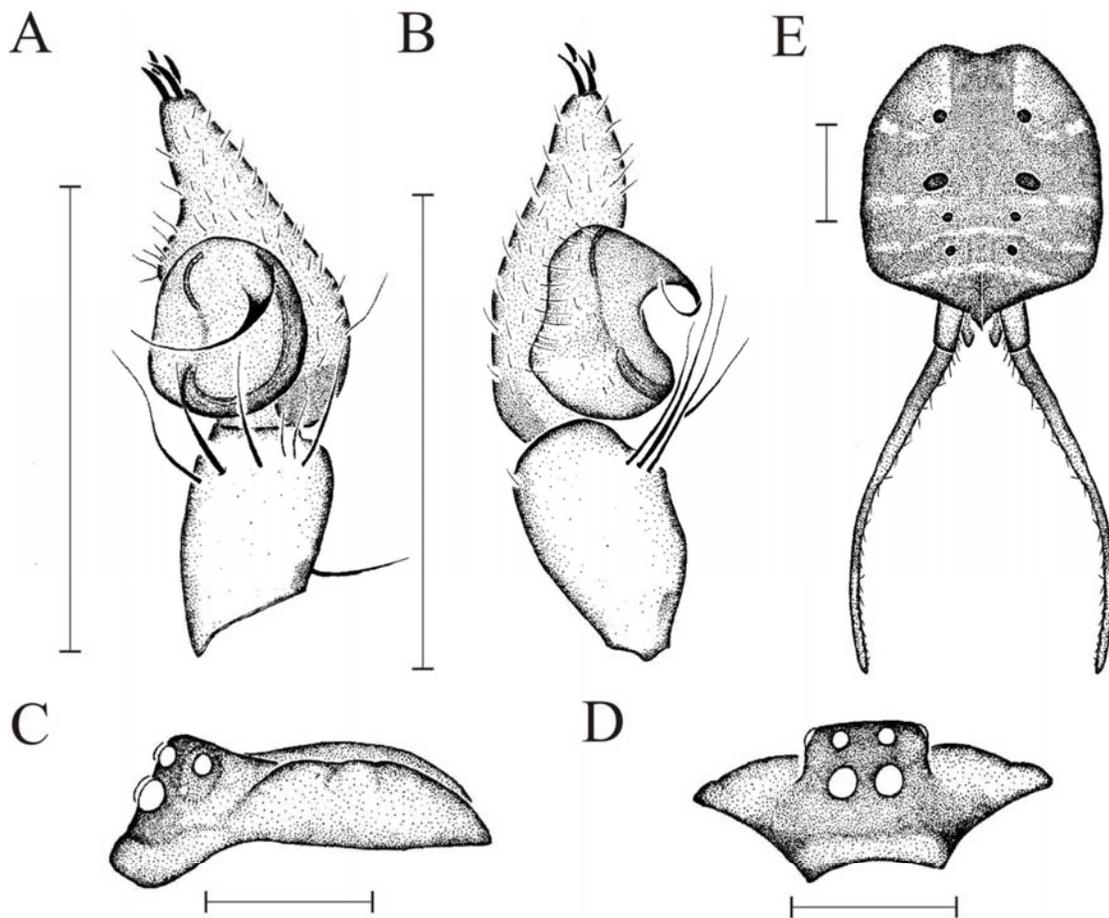
**Figure 7.** *Hersilia bubi* sp. nov. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Female abdomen dorsal view. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. c = copulatory duct; f = fertilization duct.



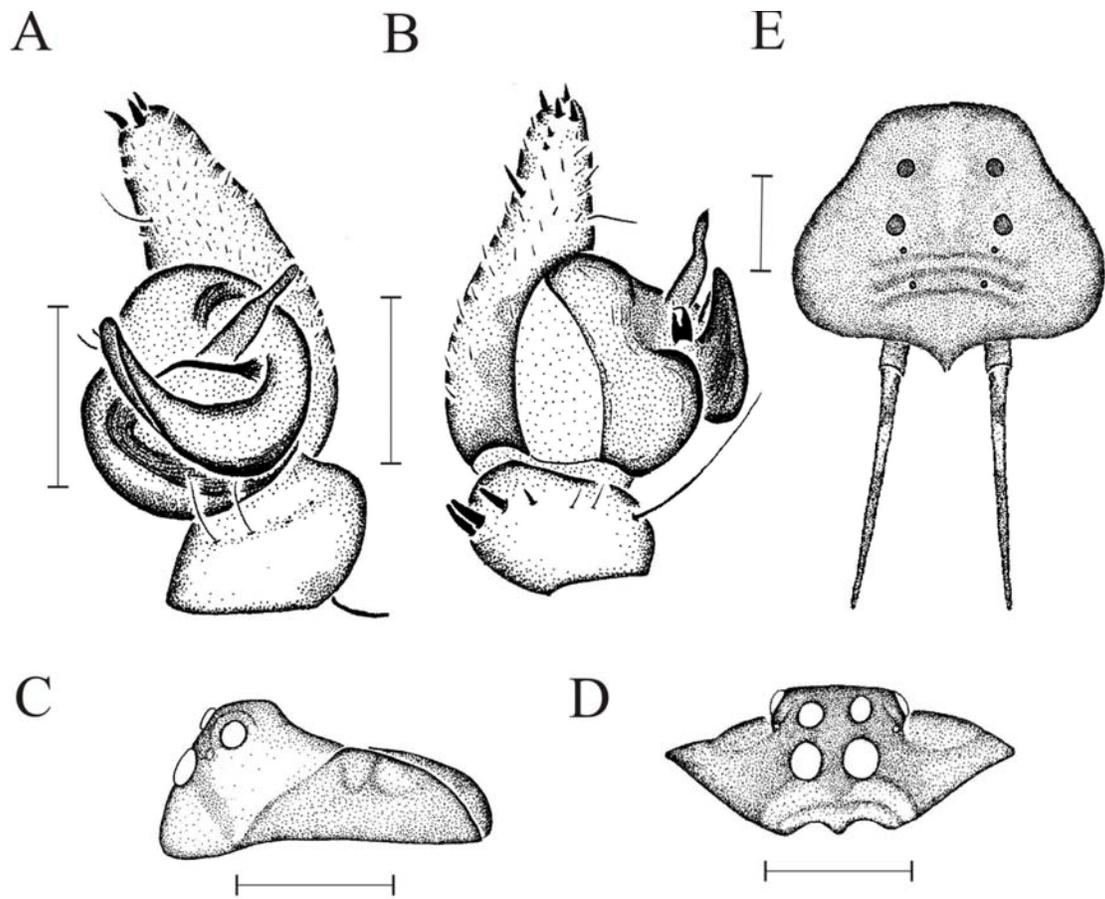
**Figure 8.** *Hersilia caronae* sp. nov. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Female abdomen dorsal view with spinnerets. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. Illustrations by SF.



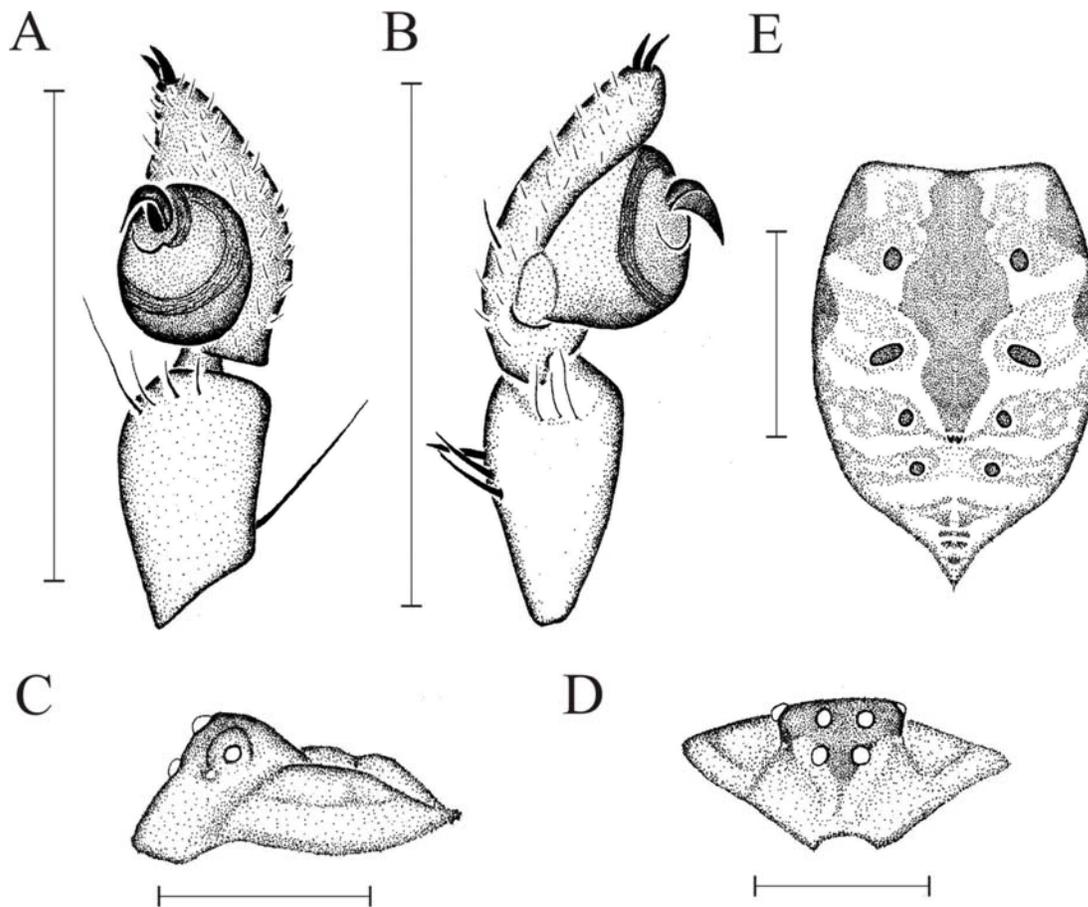
**Figure 9.** *Hersilia caudata* Audouin, 1826. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Female abdomen dorsal view with spinnerets. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. Illustrations by SF.



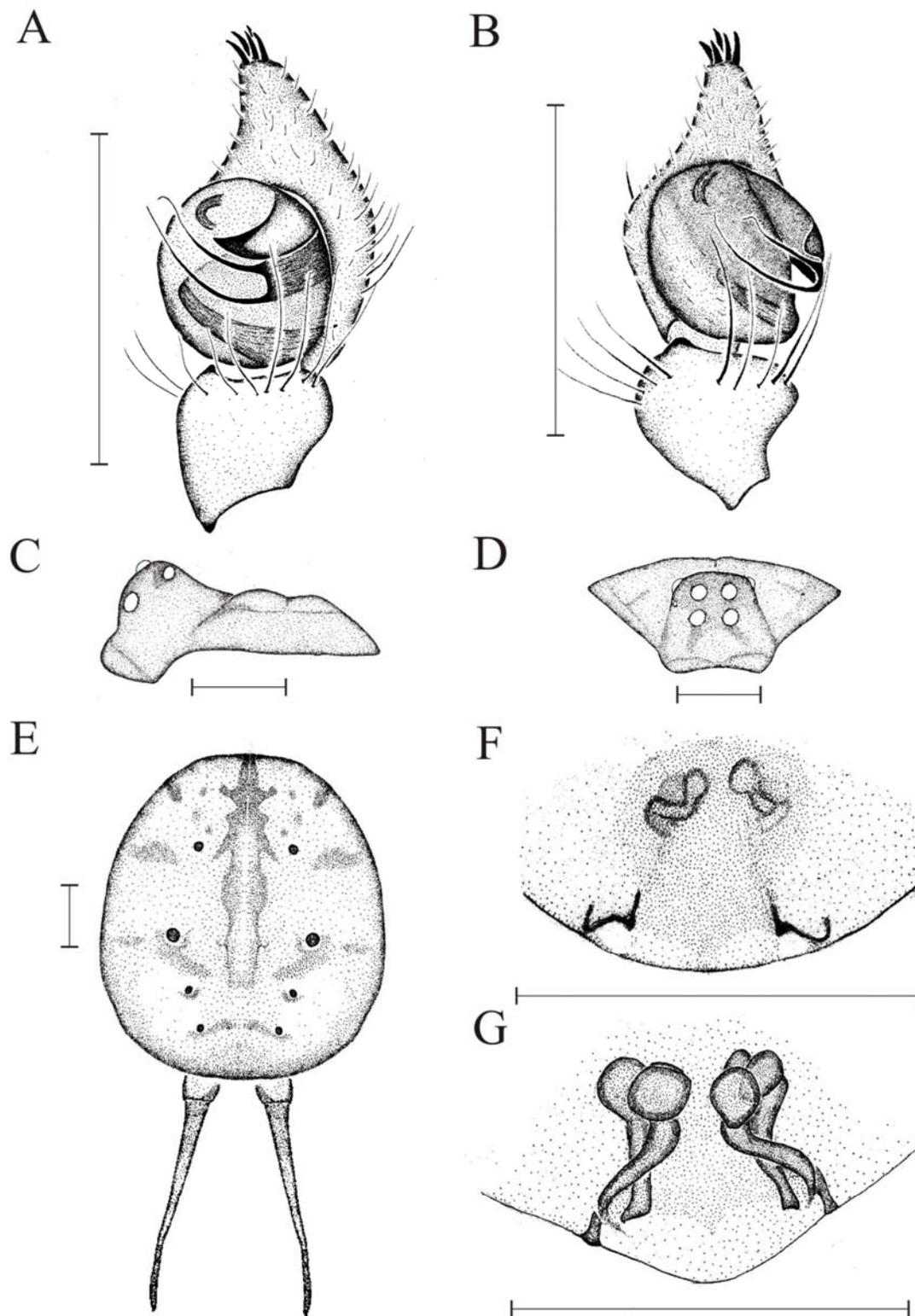
**Figure 10.** *Hersilia clarki* Benoit, 1967. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Male abdomen dorsal view with spinnerets. Illustrations by SF.



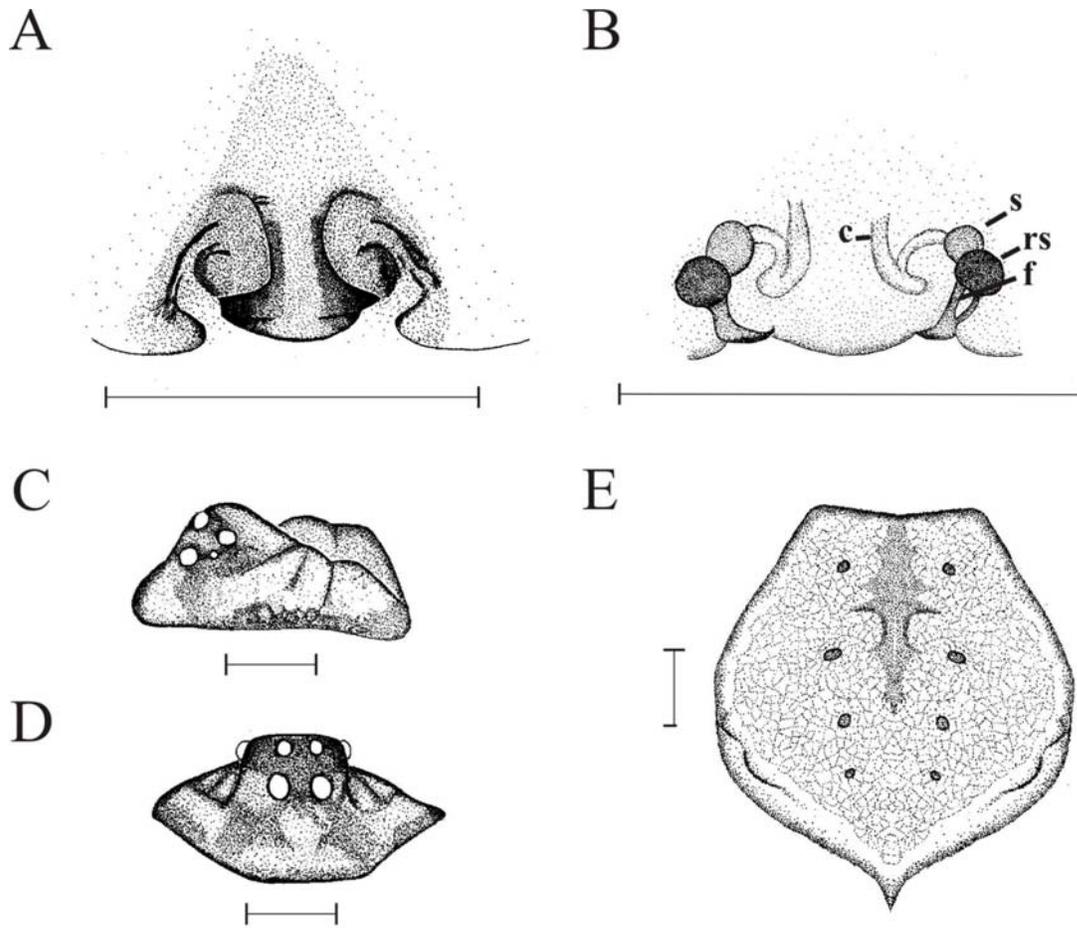
**Figure 11.** *Hersilia dilumen* sp. nov. **A.** Left palp ventral view. **B.** Left palp medial view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Male abdomen dorsal view with spinnerets. Illustrations by SF.



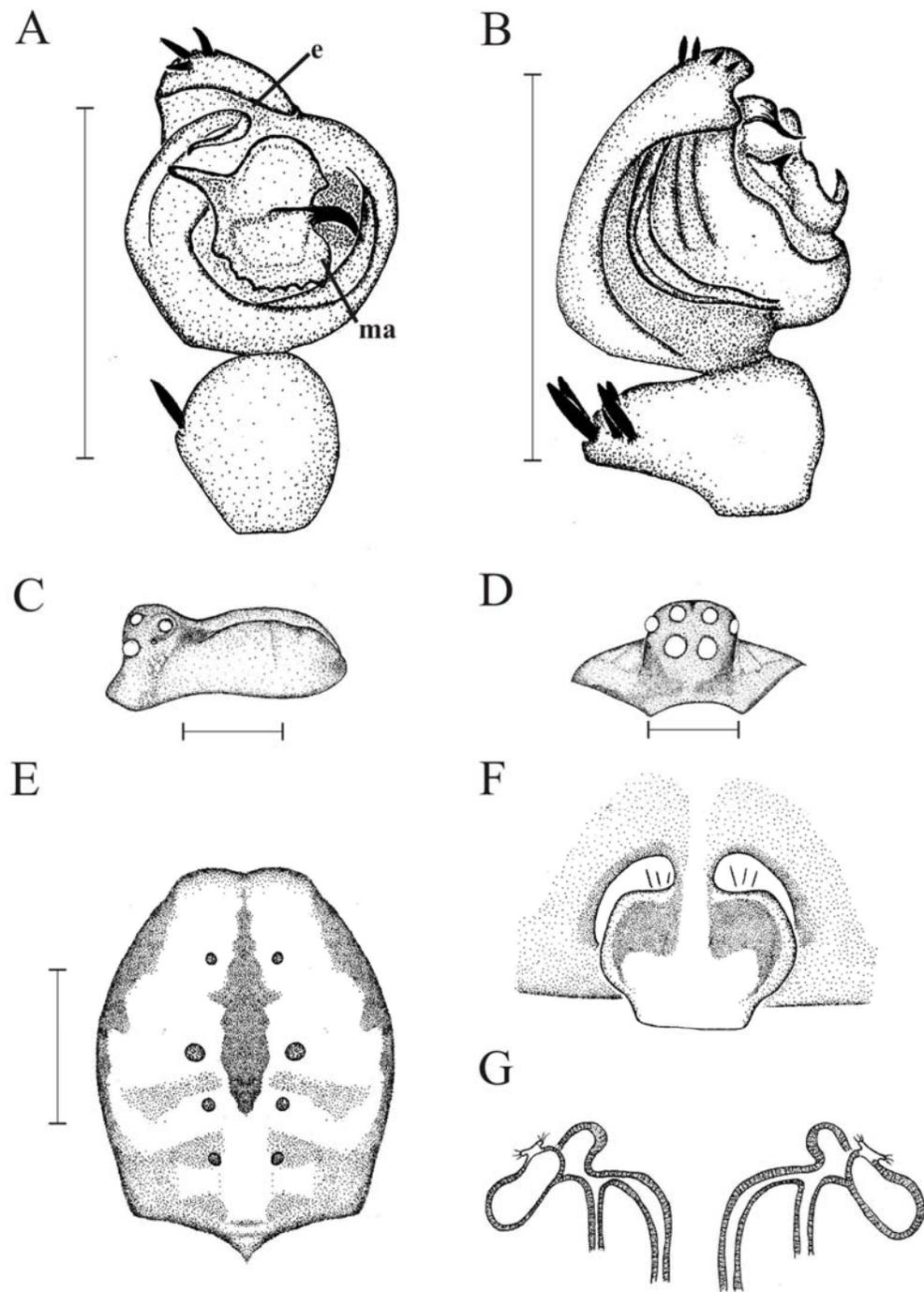
**Figure 12.** *Hersilia eloetsensis* sp. nov. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Male abdomen dorsal view. Illustrations by SF.



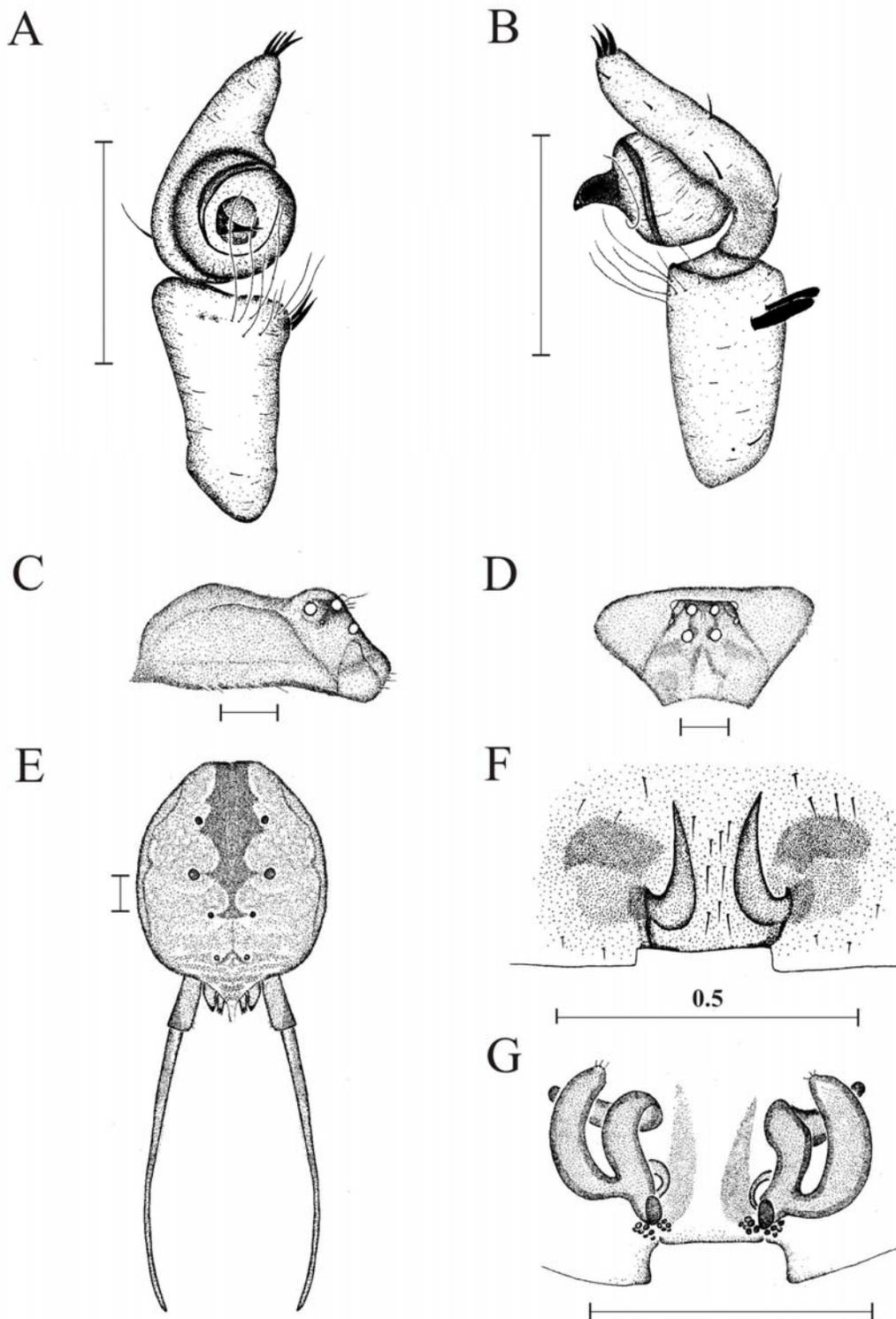
**Figure 13.** *Hersilia ferra* sp. nov. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view. **D.** Carapace anterior view. **E.** Female abdomen dorsal view. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. Illustrations by SF.



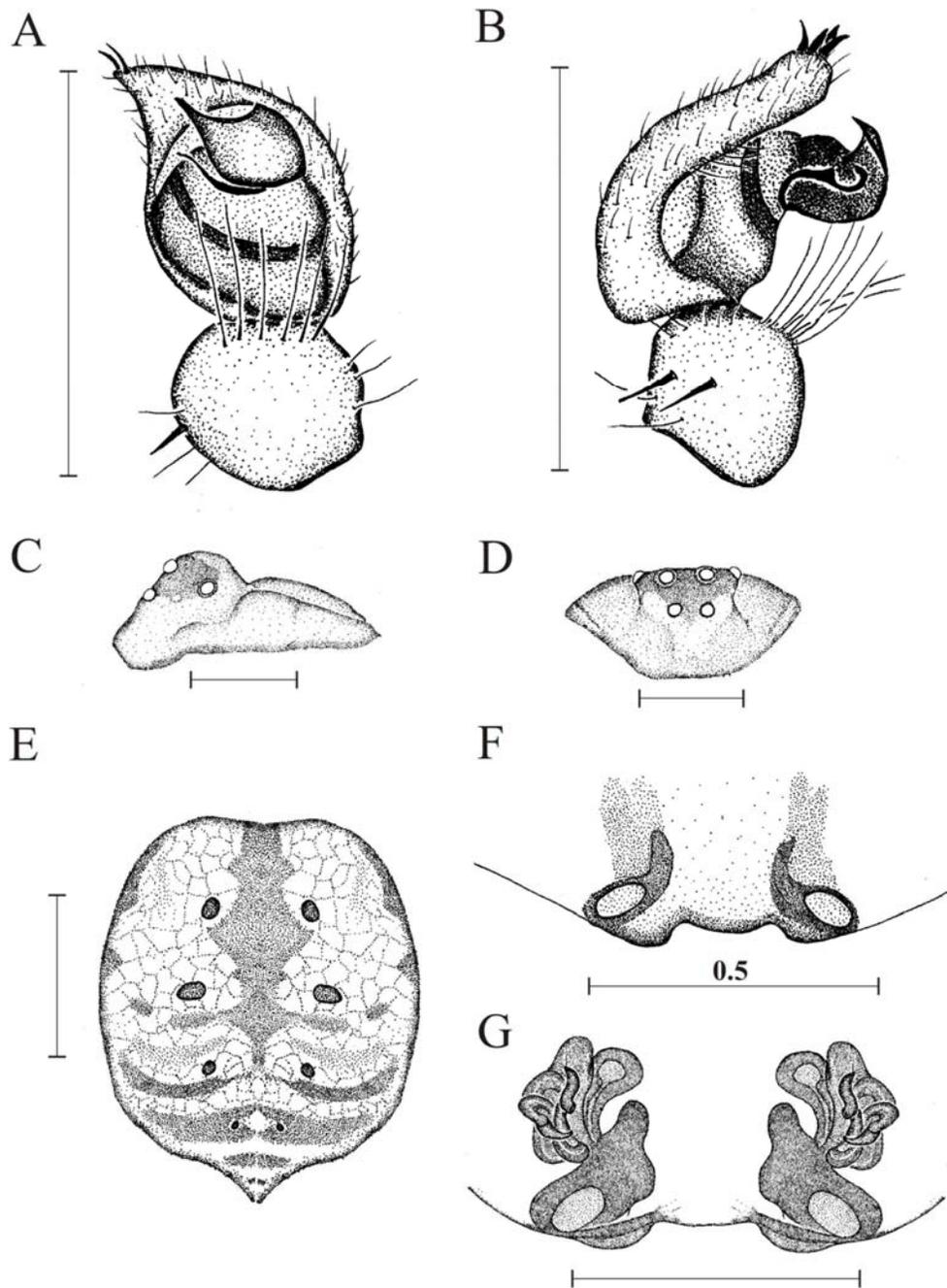
**Figure 14.** *Hersilia hildebrandti* Karsch, 1878. **A.** Epigyne ventral view. **B.** Epigyne dorsal view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Female abdomen dorsal view. Illustration by SF.



