



THE GENUS *CHEIRACANTHIUM* (ARANEAE: CLUBIONIDAE)
IN SOUTHERN AFRICA

by

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PREFACE

This study was carried out under the auspices of the National Museum, Bloemfontein, from January 1993 to November 1995.

This study represents original work by the author and has not been submitted in any form to another University. Where use was made of the work of others, it has been duly acknowledged in the text.

Leon N. Lotz

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INTRODUCTION

According to Lehtinen (1967), the alpha phase in spider taxonomy has largely been completed and the task of the taxonomist today is to conduct revisionary studies. The present knowledge of the systematics of the Afrotropical Region spiders is still fragmentary and most genera are still in need of revisions.

The Clubionidae, known as sac spiders, are a moderately large cosmopolitan family consisting of 25 genera. Of these nine genera occur in the Afrotropical Region, representing 104 species. This rich and diverse clubionid fauna of the Afrotropical Region has, however, received little attention and no revisionary work has been attempted before the present study.

The genus *Cheiracanthium* C.L. Koch, 1839, also known as the long-legged sac spiders, is a widely distributed cosmopolitan genus with 164 known species (Figure 1). They are nocturnal, fast moving wandering spiders commonly found on plants. A few species are also found in and around buildings. They rest during the day in sac-like retreats made of silk, hence their common name, sac spiders.

Due to their common occurrence on plants they are frequently recorded from agro-ecosystems throughout the world. They are aggressive feeders and prey on a variety of insect pests, as reported by Dondale & Redner (1982), Corrigan & Bennett (1987) and Breene, Dean, Nyffeler & Edwards (1993). In southern Africa Bretell (1982) found that *C. lawrencei* is a very important predator of bollworm in cotton in Zimbabwe, while Van den Berg, Dippenaar-Schoeman & Schoonbee (1990) found *C. lawrencei* to be the dominant clubionid species on cotton in South Africa. They are also known from citrus (Van den Berg, Dippenaar-Schoeman, Deacon & Anderson 1992) and strawberries (Dippenaar-Schoeman 1976, 1979). Results from

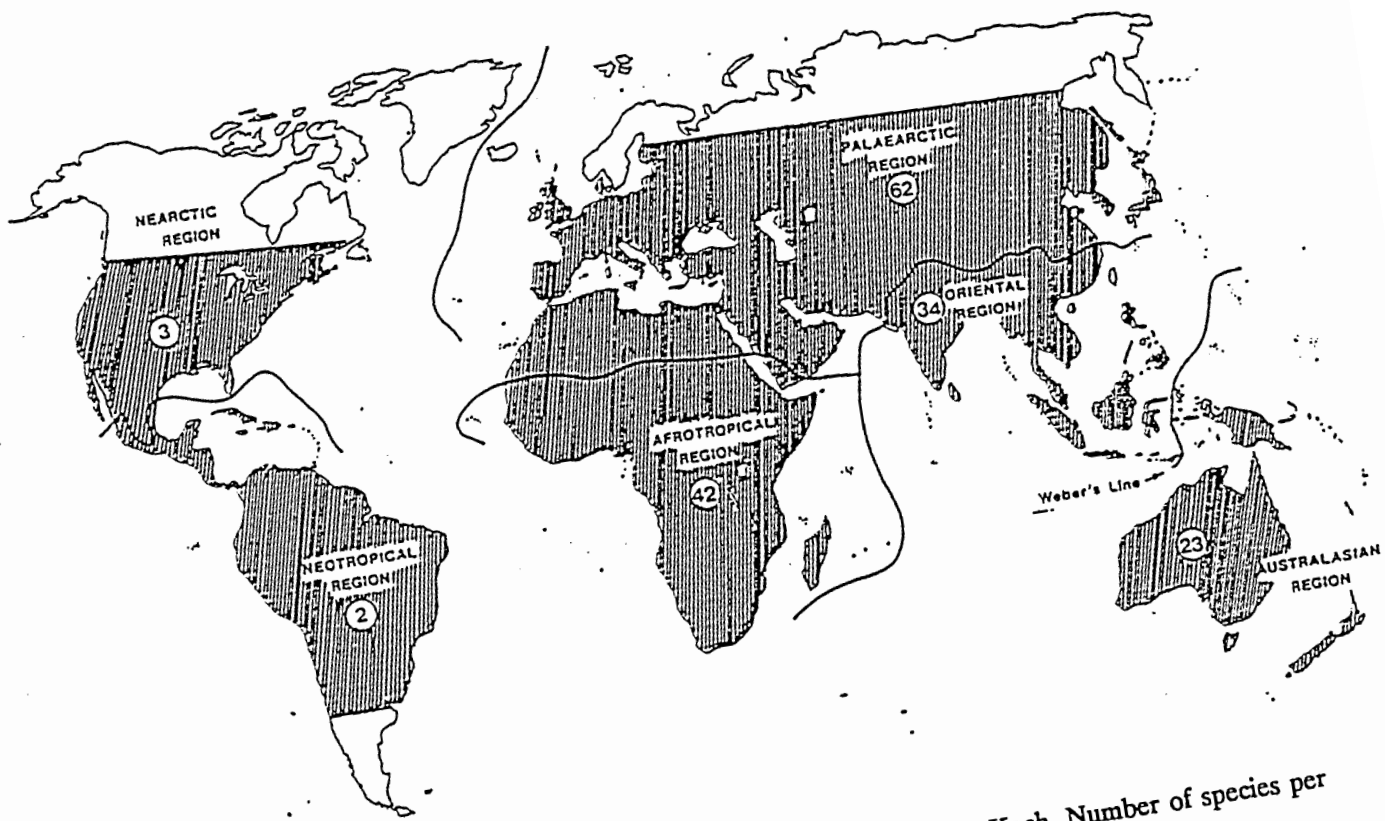


Figure 1. The known geographical distribution of *Cheiracanthium* C.L. Koch. Number of species per region indicated.

this study indicated that three species, namely *C. africanum*, *C. furculatum* and *C. vansoni*, are known to occur on crops in southern Africa. The first two species have a very wide distribution, while *C. vansoni* only occurs in the northern part of the region.