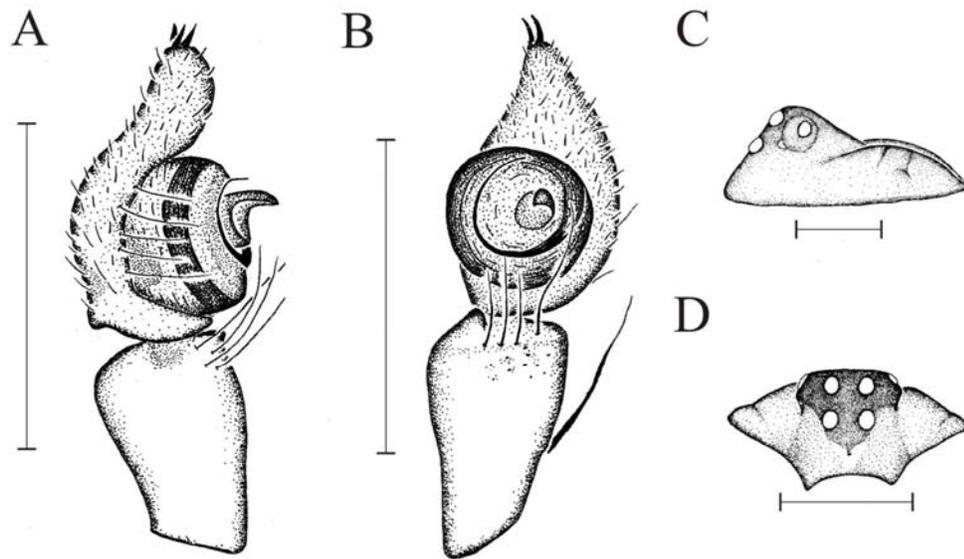
**Figure 15.** *Hersilia incompta* Benoit, 1971. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view. **D.** Carapace anterior view. **E.** Male abdomen dorsal view. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. e = embolus; ma = median apophysis. Illustrations by SF.



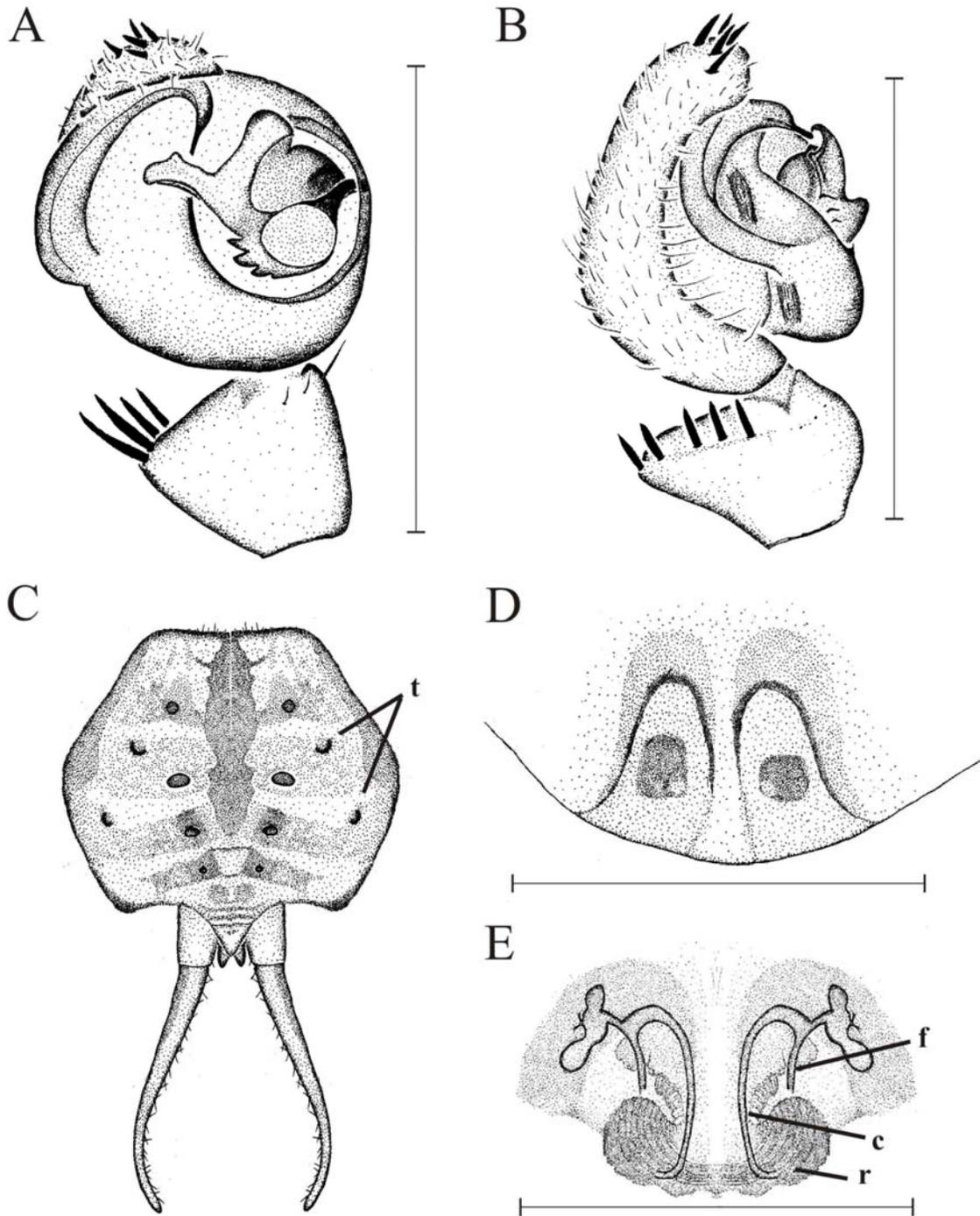
**Figure 16.** *Hersilia insulana* Strand, 1907. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Male abdomen dorsal view with spinnerets. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. Illustrations by SF.



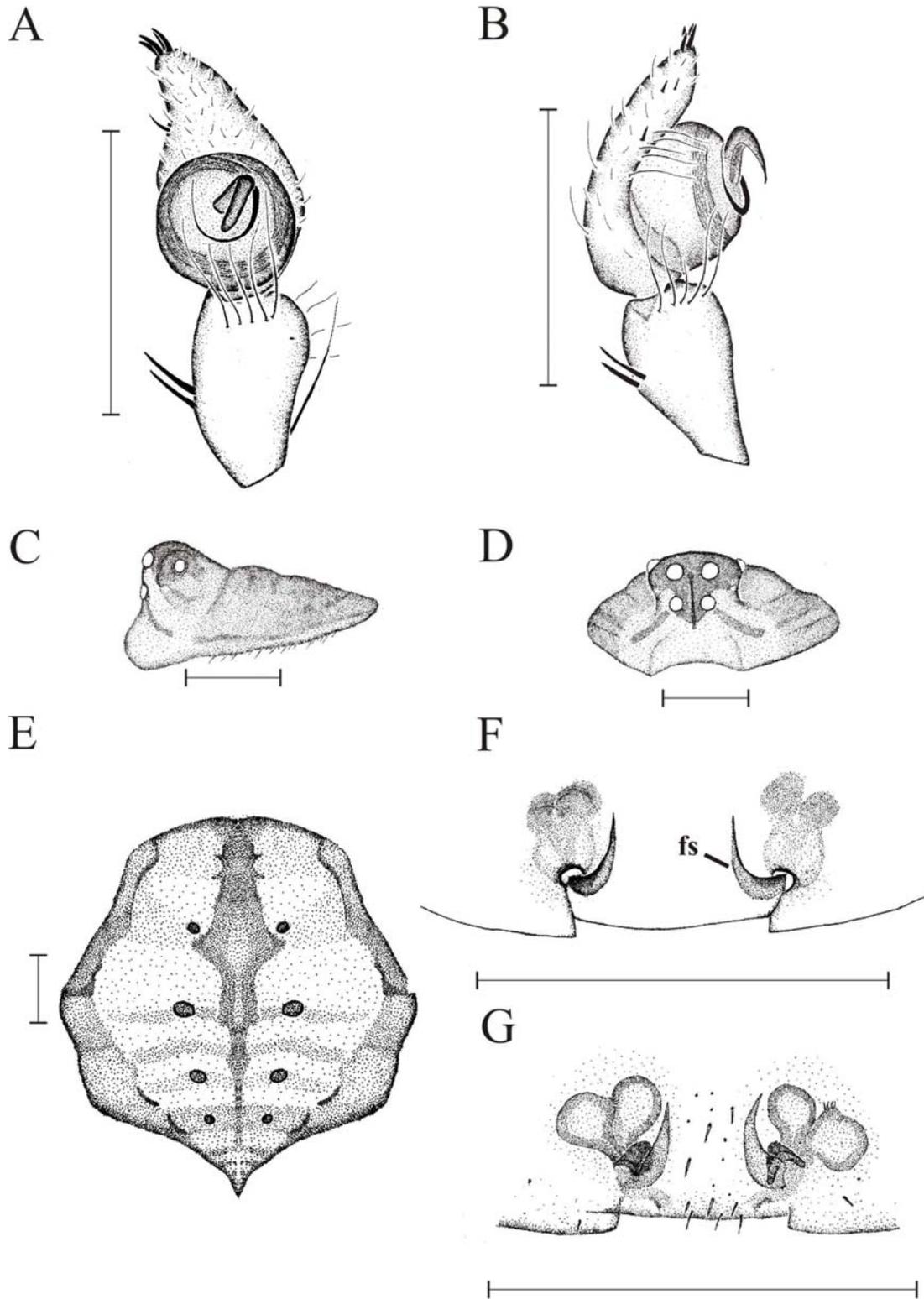
**Figure 17.** *Hersilia madagascariensis* (Wunderlich 2004). **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view. **D.** Carapace anterior view. **E.** Male abdomen dorsal view. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. Illustrations by SF.



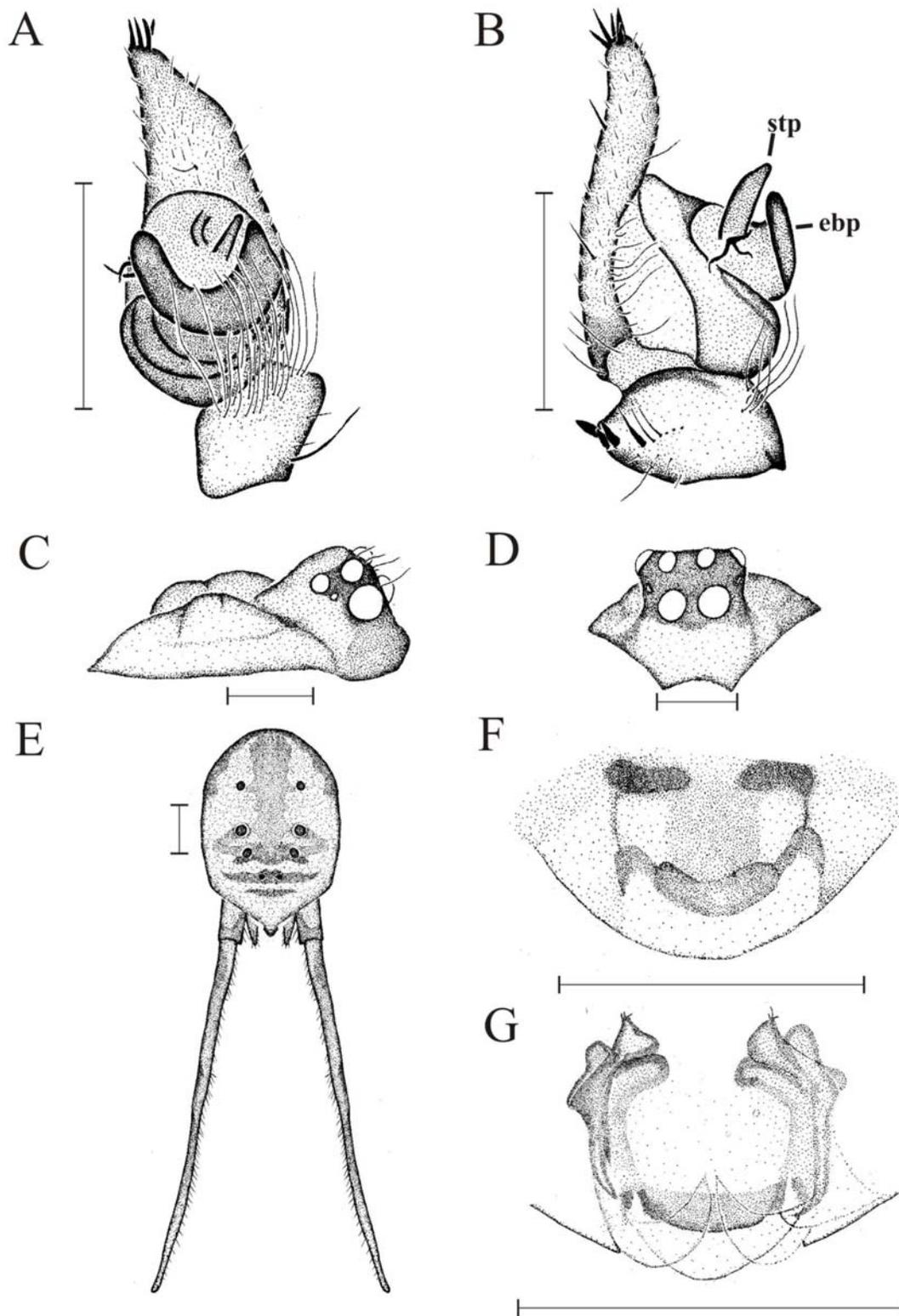
**Figure 18.** *Hersilia moheliensis* sp. nov. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view **D.** Carapace anterior view. Illustrations by SF.



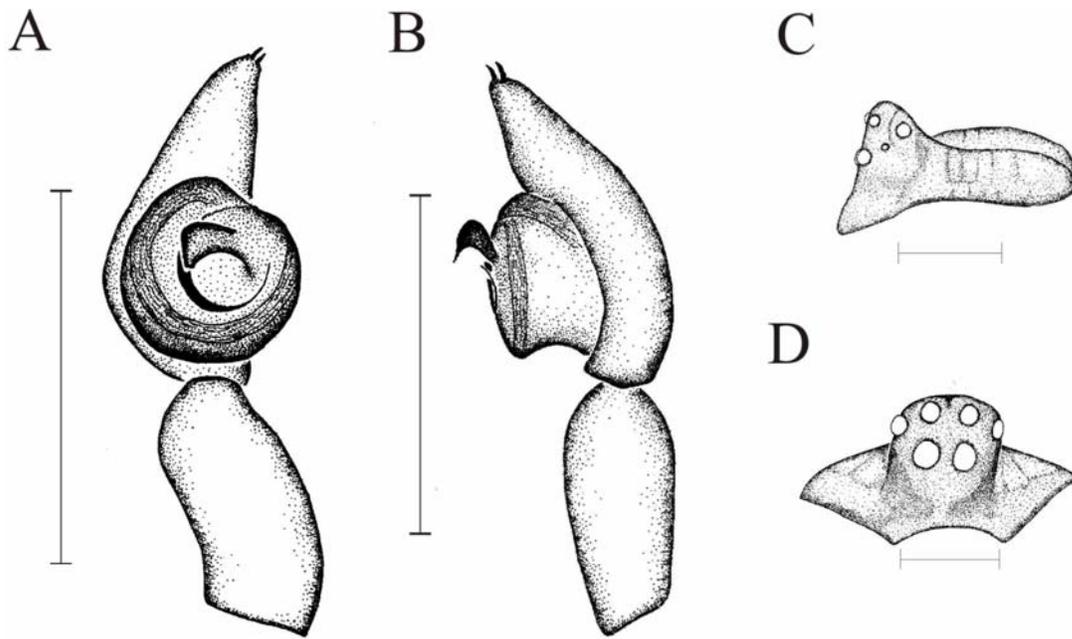
**Figure 19.** *Hersilia nicolae* sp. nov. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Female abdomen dorsal view with spinnerets . **D.** Epigyne ventral view. **E.** Epigyne dorsal view; c = copulatory duct; f = fertilization duct; r = ruffles; t = tubercle.. Illustrations by SF.



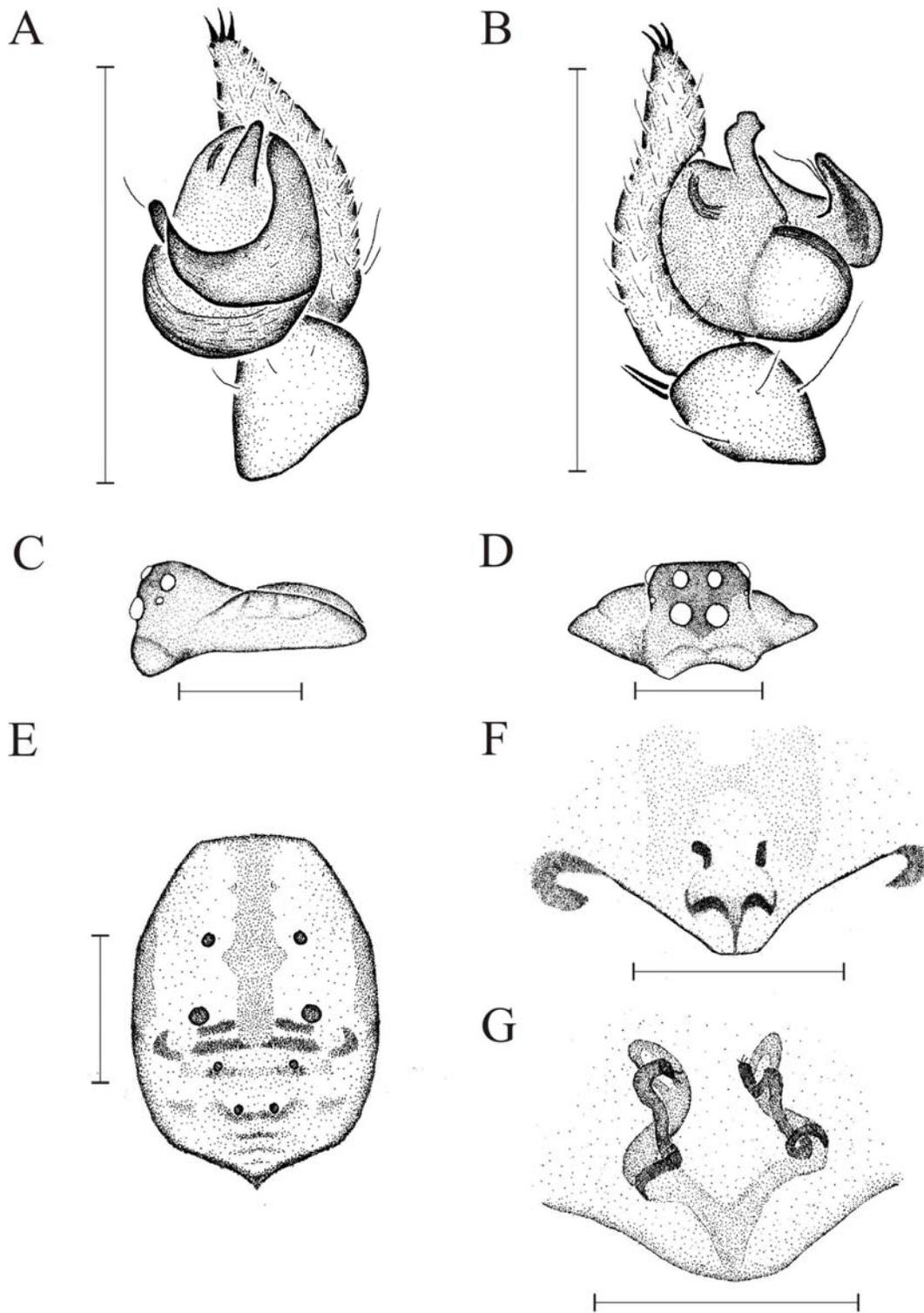
**Figure 20.** *Hersilia occidentalis* Simon, 1907. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Male abdomen dorsal view. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. fs = fixing structure.



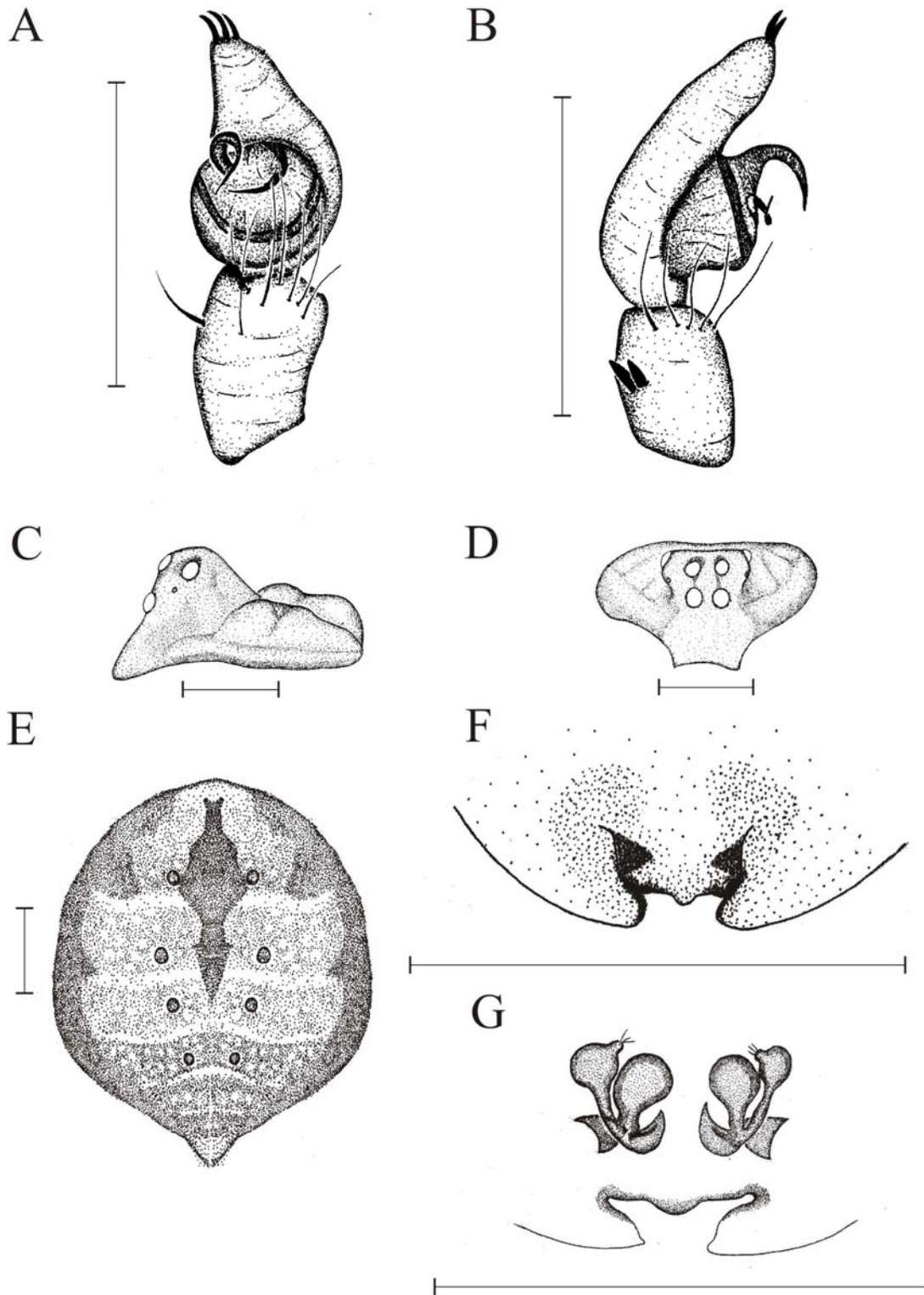
**Figure 21.** *Hersilia plara* sp. nov. **A.** Left palp ventral view. **B.** Left palp medial view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Male abdomen dorsal view with spinnerets. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. ebp = basal embolar process.



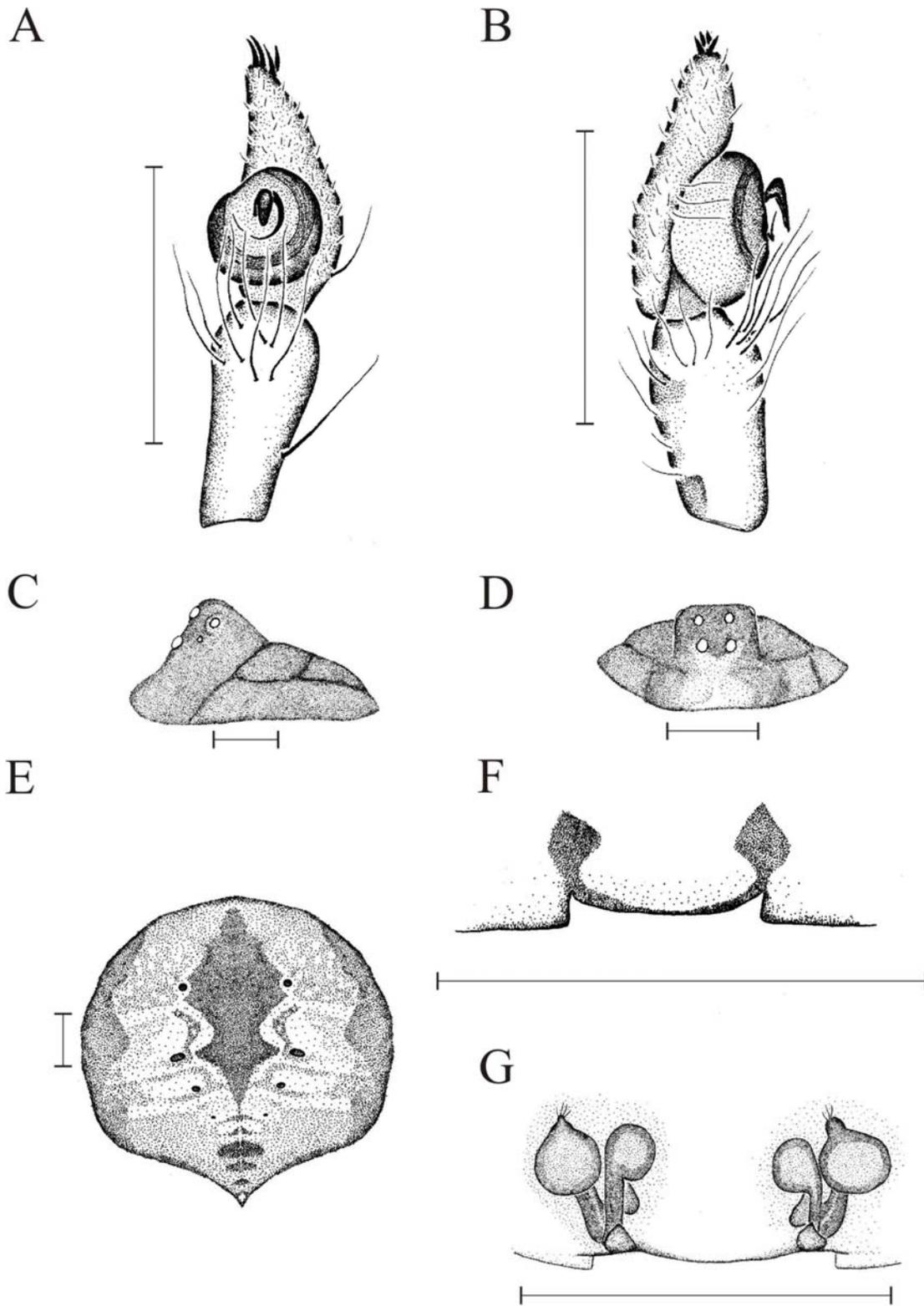
**Figure 22.** *Hersilia pungwensis* Tucker, 1920. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view **D.** Carapace anterior view. Illustration by SF.



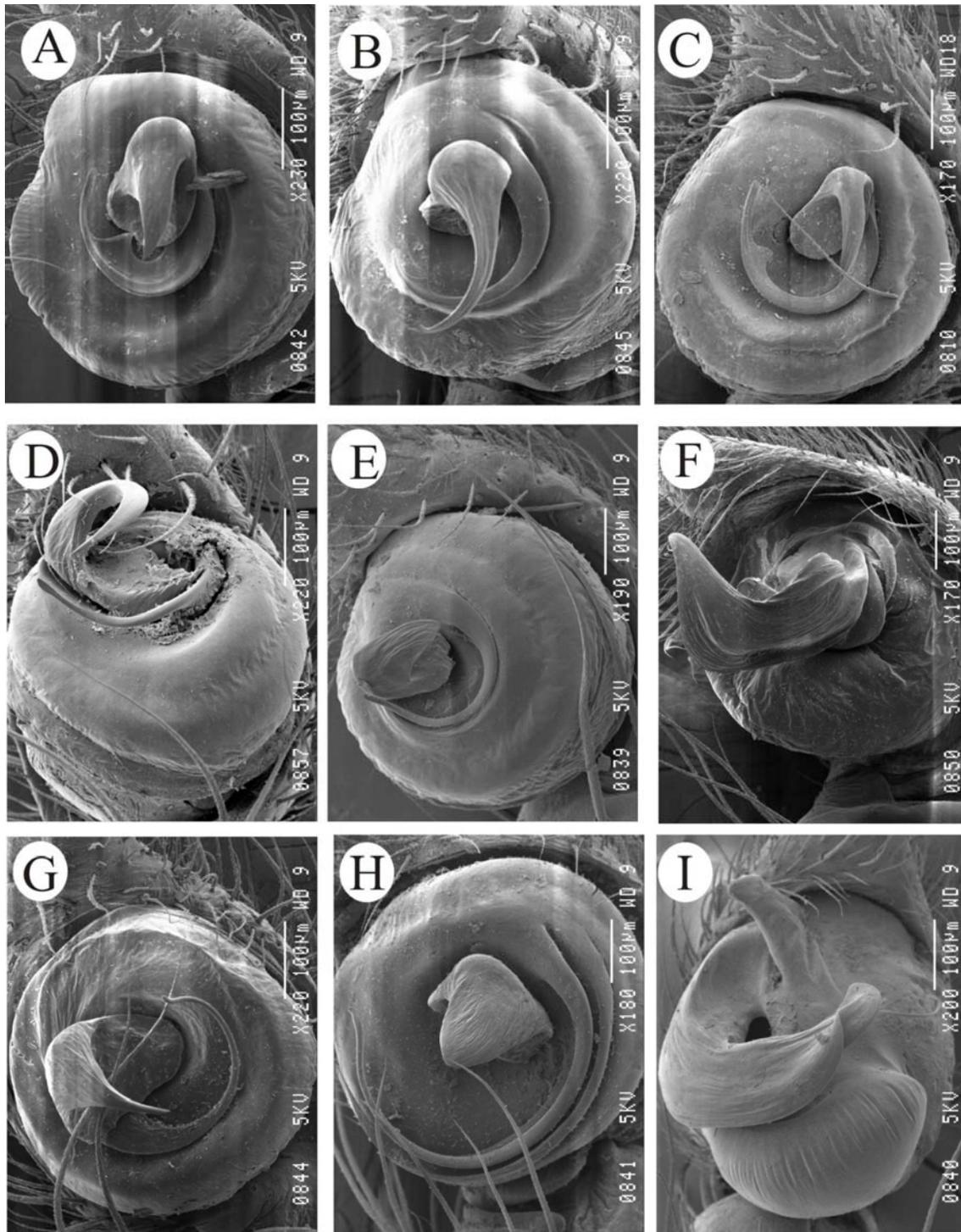
**Figure 23.** *Hersilia salda* sp. nov. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Male abdomen dorsal view. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. Illustration by SF.



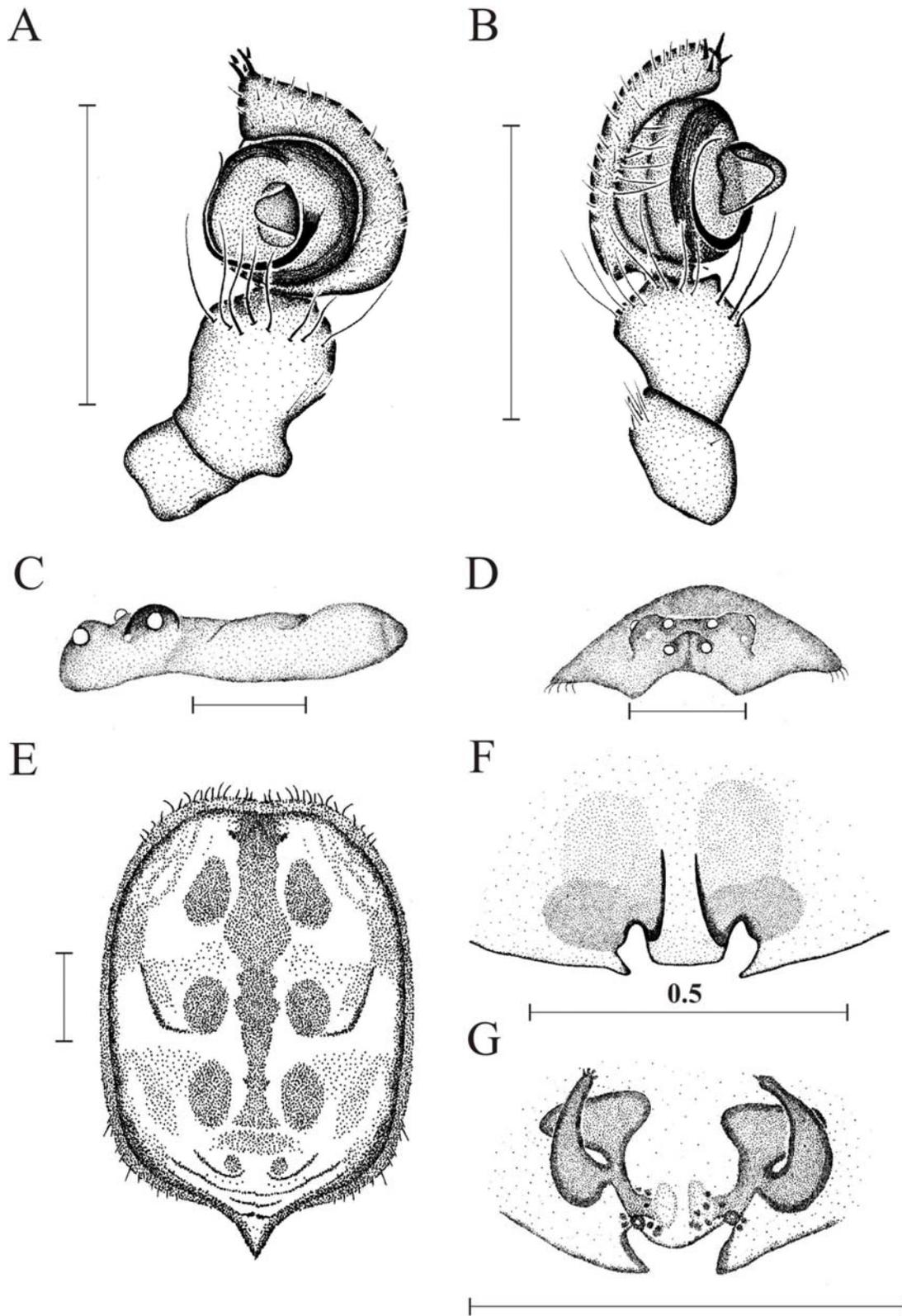
**Figure 24.** *Hersilia sericea* (Pocock 1898). **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view. **D.** Carapace anterior view. **E.** Female abdomen dorsal view. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. Illustration by SF.



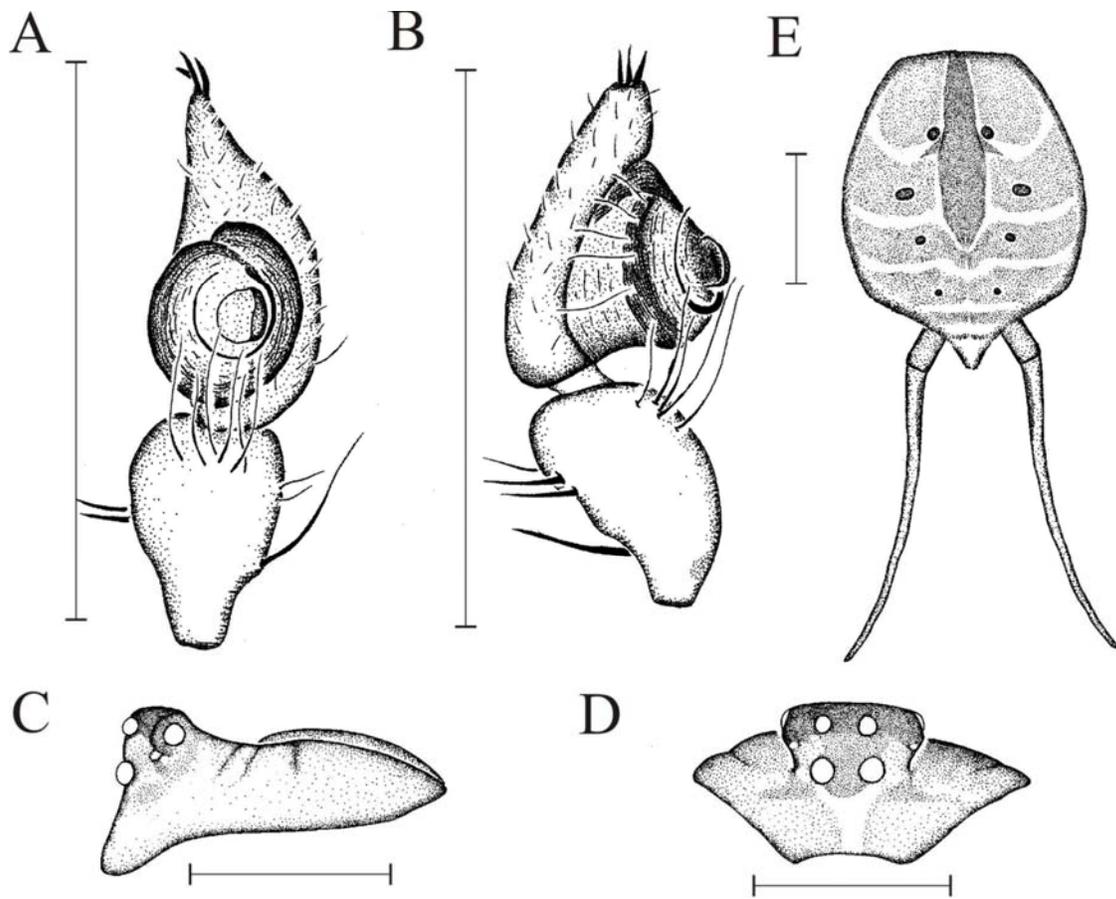
**Figure 25.** *Hersilia setifrons* Lawrence, 1928. **A.** Left palp ventral view. **B.** Left palp prolateral view. Cephalothorax. **C.** Cephalothorax lateral view. **D.** Carapace anterior view. **E.** Abdomen dorsal view. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. Illustration by SF.



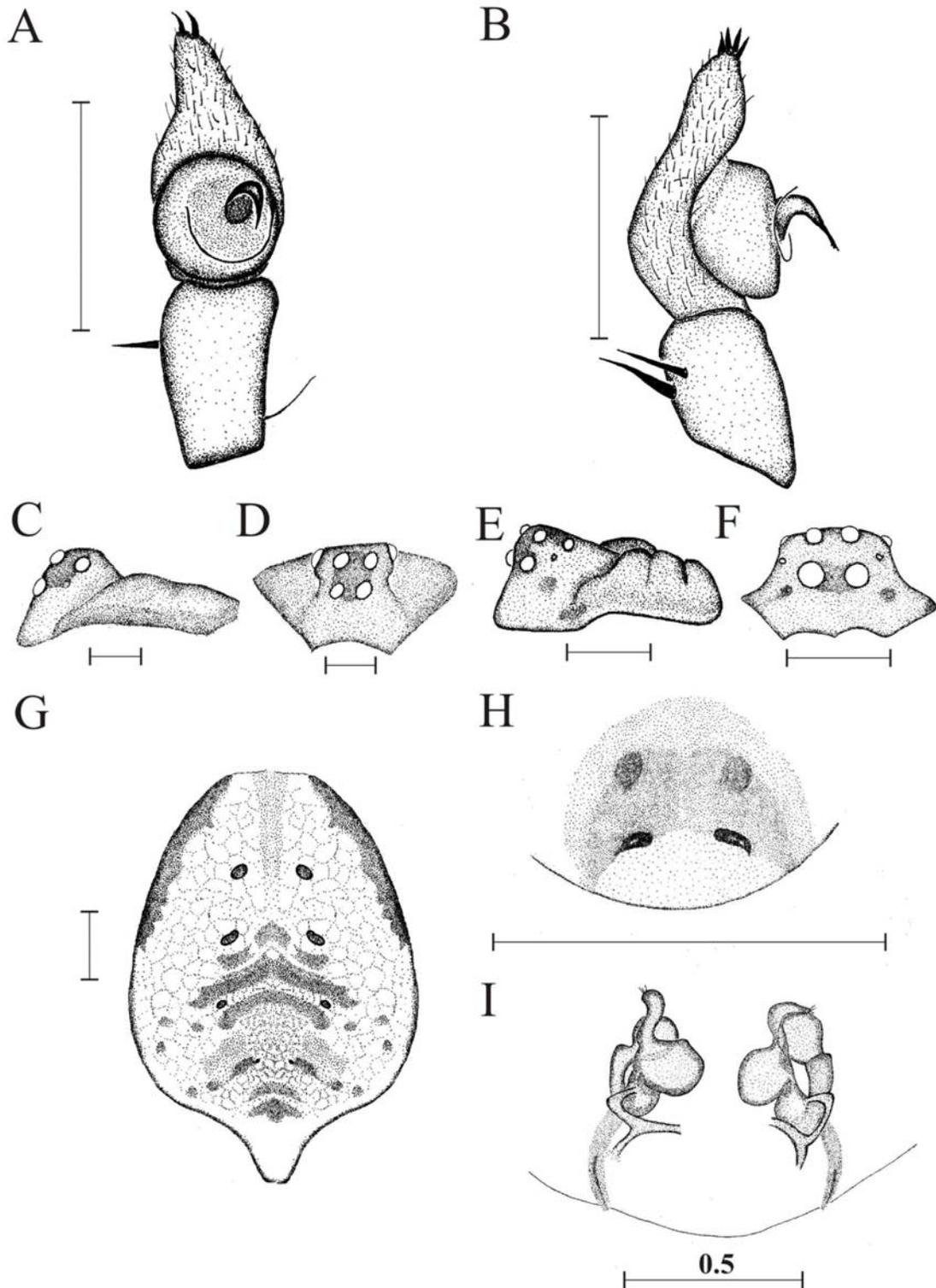
**Figure 26.** Left palps of males *Hersilia*. **A.** *H. albicomis* from Oguta Lake, Nigeria, **B.** *H. caudata* from Fogo island, Cape Verde, **C.** *H. occidentalis* from Butar, Rwanda, **D.** *H. sericea* from Pretoria, South Africa, **E.** *H. setifrons*. from Nylsvlei, South Africa, **F.** *H. madagascariensis* (Wunderlich) from Ranomfana, Fianarantsoa Province, Madagascar, **G.** *H. caronae*, right palp of male from Aldabra Island Group, Malabar Island, **H.** *H. sigillata*, male from District, Masindi, Budongo Forest, near Sonso, Uganda, **I.** *H. salda* from Shimba Hills Natur Reserve, Kenya.



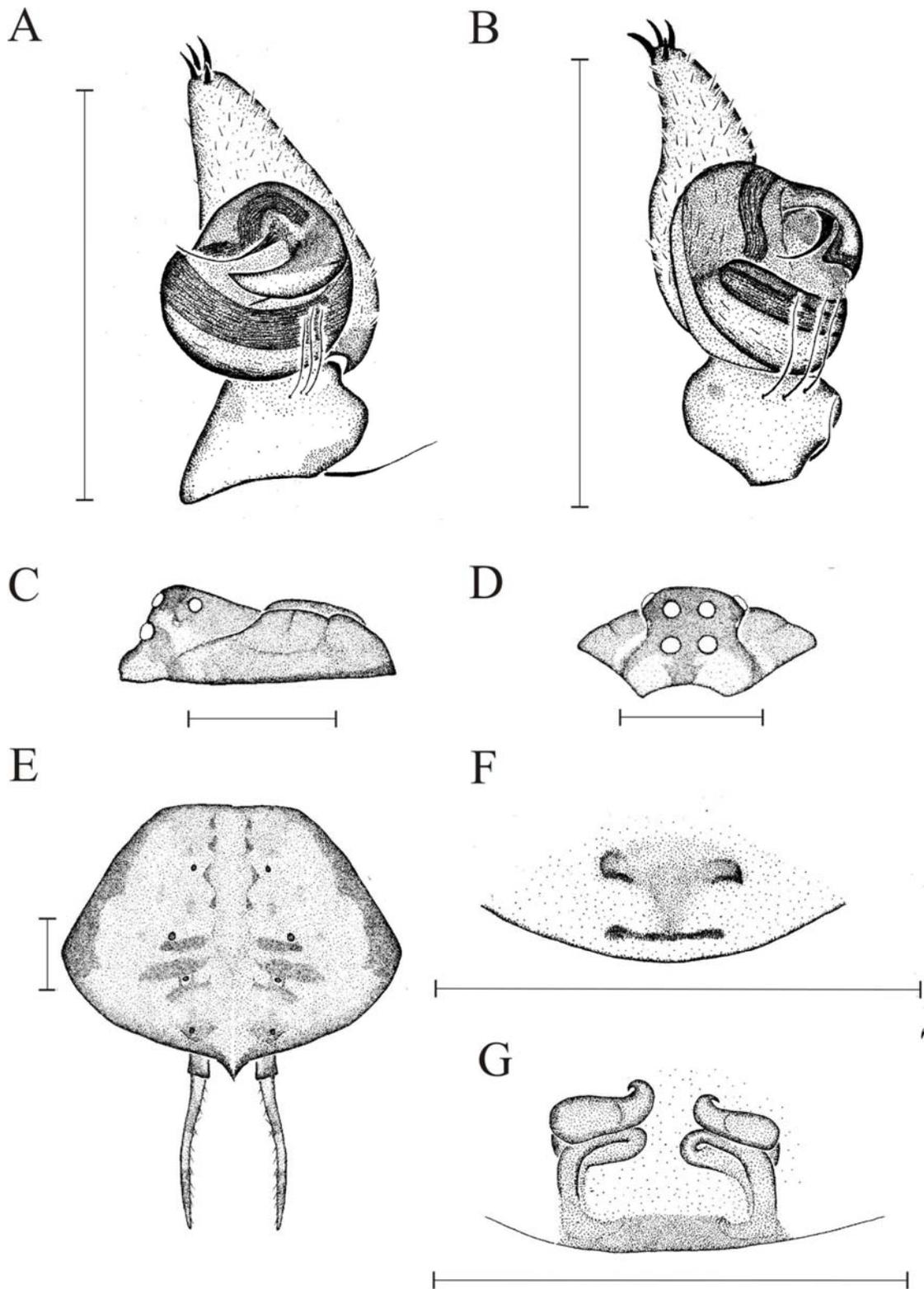
**Figure 27.** *Hersilia sigillata* Benoit, 1967. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view. **D.** Carapace anterior view. **E.** Female abdomen dorsal view. **F.** Epigyne ventral view. **G.** Epigyne dorsal view..



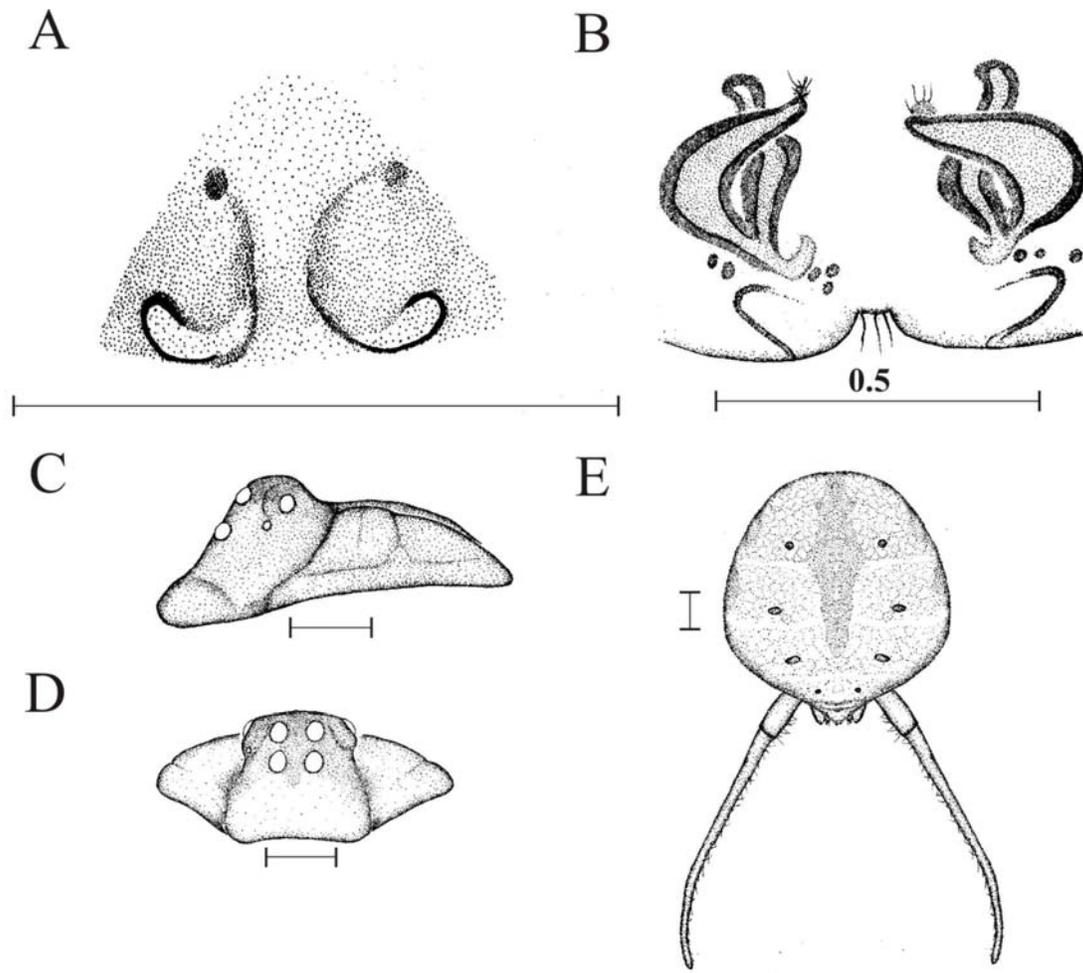
**Figure 28.** *Hersilia taita* sp. nov. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Male abdomen dorsal view. Illustrations by SF.



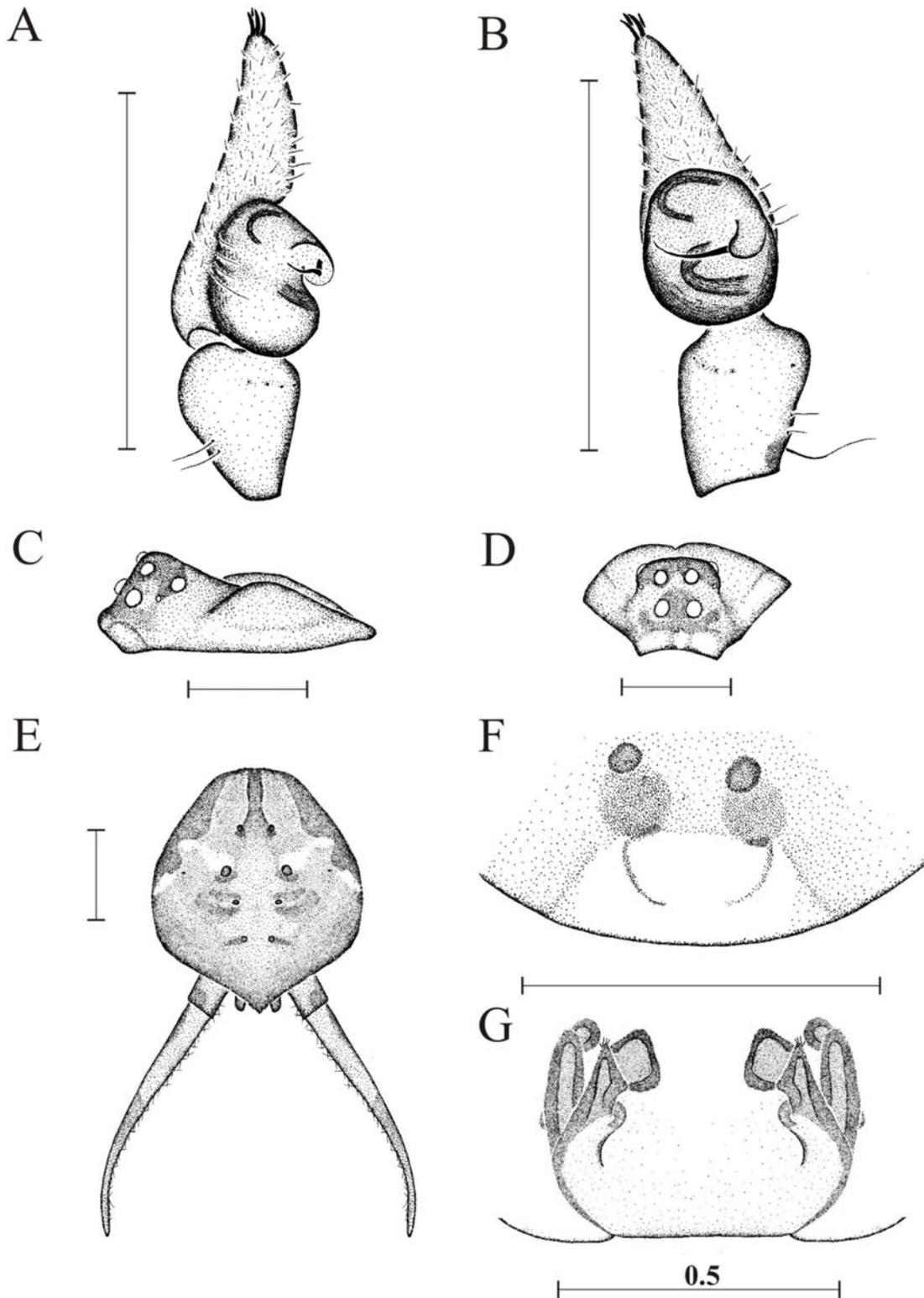
**Figure 29.** *Hersilia tamatavensis* sp. nov. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view **D.** Carapace anterior view. *Hersilia unca* sp. nov. **E.** Epigyne ventral view. **F.** Epigyne dorsal view. **G.** Carapace lateral view **H.** Carapace anterior view. **I.** Abdomen dorsal view. Illustration by SF.