Members of *Cheiracanthium* are frequently found in houses, where they construct their silk retreats on curtains, clothes and bedding. This behaviour brings them in contact with man. During the night they wander around in search of food and frequently land in beds. Due to their aggressive behaviour bites are then frequently administered. According to Newlands & Atkinson (1990a) *C. lawrencei* is the cause of most of the reported spider bite cases in the Witwatersrand, South Africa, whilst Peters (1992) states that these spiders cause about 75% of all venomous spider bites in South Africa. As the bite is not painful the victim does not know that a bite has been delivered. Only later symptoms develop and then it is often very difficult to link these spiders with the specific bite. Their venom is cytotoxic and a bite develops into necrotic wounds that takes about two weeks to heal. Secondary infection frequently causes problems. In southern Africa the medical importance of *Cheiracanthium* is mentioned in studies by de Meillon & Gear (1947), Newlands (1975, 1976, 1977, 1978 & 1986), Newlands, Martindale, Berson & Rippey (1980), Prins & Leroux (1986), Newlands & Atkinson (1988, 1990a & 1990b), Peters (1992) and Müller (1993). It was only in 1980 that the species responsible for the bites in South Africa was identified as *C. lawrencei* (Newlands *et al.* 1980). Results from the present study indicated that *C. lawrencei* is the only species of *Cheiracanthium* known to occur in houses in southern Africa.

According to Lehtinen (1967) no generic revision has been done for the very large *Cheiracanthium* genus since L. Koch (1864). Several regional studies *Cheiracanthium* have been published, by Palmgren (1943) for Finland, Edwards (1958) for the

United States, Van Helsdingen (1978) for the Netherlands, Forster & Blest (1979) for New Zealand, Dondale & Redner (1982) for Canada and Alaska, Urones (1987) for the Iberian Peninsula, Paik (1990) for Korea, Wolf (1991) for central Europe and Bonaldo & Brescovit (1992) for the Neotropical Region.

The present study revises the *Cheiracanthium* species from southern Africa and forms part of an ongoing study of this genus in the Afrotropical Region. The catalogues of Roewer (1954), Brignoli (1983) and Platnick (1989 & 1993) list 57 *Cheiracanthium* species as occurring in the Afrotropical Region, of which 13 occur in the southern African Region.

Most of the species descriptions were done in the late nineteenth and early twentieth century and are inadequate in terms of present-day taxonomic requirements and are scattered in the literature.

The first southern African species of *Cheiracanthium*, namely *C. clavigerum* Simon, 1897 and *C. filipes* Simon, 1898, were described from Kwazulu/Natal. Strand (1907a) described *C. hottentottum*, the first species from the Western Cape, based on an immature specimen. From Namibia, Simon (1910b) described *C. simplicitarise*, whilst Lawrence (1927) described *C. castum* from Namakunde, Namibia (type locality now part of Angola) and *C. inornatum* from Namibia. Unfortunately the name *C. inornatum* was preoccupied and Roewer (1951) suggested the replacement name *C. lawrencei*. Roewer (1951) also provided the replacement name *C. melanostomellum* for *C. melanostoma* Simon, 1910, a species described from Equatorial Guinea, but also recorded from Namibia by Roewer (1951). Subsequently another three species were described, namely *C. natalense* Lessert, 1923, *C. silvicolum* Lawrence, 1938 and *C. akermani* Lawrence, 1942, all from Kwazulu/Natal. Only one species was described from Botswana, namely *C. vansoni* Lawrence, 1936. *Cheiracanthium*

africanum and *C. hoggi* both described from Tanzania by Lessert (1921) were also recorded from Kwazulu/Natal (Lawrence 1949) and Mozambique (Lessert 1936) respectively. Roewer (1954) listed a 14th species, *C. jocularis*, from Principe Island and 'SW.-Africa' [Namibia]. During this study the occurrence of *C. jocularis* in the southern African Region could not be confirmed and Roewer's (1954) reference could thus be a typographical error of some kind.

All available material from southern Africa housed in southern African, European and American institutions were studied. All the available type material of species described from the Afrotropical Region (Appendix A & B) was compared with the southern African species. A total of 617 specimens were examined. Since series of specimens were available, it was possible to study inter- and intraspecific morphological variation and critically evaluate previous diagnostic characters used in the separation of species. The use of sexual characters were found to be the most important characters to differentiate species. Other characters, such as leg setation, eye pattern, teeth on cheliceral fang furrow and tibia I length / carapace width ratio, were also evaluated. Of these the leg setation patterns are of some use, while the rest were found to be of minimal use. In the end this study resulted in the synonymy of 11 species, the description of four new species, the description of the male of *C. vansoni*, the recognition of eight species for southern Africa and the description of a new Afrotropical genus.

MATERIALS AND METHODS

Material studied

A total of 617 adult specimens, preserved in alcohol, were examined. The specimens were obtained on loan from institutions throughout the world. *Cheiracanthium* representatives from 20 collections were studied. To determine the status of the *Cheiracanthium* species of southern Africa they were compared with the type specimen or, if lost, the type description of all known species of the Afrotropical Region. In appendix A a list of all the species known from the Afrotropical Region are listed with an indication of the species examined and the species studied with their synonyms and distribution.

Study area

The southern African Region includes the area south of the rivers Kunene, Okavango and Zambezi, *i.e.* 15°S latitude. The countries included are Namibia, Botswana, Zimbabwe, Mozambique (south of the Zambezi), Swaziland, Lesotho and South Africa (SA) and the small area of southern Angola that had previously belonged to Namibia. South Africa is represented by the following nine provinces: Eastern Cape, Free State, Gauteng, Kwazulu/Natal, Mpumalanga, Northern Transvaal, Northern Cape, Northwest and Western Cape.

Methods

Microscopes: The specimens were examined in alcohol under a Zeiss stereo-dissecting microscope. For detailed observations of the finer structure of the genitalia, a Zeiss stereo-compound microscope was used.

Preparation of genitalia: The female's epigynum was cut loose on three sides, flipped open and gently cleaned with a micropin. For studies of the finer structures

and drawings, they were removed completely and cleaned under alcohol and then temporarily mounted in Heinze's modified PVA mounting medium (*sensu* Meyer & Rodriques 1966) on a cavity microscope slide. The male palps were usually studied while still attached to the specimens. For detailed studies and drawings the left palp (where available, otherwise the right) of each species were removed and temporarily mounted in alcohol on a cavity slide. The loose genitalia were cleaned in alcohol and stored in microvials with the respective specimens.

Illustrations: Illustrations were made of the external and internal genitalia of the females and the ventral and retrolateral views of the left male palp and the teeth on the cheliceral fang furrow using a drawing-tube. The same scale was not used for all the drawings (see scales given with the figures). The cheliceral fang furrow teeth were drawn with a curved line representing the fang base (FB) and round black spots representing the promarginal (PM) and retromarginal (RM) cheliceral teeth. The dorsal and/or ventral view of the cephalothorax and abdomen were drawn where applicable.