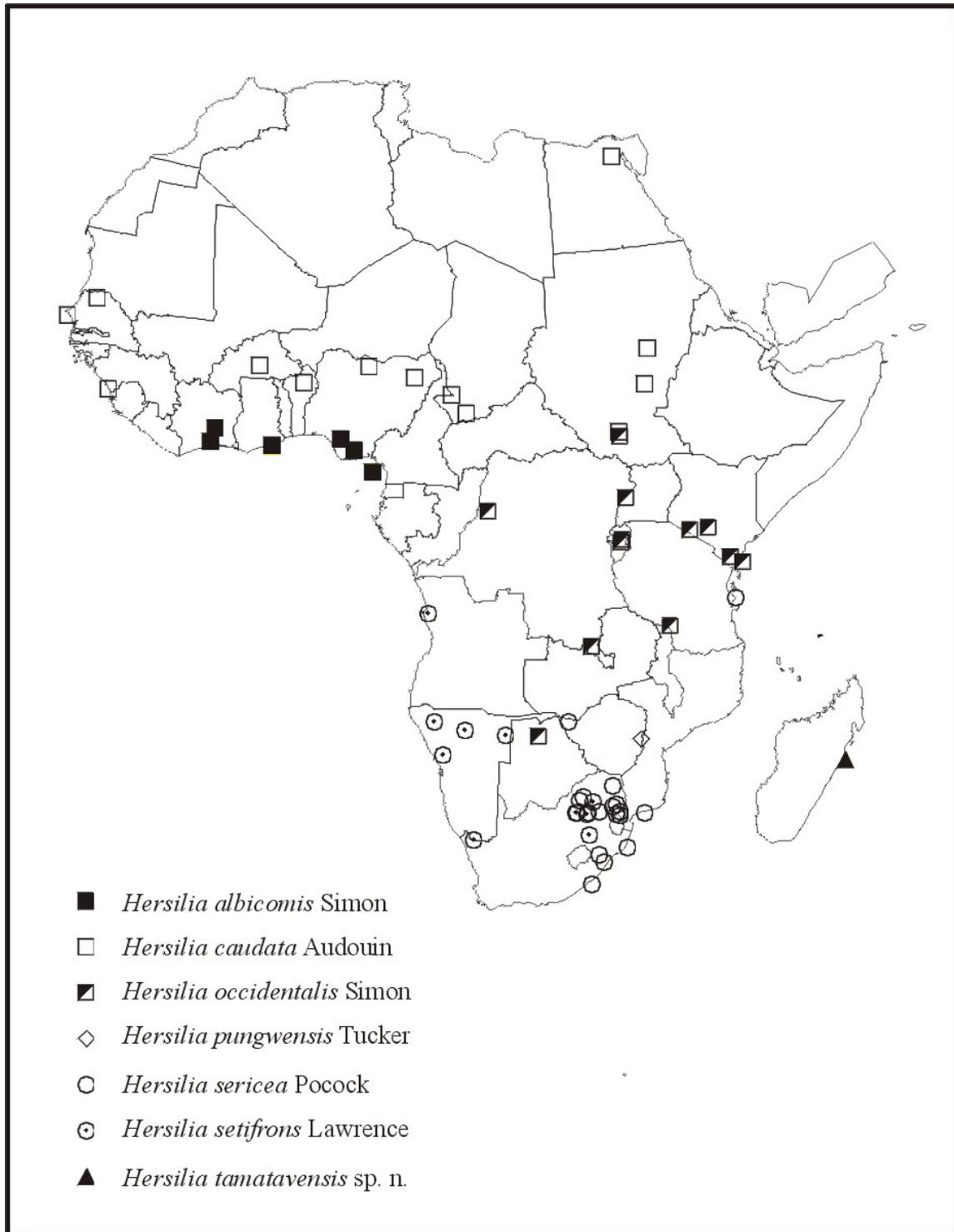
**Figure 30.** *Hersilia vanmoli* Benoit, 1971. Palp. **A.** Left palp ventral view. **B.** Left palp medial view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Male abdomen dorsal view with spinneret **F.** Epigyne ventral view. **G.** Epigyne dorsal view. Illustration by SF



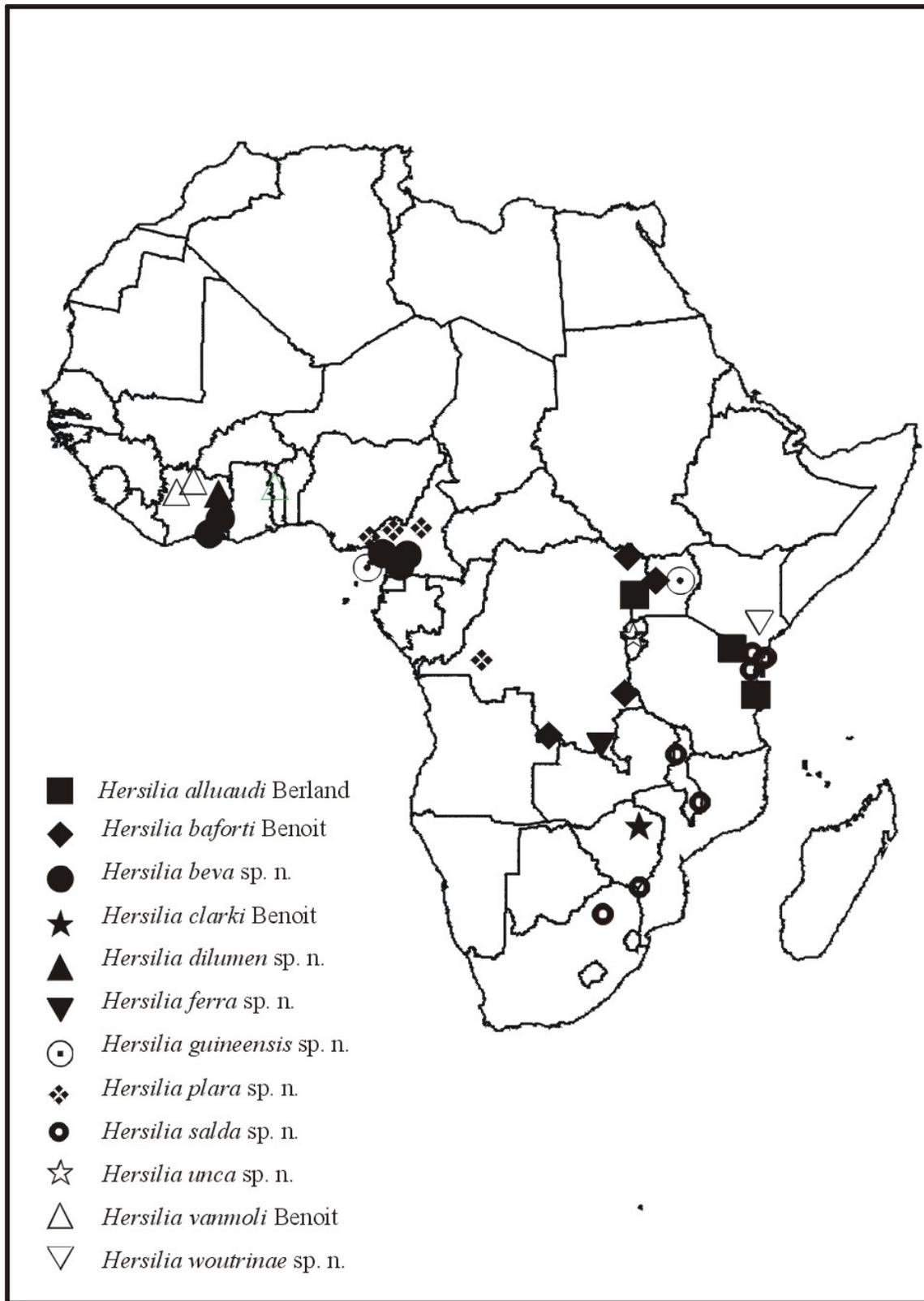
**Figure 31.** *Hersilia vinsoni*, Lucas, 1869. **A.** Epigyne ventral view. **B.** Epigyne dorsal view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Female abdomen dorsal view with spinnerets.. Illustration by SF



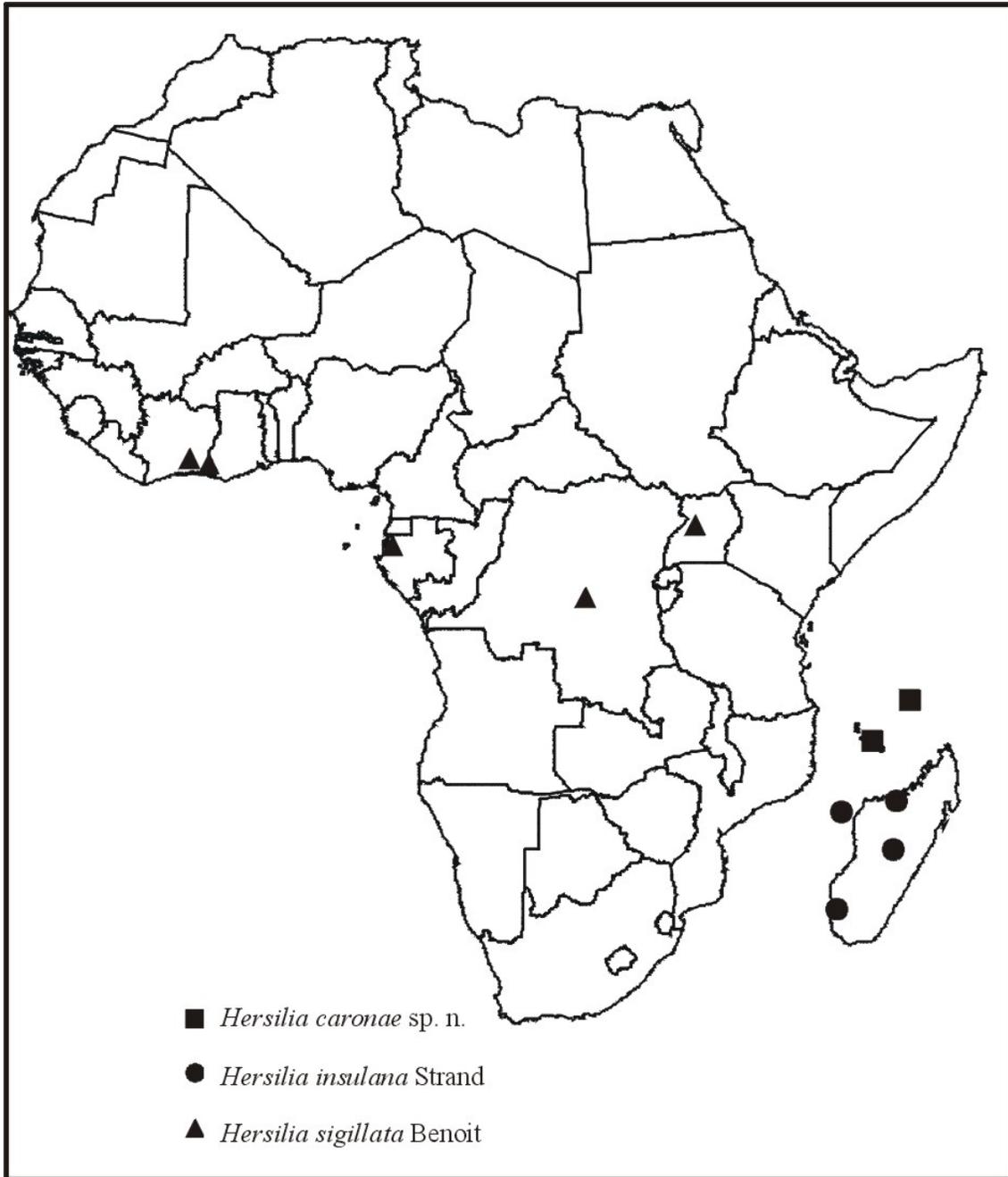
**Figure 32.** *Hersilia woutrinae* sp. nov. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Female abdomen dorsal view. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. Illustration by SF.



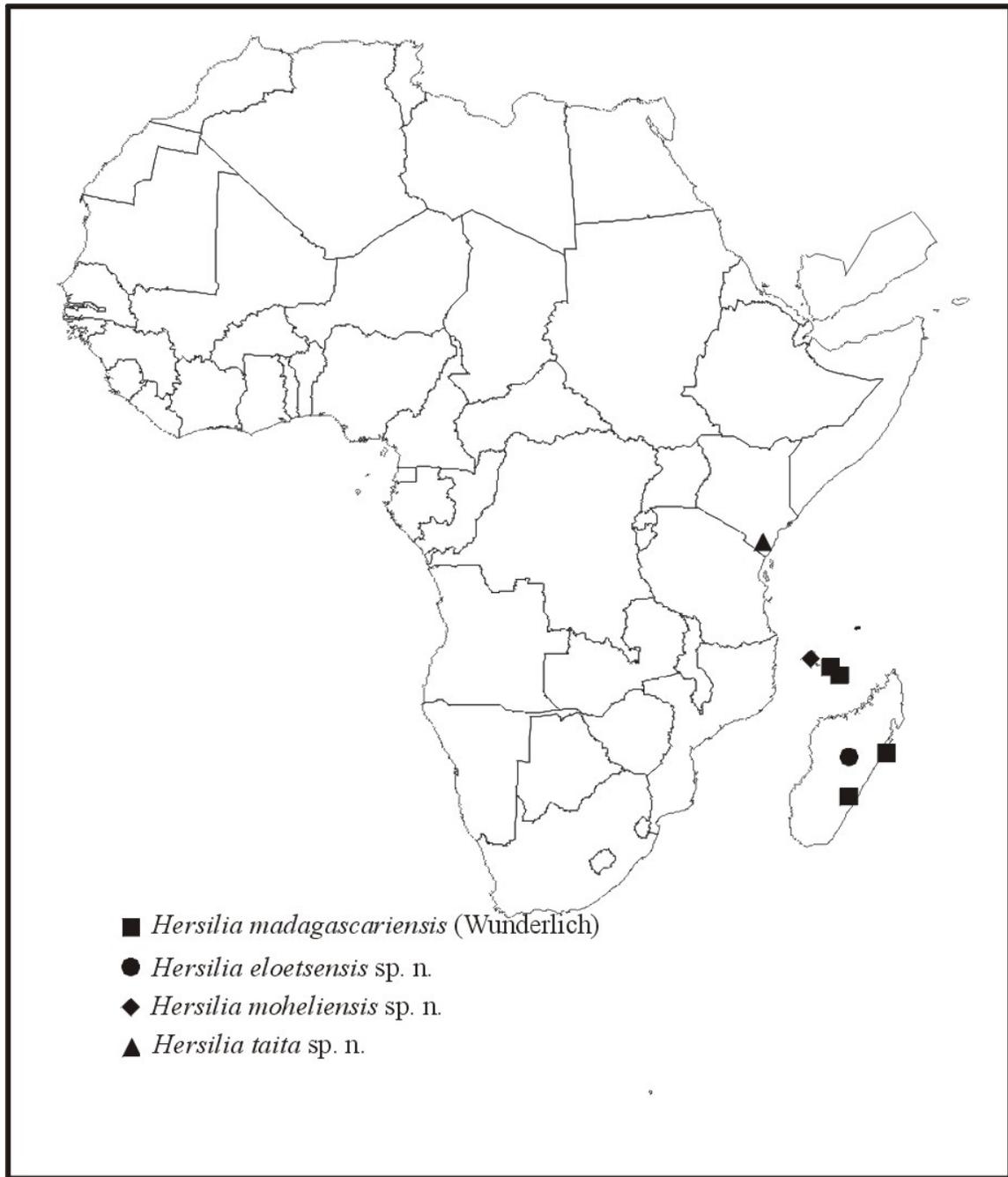
**Figure 33.** Distribution map of *Hersilia caudata* species group.



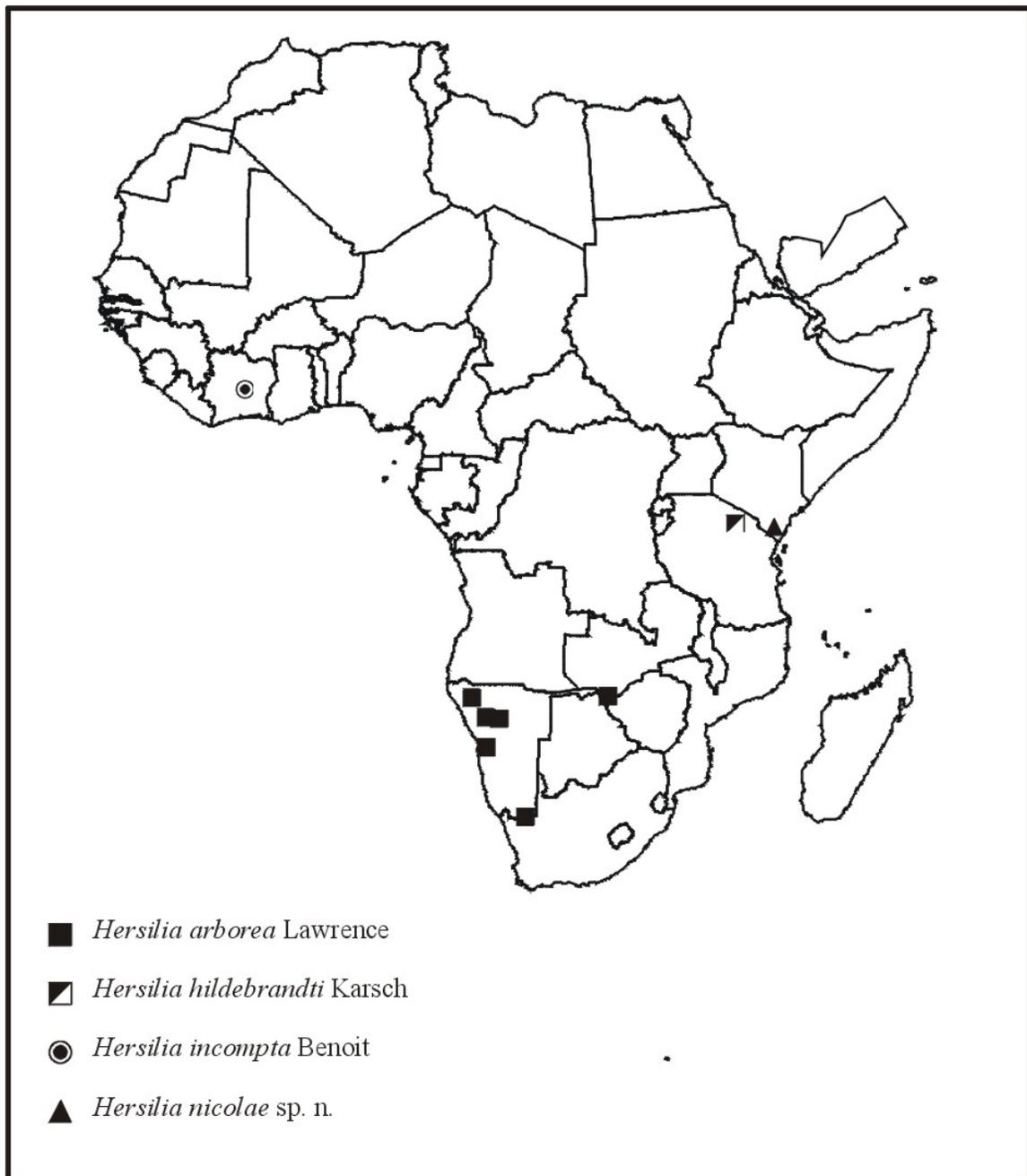
**Figure 34.** Distribution map for Afrotropical species of *Hersilia baforti* species group.



**Figure 35.** Distribution map for Afrotropical species of *Hersilia sigillata* species group.



**Figure 36.** Distribution map for Afrotropical species of *Hersilia madagascariensis* species group.



**Figure 37.** Distribution map for Afrotropical species of *Hersilia incompta* species group and *Hersilia arborea*.

## 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 redescrptions 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 stereomicroscope Zeiss 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 Academy 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 Africa; TMP – 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 uniaarticulate 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,  $>6 \times$  ocular area length,  $1.54 - 1.82 \times$  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,  $0.42 \times$  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  $<1.5 \times$  length of basal segment. Legs: leg IV longest; leg III  $>0.5 \times$  length of leg I; metatarsus I  $<4 \times$  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 large, 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  $0.46 \times$  carapace width; tS  $0.74 \times$  bS. Legs: leg ratio: 1: 1.02: 0.6: 1.21; metatarsus I,  $2.64 \times$  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 (3°E 30°05'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  $0.69 \times$  carapace width; tS  $1.27 \times$  bS. Legs: leg ratio: 1: 1.15: 0.7: 1.19; metatarsus I  $2.42 \times$  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 anterior narrowing (Fig. 3f); copulatory duct elongate, regularly coiled; Spermathecae large; seminal receptacle small; 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,  $1.4 \times$  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 (30°N 8° 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 (15°7'N 23°31'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),  $0.83 \times \text{MOQL}$ ; eye ratio: 1: 0.5: 0.81: 1. Abdomen: faint impression of four dorsal sigilla; posterior lateral spinnerets  $0.73 \times$

carapace width; tS  $0.64 \times$  bS. Legs: leg ratio: I: 1.13: 0.6: 1.15; metatarsus I  $2 \times$  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, São 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 ( $<0.4 \times$  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  $1.3 \times$ . 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 homoplastic 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  $0.5 \times$  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 seen 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  $< 3 \times$  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 ventrally 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)..... | <i>T. taris</i> sp.n.       |
| —  | Crescent-shaped ridge absent between copulatory openings; copulatory ducts with medial bend (Fig. 7a,b) (Namibia).....        | <i>T. bicava</i> (Smithers) |
| 4. | Atrium elongate; projecting rim present anterior 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 (33°47'S 20°07'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 receptacle 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, (32°28'S19°16'E), 1 female, 10.iii.1993, J. Henschel (NCA 93/274); Karoo National Park, 10 km N of Beaufort West, 3500 feet, (32°18'S 22°33'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 holotype, South Africa: Western Cape Province: Poortjiesfontein (29°38'S 26°01'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 anteriorly 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  $0.51 \times$  abdomen,  $0.65 \times$  carapace width; tS  $1.25 \times$  bS. Legs: leg ratio: 1: 0.93: 0.47: 1.18; metatarsus I,  $1.73 \times$  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,  $1.96 \times$  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 ( $28^{\circ}46'S$   $26^{\circ}05'E$ ), 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 ( $29^{\circ}08'S$   $26^{\circ}04'E$ ), pit traps, south slope, 1 male, ii-iv.1990, S. du Toit (NMBA 5605); Northern Cape Province: Richtersveld, Paradyskloof summit ( $28^{\circ}20'S$   $17^{\circ}00'E$ ), 1

male, 6.x.1991, S. Louw (NMBA 5811); Greenvalley, near Upington (28°26'S 21°15'E), 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  $0.6 \times$  abdomen length,  $0.95 \times$  carapace width; tS  $1.94 \times$  bS. Legs: leg ratio: 1: 1.11: 0.53: 1.15; metatarsus I,  $2.05 \times$  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,  $1.8 \times$  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 ( $17^{\circ}51'S$   $13^{\circ}02'E$ ), vii-ix 1982, J. Coetzer (NCA 84/69); 1 female, Windhoek ( $22^{\circ}34'S$   $17^{\circ}05'E$ ), 17.xi.1972, Schadhof (SMN 35661); 1 male, Windhoek, Regenstein ( $22^{\circ}34'S$   $17^{\circ}05'E$ ), 3.xii.1974, S. Endrody-Younga (TM 18919); 1 male Otjiku 192, Otjwarongo district ( $21^{\circ}16'S$   $16^{\circ}49'E$ ), 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  $0.47 \times$  total body length,  $0.72 \times$  carapace width; tS  $1.58 \times$  bS. Legs: leg ratio: 1: 1.07: 0.56: 1.24; metatarsus I,  $2.02 \times$  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,  $1.4 \times$  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 Kloof (33°21'S 21°40'E), 15.iii.2003, Z. van der Walt, (NCA ); - paratypes: 1 female, Karoo National Park near Beaufort West (32°50'S 28°05'E), 3.iv.1989, A. le Roy (NCA 89/715); 2 females, Blouyfer 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  $0.57 \times$  abdomen length,  $0.91 \times$  carapace width; tS  $2.14 \times$  bS. Legs: leg ratio: 1: 1.14: 0.6: 1.22; metatarsus I,  $2.22 \times$  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 ( $31^{\circ}23'S$   $19^{\circ}06'E$ ), 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  $0.94 \times$  carapace width; tS  $2.13 \times$  bS. Legs: metatarsus I,  $2.14 \times$  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  $0.83 \times$  carapace width; tS  $1.5 \times$  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,  $0.83 \times$  wider than long; cymbium compact,  $1.86 \times$  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 (28°18'S 17°10'E), 7.ix.1992, S. Nesor (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.

### References

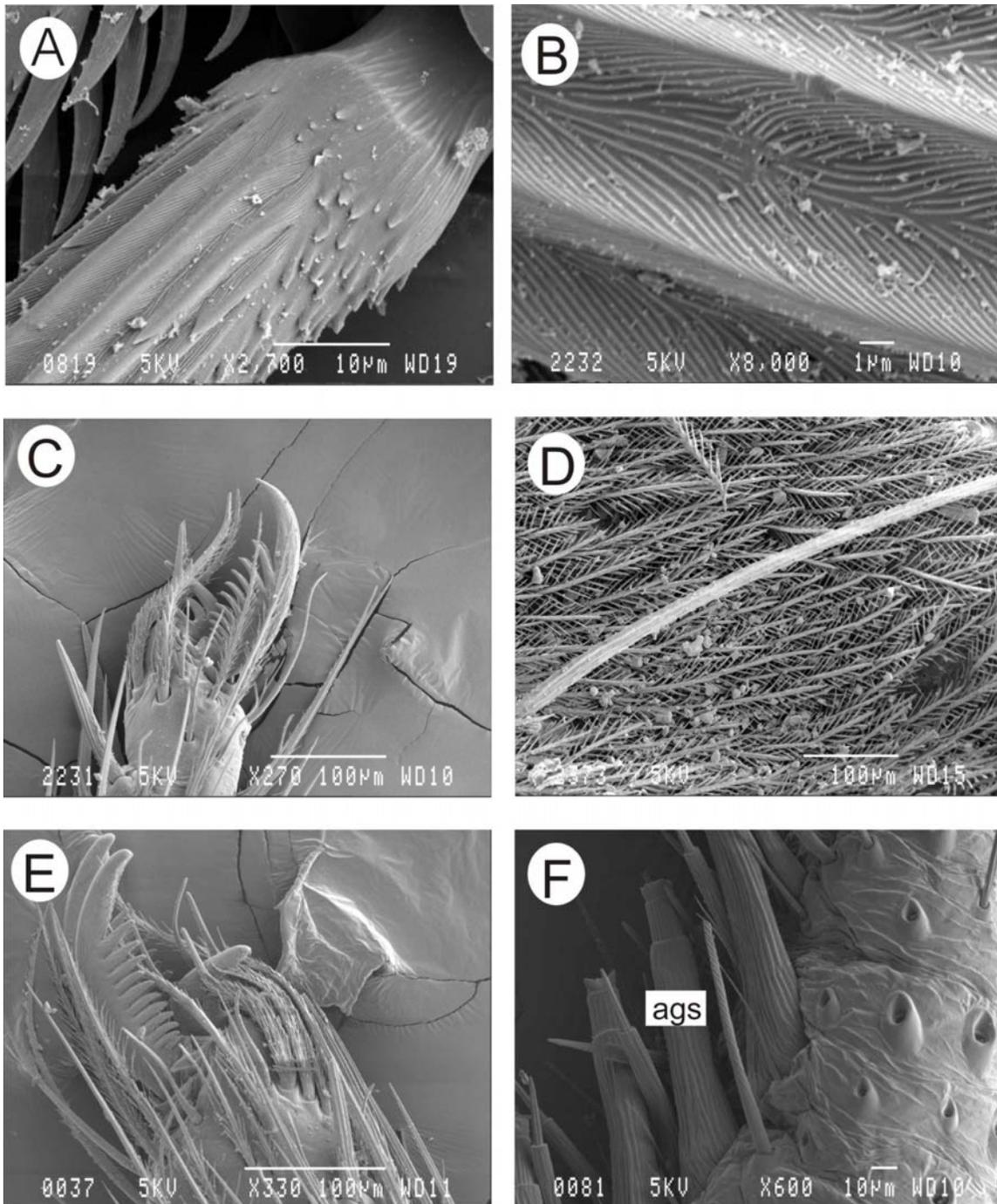
BAEHR, B. 1998. The genus *Hersilia*: phylogeny and distribution in Australia and New Guinea (Arachnida, Araneae, Hersiliidae). – Proc. 17<sup>th</sup> European Coll. Arachnology 1997. *Bulletin of the British Arachnological Society* : 61-65.

- BAEHR, B. & BAEHR, M. 1987. The Australian Hersiliidae (Arachnida: Araneae): Taxonomy, phylogeny, zoogeography. *Invertebrate Taxonomy* **1**: 351-437.
- BAEHR, M. & BAEHR, B. 1993. The Hersiliidae of the Oriental Region including New Guinea. Taxonomy, phylogeny, zoogeography (Arachnida, Araneae). *Spixiana* **19**: 1-95.
- BENOIT, P. L. G. 1974. Araignées intéressantes du Muséum d'Histoire Naturelle de Genève. *Revue Suisse de Zoologie* **81**: 993-998.
- BLACKWALL, J. 1865. Descriptions of recently discovered spiders collected in the Cape Verde Islands by John Gray, Esq. *Annals and Magazine of Natural History* (3) **16**: 80-101.
- BONNET, P. 1957. *Bibliographia Araneorum* 2 (3). Douladoure, Toulouse, pp. 1927-3026.
- CAMBRIDGE, O. P.-. 1872. General list of the spiders of Palestine and Syria, with descriptions of numerous new species, and characters of two new genera. *Proceedings of the Zoological Society of London* **1871**: 212-354.
- DENIS, J. 1955. Contribution a l' étude de l' Aïr (Mission L. Chopard et A Villier): *Araignées bulletin de l'Institut français d'Afrique noire* **17**: 99-146.
- DENIS, J. 1966. Les araignées du Fezzân. *Bulletin de la Société d'Histoire Naturelle de l'Afrique du Nord* **55**:103-144.
- DIPPENAAR-SCHOEMAN, A.S. & JOCQUÉ, R. (1997). *African Spiders: An identification manual*. Plant Protection Research Handbook no. 9. Agricultural Research Council, Pretoria, 392 pp.
- DUFOUR, L. 1831. Descriptions et figures de quelques Arachnides nouvelles ou mal connues et procédé pour conserver à sec ces Invertébrés dans les collections. *Annales des Sciences Naturelles Paris, Zoologie* **22**: 355-371.
- LAWRENCE, R. F. 1928. Contributions to the knowledge of the fauna of South-West Africa VII. Arachnida (Part 2). *Annals of the South African Museum* **25**: 217-312.
- LAWRENCE, R. F. 1964. A conspectus of South African spiders. Department of Agricultural Technical Services, South Africa. Science Bulletin 369, 64pp.
- LEVY, G. 2003. Spider families Anyphaenidae, Hahnidae, Ctenidae, Zoridae, and Hersiliidae (Araneae) from Israel. *Israel Journal of Zoology* **49**: 1-31.

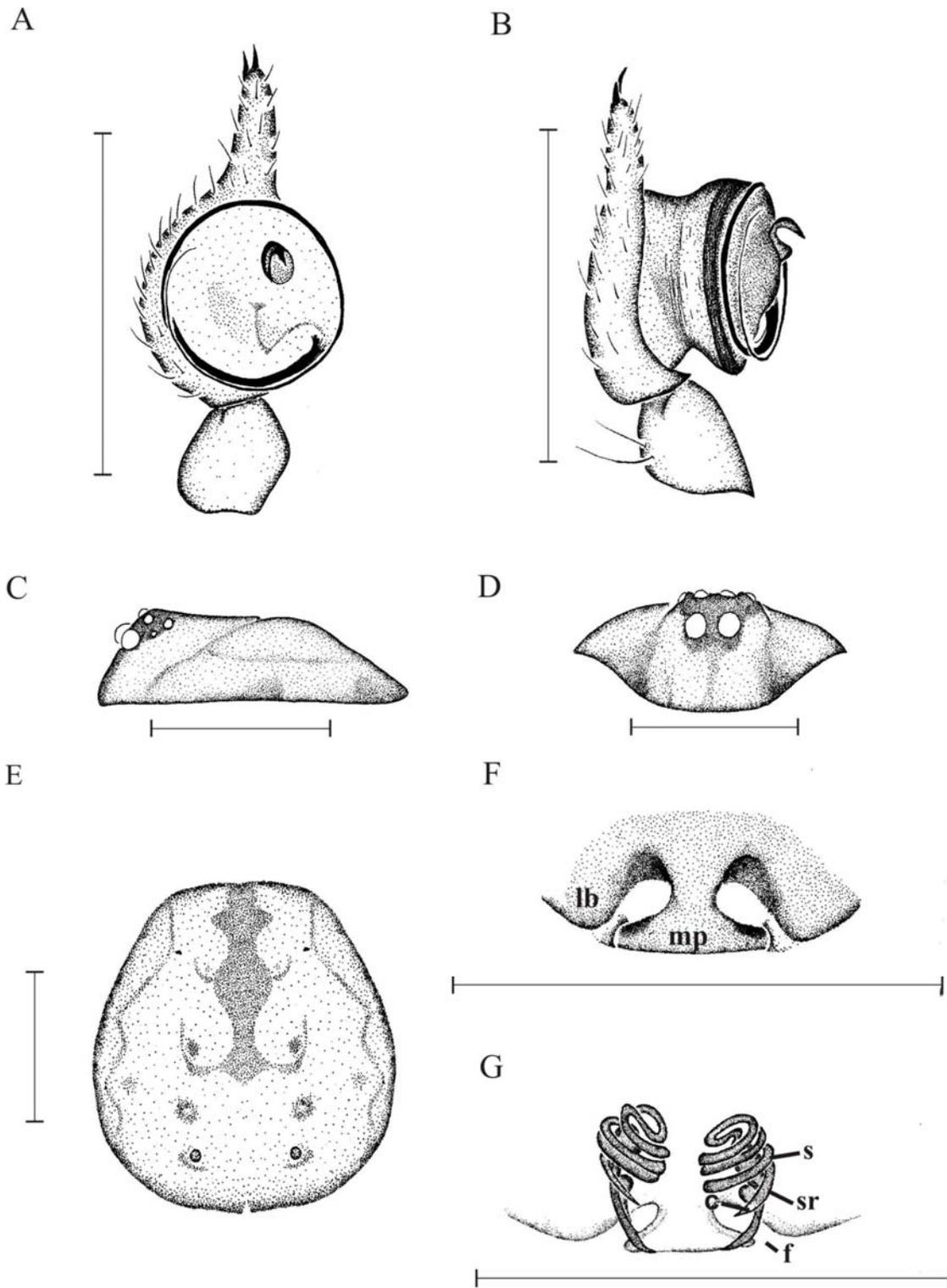
- LUCAS, H. 1846. Histoire naturelle des animaux articulés. In: Exploration scientifique de l'Algérie pendant les années 1840, 1841, 1842 publiée par ordre du Gouvernement et avec le concours d'une commission académique. *Paris, Sciences physiques, Zoologie* **1**: 89-271.
- MEYER, M.K.P. (SMITH). & RODRIQUES, M.C. 1966. Acari associated with cotton in South Africa. *Garcia de Orto* **13**:1-33.
- PLATNICK, N.I. 2004. *The world spider catalog*. American Museum of Natural History. Internet:  
<http://research.amnh.org/entomology/spiders/catalog/HERSILIIDAE.html>
- RIBERA, C., FERRÁNDEZ, M. A. & PÉREZ, J. A. 1988. Los hersílicos (Araneae, Hersiliidae) de la fauna Ibérica. *Miscellanea Zoologica* **10**: 97-103.
- RHEIMS, C.A. & BRESOVIT, A.D. 2004. Revision and cladistic analysis of the spider family Hersiliidae (Arachnida, Araneae) with emphasis on Neotropical and Nearctic species. *Insect Systematics and Evolution* **35**: 189-239.
- RHEIMS, C.A., BRESOVIT, A.D., VAN HARTEN, A. 2004. Hersiliidae (Araneae) of Yemen, with description of a new species of Hersilia Audouin, 1826 from Socotra Island. *Fauna of Arabia* **20**: 335-347.
- SCHMIDT, G. E. W. & KRAUSE, R. H. 1995. Weitere Spinnen von Cabo Verde. *Entomologische Zeitschrift. Frankfurt am Main* **105**: 355-364.
- SIMON, E. 1870. Aranéides nouveaux ou peu connus du midi de l'Europe. sulle specie europee della famiglia degli Attidi. *Mémoires de la Société Royale des Sciences de Liège* (2) **3**: 271-358.
- SIMON, E. 1882. II. Etude sur les Arachnides du Yemen méridional. In: Viaggio ad Assab nel Mar Rosso dei signori C. Doria ed O. Beccari con il r. Aviso esploratore del 16 Nov. 1879 ad 26 Feb. 1881. *Annali di Museo Civico di Storia Naturale di Genova* **18**: 207-260.
- SIMON, E. 1893. *Histoire naturelle des araignées*. Paris, **1**: 257-488.
- SMITHERS, R. H. N. 1945. The Hersiliidae (Araneae) of South Africa. *Transactions of the Royal Society of South Africa* **31**: 1-18.
- THORELL, T. 1870. On European spiders. *Nova Acta Regiae Societatis Scientiarum Upsaliensis* **7(3)**: 109-242.

TUCKER, R. W. E. 1920. Contributions to the South African Arachnid Fauna. II. On some new South African spiders of the families Barychelidae, Dipluridae, Eresidae, Zodariidae, Heracliidae, Urocteidae, Clubionidae. *Annals of the South African Museum* **17**: 439-488.

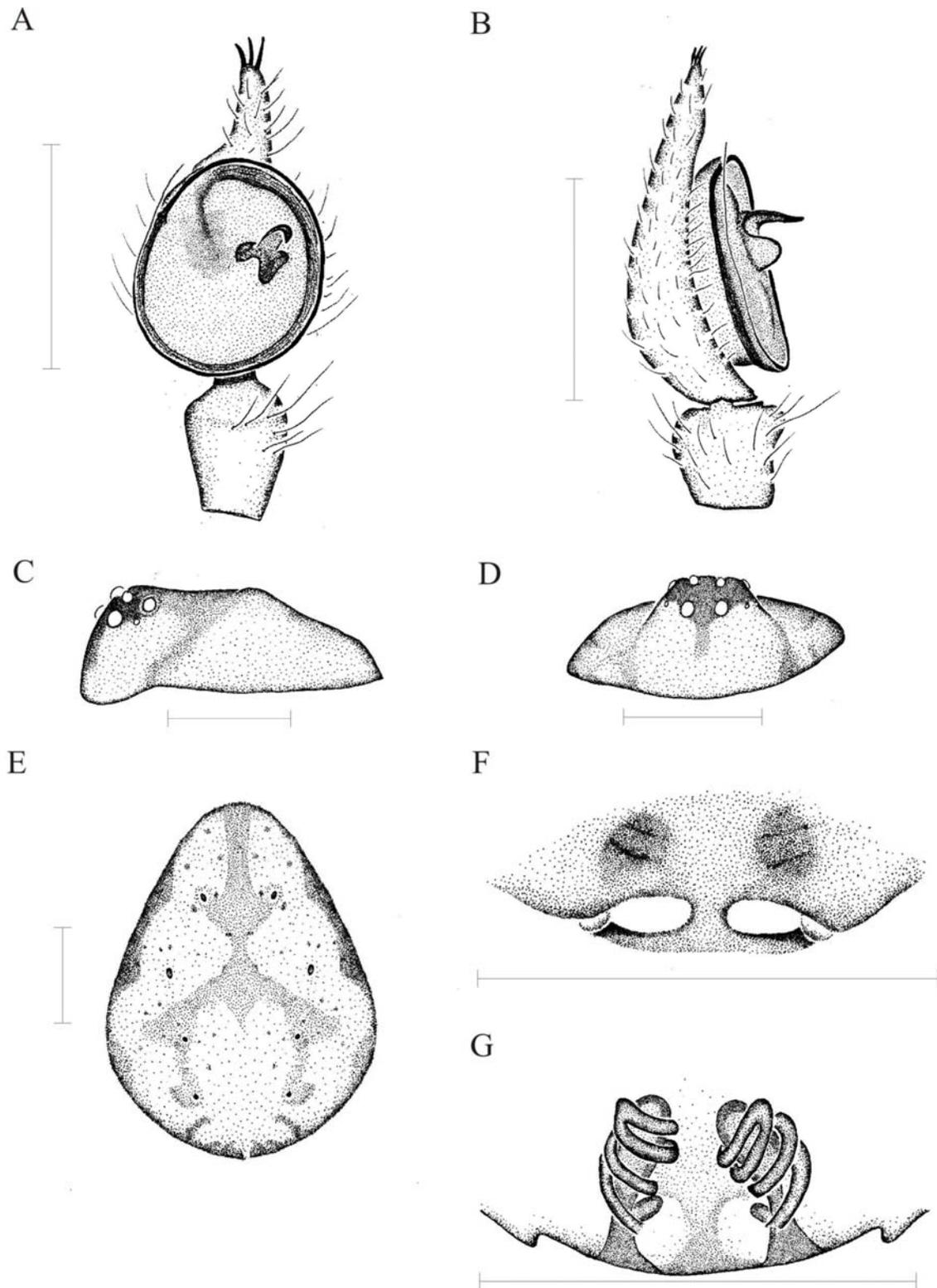
WIEHLE, H. 1960. Der Embolus des männlichen Spinnentasters. *Verhandlungen der Deutschen Zoologischen Gesellschaft*. Bohn/ Rhein 1960: 457-480.



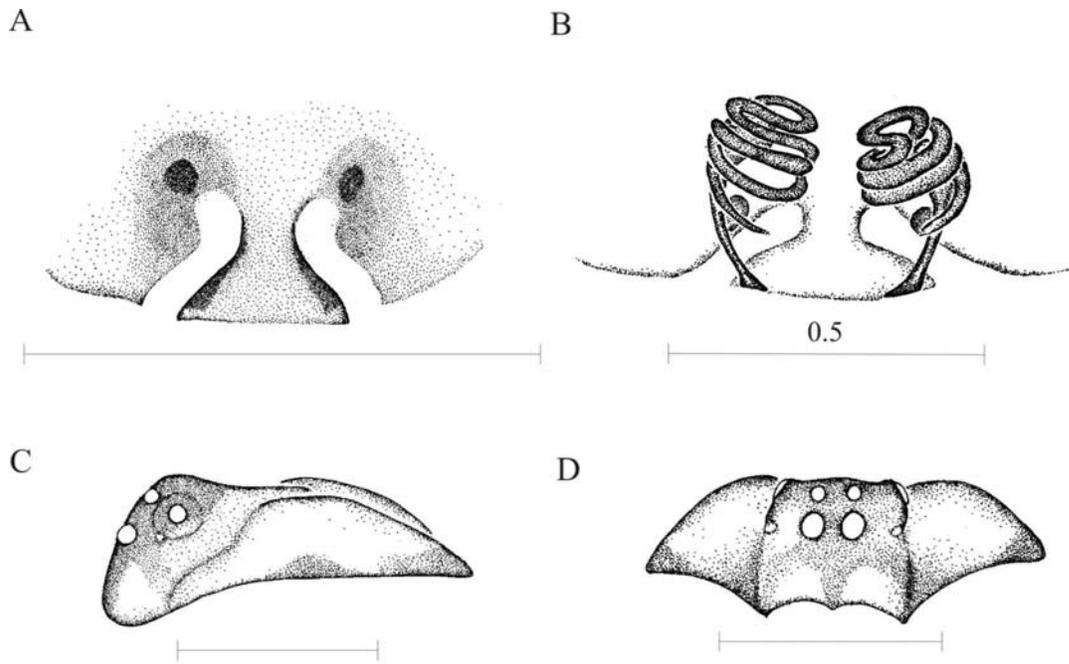
**Figure 1.** Electron micrographs of *Tyrotama fragilis* (Lawrence). **A, B.** Leg spine. **C.** Tarsal claws. *T. gamkasiensis* sp. n. **D.** Plumose and isolated setae on abdomen. **E.** Tarsal claws. **F.** Posterior lateral spinnerets; ags = aciniform gland spigots.



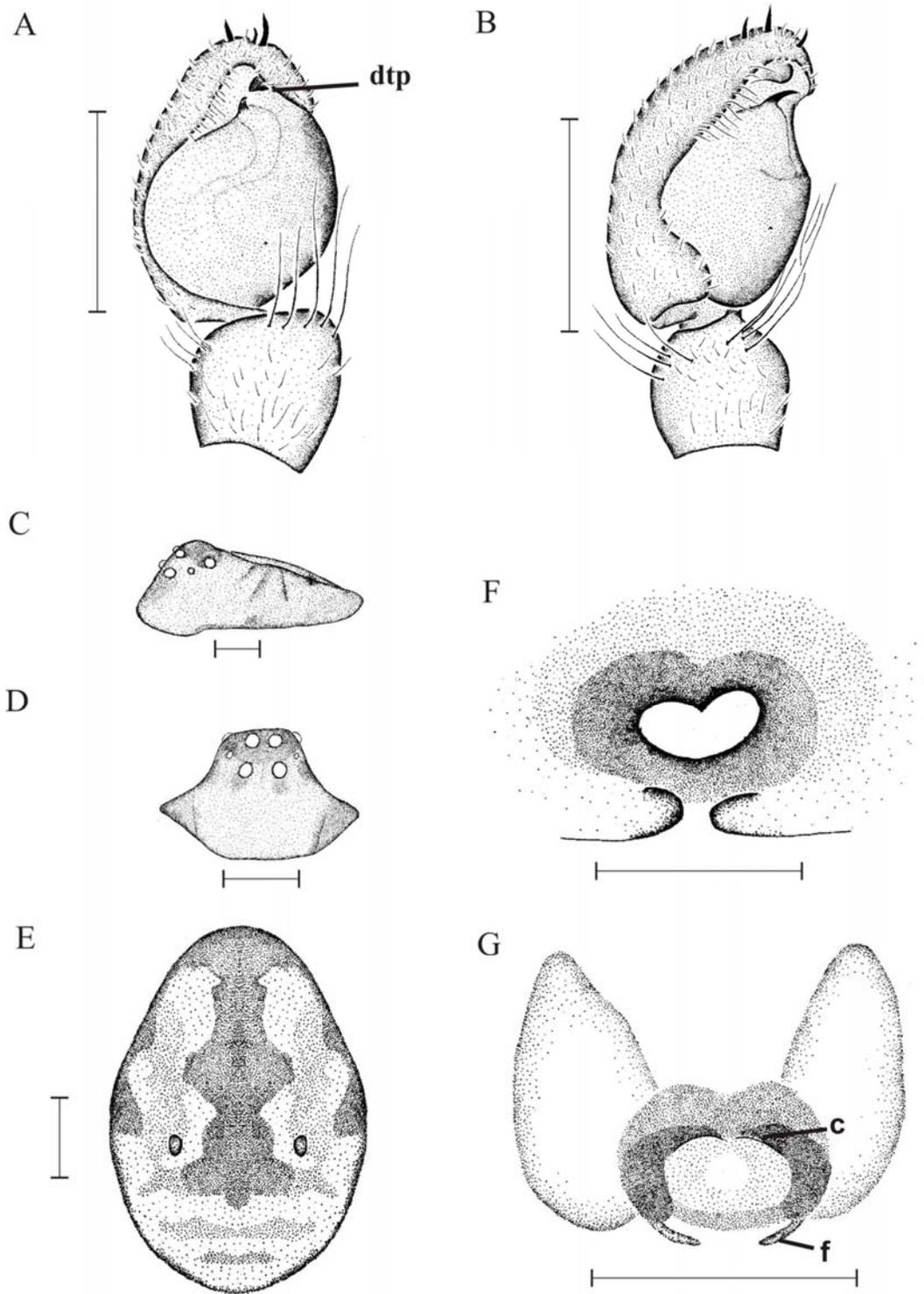
**Figure 2.** *Hersiliola macullulata*(Dufour); Palp, **A**, Ventral, **B**, Prolateral; Cephalothorax, **C**, Lateral, **D**, anterior; **E**, Abdomen dorsal; Epigyne, **F**, Ventral, **G**, Dorsal.



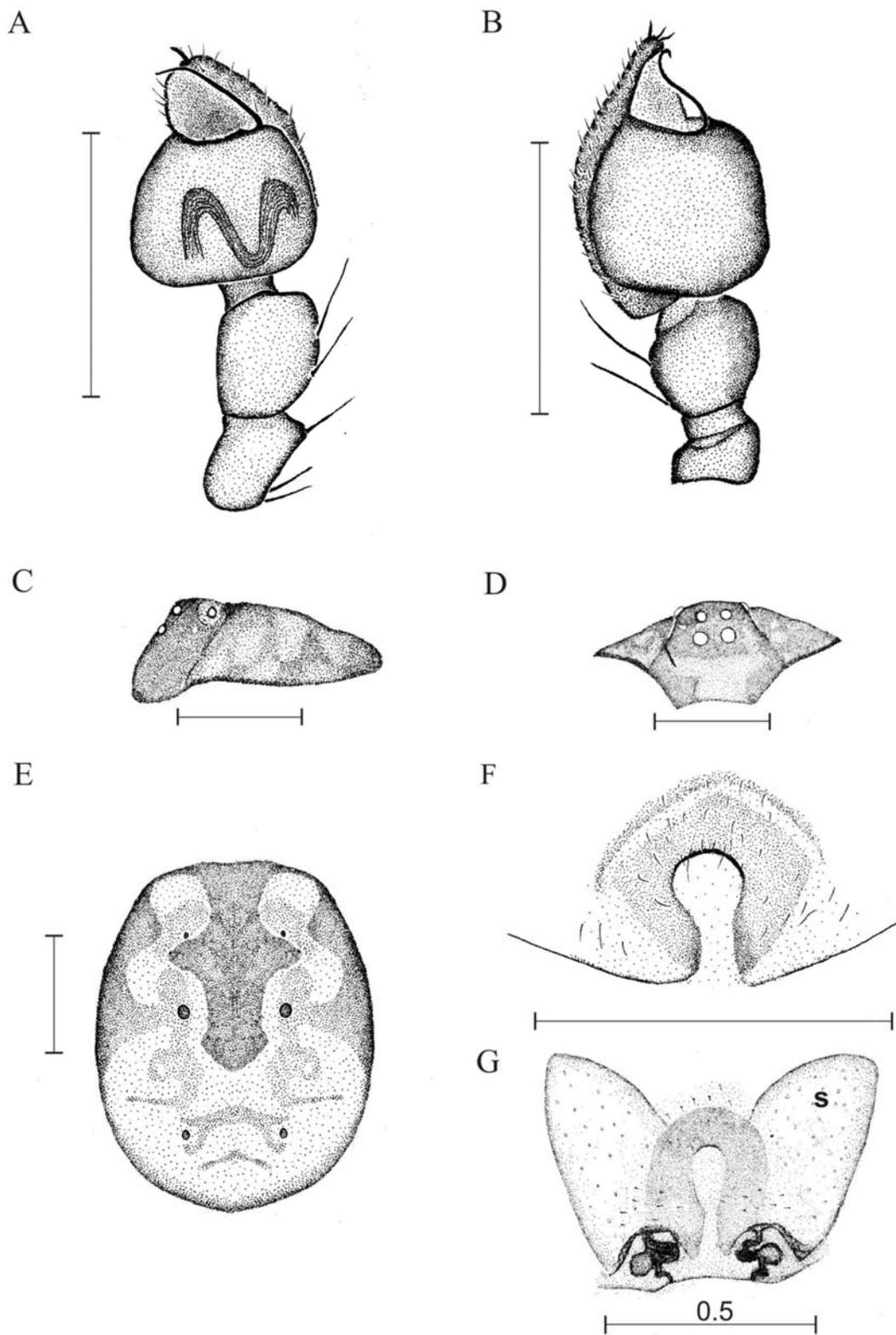
**Figure 3.** *Hersiliola simoni* (O.P.-Cambridge); Palp, **A**, Ventral, **B**, Prolateral; Cephalothorax, **C**, Lateral, **D**, Anterior, **E**, Abdomen dorsal; Epigyne, **F**, Ventral, **G**, Dorsal.



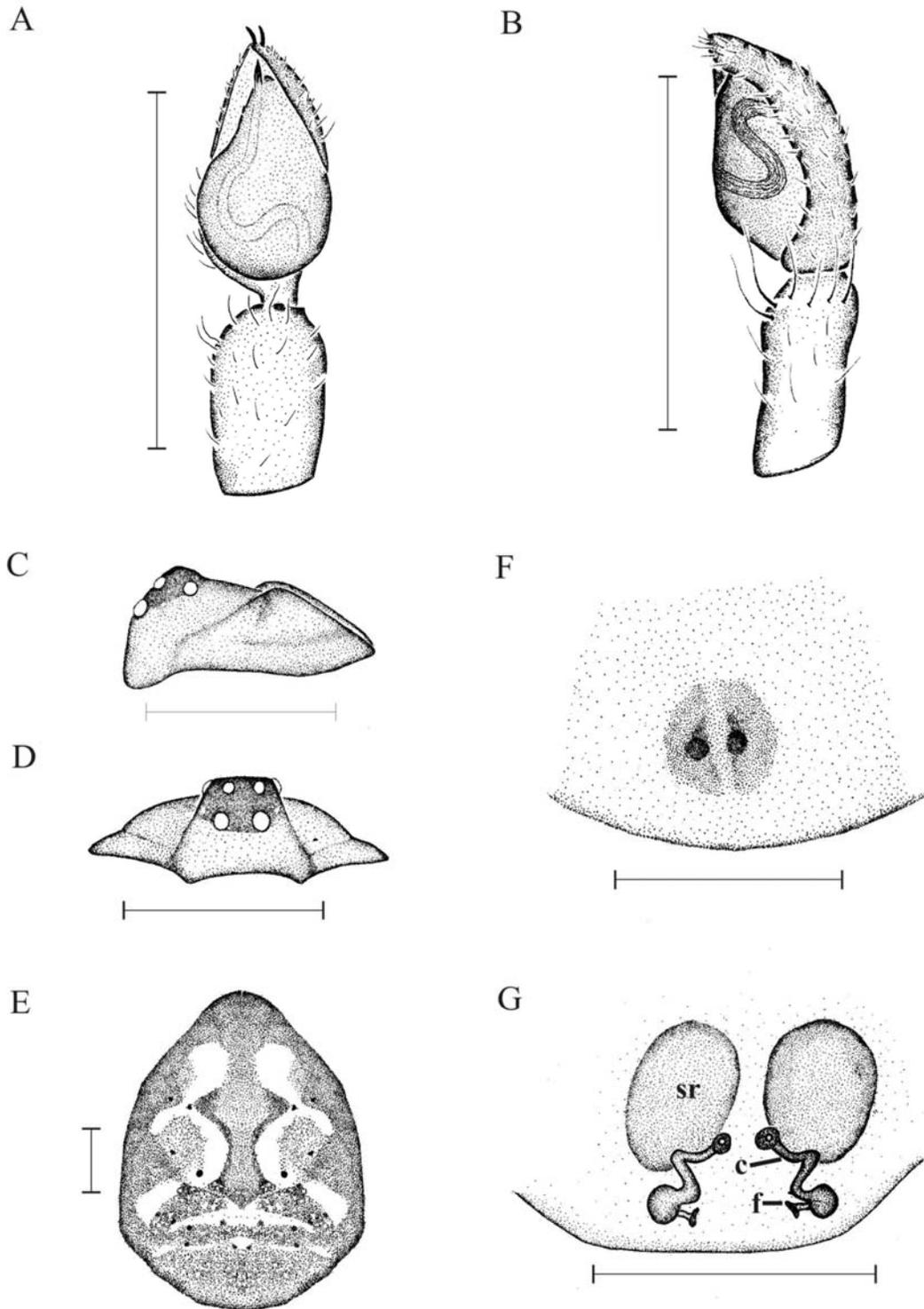
**Figure 4.** *Hersiliola versicolor* Blackwall, 1865; Epigyne, **A**, Ventral, **B**, Dorsal; Cephalothorax, **C**, Lateral, **D**, Anterior.



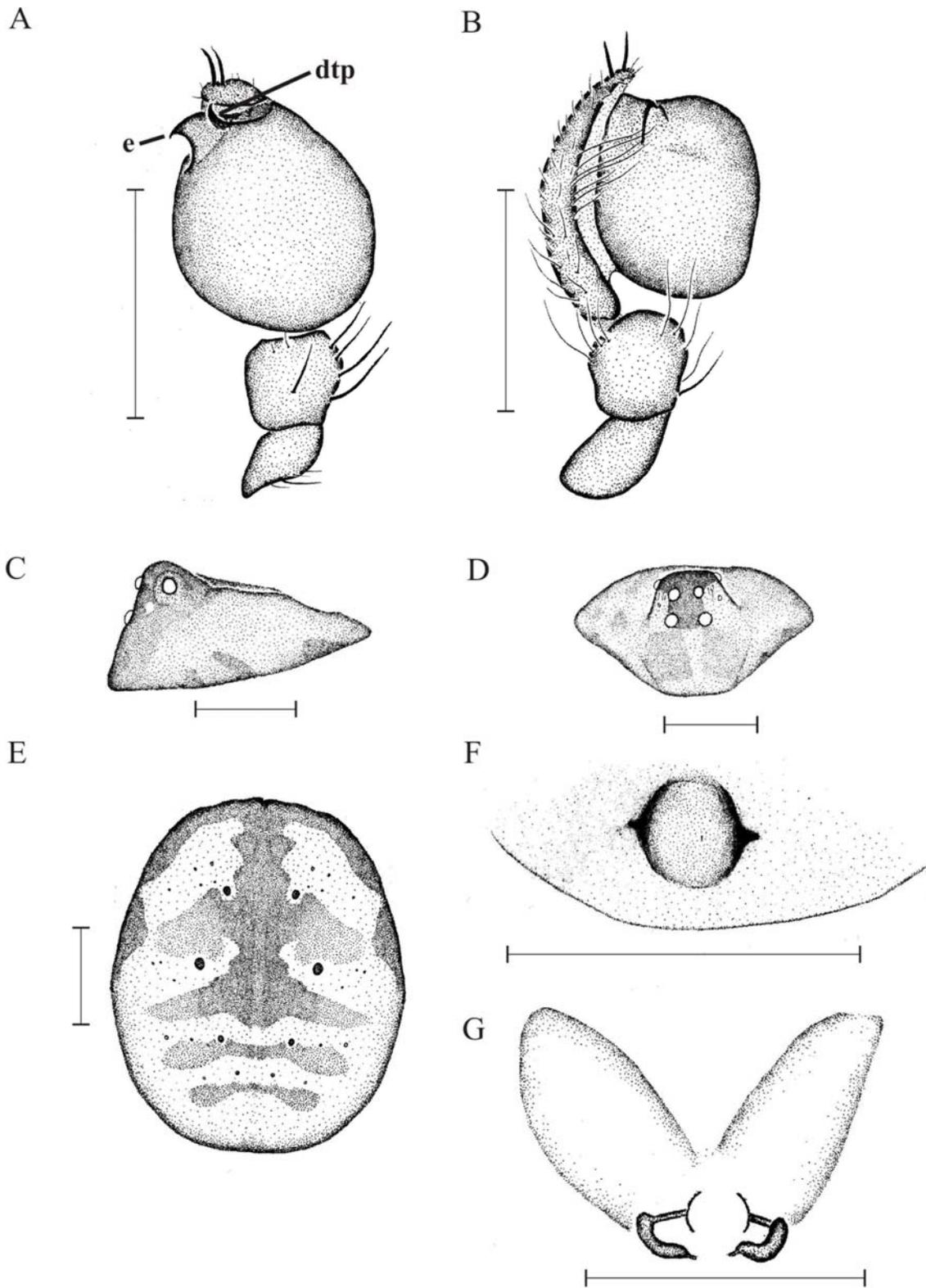
**Figure 5.** *Tyrotama arida* (Smithers); Palp, **A**, Ventral, **B**, Prolateral; Cephalothorax, **C**, Lateral, **D**, anterior; Abdomen **E**, Dorsal; Epigyne, **F**, Ventral, **G**, Dorsal; c = copulatory duct; dtp = distal tegular projection; f = fertilization duct.