Measurements: Measurements were taken by means of a Zeiss ocular micrometer in mm. Where possible 10 females and 10 males of each species were measured. The means of the measurements taken are given with the observed range in brackets.

The following measurements were taken:

- Total length (TL): midline from the anterior edge of the carapace to the posterior edge of the abdomen.
- Carapace length (CL): midline from the anterior to the posterior edges of the carapace.
- Carapace width (CW): the widest part of the carapace between coxae II and III.
- Ocular area length (OAL): anterior edge of the AME to the posterior edge of the PME (Figure 2c).

- Ocular area width (OAW): width of the ocular area between the outer edges of the PLE (Figure 2c).
- Clypeal length (CLL): anterior edge of the AME to the anterior edge of the clypeus (Figure 2c).

The following measurements were taken and indices calculated for each type specimen studied:

- Sternum length (SL): midline from the anterior to the posterior edges of the sternum.
- Sternum width (SW): width of the sternum between coxa II.
- AME-AME: shortest distance between the AME (Figure 2c).
- AME-ALE: shortest distance between the AME and the ALE (Figure 2c).
- AME diameter: diameter of one of the AME (Figure 2c).
- PME-PME: shortest distance between the PME (Figure 2c).
- PME-PLE: shortest distance between the PME and the PLE (Figure 2c).
- PME diameter: diameter of one of the PME (Figure 2c).
- Median ocular quadrangle anterior width (MOQAW): distance between outer edges of the AME (Figure 2c).
- Median ocular quadrangle posterior width (MOQPW): distance between outer edges of the PME (Figure 2c).
- Leg lengths: length of each segment are given as well as total length, with the total length of the leg the sum of each segment. This was also done for the palp length.
- Carapace index (CI): the carapace length (CL) divided by the width (CW).
- Leg/carapace index (LL:CL): the total length of leg I divided by the carapace length (CL).

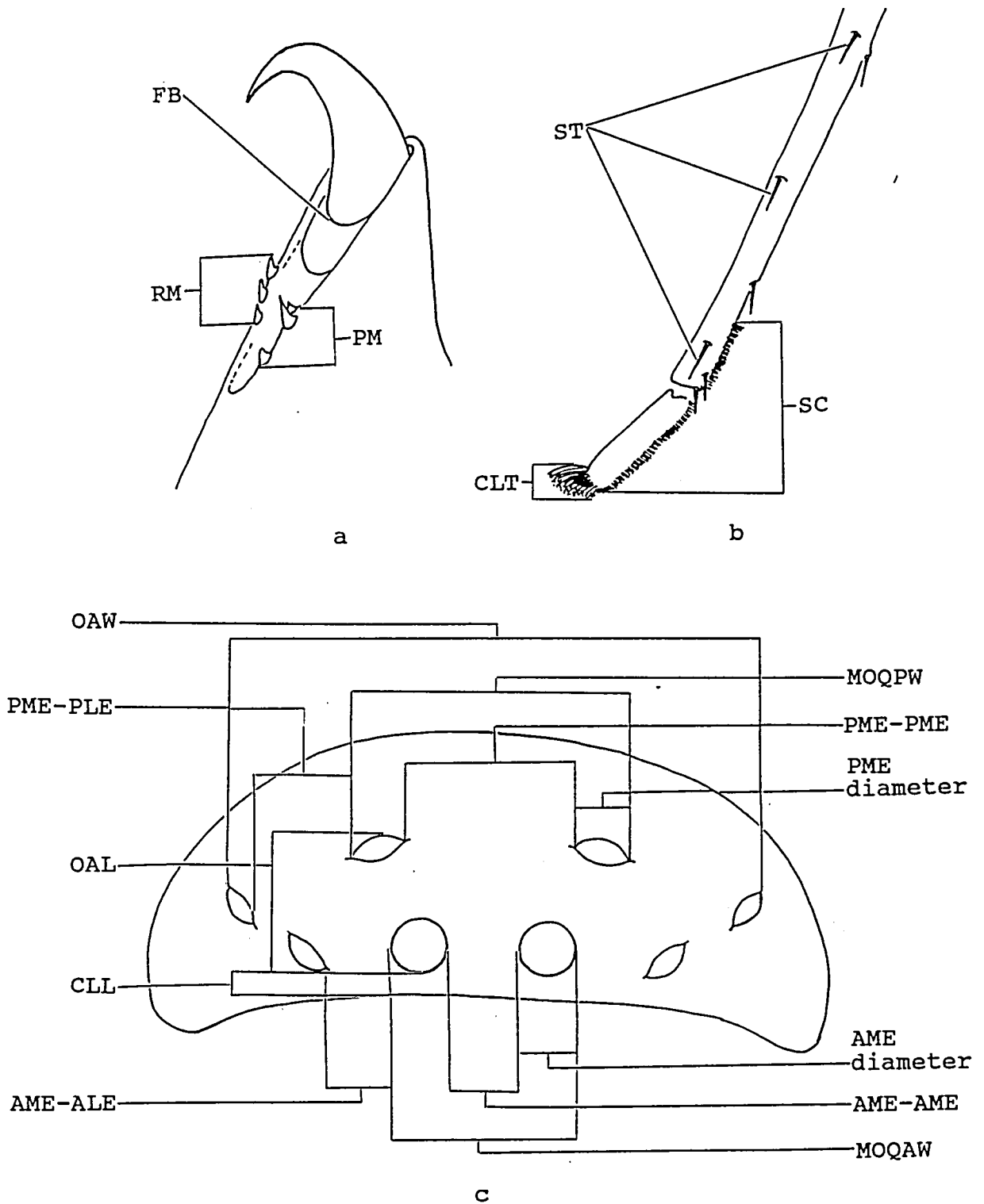


Figure 2. *Cheiracanthium furculatum* Karsch: (a) chelicera with fang furrow, showing promarginal (PM) and retromarginal (RM) cheliceral teeth and fang base (FB); (b) leg, showing scopulae (SC), claw tuft (CLT) and setae (ST); (c) eyes, showing measurements taken.

Abbreviations

Abbreviations for the collections used were as indicated by Arnett & Samuelson (1986) with the following exceptions: for the National Collection of Arachnida, Pretoria, South Africa, the more accepted abbreviation of NCA was used with a P added for uniformity; for The State Museum, Windhoek, Namibia the abbreviation SMWN, in use since the independence of Namibia in 1990, was used and for the National Museum, Bloemfontein, South Africa, the abbreviation NMBA, in use since the start of the collection in 1982, was used.