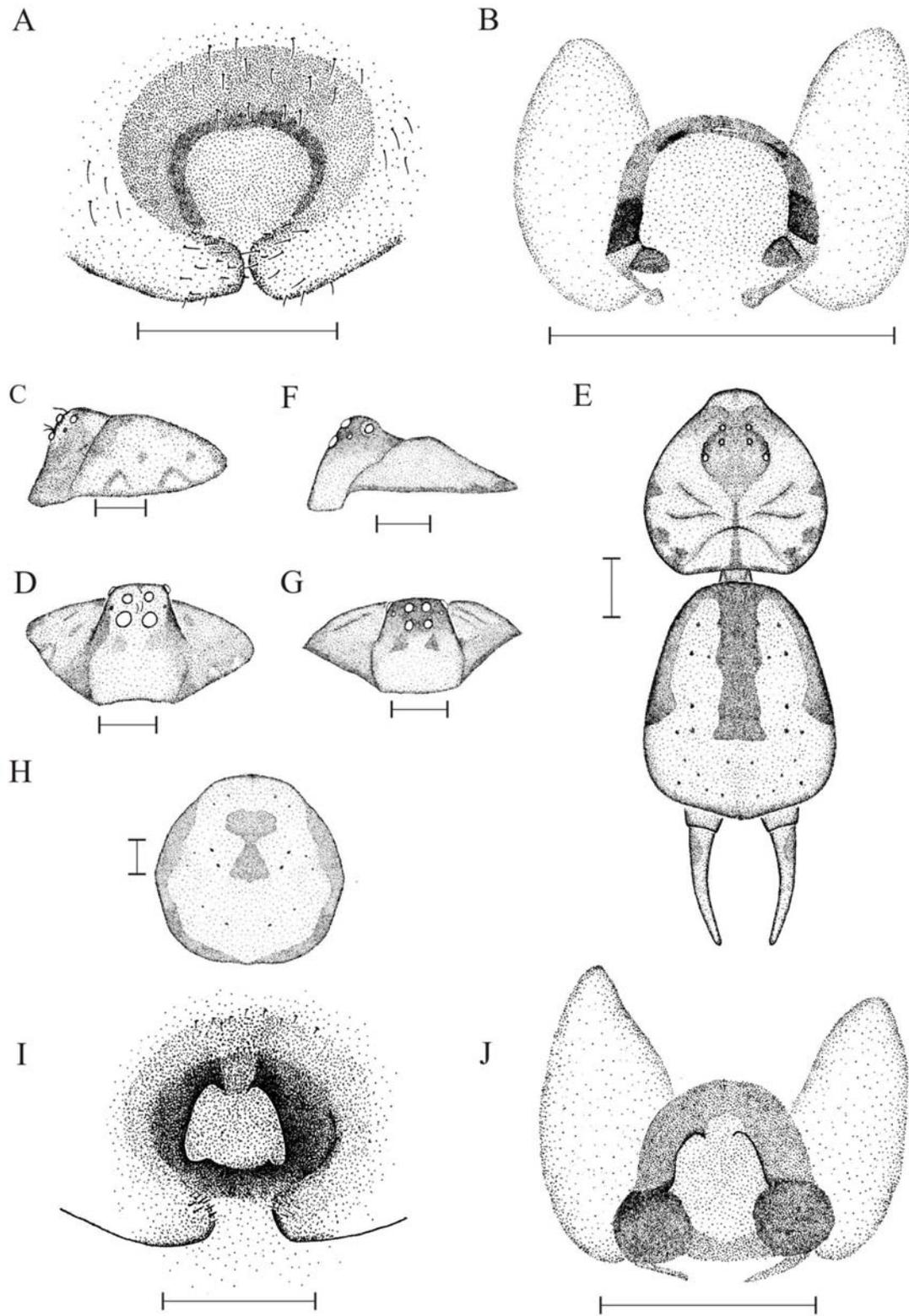
**Figure 6.** *Tyrotama australis* (Simon); Palp; **A**, Ventral; **B**, Prolateral; Cephalothorax; **C**, Lateral; **D**, anterior; **E**, Abdomen dorsal; Epigyne; **F**, Ventral, **G**, Dorsal.



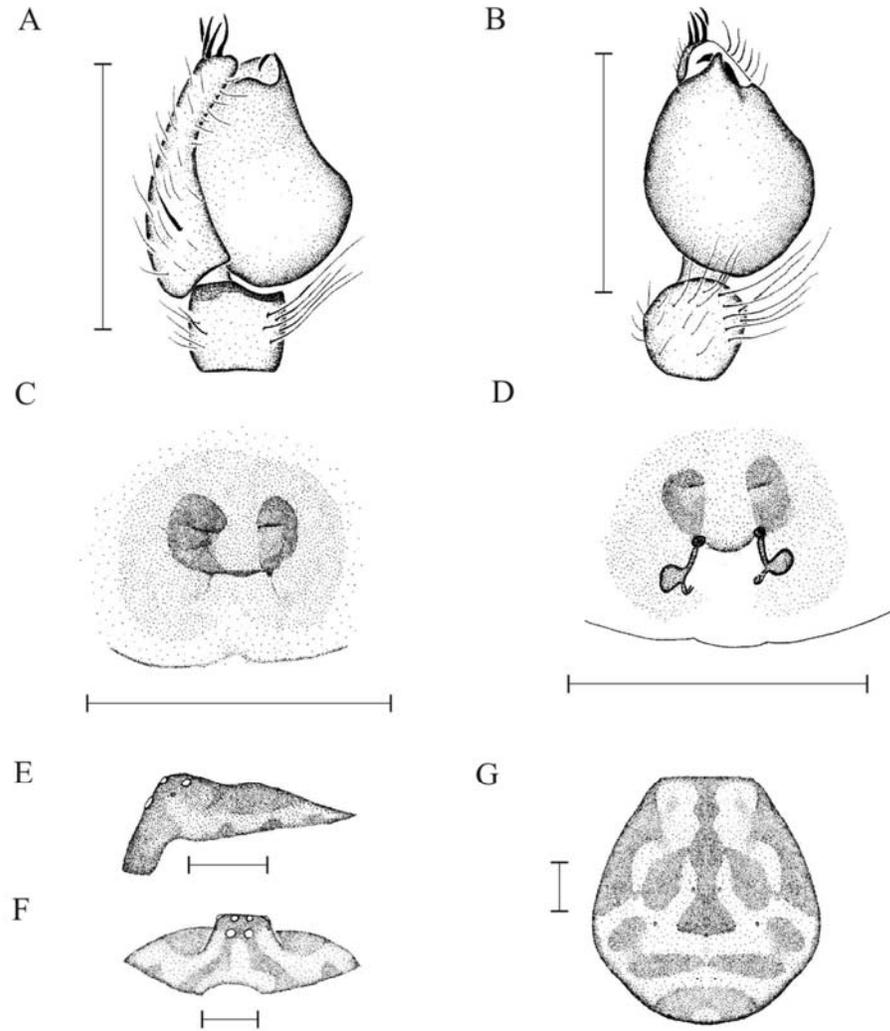
**Figure 7.** *Tyrotama bicava* (Smithers); Palp, **A**, Ventral, **B**, Prolateral; Cephalothorax, **C**, Lateral, **D**, anterior; Abdomen **E**, Dorsal; Epigyne, **F**, Ventral, **G**, Dorsal; c = copulatory duct; f = fertilization duct; sr = seminal receptacle.



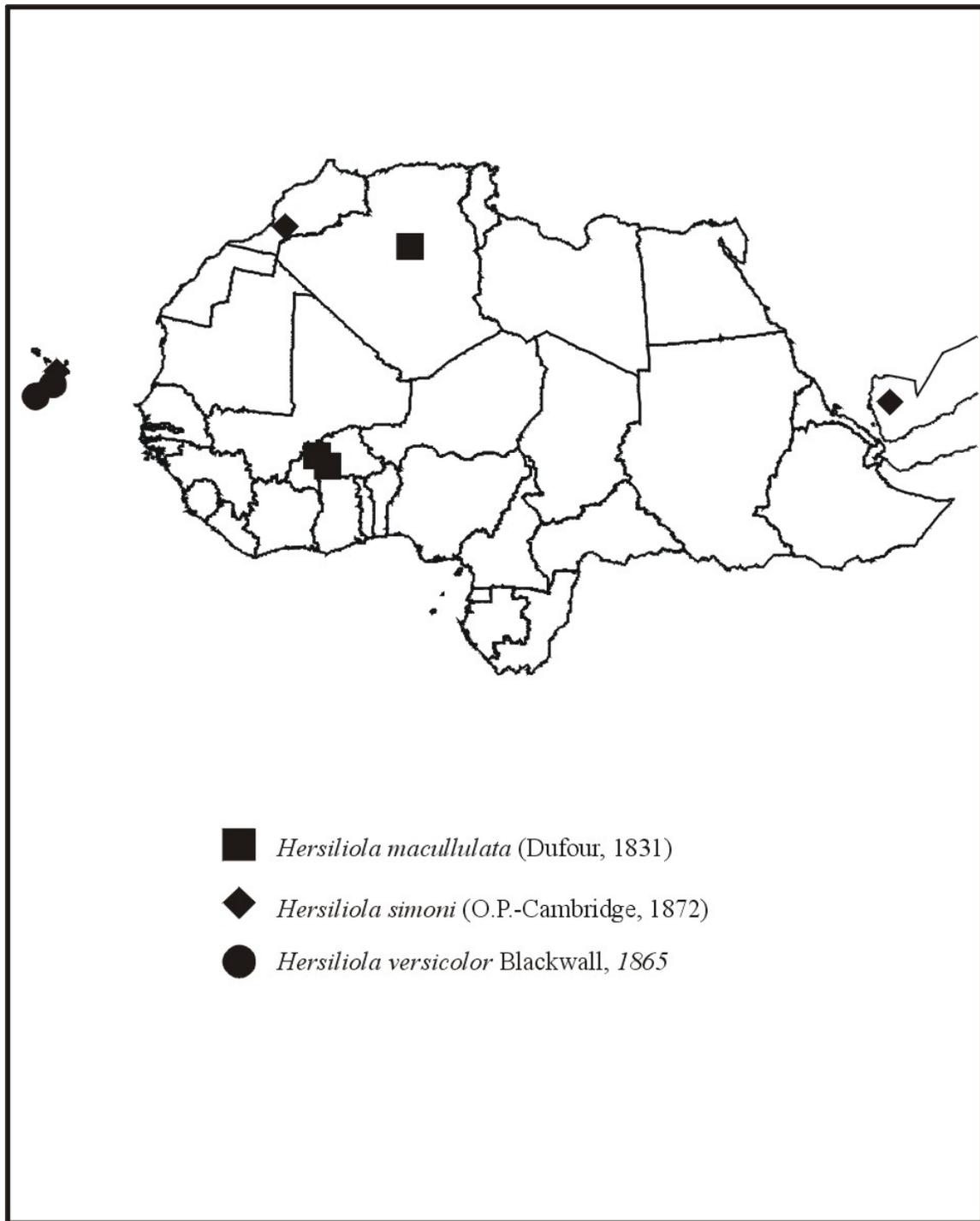
**Figure 8.** *Tyrotama fragilis* (Lawrence); Palp; **A**, Ventral, **B**, Prolateral; Cephalothorax, **C**, Lateral, **D**, Anterior; **E**, Abdomen dorsal; Epigyne, **F**, Ventral, **G**, Dorsal. e = embolus; dta = distal tegular apophysis; dtp = distal tegular projection; e = embolus.



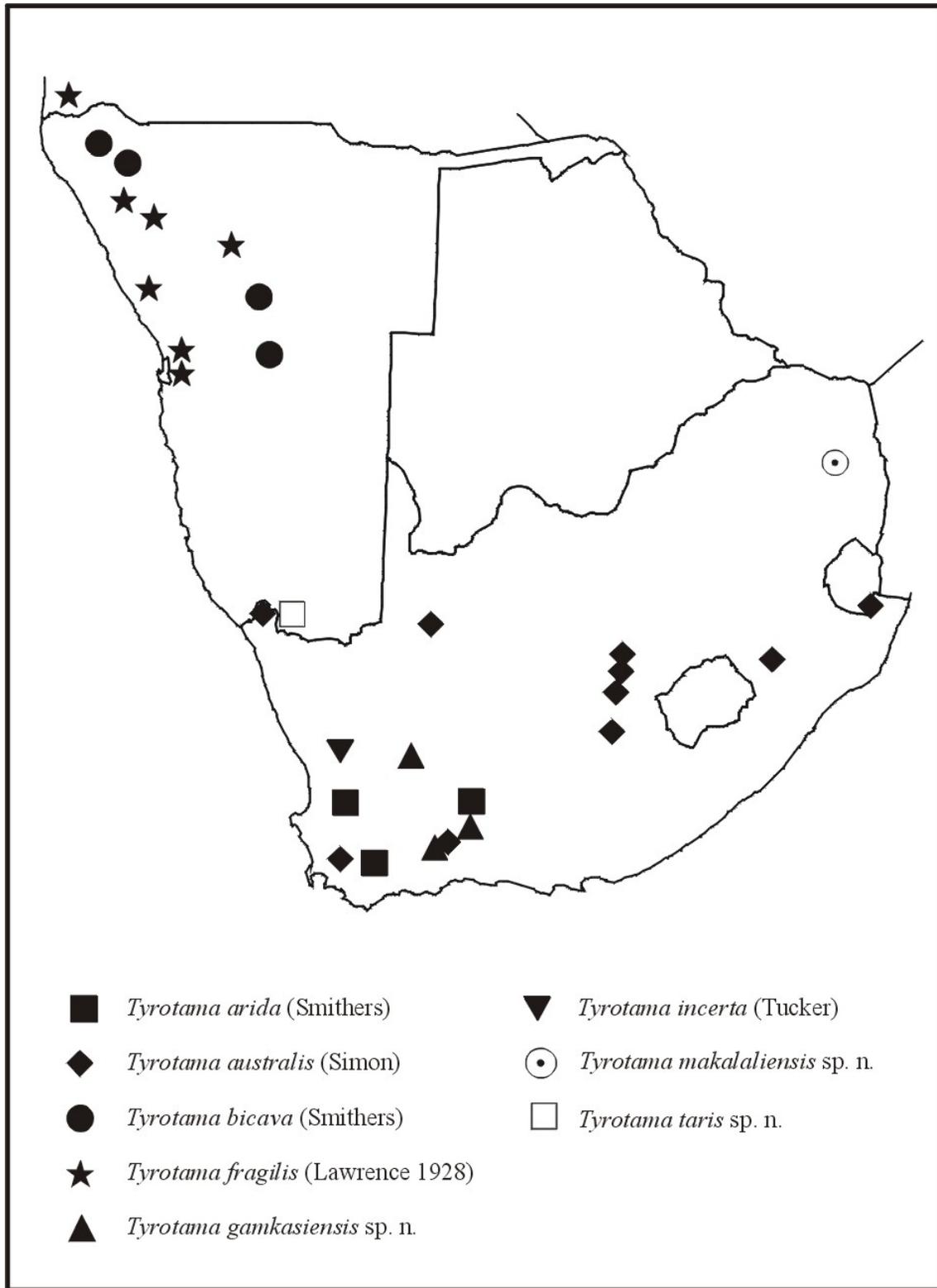
**Figure 9.** *Tyrotama gamkasiensis* sp. n; Epigyne, **A**, Ventral, **B**, Dorsal; Cephalothorax, **C**, Lateral, **D**, anterior; **E**, spider, dorsal view. *Tyrotama incerta* (Tucker); Cephalothorax, **F**, Lateral, **G**, Anterior; **H**, Abdomen dorsal view; Epigyne; **I**, Ventral, **J**, Dorsal.



**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.

## CHAPTER FOUR

### **The First Records of *Murricia* Simon from the Afrotropical Region (Araneae: Hersiliidae)**

The genus *Murricia* is recorded from the Afrotropical Region and a male of the genus is described for the first time. Two species, *M. uva* and *M. emlynae* are described as new. The significance of certain plesiomorphic characters for hersiliid phylogeny is discussed.

**Key words:** Afrotropical Region, Araneae, Hersiliidae, *Murricia*.

## Introduction

*Murricia* Simon is a small genus in the family Hersiliidae with three species that have been recorded from India, Sri Lanka and Singapore respectively (Platnick 2004). The male of the genus is yet unknown. The female is distinguished by the lateral eyes that are on distinct eye tubercles, the markedly triangular abdomen and the second pair of dorsal muscular pits that are transverse (Baehr & Baehr 1993).

Little is known about their natural history except that they are arboreal forest dwellers. Baehr & Baehr (1993) discussed their origin and possible relationship with *Promurricia* Baehr & Baehr from Sri Lanka. The taxonomic status of these two genera was considered to be doubtful, as only females are known. The possibility existed that *Murricia* is a junior synonym of *Hersilia* with *Promurricia* intermediate between the first two genera (Baehr & Baehr 1993; Rheims & Brescovit 2004). Baehr & Baehr (1993) did suggest that *Murricia* originated from ground-living hersiliids based on the genus' restricted distribution in the Oriental Region and the synapomorphic character that *Promurricia* shares with *Murricia* namely: the medio-posterior part of the female epigyne having a wide, oval median plate slightly separated from the lateral lobes.

In this study *Murricia* was for the first time recorded from the Afrotropical Region resulting in a considerable expansion of the genus' known distribution. The first *Murricia* male is described and two species that were collected in the forests and grasslands of Central Africa are described as new. This paper forms part of a series on the Hersiliidae of the Afrotropical Region.

## Materials and Methods

Study area: The area covered by this study is the Afrotropical Region, including the islands in both the Indian and Atlantic oceans.

Abbreviations: The following abbreviations are used in this paper:

ALE - anterior lateral eye; AME - anterior median eye; bS - basal segment of posterior lateral spinneret; CI - carapace index; CL - carapace length; CLL - clypeus length; co - copulatory opening; CW - carapace width; el - epigyne length; ew - epigyne width; Fe - femur; MOQ - median ocular quadrangle; MOQ-AW - MOQ anterior width; MOQ-PW -

MOQ posterior width; MOQL – MOQ length; Mt – metatarsus; Pat – patella; PER - posterior eye row; PLE - posterior lateral eyes; PME - posterior median eyes; r – retromargin; Ta – tarsus; Tib – tibia; tS - terminal segment of posterior lateral spinneret.

Measurements: All measurements are given in millimetres with the observed ranges in parentheses. The following measurements were taken.

Carapace: CI - carapace index (derived by dividing the length of carapace by its width); CL - carapace length (measured from clypeal edge to posterior edge); CW – carapace width (measured over widest part of the carapace); CLL - clypeus length (measured from outer edge of AME to anterior edge of clypeus).

Size of eyes is given as relative to AME in the following order: AME: ALE: PME: PLE.

Legs - length of leg (each segment from the 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. *Murricia* spp. have a biarticulation on metatarsus I, II, and IV; the length of the proximal and distal segments of the metatarsi are given under the headings of metatarsus i and metatarsus ii respectively.

Abdomen: length (measured from anterior edge to posterior edge of abdomen) and width (measured over widest part of abdomen); spinneret length.

Material was received on loan from the following institutions: CAS- California Academy of Sciences, Golden Gate Park, San Francisco, California, USA; MNHU – Museum für Naturkunde der Humboldt Universität, Berlin, Germany; MRAC- Koninklijk Museum voor Midden- Afrika, Tervuren, Belgium.

## **Taxonomy**

### ***Murricia* Simon, 1882**

*Murricia* Simon, 1882: 255; 1893: 446; Pocock, 1900: 242; Baehr & Baehr 1993: 64.

Type species: *Murricia indica* (Lucas, 1836)

**Diagnoses.** *Murricia* differs from other hersiliid genera by the lateral eyes that are on a distinct eye tubercle (Figs. 1d & 2d), large posterior lateral eyes; abdomen triangular (Fig. 1e) to trapezoid (Fig. 2e), that is as wide as or wider than long, widest in posterior third; five pairs of dorsal muscular pits with third pair of dorsal muscular pits much larger than rest (Figs. 1e & 2e), second pair very small, postero-mesad of 1<sup>st</sup> pair; legs short with metatarsi biarticulate; palps with complex coiled sperm ducts; embolus circular, positioned in distal half of bulbus; median tegular apophysis small, triangular, transversely directed, apically attached (Figs. 2a,b); epigyne with copulatory ducts elongate, simple; spermathecae cylindrical, complexly coiled; seminal receptacle varies from multiple seminal receptacles abutting a central stalk to single globose receptacle; fertilization duct simple, short (Fig. 1b).

**Description. Female.** Size: small to medium, range (4.52 - 6.38).

Colour: Carapace varies from pale yellow to dark brown, with dark rim of varying thickness around border; clypeus pale with dark or white markings; eye area dark, white mark posteriad on eye tubercle; sternum pale with mottled white markings; labium and endites pale. Abdomen: dorsum with mottled white background; heart mark narrow, elongate, run along entire length of abdomen; antero-lateral border dark brown; venter pale to mottled white. Legs: femora and tibiae pale with faint to dark annulation and lateral striae.

Carapace: varying between longer than wide to as wide as long; thoracic region widest, cephalic region narrow; dorso-ventrally flattened; fovea longitudinal with radial striae; clypeus truncate in dorsal view, not projecting much beyond eye area, varies in length from 0.88 - 0.94 × median ocular quadrangle length; eye tubercle slightly raised; eyes: PER recurved seen from above and in front (Fig. 2d); AER recurved seen from above and in front; ALE smallest, translucent; PLE >PME <AME>>PLE with ratio range AME:ALE:PME:PLE = 1: 0.27-0.42: 0.92-1.3: 1.28-2; median ocular quadrangle wider than long; MOQ-AW = MOQ-PW; chelicerae rather stout, 1.61 × longer than wide, retromargin with row of four minute teeth, promargin with three large teeth. Sternum: heart-shaped; labium: sub-triangular, two-thirds the length of endites; endites stout, subquadrate, broadening anteriorly.

Abdomen: wider than long, sub-triangular; dorso-ventrally flattened; five pairs of distinct dorsal muscular pits that vary in size, third pair by far largest, oval (Figs.1c,f); venter with V-shaped muscular pits. Spinnerets: posterior lateral spinnerets long  $> 1.5 \times$  carapace width; terminal segment  $\geq 4 \times$  length of basal segment; large elongate spinules with truncate apex bordered laterally by shorter spinules with apex acute (Fig. 2f).

Legs: rather short  $\leq 2.22 \times$  total body length; either leg I or II longest; leg formula I:II:IV:III; leg III very short,  $<0.4 \times$  length of leg I; metatarsus I  $>6 \times$  longer than tarsus I; distal segment of metatarsus  $>0.7 \times$  length of proximal segment; femur, patella, and metatarsus with spines, spine formula tends to be rather similar between species and were variations of the following: I- Fe 1p1d1r-1p1d1r-1p1d1r-1p1r, Pat 1d1d, Tib 1d-1p1d1r-1p1d1r, Mt 1p1r-1d; II- Fe 1p1d1r-1p1d-1r-1p1d-1p1r, Pat 1p1r-1d, Tib 1d-1p1r-1d-1p1d1r, Mt 1p1r-1p-1d; III- Fe 1d-1d-1d-1r, Pat 1d-1d, Tib 1d-1v-1d, Mt 1d-1d; IV- Fe 1p1d-1d1r-1d-1p1r, Pat 1d-1r-1d, Tib 1d1r1p-1d-1p1r1d, Mt 1r1p-1r1p-1d; spine microstrucutes with randomly arranged conical scales covering spine surface (Fig. 2g).

Epigyne: ovate depressions posterior of copulatory openings (Fig.1a); copulatory ducts simple, elongate; spermathecae cylindrical, complexly coiled (Fig.1b); fertilization duct curved medially.

**Remark.** Forster (1980) suggested a possible evolutionary sequence starting with *Grandungula sorenseni* (Grandungulidae) where the invagination of bursal wall with several small spermathecae form stable bilobed spermathecae. The numerous secondary spermathecae found in Afrotropical females of *Murricia* are hypothesized to be homologous to these small spermathecae.

**Male.** Size: small (4.88 - 5.03). Resemble female in shape and colour; differs structurally as follows: smaller in size; abdomen more slender, subquadrate, widest posteriorly; distal segment of metatarsus  $>0.6 \times$  length of proximal; metatarsus I  $> 10 \times$  tarsus I, legs relatively longer,  $3.45 \times$  total body length.

Palps (Figs.1h, j): tibia stout, dorsal spines absent; cymbium compact; bulbus large, round, sperm duct complexly coiled; median tegular apophysis small, triangular, distally attached; embolus circular, apex acute, originate retrolaterad on bulbus.

### 1. *Murricia uva* sp. nov. (Figs. 1 & 3)

**Types.** Female holotype, **Democratic Republic of Congo:** District Stanleyville, Avakubi (01°19'N 27°33'E), vii.1932, B. Randoux, MRAC 137384; - paratype: 1 female,

**Uganda:** Semliki Forest (0°48'N 30°8'E), 5-12.ii.1997, Wagner, MNHU; 1 female,

**Rwanda:** PN Akagera, 6 km S de la pêcheurie, foret seche a Sansevieria (15°5'S 30°45'E), 14.xi-3.xii.1985, R. Jocqué, Nsengimana, Michiels, MRAC 165429; 1 female, PN Akagera, 50 kmNde la pêcheurie Ihema, pres du lac Mihindi (13°2'S 30°43'E), 6.xii.1985, R. Jocqué, Nsengimana, Michiels, MRAC 165058.

**Etymology.** The specific epithet *uva* latin for bunch of grapes refers to the large number of seminal receptacles abutting a central stalk..

**Diagnosis.** Small spiders; eye tubercle slightly raised (Figs.1c,d); clypeus short (Fig.1d); epigyne with impression of lateral spermathecae visible as loop externally (Fig.1a); spermathecae cylindrical complexly coiled; multiple > 30, globose seminal receptacles abutting central stalk (Fig.1b). Male unknown.

**Description. Female.** Size (n=4). TL 5.56 (4.52 - 5.72); CL 2.13 (2.08 - 2.18); CW 2.22 (2.03 - 2.48); CLL 0.39 (0.33 - 0.46); OAL 0.13 (0.12 - 0.13). AME diameter 0.14; AME-AME 0.16; ALE 0.18; MOQ-AW 0.45; ALE diameter 0.04; PME-PME 0.13; PME diameter 0.16; PME-PLE 0.2; MOQ-PW 0.45; PLE diameter 0.23.

Colour: carapace pale yellow, sparsely covered with white setae; clypeus pale yellow; median ocular quadrangle dark; abdomen laterally covered with dense long white setae; mottled white with dark markings postero-laterally; dorsum with narrow lancet-shaped heart mark; posterior half of abdomen with triangular darkly mottled area; legs and palps pale yellow, without annulations.

Carapace: as long as wide (CI 0.97); clypeus short,  $1.01 \times$  median ocular quadrangle length, sloping (Fig.1c) not projecting much beyond eye area; eye tubercle depressed, sides vertical (Fig1d); PLE largest; eye ratio 1: 0.36: 1.1: 1.63, MOQ-AW = MOQ-PW; chelicerae elongate,  $1.61 \times$  longer than wide; retromargin with row of five to six minute teeth.

Abdomen (Fig.1e): length 3.26, width 4.43; much wider than long, triangular; five pairs of dorsal muscular pits; third pair largest, oval; posterior lateral spinnerets  $1.21 \times$  longer than abdomen,  $1.71 \times$  carapace width; tS  $4.1 \times$  bS.

Legs: leg II longest,  $2.22 \times$  total body length; leg ratio: 1: 0.45: 1.02: 0.93; metatarsus I,  $7.64 \times$  tarsus I; distal part of metatarsus  $0.73 \times$  length of proximal part; leg measurements: I- Fe 3.9, Pat + Tib 3.86, Mt I 2.81, II 2.06, Ta 0.64, total 13.13; II-4.01, 4.14, 2.81, 2.06, 0.6, total 13.35; III-1.53, 1.57, 1.08, 0.55, total 4.77; IV-3.57, 3.39, 2.89, 1.8, 0.56, total 12.19; Palp-0.89, 1.11, 0.75, total 2.63.

Epigyne (Figs.1a,b): elongate (el/ew 0.9); externally with two longitudinal oval depressions; copulatory ducts form regular loop anterior of copulatory openings; multiple globose seminal receptacles abutting central stalk; spermathecae complexly coiled ..

**Male.** Unknown.

**Distribution.** Democratic Republic of the Congo, Rwanda, Uganda (Fig. 3).

**Natural history.** Some of the type specimens were collected from trees in the Forests Biome.

## 2. *Murricia emlynae* spec. nov. (Figs. 1f-j & 2)

**Types.** Male holotype, **Kenya:** Rift Valley Province, Marich Pass, Field studies Centre ( $1^{\circ}32'S$   $35^{\circ}27'E$ ), 7.vi.1999, W.J. Pulawski, J.S. Schweikert, CAS; - paratype: 1 male, **Cameroon:** Chabal Mbabo, SW slope ( $07^{\circ}25'N$   $12^{\circ}49'E$ ), 1300 m a.s.l., grassland, 12.iii.1981, Bosmans & van Stalle, MRAC 162559.

**Etymology.** Specific epithet named after the second daughter of the author.

**Diagnosis.** Small spiders; legs long; eye tubercle slightly raised (Fig. 2c); clypeus short (Fig. 2d); male palp with complexly coiled sperm duct; embolus circular with distal curve, apex acute; small triangular median tegular apophysis, transversely positioned (Figs. 2a,b). Female unknown.

**Description. Male.** Size (n=2). TL 4.95 (4.88 - 5.03); CL 2.25; CW 2.03 (1.95 - 2.1); CLL 0.32 (0.31 - 0.33); OAL 0.5 (0.47 - 0.52); AME diameter 0.2; AME-AME

0.16; ALE 0.16; MOQ-AW 0.56; ALE diameter 0.08; PME-PME 0.12; PME diameter 0.17; PME-PLE 0.25; MOQ-PW 0.45; PLE diameter 0.18.