Abbreviations of Institutions, with contact persons in brackets:

AMGS: Albany Museum, Grahamstown, SA (F. Gess)

AMNH: American Museum of Natural History, New York, USA (N.I. Platnick)

CASC: California Academy of Sciences, San Francisco, USA (C.E. Griswold)

DMSA: Durban Museum, Durban, SA (specimens presently housed in NMSA)

HNHM: Hungarian Natural History Museum, Budapest, Hungary (Curator in charge)

MCSN: Museo Civico di Storia Naturale "G. Doria", Genova, Italy (G. Doria)

MCVR: Museo Civico di Storia Naturale, Verona, Italy (L. Sorbini)

MHNG: Museum d'Histoire Naturelle, Genève, Switzerland (B. Hauser)

MNHN: Muséum National d'Histoire Naturelle, Paris, France (C. Rollard)

MRAC: Musée Royal de l'Afrique Centrale, Tervuren, Belgium (R. Jocqué)

NCAP: National Collection of Arachnida, Pretoria, SA (A. Dippenaar-Schoeman)

NMBA: National Museum, Bloemfontein, SA (L.N. Lotz)

NMBZ: The Natural History Museum of Zimbabwe, Bulawayo, Zimbabwe (M. FitzPatrick)

NMSA: Natal Museum, Pietermaritzburg, SA (P. Croeser, B. Lawrence)

OXUM: Oxford University Museum = Hope Entomological Collections, Oxford (I. Lansbury)

SAMC: South African Museum, Cape Town, SA (H. Robertson, M. Cochrane)

SMFD: Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt, Germany (M. Grasshoff)

SMWN: State Museum, Windhoek, Namibia (E. Griffin)

TMSA: Transvaal Museum, Pretoria, SA (C.K. Brain)

ZMHB: Zoologisches Museum für Naturkunde der Humbolt Universität, Berlin, Germany (M. Moritz)

Abbreviations for structures of the genitalia::

C	= Cymbium
CA	= Cymbial apophysis
CO	= Copulatory opening
CON	= Conductor
CT	= Copulatory tube
E	= Epigynum
EF	= Epigynal fold
EM	= Embolus
FT	= Fertilization tube
MA	= Medial apophysis
RTA	= Retrolateral tibial apophysis
SPER	= Spermathecae
T	= Tegulum
TA	= Tegular apophysis
VTA	= Ventral tibial apophysis

Other abbreviations

AER	= Anterior eye row
ALE	= Anterior lateral eyes
AME	= Anterior median eyes
CI	= Carapace index
CL	= Carapace length
CLL	= Clypeal length
CLT	= Claw tuft
CW	= Carapace width

DST	= Dorsal setae
EN	= Endites
F	= Female
FB	= Fang base
FO	= Fovea
LA	= Labium
LL	= Total length of leg I
LL:CL	= Leg / carapace index
M	= Male
MOQ	= Median ocular quadrangle
MOQAW	= MOQ anterior width
MOQPW	= MOQ posterior width
OAL	= Ocular area length
OAW	= Ocular area width
PER	= Posterior eye row
PLE	= Posterior lateral eyes
PM	= Promarginal cheliceral teeth
PME	= Posterior median eyes
RM	= Retromarginal cheliceral teeth
S	= Sternum
SC	= Scopulae
SL	= Sternum length
SP	= Spinnerets
ST	= Setae
SW	= Sternum width
TI	= Tibia
TL	= Total length
TS	= Tracheal spiracle
SA	= South Africa

SYSTEMATICS

FAMILY CLUBIONIDAE Wagner, 1887

Type genus: *Clubiona* Latreille, 1804

Simon (1897b) included eight subfamilies in the family Clubionidae. Petrunkevitch (1923) was the first to relimit the Clubionidae in separating Anyphaenidae, Sparassidae and Ctenidae from the Clubionidae. Lehtinen (1967) removed some more subfamilies and raised Liocranidae, Miturgidae and Corinnidae to family rank, while including Micariinae in the Gnaphosidae.

Lehtinen (1967) regarded the limitation of the true Clubionidae (Clubioninae) as unclear and he included only two Palearctic genera, *Clubiona* and *Cheiracanthium*. According to Lehtinen (1967) revisions by Lohmander (1944) and Wiehle (1965) recognized several groups of the *Clubiona* which might represent different genera, while no revisionary study of *Cheiracanthium* has been undertaken since L. Koch (1864). Lehtinen (1967) do not regard *Clubiona* and *Cheiracanthium* as being distinctly related, their exact position remains obscure but their colouration and genital organs show affinities with Sparassidae and are included by Lehtinen (1967) in the Sparassoidea with doubt on the placement of *Cheiracanthium*.

Coddington & Levi (1991) in a cladistic analysis of the relationship of the members of the infraorder Araneomorphae recognized the Clubionidae as belonging to the Dionychan clade based on synapomorphies which include the presence of a retrolateral apophysis on the male palp and the absence of a third claw. They refer to the unpublished thesis of Penniman (1985) who regarded the classical Clubionidae as paraphyletic and considered Clubionidae and Anyphaenidae as

outgroups of the Gnaphosoidea based on the morphology of the sternum. Coddington & Levi (1991) united the Anyphaenidae, Clubionidae and Salticidae and place them next to the Gnaphosoidea in their cladogram based on the secondary loss of the cylindrical glands and spigots, a character typical of the higher entelegynes.

Platnick & Shadab (1989) confirm that the limits of the Clubionidae are unclear and not supported by any synapomorphies. They question the position of *Cheiracanthium* in the clubionine because of the moderately long second segment of the posterior lateral spinnerets and they state that *Cheiracanthium* may prove to be relatively plesiomorphic miturgid rather than clubionid. (See also Appendix C.)

Platnick (1990), in a study on the spinneret morphology of the ground spiders, regarded the clubionines and anyphaenids as the closest relatives of the Gnaphosoidea, united by the sclerotized precoxal extensions of the sternal margin.

Presently 25 Clubionidae genera are known to occur in the world. *Cheiracanthium* and *Clubiona* were recorded from the Afrotropical Region since 1875. Both genera have a world-wide distribution with a very rich species diversity. Simon (1896) described a new genus *Carteronius* recorded from Madagascar, Mauritius and Sierra Leone. However, Lehtinen (1967) doubts whether it belongs to the clubionids due to the shape of their genital structure, colour pattern and the shape of their chelicerae. Caporiacco (1947) described a monotypic genus *Arushina* from East Africa as a dictynid. Lehtinen (1967) transferred it to the Zodariidae and "probably" regarded it as a possible synonym of *Hermippus*. Jocqué (1991) examined the type and transferred it to Clubionidae *s.l.* genus unknown. Benoit (1977) added another three genera *Bucliona*, *Helebiona* and *Tecution* from St. Helena to the list.

Diagnosis:

Clubionid spiders can at present be distinguished as: two clawed, entelegyne, ecribellated spiders with distinct retromarginal teeth on cheliceral fang furrows; endites with apex truncated, furnished with scopulae, and lacking an oblique ventral depression; the anterior spinnerets are contiguous; the tracheal spiracle situated anterior of the spinnerets, with the tracheae restricted to the abdomen; and the prograde legs bearing two claws with dense claw tufts and scopulae; males with RTA.

Clubionidae genera recognized from the Afrotropical Region:

The genera *Helebiona* and *Tecution* share with *Cheiracanthium* the possession of a cymbial apophysis in the male palp. During this study it became clear that a number of species described as *Cheiracanthium* do not possess this apophysis. Simon (1897a) described a species from Kwazulu/Natal, *C. clavigerum*, recognized by the absence of a basal cymbial apophysis. In 1898 he described another species from Kwazulu/Natal closely related to *C. clavigerum*, *C. filipes*, but recognizable by the very long and filiform anterior legs and the armature of the chelicerae. Simon (1910b) described another species, *C. simplicitarse* from Little Namaqualand, again with long legs and cymbial apophyses absent from the palps. Lessert (1923) described another species *C. hewitti* without a cymbial apophysis from Tanzania. According to him the absence of a basal cymbial apophysis on the male palp is rare in *Cheiracanthium*. Lawrence (1938) added *C. silvicolum* and *C. akermani* Lawrence, 1942 from Kwazulu/Natal to the list of species with similar apophyses and legs. During this study a new genus has been erected to accommodate these six species. This distinction is supported by the femoral and tibial setae patterns, the setae on the femur and tibia II of male not stronger developed than rest of setae, the blunt and thick retrolateral tibial apophysis, the absence of a cymbial apophysis, the short

and thick embolus, the absence of a tegular apophysis replaced by a median apophysis, the indistinct conductor, the kidney-shaped spermathecae, the short copulatory tube entering the spermathecae medially, the copulatory opening medially positioned to the spermathecae, the small epigynal plate, the dark pigmentation around the spinnerets and the leg joints and the PM:RM ratio not equaling 3:3.

1. *Bucliona* Benoit, 1977

Type species *Clubiona dubia* O. Pickard-Cambridge, 1869. This monotypic genus is distinguished by: leg VI being longer than leg I; the presence of a fovea on the cephalothorax; the female spermathecae being posterior of the copulatory openings; the small sharp retrolateral tibial apophysis of the male; and the cephalic region being only slightly narrower than the thoracic region.

Distribution: St. Helena.

2. *Carteroniella* Strand, 1907

Type species *Carteroniella macroclava* Strand, 1907. This monotypic genus is distinguished by: the cephalic region being much narrower than the thoracic region.

Distribution: Cape Province, South Africa (no exact locality).

3. *Carteronius* Simon, 1896

Type species *Carteronius helluo* Simon, 1896. This genus is distinguished by: leg I being longer than leg IV; the presence of a fovea on the cephalothorax; and the eight or more setae ventral on tibia I.

Species: *C. helluo* Simon, 1896, *C. argenticomus* (Keyserling, 1877), *C. fuscus* Simon, 1896, *C. scriptus* Simon, 1896 and *C. vittiger* Simon, 1896.

Distribution: Madagascar, Mauritius and Sierra Leone.

4. *Cheiracanthium* C.L. Koch, 1839

Type species *Aranea punctorium* Villers, 1789. Diagnostic characters for this genus are: strong setae on femur and tibia I; tegular apophysis long, sclerotized and mostly broad; copulatory opening anterior of the spermathecae; epigynal plate medium to large rectangular; fovea absent; long curved erect setae anterodorsal on abdomen absent; leg I longer than leg IV; cymbial apophysis present; and setae present on femora I, II and III.

Species: 60 (see Appendix A & B)

Distribution: Cosmopolitan.

5. *Clubiona* Latreille, 1804

Type species *Araneus pallidula* Clerck, 1757. This genus is distinguished by: leg I shorter than leg IV; cephalic region only slightly narrower than the thoracic region; fovea present; spermathecae anterior of the copulatory openings; and large and blunt retrolateral tibial apophysis.

Species: 44 species and four sub-species are known from the Afrotropical Region.

Distribution: Cosmopolitan.

6. *Helebiona* Benoit, 1977

Type species *Helebiona wilma* Benoit, 1977. This monotypic genus is distinguished by: leg I longer than leg IV; copulatory tubes entering the spermathecae anteriorly; cymbial apophyses present; and femoral I, II and III without setae.

Distribution: St. Helena.

7. *Tecution* Benoit, 1977

Type species *Cheiracanthium planum* O. Pickard-Cambridge, 1873. Diagnostic characters for this genus are: PM and RM cheliseral fang furrow teeth ratio more than 3:3 (Figure 19f); the presence of a bent seta dorsoapically on the male palp (Figure 19a-c); epigynal plate small and rounded semi-triangular (Figure 19d-e); leg I longer than leg IV; copulatory tubes entering the spermathecae anteriorly; cymbial apophyses present; femoral setae on legs I, II and III present; and fovea present.

Species: *T. planum* (O. Pickard-Cambridge, 1873); *T. helenicola* Benoit, 1977 and *T. mellissi* (O. Pickard-Cambridge, 1873).

Distribution: St. Helena.

Note: According to Jocqué (1987) the species *Heradida quadrimaculata* Pavesi, 1895 is misplaced and belongs in the Clubionidae *s.l.* The type material of this species could so far not be obtained and placement in the Clubionidae is still uncertain.