Colour: carapace red-brown to pale yellow, dark broad posterior border, distinct longitudinal fovea; clypeus with dark medial line; eye area dark; abdomen: dorsum white with dark markings, dark antero-lateral border; heart mark lancet-shaped, as long as abdomen; venter pale; posterior lateral spinnerets with strong annulation; legs pale with striations on margins, patellae dark; palps with tarsi dark.

Carapace: longer than wide (CI 1.11); clypeus short,  $0.6 \times$  median ocular quadrangle length, sloping; eye tubercle slightly raised; AME largest, eye ratio 1: 0.41: 0.85: 0.9; chelicerae rather stout,  $1.85 \times$  longer than wide, retromargin with row of six minute teeth.

Abdomen (Fig. 2e): wider than long, widest posteriorly, sub-quadrate; five pairs of round dorsal muscular pits round, small, except large oval third pair; posterior lateral spinnerets  $1.35 \times$  longer than abdomen;  $1.92 \times$  carapace width;  $tS 4 \times bS$ .

Legs: leg II longest,  $3.33 \times$  total body length; leg ratio 1: 1.03: 0.32: 0.88; metatarsus I,  $10.77 \times$  longer than tarsus I; distal part of metatarsus  $0.62 \times$  length of proximal part; leg measurements: I- Fe 4.28, Pat + Tib 4.8, Mt I 3.98, II 2.4, Ta 0.6, total 16.29; II-4.35, 5.33, 4.13, 2.48, 0.6, total 16.51; III-1.65, 1.76, 0.9, 0.38, total 4.65; 3.68, 4.2, 3.75, 2.1, 0.6, total 14.25; Palp-0.9, 0.83, 0.75, total 2.55.

Palps (Figs. 1h,i): tibia stout, as long as wide, dorsal spines absent; cymbium compact,  $1.5 \times$  longer than wide, three apical spines; bulbus round; sperm duct irregularly coiled; embolus situated in distal half of bulbus, circular with distal curl, apex acute; median tegular apophysis small, triangular, apex acute, prolaterally directed.

**Female.** Unknown.

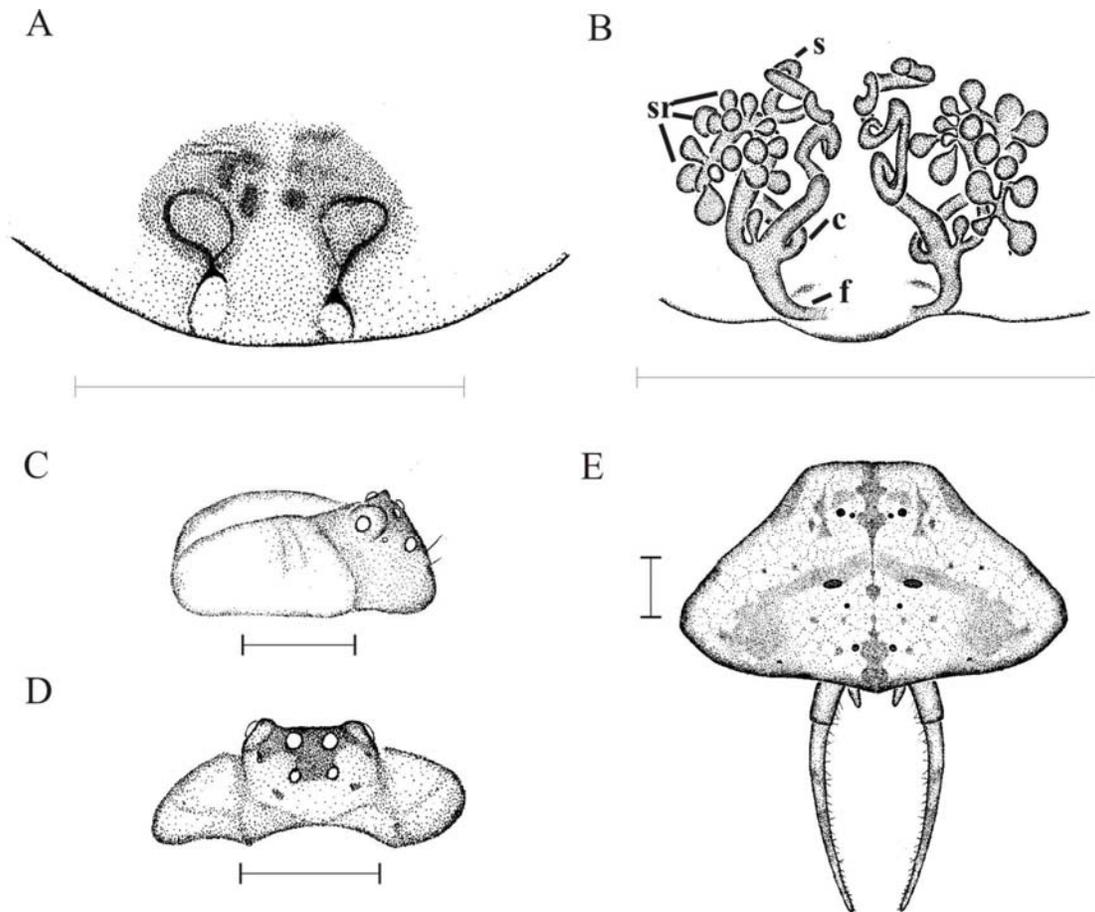
**Distribution.** Cameroon, Kenya (Fig. 3).

**Natural history.** The male paratype was caught at an altitude of 1300 m a.s.l., in grassland.

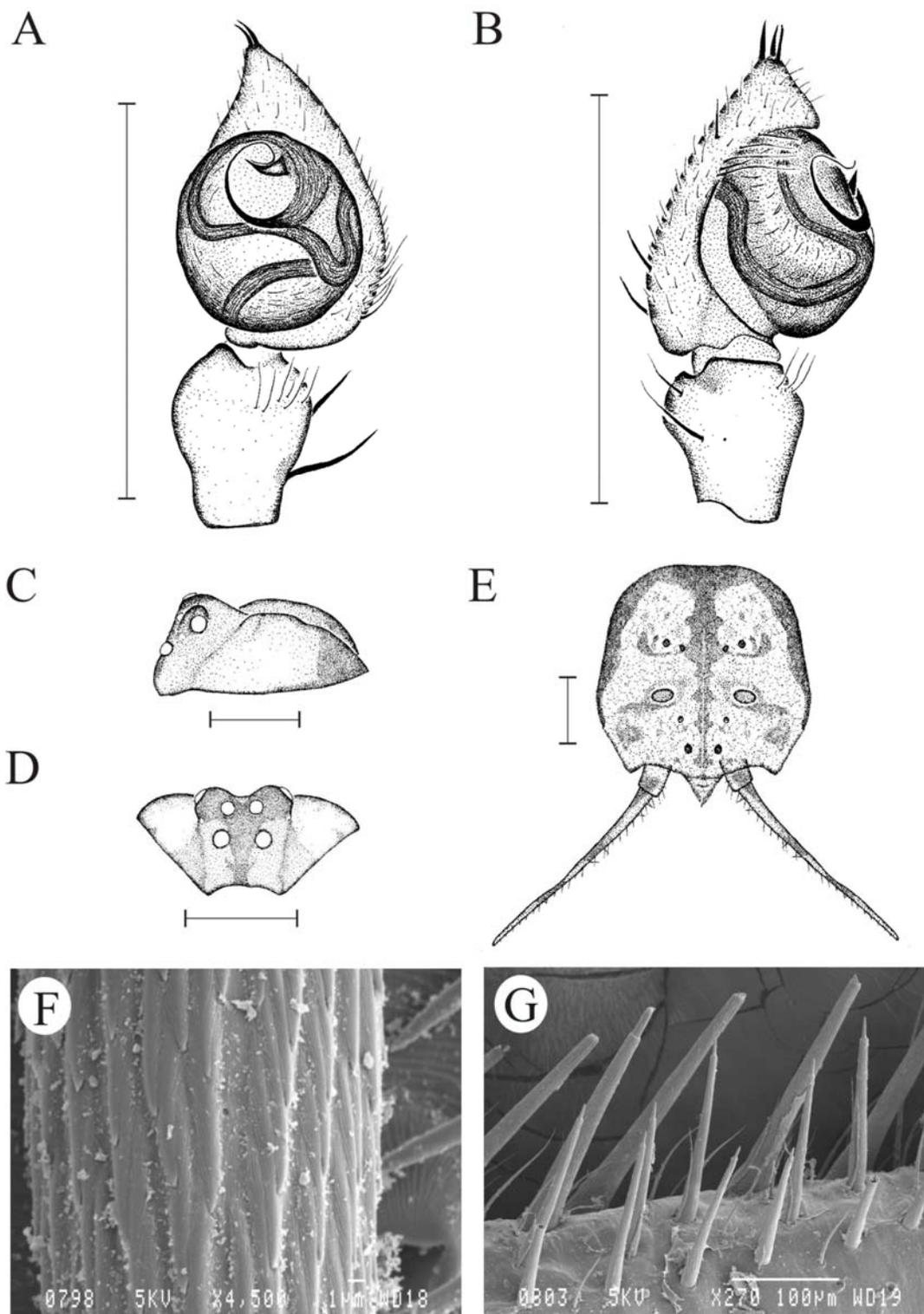
## References

Baehr, M. & B. Baehr. 1993. The Hersiliidae of the Oriental Region including New

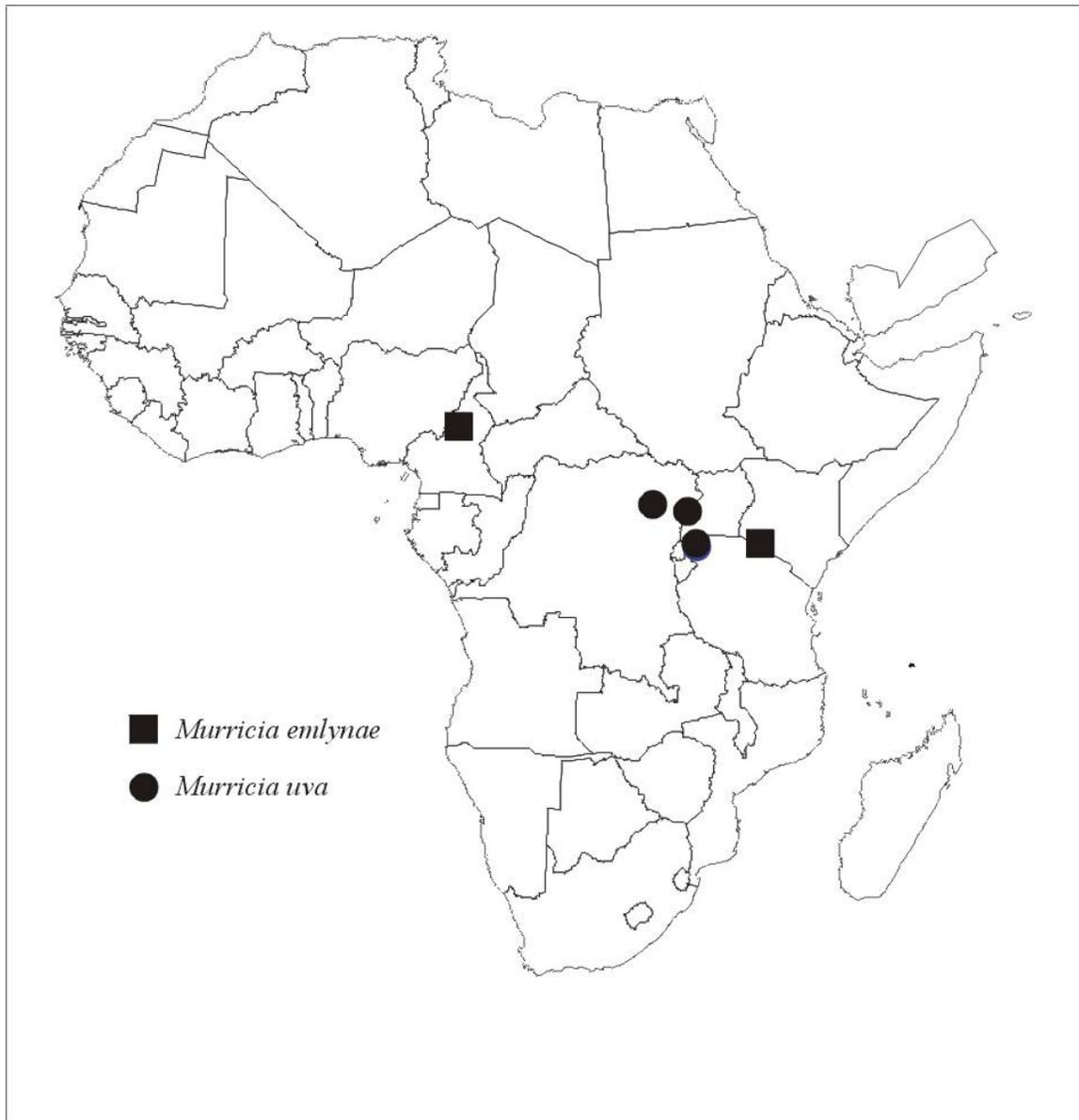
- Guinea. Taxonomy, phylogeny, zoogeography (Arachnida, Araneae). *Spixiana* Supplement **19**: 1-96.
- Forster, R.R. 1980. Evolution of the tarsal organ, the respiratory system and the female genitalia in spiders. *Verhandlungen der Internationale Arachnologische Kongres* **8**: 269-284.
- Platnick, N.I. 2004. The World Spider Catalog, Version 3.5.  
<http://research.amnh.org/entomology/spiders/catalog81-87/INTRO1.html>
- Pocock, R. I. 1900. *The fauna of British India, including Ceylon and Burma. Arachnida.* London, pp. 1-279.
- Simon, E. 1882. II. Etude sur les Arachnides du Yemen méridional. In Viaggio ad Assab nel Mar Rosso dei signori C. Doria ed O. Beccari con il r. Aviso esploratero del 16 nov. 1879 ad 26 feb. 1881. *Annali di Museo Civico di Storia Naturale di Genova* **18**: 207-260.
- Simon, E. 1893. *Histoire naturelle des araignées.* Paris, **1**: 257-488.



**Figure 1.** *Murricia uva* sp. nov. **A.** Epigyne ventral view. **B.** Epigyne dorsal view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Female abdomen dorsal view with spinnerets. Illustration by SF



**Figure 2.** *Murrícia emlynae* sp. Nov. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view **D.** Carapace anterior view. **E.** Male abdomen dorsal view with spinnerets. Electron micrographs **F.** Leg spine. **G.** Spinules on posterior lateral spinnerets. Illustrations by SF.



**Figure 3.** Distribution map of Afrotropical species of *Murrícia* Simon.

## CHAPTER FIVE

### **The First Records of *Neotama* Baehr & Baehr from the Afrotropical Region and Description of a New Genus, *Prima* (Araneae: Hersiliidae)**

The genus *Neotama* Baehr & Baehr is recorded from the Afrotropical Region for the first time. The *Hersilia* Audouin species *H. corticola* was transferred to *Neotama*. A new genus from Madagascar, *Prima* gen. nov., are erected and two new species, *P. ansiae* and *P. syda* is described.

**Key words:** Afrotropical Region, Araneae, Hersiliidae, *Neotama*, *Prima*.

## Introduction

The family Hersiliidae is known for the peculiarly long legs of its members. The legs of some genera have been modified to accommodate this elongation and presumably add to the speed at which these spiders move. These adaptations vary from flexibilities in the distal third of the metatarsi to complete biarticulation. Until recently arboreal hersiliids with flexible zones on their metatarsi, were only known from Australia (Baehr & Baehr 1987), Neotropical Region (Reihms and Brescovit, 2004) and the Oriental Region (Baehr & Baehr 1993). The biarticulate condition could be considered derived and is restricted to the Afrotropical (Benoit, 1968) and Oriental Regions. This study records the first arboreal hersiliids with flexible zones on their metatarsi from the Afrotropical Region.

*Neotama* Baehr & Baehr is a small, very long-legged genus in the family Hersiliidae with four species recorded from India, Sri Lanka, Java and Sumatra (Platnick 2004). Rheims & Brescovit has described four additional species from the Neotropical Region. The genus is distinguished by the narrow flexible zone in the distal third of metatarsi I, II and III, and the epigine with a slit-like lateral opening, (Baehr & Baehr 1993).

Members of *Neotama* are arboreal forest dwellers. Very little is known about their natural history. The narrow flexible zone and very simple male palp and epigyne are considered to be plesiomorphic and Baehr & Baehr (1998) used members of the genus to polarise characters in the genus *Hersilia* Audouin.

In this study the first records of *Neotama* from the Afrotropical Region was made resulting in a considerable expansion of the genus' known distribution. One species is described that were collected in the southeastern coastal forests of South Africa. A new genus, *Prima* gen. nov., is also erected for two new species from Madagascar. This paper forms part of a series on the hersiliidae of the Afrotropical Region.

## Materials and Methods

Study area: The area covered by this study is the Afrotropical Region, including the following islands in both the Indian and Atlantic oceans: St. Helena, Comoros ,

Madagascar, Seychelles, Zanzibar and Cape Verde. 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. Where possible, locality coordinates are given for all collection localities of species. 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). References to illustrations in this publication is capitalised whereas references to figures from other papers are noted in lower case.

Abbreviations: The following abbreviations are used in this paper:

ALE - anterior lateral eye; AME - anterior median eye; bS - basal segment of posterior lateral spinneret; CI - carapace index; CL - carapace length; CLL - clypeus length; co - copulatory opening; CW - carapace width; el - epigyne length; ew - epigyne width; f - fertilization duct; Fe - femur; MOQ - median ocular quadrangle; MOQ-AW - MOQ anterior width; MOQ-PW - MOQ posterior width; MOQL - MOQ length; Mt - metatarsus; Pat - patella; PER - posterior eye row; PLE - posterior lateral eyes; PME - posterior median eyes; Ta - tarsus; Tib - tibia; tS - terminal segment of posterior lateral spinneret.

Measurements: Where enough material was available, 10 specimens of both sexes were measured for each species. Measurements were made under a stereomicroscope using an ocular micrometer with up to 50× magnification. All measurements are given in millimetres with the observed ranges in parentheses.

The following measurements were taken.

Carapace: CI - carapace index (derived by dividing the length of carapace by its width); CL - carapace length (measured from clypeal edge to posterior edge); CW - carapace width (measured over widest part of the carapace); CLL - clypeus length (measured from outer edge of AME to anterior edge of clypeus).

Size of eyes is given as relative to AME in the following order: AME: ALE: PME: PLE.

Legs - length of leg (each segment from the 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.

Abdomen: length (measured from anterior edge to posterior edge of abdomen) and width (measured over widest part of abdomen); spinneret length.

Epigyne: length and width.

Drawings: The left palp of males was drawn where available, otherwise the right palp were drawn and specified as such. Drawings of the carapace include a lateral view and an anterior view. The abdomen of the female were drawn if available, otherwise the male abdomen were drawn. In some type specimens the abdomen was damaged to such an extent that no drawings could be made. Drawings of epigyne include a ventral and dorsal view.

Material were received on loan from the following institutions: NM - Natal Museum, Pietermaritzburg, South Africa; TMP – Northern Flagship Institute – Transvaal Museum, Pretoria, South Africa; .

### Taxonomy

#### ***Neotama* Baehr & Baehr, 1993.**

*Tama* Simon, 1882: 255

*Neotama* Baehr & Baehr, 1993: 68

Type species: *Tama variata* Pocock, 1899

**Remarks.** *Neotama* differs from *Tama* Simon in its arboreal life style; much longer legs, leg I and II always longer than leg IV, a narrow flexible zone in distal third of leg I, II and IV; dorso-ventrally flattened carapace and abdomen; very short clypeus. As opposed to monotypic *Tama*, which is a ground living species, with short legs, leg IV always longer than leg I and II, elongate flexible zone in distal third of metatarsi I, II, and IV; carapace inclined and abdomen convex; clypeus long.

**Diagnosis:** clypeus very short, as long as ocular area length, eye tubercle depressed; very long legs, metatarsi I, II, and IV with narrow flexible zone in distal third; male palp with tibia

elongate, cymbium digitate, bulbus round; sperm duct regularly curved; embolus curved short, stout; epigyne externally with two lateral oval openings, medial spermathecae basally swollen, lateral spermathecae simple, round well separated from copulatory duct.

**Description. Female.** Size: medium, range (6.32 - 7.13).

Colour: pale yellow carapace with isolated dark and white markings laterally; clypeus pale yellow, white anteriorly; eye area dark around AME eyes and PER; white mark posteriad on eye tubercle; abdomen white with dark antero-lateral borders; dorsum with lancet-shaped heart mark; V-shaped marking posteriad on dorsum (Fig. 1e); posterior lateral spinnerets with no or faint annulation; legs pale yellow with patellae dark brown; femora and palps with faint annulation.

Carapace: as long as wide; thoracic region widest; cephalic region narrow; dorso-ventrally flattened (Fig. 1c); fovea longitudinal with radial striae; clypeus very short, not projecting beyond eye tubercle, varies in length between  $0.36$  and  $0.59 \times$  median ocular quadrangle length; eye tubercle very depressed (Fig. 1c); ALE smallest, white; AME largest; chelicerae stout, retromargin with one row of minute teeth, promargin with three large teeth. Sternum heart-shaped; labium triangular,  $0.63 \times$  endite length; endites elongate, rectangular.

Abdomen: wider than long, widest in posterior third; dorso-ventrally flattened; heart mark lancet-shaped, extends up to third pair of dorsal muscular pits (Fig. 1e); four pairs of distinct dorsal muscular pits that vary in size, second pair largest, oval; venter with V-shaped muscular pits posterior lateral spinnerets very long,  $>2 \times$  carapace width; terminal segment  $>4 \times$  basal segment; spinules on posterior lateral spinnerets conical in shape narrowing distally to tapers at the end (Fig. 1e);.

Legs: either leg I or II longest; leg I  $> 3 \times$  total body length; leg formula I:II:IV:III; leg III very short,  $< 0.3 \times$  length of leg I; metatarsus I  $> 8 \times$  longer than tarsus I; distal segment of metatarsus  $< 0.5 \times$  length of proximal segment. Femur, patella, and metatarsus with spines; spines short,  $< 0.5 \times$  diameter of legs, spine formula tends to be rather similar between species and were variations of the following: I- Fe 1p1r1d-1p1r1d-1p1r1d, Pat 1d, Tib 1d-1p-1r-1d-1r-1p, Mt 1p1r; II- Fe 1p1r1d-1p1r1d-1p1r-1d, Pat, Tib 1d-1p1r-1d-1p1r-1d, Mt 1p1r; III- Fe 1d-1d, Pat 1d, Tib 1d-1d, Mt 1r1p1v-1d; IV- Fe 1d-

1d-1d-1d, Pat 1d, Tib 1d-1d-1r-1d, Mt 1p1r; spine with irregular patterns of lancet-shaped scales; paired tarsal claws with nine teeth.

**Male.** Size: small (4.83 - 5). Resemble female in shape and colour; male differs structurally as follows: smaller in size; abdomen more slender, legs much longer in relation to body length; leg I much longer than other legs.

Palps: tibia elongate, cymbium digitate; bulbus round, sperm duct regularly curved; embolus short, stout, curves, apex acute.

### 1. *Neotama corticola* (Lawrence, 1937) comb. nov. (Figs.1a-g & 4)

*Hersilia corticola* Lawrence, 1937: 226; 1938: 481; Smithers, 1945: 5, 8; Benoit, 1967: 15.

**Types.** female holotype, **South Africa:** KwaZulu-Natal: Durban, Bluff, (29°53'S 31°01'E), xi.1936, R.F. Lawrence, NMSA 74; - paratypes: one female, same data; three males, Umzinto, Vernon Crookes Nature Reserve, (30°16'S 30°37'E), 5.i.1992, L.N. Lotz, NMBA 5957; 1 male, Eastern Cape Province: Kudu Reserve (Fort Brown) near Grahamstown (33°07'S 26°37'E), 629 m a.s.l., on trunk of *Combretum caffrum*, 14.xii.1981, E. Nieman, J. Hoffman, NMSA.

**Diagnoses.** Medium-sized spiders; very long legs; eye tubercle depressed; clypeus short; narrow flexible zone on metatarsi I, II, and IV; male palp with bulbus without any apophysis; embolus short, stout, curved (Figs.1a,b); epigyne with spiniform lateral lobes, central septum narrow anteriorly(Fig.1f); spermathecae bilobed, lateral circular spermathecae strongly divided from insemination duct (Fig.1g);

**Description. Female.** Size (n=4). TL 6.67 (6.32- 7.13); CL 2.28 (1.76 - 2.63); CW 2.36 (2 - 2.7). OAL 0.2 (0.16-0.23); CLL 0.29 (0.2-0.4). AME diameter 0.23; AME-AME 0.21; AME-ALE 0.2; ALE diameter: 0.078; MOQ-AW 0.64; PME-PME 0.22; PME diameter 0.17; PME-PLE 0.23; MOQ-PW 0.55; PLE diameter: 0.15.

Colour: carapace pale yellow to pale brown, with brown and white spots laterally; clypeus pale, white anteriorly; eye area dark around AME eyes and PER; white mark

posteriad on eye tubercle; abdomen white with dark borders anteriorly; dorsally with lancet-shaped heart mark; posterior half of abdomen V-shaped dark border around dorsal muscular pits, venter mottled white; posterior lateral spinnerets with no or faint annulation; legs pale yellow with dark brown patellae; femora and palps with faint annulation.

Carapace: as long as wide (CI 0.97); clypeus very short,  $0.48 \times$  median ocular quadrangle length, sloping; eye tubercle depressed; AME largest; eye ratio 1: 0.47: 0.77: 0.72; MOQ-AW > MOQPW; chelicerae stout,  $1.71 \times$  longer than wide; one row of six minute teeth on retromargin; promargin sien genus beskrywing).

Abdomen: length 3.03, width 4.2, wider than long, widest in posterior third; four pairs of dorsal muscular pits, second pair large, oval; posterior lateral spinnerets  $1.64 \times$  length of abdomen;  $2.82 \times$  CW; tS  $4.25 \times$  bS.

Legs: leg I longest,  $3.23 \times$  total body length; leg ratio 1: 0.99: 0.28: 0.87; metatarsus I  $8.29 \times$  longer than tarus I; distal part of metatarsus  $0.49 \times$  proximal part; leg measurements: I- Fe 6.49, Pat + Tib 7.18, Mt I 8.93, Ta 0.98, total 21.8; II-6.01, 6.81, 8.09, 0.98, total 21.07; III-2.06, 2.06, 1.66, 0.64, total 5.95; IV-5.47, 5.74, 7.8, 0.86, total 19.16; Palp-1.13, 1.13, 0.94, total 3.38.

Epigyne (Figs.1f,g): wide (el/ew 0.58); spiniform lateral lobes; central septum broad, narrower anteriorly; copulatory openings widely spaced; spermathecae bilobed, lateral spermathecae simple, round, strongly divided from copulatory duct duct (Fig.1g).

**Male.** Size (n=3). TL 4.92 (4.83 - 5); CL 2.25 (2.16 - 2.33); CW 2.02 (1.88 - 2.16). OAL 0.56 (0.56-0.57); CLL 0.21 (0.19-0.22). AME diameter 0.22; AME-AME 0.12; AME-ALE 0.13; MOQ-AW 0.57; ALE diameter 0.09; PME-PME 0.19. PME diameter 0.13; PME-PLE 0.19; MOQ-PW: 0.44; PLE diameter 0.14.

Closely resemble females except: smaller; legs longer,  $1.2 - 1.7 \times$  longer; leg I very long, patellae dark; leg measurements: I- Fe 9.39, Pat + Tib 11.82, Mt I 18.68, Ta 1.12, total 37.22; II- 7.5, 8.98, 10.88, 0.71, total 28.58; III-2.46, 2.44, 2.1, 0.6, total 7.25; IV-6.75, 7.25, 11.07, 0.75, total 25.05; Palp-1.12, 0.77, 0.7, total 2.59.

Palps (Figs.1a,b): tibia elongate,  $1.5$  longer than wide; cymbium digitate, twice as long as wide, three apical spines; row of long white setae on prolateral border of cymbium arching over bulbus; bulbus round; sperm duct regularly curved; embolus circular, stout, apex acute.

**Additional material examined. South Africa:** KwaZulu-Natal: Hluhluwe Game Reserve (28°09'S 32°10'E), 2 females, x.1935, R.F. Lawrence, NM 1149; Port Edward (31°03'S 30°13'E), 1 female, xi.1943, R.F. Lawrence, NM 4168; Ngome State Forest (27°52'S 31°24'E), 2 females, Northern KwaZulu-Natal, 1.ii.1988, L. Prendini, TMP 181653; “Cascade” farm (H. Lee) 10km W Eshowe (28°53'S 31°28'E), Ngotsche (Ntumeni) forest, 600m a.s.l., 2 females, 1 juv., 17-18.i. 1984, C.E. Griswold, P. Croeser, R. Lee, P. Reavell; Western Cape Province: Knysna, Diepwalle Forest Station, 22 km NE of Knysna (33°57'S 23°10'E), 600m a.s.l., indigenous forest, 1 female, 1 juv., 11-13.xi. 1985, C.E. Griswold, J. Doyen, T.M. Griswold, NMSA

**Distribution:** South Africa (forested areas of KwaZulu-Natal and Western Cape) (Fig. 4).

**Natural history.** Found mainly on trees in the Forest Biome. Adult females were collected between October and November, adult males in January and July; arboreal, caught in forest on tree trunk.