Key to the genera of Clubionidae from the Afrotropical Region

1. Leg I longer than leg IV 2
- Leg I shorter than leg IV 6
2. Copulatory tubes entering spermathecae medially (Figure 16a-f); male palp without cymbial apophysis, embolus short (Figure 18a-e)
..... *Cheiramiona* n. gen.
- Copulatory tubes entering spermathecae anteriorly (Figure 4d); male palp with cymbial apophysis; embolus long (Figure 4d-e) 3
3. Setae present on femora I, II and III 4
- Setae absent on femora I, II and III *Helebiona* Benoit
4. Fovea absent (Figure 3a) *Cheiracanthium* C.L. Koch
- Fovea present 5
5. Tibia I with six or less setae ventrally *Tecution* Benoit
- Tibia I with eight or more setae ventrally *Carteronius* Simon
6. Cephalic region much narrower than thoracic region *Carteroniella* Strand
- Cephalic region only slightly narrower than thoracic region 7
7. Spermathecae anterior of copulatory openings; retrolateral tibial apophysis large and blunt *Clubiona* Latreille
- Spermathecae posterior of copulatory openings; retrolateral tibial apophysis small and sharply pointed *Bucliona* Benoit

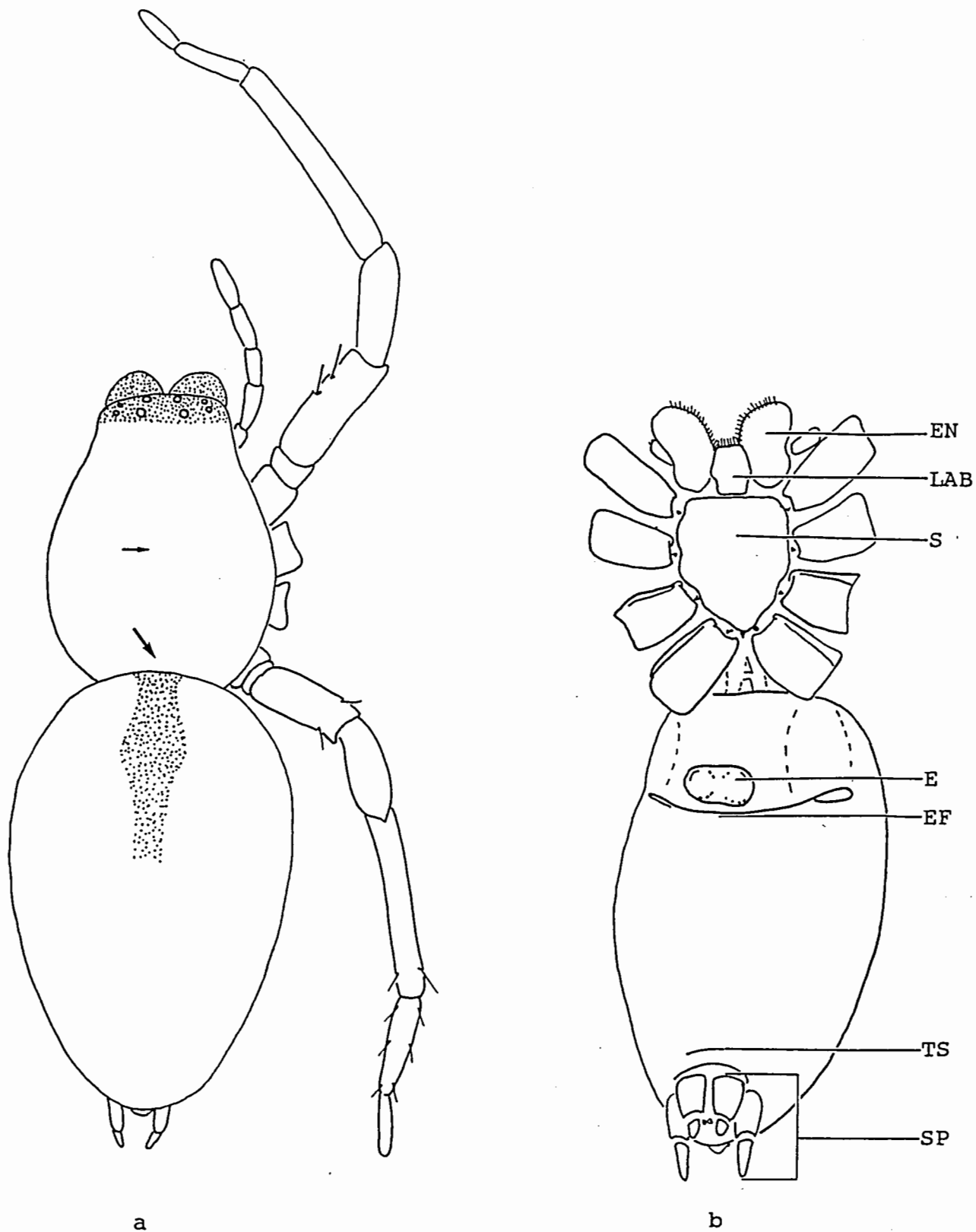


Figure 3. *Cheiracanthium furculatum* Karsch: (a) dorsal view, showing absence of fovea on cephalothorax and absence of anterodorsal long erect setae on abdomen (arrows); (b) ventral view, showing epigynum (E), epigynal fold (EF), labium (LA), endites (EN), spinnerets (SP), sternum (S) and tracheal spiracle (TS).

GENUS *CHEIRACANTHIUM* C.L. Koch, 1839

Anypaena (in part) Simon, 1864: 139, 145; 1897b: 103.

Aranea (in part) Villers, 1789: 128; Walckenaer 1802: 219 (preocc. Olivier 1789).

Chiracanthops Mello-Leitao, 1942: 416. Type species: *C. mandibularis* Mello-Leitao, 1942 (= *Cheiracanthium inclusum*), synonym Bonaldo & Brescovit 1992: 732.

Clubiona (in part) Walckenaer, 1805: 43; 1825: 135; 1837: 601, 602; Latreille 1806: 92 (preocc. Walckenaer 1805); Hahn 1831: 7; 1833: 1; Sundevall 1832: 267; Hentz 1847: 451; Blackwall 1861: 135; Holmberg 1876: 11.

Eutittha Thorell, 1878: 179. Type species: *E. insulanum* Thorell, 1878 (= *Cheiracanthium insulanum*), all species transferred to *Cheiracanthium* by Roewer 1954: 1509.

Cheiracanthium C.L. Koch, 1839: 9 (*Chiracanthium* Bonnet 1956: 1047, unjustified emendation, Platnick 1989: 438); Thorell 1870: 209; Simon 1897b: 87; Comstock 1912: 569; Simon 1932: 895; Petrunkevitch 1933: 53; Reimoser 1937: 71; Palmgren 1943: 58; Tullgren 1946: 35; Kaston 1948: 369; Locket & Millidge 1951: 143; Roewer 1954: 476-489, 1441-1442; Bonnet 1956: 1066; Edwards 1958: 368; Lehtinen 1967: 291; Peck 1975: 204; Forster & Blest 1979: 91; Dondale & Redner 1982: 17; Brignoli 1983: 549-550; Roberts 1985: 88; Sterghiu 1985: 100; Newlands 1986: 86; Yaginuma 1986: 177; Chikuni 1989: 122, 123; Platnick 1989: 438-440; Feng 1990: 168, 169; Paik 1990: 3; Wolf 1990b: 233; Bonaldo & Brescovit 1992: 731; Platnick 1993: 606-608.

Type species: *Cheiracanthium punctorium* (Villers, 1789), as subsequently designated by Simon (1864).

Diagnosis:

Representatives of this genus are recognized by: fovea absent; long curved erect setae absent from anterodorsal part of abdomen; leg I longer than leg IV (Figure

3a); distinct trochanteral notches; posterior lateral spinnerets with moderately long second segments and canoe-shaped spinning fields; females with small well-separated spermathecae (Figure 4d); copulatory opening anterior of spermathecae; and epigynal plate medium to large rectangular; males with secondarily strengthened setae of femur and tibia II; tegular apophysis long, sclerotized and mostly broad; and cymbial apophysis present (Figure 4e-f).

Description:

Female. Size: TL = 4,00 - 12,80 mm.

Colour: cephalothorax pale yellow to orange, chelicerae and ocular area dark brown in some species; legs uniform yellow with tarsal tips often darker; abdomen yellow to pale green or pale grey, sometimes with a white sheen of soft downy abdominal hair. A brownish longitudinal heart mark present anterodorsally on the abdomen. In live specimens the colours are more distinct than in the alcohol preserved specimens. In some of the older alcohol specimens the colours have faded to an overall pale yellow. The colour fading is specifically noticeable in the heart mark.

Cephalothorax: sub-ovoid seen dorsally, longer than wide; widest between coxa II and III; anterior part of cephalic region highest; fovea absent (Figure 3a); eyes: eight eyes in two transverse rows, uniform in size, AME sometimes slightly larger than other eyes; PER slightly longer than AER; AER straight to slightly recurved; PER slightly procurved; MOQ wider than long and wider posteriorly than anteriorly; clypeus length equal to or shorter than half the diameter of AME. Labium longer than wide, extending past middle of endites; roughly spear-shaped with apex truncated (Figure 3b). Endites long with a lateral concavity but without transverse or oblique depressions ventrally with scopula on the anterior end; anterior end slightly wider than posterior end (Figure 3b). Sternum heart-shaped; longer than wide;

widest between coxa II; truncated anteriorly and narrowing posteriorly to a point between coxa IV; scalloped along the lateral edges with small precoxal sclerites (Figure 3b).

Chelicerae: robust, moderately long, with long fangs; opened fangs have a wide gape; cheliceral fang furrow with three PM and three RM teeth of unequal size (Figure 2a). The PM tooth closest to the fang is usually small and difficult to see and is easily overlooked because of the dense brush of hair next to the fang furrow. In *C. furculatum* (Figure 2a) this PM tooth is relatively large in comparison to most of the other species. The arrangement of the teeth differ slightly between species.

Legs: long and moderately stout, two tarsal claws with CLT and SC (Figure 2b). Leg I 1,6 mm to 4,15 mm longer than leg IV (Table 1); leg formula I:IV:II:III. Legs with stout setae; most setae ventrally on metatarsus; patellae without setae; no setae dorsally on femora; metatarsus I and II with unpaired ventral seta at distal end; trochanters distinctly notched; trichobothria present on all legs. Palp of female with single simple claw that is difficult to see, especially in the smaller species.

Table 1. Leg lengths and leg indexes (LL:CL) of *Cheiracanthium* species occurring in southern Africa.

Species\Leg	Sex	I	II	III	IV	LL:CL
<i>C. africanum</i>	F	11,95	9,05	6,70	9,80	4,74
<i>C. africanum</i>	M	12,60	7,60	5,60	8,20	5,63
<i>C. dippenarae</i>	F	7,45	5,10	3,95	5,85	3,63
<i>C. furculatum</i>	F	13,80	10,35	7,70	10,50	3,73
<i>C. furculatum</i>	M	22,85	14,70	11,30	16,30	6,62
<i>C. imbelle</i>	F	13,20	9,85	7,75	10,90	3,94
<i>C. minshullae</i>	F	11,60	8,55	6,45	9,20	3,63
<i>C. minshullae</i>	M	16,85	11,10	7,60	11,25	7,42
<i>C. presleyensis</i>	F	14,70	9,65	7,10	10,555	4,67
<i>C. shiluvanensis</i>	F	25,60	17,50	12,30	22,75	4,57
<i>C. vansoni</i>	F	8,70	5,25	4,50	6,75	3,28
<i>C. vansoni</i>	M	14,35	9,20	7,05	9,75	6,83

Abdomen: Elongate-oval, without anterodorsal stout setae (Figure 3a). Distinct to indistinct elongate heart mark starts anteriorly and reaches about two thirds towards the posterior end. Six spinnerets; middle pair smallest, almost hidden by anterior and posterior pairs; anterior pair conical, contiguous or almost contiguous and not more sclerotized than posterior pair; posterior pair two-jointed longer than anterior pair, with distinct and conical apical segment and canoe-shaped spinning field; colulus absent.

Epigynum: The female genitalia differ from species to species and is of major importance in species differentiation. Epigynal plate flat or concave sclerotized, wider than long, rectangular; CO situated in different positions along the edge of the epigynal plate is of diagnostic value; CT range from long (Figure 4d) to short (Figure 6c) and can be twisted (Figure 4d) or straight (Figure 6c); CT extends anteriorly before curving posteriad; the SPER are small and round and widely separated from each other, except in the case of *C. vansoni* where they are large (Figure 14d) in comparison to the SPER of other species (Figure 4d).

Note: In some cases the epigynum is covered with a plug of some dark brown 'resinous' substance. Unlike the case of *Peuceitia* (Van Niekerk & Dippenaar-Schoeman 1994) no part of the male palp has so far been found broken off and embedded in these plugs.

Male. Size: TL = 4,00 - 10,20 mm.

In colour and body shape similar to female; abdomen slightly more slender. Smaller in size than female but legs longer and more slender; leg I 4,4 mm to 6,55 mm longer than leg IV (Table 1); setae on legs stronger and more numerous; one or two setae

on femur II and one on tibia II stronger developed and used during copulation; chelicerae longer and slightly less robust; PM and RM teeth positions differ slightly between sexes.