***Prima* gen. n.**

Type species: *Prima ansiae* spec. nov.

**Etmology.** Prima was the daughter of Hersilia, Roman mythology. The gender is feminine.

**Diagnoses.** The species in this genus *Prima* resemble those of *Tama* Simon by the presence of an elongate flexible zone on metatarsi I, II, and IV. The males are distinguished by the apically inserted, bifid median apophysis, short stout embolus and sperm duct with a medial curve (Fig. 2a). The females are distinguished by the presence of medial copulatory openings on the epigynal plate, unpigmented subtriangular median plate and the indistinct separation between the spermathecae and seminal receptacles (Fig. 3a,b).

**Description. Female.** Size: small, range (4.5-6).

Colour: Carapace pale yellow; clypeus pale with dark or white markings; eye area dark around median ocular quadrangle and around posterior eye row, white marks

posteriad of eye tubercle in some species; sternum, labium and endites pale. Abdomen: dorsum mottled white; heart mark dark, lancet-shaped extends up to third pair of dorsal muscular pits; antero-lateral border dark brown; venter pale to mottled white; femora and tibiae pale with faint to dark annulation and lateral stripes.

Carapace: as wide as long; thoracic region widest; cephalic region narrow; dorso-ventrally flattened; fovea longitudinal with radial striae; covered with plumose setae; clypeus truncate in dorsal view, sloping, short, varies in length from  $0.46-0.97 \times$  median ocular quadrangle length; eye area depressed to slightly raised (Figs. 2c & 3c); ALE smallest;  $AME \geq PME \geq PLE \gg PLE$  with ratio range  $AME:ALE:PME:PLE = 1: 0.38-0.83: 0.77-1.25: 0.54-1$ ; chelicerae stout, retromargin with one row of minute teeth, promargin with three large teeth; sternum heart-shaped; labium half the length of endite triangular to crescent-shaped; endites elongate, rectangular.

Abdomen: as long as wide, circular (Fig. 2e); dorso-ventrally flattened; dorsum with lancet-shaped heart mark (Fig. 2e); four small dorsal muscular pits that vary in size; second pair largest; ventrum with V-shaped muscular pits. spinnerets: posterior lateral spinnerets long, at least  $2 \times$  longer than carapace width; terminal segment  $>4 \times$  length of basal segment; spinules on posterior lateral spinnerets conical, tapering distally, apex truncate or acute;

Legs: either leg I or II longest; very long, leg I at least  $3.23 \times$  longer than total length of body; leg formula I:II:IV:III; leg III very short,  $<0.4 \times$  length of leg I; metatarsus I  $>6 \times$  longer than tarsus I; metatarsi I, II, and IV with elongate, flexible zone distally. Spines short spines  $<$  leg diameter; spine formula rather similar between species, variations of the following: I- Fe 1r1p-1d-1d-1r1p1d, Pat, Tib 1p, Mt 1p1r; II- Fe 1r1p-1d-1d-1r1p1d-1r-1p-1d, Pat, Tib, Mt 1p1r; III- Fe 1d-1d-1d, Pat 1d, Tib, Mt; IV- Fe 1d-1d-1d-1r-1p1d, Pat, Tib 1p, Mt 1r1p. Spine microstructure with irregular patterns of lancet-shaped scales; tarsal claws with seven tarsal teeth.

Epigyne (Figs. 2f,g & 3a,b): lateral lobes spiniform; median plate subtriangular, white; copulatory openings mesad of spermathecae; copulatory ducts short, simple; spermathecae and seminal receptacles indistinctly separated; fertilization duct curved medially.

**Male.** Size: Small (4.5). Resemble female in shape and colour; male differs structurally as follows: smaller in size; abdomen more slender.

Palps (Figs. 2a,b): tibia elongate; cymbium digitate, one spine apically; bulbus distad flattened; sperm duct with medial curve; median tegular apophysis apically inserted attached; embolus short, stout.

**Distribution.** Madagascar

**Phylogenetics.** The monophyly of this genus is supported by the presence of a claw-like, bifid median apophysis positioned distally on the bulbus of the palp and the indistinct separation between the spermathecae and seminal receptacles of the epigyne.

### 1. *Prima ansieae* spec. nov. (Figs. 2 & 4)

**Types.** Holotype female, **Madagascar:** Fianarantsoa Province: Parc Nationale, Ranomafana: Talatakely (21°14'S 47°25'E), 5-18.iv.1998, C.E. Griswold, D.H. Kavanaugh, N.D. Penny, M.J. Raheirilalao, J.S. Ranorianarisoa, J. Scweikert, D. Ubick, CAS; -paratypes: 1 male, 8 juveniles, same data; 1 female, Parc Nationale Ranomafana: 23km N. Vohiparona village, (21°12'S 47°23'E), c.a. 1100m, 10-11.iv.1998, C.E. Griswold, D.H. Kavanaugh, N.D. Penny, M.J. Raheirilalao, J.S. Ranorianarisoa, J. Scweikert, D. Ubick, CAS; 1 female, Antsiranana Province; PN Montagne d'Ambre, 2.79km NE of park entrance (12°32'S 49°10'E), 21-30.xi.1993, J. Coddington, C. Griswold, N. Scharff, S. Larcher, R. Adrianmazinama, CAS.

**Etymology.** The specific epithet is a patronym in honor of Prof. Ansie Dippenaar-Schoeman for her contribution to the knowledge of African spiders.

**Diagnoses.** Small spider; legs very long; eye tubercle depressed (Fig. 2c); clypeus short (Fig. 2d); males are distinguished by the medial curve of the sperm duct; median tegular apophysis, apically attached, bifid with concave flap laterally, medially with a hook-shaped process excised at apex (Fig. 2a); epigyne with subtriangular median palte, copulatory openings mesad of spermathecae; separation between seminal receptacle and spermathecae indistinct (Fig. 2f,g).

**Description. Female.** Size (n=3). TL 5.62 (5.25 - 6); CL 2.06 (1.84 – 2.16); CW 2.14 (2 - 2.16). OAL 0.11 (0.1 - 0.12); CLL 0.28 (0.26-0.3). AME diameter: 0.14; AME-AME: 0.21; AME-ALE: 0.15; MOQ-AW: 0.57; ALE diameter: 0.11; PME-PME: 0.13; PME diameter: 0.2. PME-PLE: 0.14. MOQ-PW: 0.52. PLE diameter: 0.15.

Colour: carapace pale brown; clypeus pale; eye area dark with tridentate white spot posteriad on eye tubercle; abdomen white with antero-lateral dark border; heart mark, linear broadening posteriorly; posterior half of dorsum with dark chevron markings (Fig. 2e), distinct transverse lines; venter pale; posterior lateral spinnerets with annulation; legs pale brown; femora and palps annulate.

Carapace: as wide as long (CI 0.96); clypeus short,  $0.76 \times$  longer than median ocular quadrangle length, sloping; eye tubercle depressed, sides sloping; AME largest; eye ratio 1: 0.68: 1.04: 0.82; MOQ-AW > MOQ-PW; chelicerae stout,  $1.67 \times$  longer than wide, row of seven minute teeth on retromargin.

Abdomen (Fig. 2e): length 3.16, width 3.16, circular; four pairs of round dorsal muscular pits, 2<sup>nd</sup> large, 3<sup>rd</sup> and 4<sup>th</sup> very small; posterior lateral spinnerets elongate,  $1.55 \times$  longer than abdomen,  $2.26 \times$  carapace width; ts  $4.37 \times$  bS.

Legs: leg II longest,  $3.23 \times$  total body length; leg ratio 1: 1.11: 0.34: 0.96; metatarsus I,  $8 \times$  longer than tarsus I; metatarsi I, II, and IV with elongate flexible zone distally; distal flexible zone  $0.54 \times$  proximal part; leg measurements: I- Fe 4.73, Pat + Tib 5.23, Mt I 6.54, Ta 0.81, total 16.88; II-4.86, 6.12, 7.69, 0.85, total 18.79; III-1.66, 1.96, 1.73, 0.7, total 5.71; IV-4.69, 3.78, 5.4, 0.9, total 14.31; Palp-1.09, 0.98, 0.91, total 2.98.

Epigyne (Figs. 2f,g): wide (el/ew 0.5); spiniform lateral lobes; epigyne with trapezoid central lobe, copulatory openings mesad of spermathecae; copulatory ducts short, simple; fertilisation duct medially curved.

**Male.** Size (n=1). TL 5.36; CL 2.4; CW 2.4; OAL 0.47; CLL 0.39. AME diameter: 0.26; AME-AME 0.8; ALE 0.08; MOQAW 0.6; ALE diameter 0.07; PME-PME 0.08; PME diameter 0.13; PME-PLE 0.07; MOQPW 0.34; PLE diameter 0.2.

Similar to female except AME larger, absence of lateral line on clypeus; abdomen elongate, longer than wide, widest in middle with almost no dark antero-lateral borders; 3<sup>rd</sup> and 4<sup>th</sup> pair of dorsal muscular pits indistinct; legs disarticulated, legs very long relative to that of females; leg measurements: I- Fe 7.2; Pat + Tib ?, Mt I ?, Ta ?, total ?;

II-8, ?, ?, ?, total ?; III-3.12, 2.4, 2.88, 0.8, total 9.2; IV- 7.6, ?, ?, ?, total ?; Palp-1.33, 1.61, 0.91, total 3.85

Palps (Figs. 2a,b): tibia elongate,  $1.75 \times$  longer than wide; cymbium digitate,  $2.8 \times$  longer than wide, one apical spine; row of long white setae on prolateral border of cymbium extends across bulbus; bulbus with distad flattened; sperm duct with medial curve; median tegular apophysis apically attached; hollowed, bifid, laterally with concave flap and medially with curved process excised at apex; embolus short, stout, apex acute.

**Distribution.** Madagascar (Fig. 4)

**Natural history.** Specimens were collected at 1100m above sea level; females collected in November and April, males in April.

## 2. *Prima syda* gen. n. (Figs. 3 & 4)

**Types.** Female holotype, **Madagascar:** Androrona (15°50'S 49°31'E), x.1970, A. Lambillon, MRAC 142.940.

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

**Diagnosis.** Small spiders; legs long; eye tubercle depressed (Fig. 3c); clypeus short (Fig. 3d); epigyne with median plate, white; copulatory openings adjacent, circular (Fig. 3a), mesad of spermathecae; copulatory ducts elongate with medial bend; fertilisation duct form basal loop, distally with medial curve (Fig. 3b). Male unknown.

**Description. Female.** Size (n=1). TL 4.5; CL 1.88; CW 1.88; CLL 0.26; OAL 0.56; AME diameter 0.26; AME-AME 0.13; ALE 0.1; MOQ-AW 0.65; ALE diameter 0.1; PME-PME 0.09; PME diameter 0.2; PME-PLA 0.1; MOQ-PW 0.49; PLA diameter 0.14.

Colour: carapace pale brown; eye tubercle dark; oblique dark line extends laterally to thoracic region; clypeus dark, anteriorly white; chelicerae pale orange; dark medially; tridentate white spot posteriad on eye tubercle; abdomen mottled darkly; dorsum without pattern, oval white patch anterior of 1<sup>st</sup> and 2<sup>nd</sup> dorsal muscular pits; venter pale; posterior lateral spinnerets and femora annulate; palps with dark annulation.

Carapace: as wide as long (CI 1); clypeus very short,  $0.45 \times$  median ocular quadrangle length; eye tubercle depressed; AME largest; eye ratio: 1: 0.38: 0.77: 0.54. Chelicerae elongate,  $1.79 \times$  longer than wide.

Abdomen: length: 3.5; width: 3.3; widest in posterior third; four pairs of dorsal muscular pits, second pair large, oval; posterior lateral spinnerets elongate,  $1.6 \times$  longer than abdomen,  $2.83 \times$  carapace width; ts  $4.04 \times$  bS.

Legs: leg II longest,  $4.55 \times$  total body length; leg ratio: 1: 1.17: 0.3: 0.96; leg measurements: I- Fe 4.73, Pat + Tib 5.25, Mt I 7.58, Ta 0.9, total 17.63; II-5.1, 7, 7.58, 0.9, total 20.58; III-1.73, 1.73, 1.43, 0.45, total 5.34; IV-4.43, 4.88, 6.83, 0.83, total 16.97; Palp-1.1, 0.91, 0.9, total 2.91.

Epigyne (Figs. 3a,b): epigyne with median plate white; copulatory openings adjacent (Fig. 3a), mesad of spermathecae; copulatory ducts elongate with medial bend; spermathecae and seminal receptacle indistinctly separated; fertilisation duct form basal loop, distally with medial curve (Fig. 3b).

**Male.** Unknown.

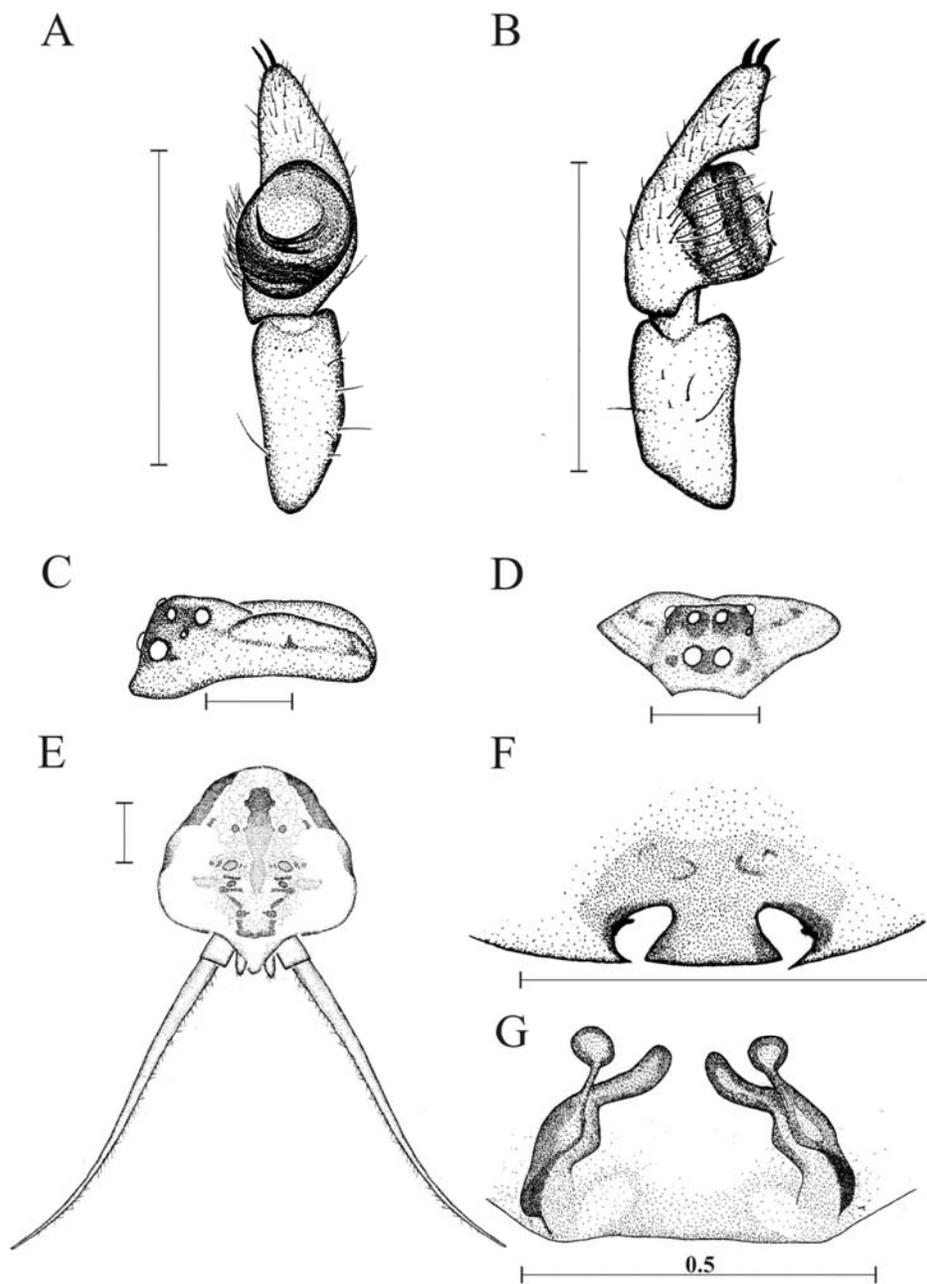
**Distribution.** Madagascar (Fig. 4).

**Natural history.** Holotype female collected in October

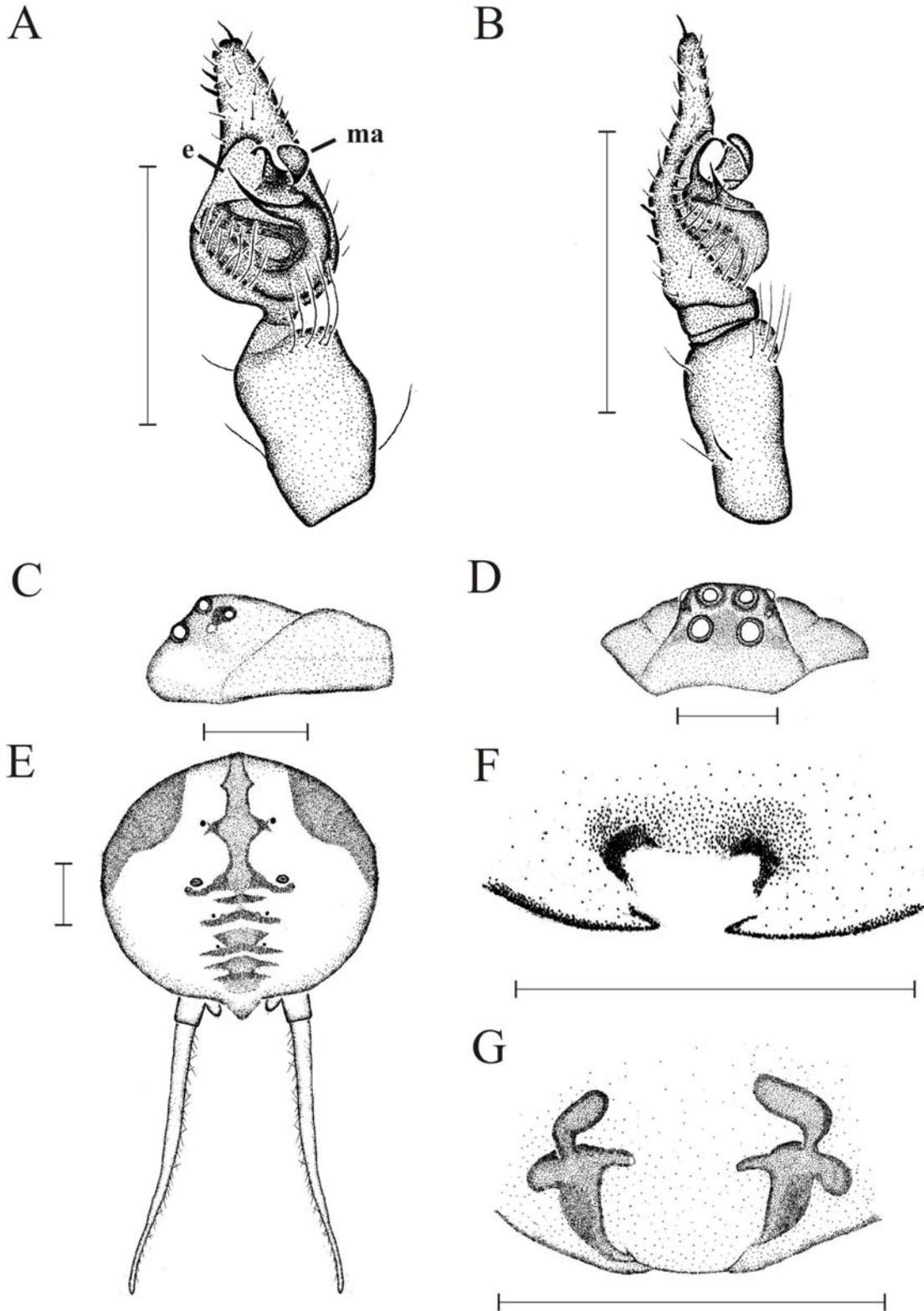
### References

- Baehr, M. & B. Baehr. 1993. The Hersiliidae of the Oriental Region including New Guinea. Taxonomy, phylogeny, zoogeography (Arachnida, Araneae). *Spixiana* Supplement **19**: 1-96.
- Baehr, B. 1998. The genus *Hersilia*: phylogeny and distribution in Australia and New Guinea (Arachnida, Araneae, Hersiliidae). - Proc. 17th European Coll. Arachnology 1997. *Bulletin of the British Arachnological Society* : 61-65.
- Benoit, P. L. G. 1967. Révision des espèces africaines du genre *Hersilia* Sav. et Aud. (Aran.-Hersiliidae). *Revue de zoologie et de botanique africaines* **76**: 1-36.
- Lawrence, R. F. 1937. A collection of Arachnida from Zululand. *Annals of the South African Museum* **8**: 211-273.
- Lawrence, R. F. 1938. A collection of spiders from Natal and Zululand. *Annals of the*

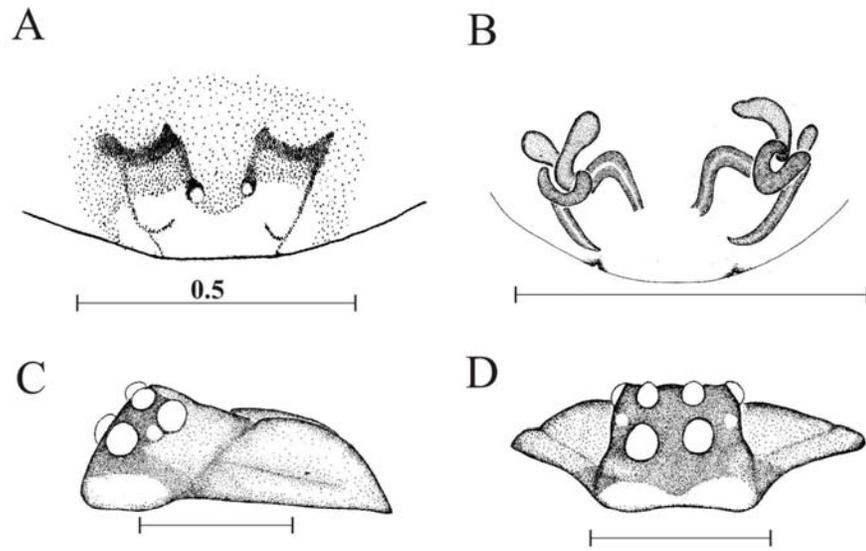
- South African Museum* **8**: 455-524.
- Meyer, M.K.P. (Smith), Rodrigues, M.C. 1966. Acari associated with cotton in South Africa. *Garcia de Orto* **13**:1-33.
- Platnick, N.I. 2003. The World Spider Catalog, Version 3.5.  
<http://research.amnh.org/entomology/spiders/catalog81-87/INTRO1.html>
- Pocock, R. I. 1900. *The fauna of British India, including Ceylon and Burma. Arachnida.* London, pp. 1-279.
- Rheims, C.A. & A.D. Brescovit. 2004. Revision and cladistic analysis of the spider family Hersiliidae (Arachnida, Araneae) with emphasis on Neotropical and Nearctic species. *Insect Systematics and Evolution* **35**: 189-239.
- Simon, E. 1882. II. Etude sur les Arachnides du Yemen méridional. In Viaggio ad Assab nel Mar Rosso dei signori C. Doria ed O. Beccari con il r. Aviso esploratere del 16 nov. 1879 ad 26 feb. 1881. *Annali di Museo Civico di Storia Naturale di Genova* **18**: 207-260.
- Simon, E. 1893. *Histoire naturelle des araignées.* Paris, **1**: 257-488.
- Smithers, R. H. N. 1945. The Hersiliidae (Araneae) of South Africa. *Transactions of the Royal. Society of South Africa* **31**: 1-18.



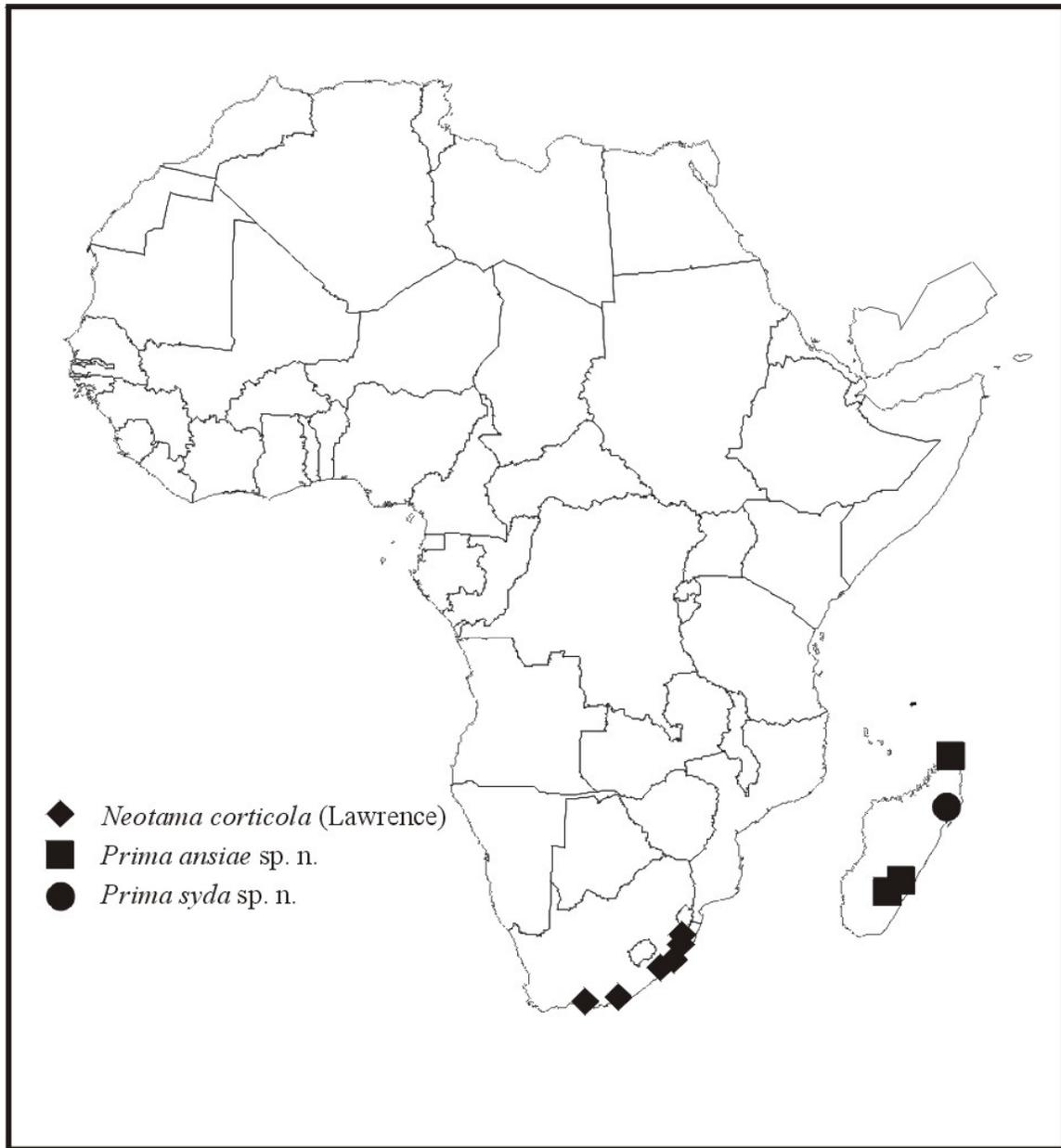
**Figure 1.** *Neotama corticola* (Lawrence, 1937) **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace lateral view. **D.** Carapace anterior view. **E.** Female abdomen dorsal view with spinnerets. **F.** Epigyne ventral view. **G.** Epigyne dorsal view. Illustration by SF.



**Figure 2.** *Prima ansiae* sp. n. **A.** Left palp ventral view. **B.** Left palp prolateral view. **C.** Carapace anterior view. **D.** Carapace lateral view. **E.** Female abdomen dorsal view with spinnerets. **F.** Epigyne ventral view. **G.** Epigyne dorsal view; e = embolus; ma = median apophysis



**Figure 3.** *Prima syda* sp. n. **A.** Epigyne ventral view. **B.** Epigyne dorsal view. **C.** Carapace lateral view **D.** Carapace anterior view. Illustration by SF.



**Figure 4.** Distribution map of *Neotama corticola* (Lawrence) and the *Prima* gen. n.