Palp: The tibia and tarsus of male palp, modified; bearing the secondary sexual organs, are of diagnostic value in determining different species; tibia (TI) with conspicuous RTA differs in shape intraspecifically, always longer than wide, and a small to inconspicuous VTA; genital bulb with tegulum (T); strong, longer than wide TA; long and thin EM, that almost encircles T (all three of which are sclerotized) and (almost unsclerotized) membranous CON next to TA. In *Cheiracanthium* the cymbium bears a long basal CA with a sharp point (Figure 4e-f).

Relationships:

In the Afrotropical Region *Cheiracanthium* is closely related to *Tecution* and *Helebiona* with which it shares the presence of a CA. It also share with *Tecution* a long EM and the presence of a distinct CON. It differs from *Tecution* in the absence of a fovea, palpal setae and dorsal setae on the femora and the shape and size of the epigynum and from *Helebiona* in the setae on the legs and the shape of the SPER. *Cheiracanthium* is also closely related to *Cheiramiona* n. gen., but differs in the smaller, rounded SPER, the presence of a CA and the long thin EM of the male palp, as well as the number of setae on the legs and the number of PM and RM teeth on the fang furrow. The relationship of the genus *Cheiracanthium* with the other Afrotropical genera will only be clear after generic revisions of all the Clubionidae genera of this region have been done.

Distribution:

The distribution of the eight southern African *Cheiracanthium* species is depicted in Figures 5, 7, 9 & 15. The world distribution of the genus (Figure 1) is as follows:

Palearctic Region (63 spp., of which *C. mildei* also occurs in the Nearctic and Neotropical Regions); Afrotropical Region (43 spp.); Oriental Region (34 spp.); Australian Region (24 spp., of which *C. mordax* also occurs in the Nearctic Region); Nearctic and Neotropical Regions (3 spp., of which *C. mildei* also occurs in the Palearctic Region and *C. mordax* also occurs in the Australian Region). According to Schmidt (1994) and Schmidt, Geisthardt & Piepho (1994) *C. mildei* also occurs on the Cape Verde Islands in the Afrotropical Region, but at present the correct identification is uncertain (Dr. G. Schmidt, Germany, pers. comm.). Two more species were added by Schmidt *et al.* (1994) from the Cape Verde Islands. In the present study 11 species are synonymized and six are transferred to the new genus *Cheiramiona*, leaving 43 species of *Cheiracanthium* in the Afrotropical Region.

Natural history:

Cheiracanthium spiders belong in the group of spiders commonly known as sac spiders. They are active nocturnal hunters that use their front legs to detect prey (Lawrence 1964, Peck & Whitcomb 1970 and Corrigan & Bennett 1987). The legs are used to flick the prey towards the chelicerae where it is seized by the fangs with the help of the palps (Peck & Whitcomb 1970). When hunting they show a distinct ability to jump, which may help them to capture their prey or to evade enemies (Lawrence 1964 and personal observation in the field).

During the day they hide in silken retreats which lends the group of spiders their common name of sac spiders (Edwards 1958, Lawrence 1964, Dondale & Redner 1982 and Wolf 1990a). Wolf (1990a) distinguishes four types of retreats according to their function and structure, namely resting-retreats, mating-retreats, breeding-retreats and hibernating-retreats. The retreats are flat tubular silken structures with one or two entrances that are mostly found on low vegetation, but have also been found in buildings, under bark and under stones. Both the males and females

produce silk retreats. When moulting and when the egg-sac is present, the retreat openings are sealed (Wolf 1990a). During the time when the eggs develop, the egg-sac is guarded by the female (Edwards 1958, Lawrence 1964, Peck & Whitcomb 1970, Dondale & Redner 1982 and Wolf 1990a). In *C. furculatum* the breeding nest is usually not made between cloth folds but a stronger protected area like folds of magazines, loose bark of trees or curled leaves are used (Dippenaar-Schoeman pers. comm. and personal observation in the field). The first instar spiderlings are found contained in the retreat and the female must open the retreat for the young spiders to emerge. In *C. inclusum* males take about 112 days to mature after four to ten immature stadia, while females take about 142 days to mature after five to ten immature stadia (Peck & Whitcomb 1970). Adult males live about a further 43 days and females a further 70 days (Peck & Whitcomb 1970).

In Clubionidae only modest courtship is involved and that is also true for *Cheiracanthium*. The male and female face each other with their ventral sides in contact (Foelix 1982). Peck & Whitcomb 1970 also describe the way in which the secondary strong setae on leg II of the males are used to hold the female during courtship. These setae seem to be a distinguishing feature of *Cheiracanthium* males, as it was found in all the species studied here.

Females usually only mate once, after which they can oviposit up to five times producing on average of about 38 eggs per oviposition (Peck & Whitcomb 1970). If the male survives the mating it can go on to mate with several other females (Peck & Whitcomb 1970).

Habitat preference of the southern African *Cheiracanthium* species can be found at the end of each species description under the heading 'Habitat'.

Key to southern African species of *Cheiracanthium*

Females

1. Copulatory opening situated in anterior section of epigynum (Figure 8c) 2
- Copulatory opening situated in posterior section of epigynum (Figure 4c) 6
2. Copulatory opening situated anterolaterally (indicated with arrows in Figures 8c, 12b & 13b) 3
- Copulatory opening situated anteromedially (indicated with arrows in Figures 11c & 14c) 5
3. Copulatory tube entering spermathecae anteromedially (Figure 13c); epigynum cup-shaped (Figure 13b) *C. shiluvanensis* n. sp.
- Copulatory tube entering spermathecae anterolaterally (Figure 8d); epigynum ovoid (Figure 8c) to rectangular (Figure 12b) 4
4. Copulatory tube straight before entering spermathecae (Figure 8d)
..... *C. furculatum* Karsch
- Copulatory tube bending before entering spermathecae (Figure 12c)
..... *C. presleyensis* n. sp.
5. Copulatory tube bending before entering spermathecae (Figure 14d); spermathecae large *C. vansoni* Lawrence
- Copulatory tube straight before entering spermathecae (Figure 11d); spermathecae smaller *C. minshullae* n. sp.
6. Copulatory tube twisted around itself (Figure 4d) *C. africanum* Lessert
- Copulatory tube not twisted around itself 7
7. Copulatory tube short, not reaching anterior epigynal edge (Figure 6c)
..... *C. dippenaarae* n. sp.
- Copulatory tube long, curved anteriorly past anterior epigynal edge (Figure 10c)
..... *C. imbelle* Caporiacco

Males*

1. Retrolateral tibial apophysis sharply pointed (Figures 8e & 14e) 2
- Retrolateral tibial apophysis with blunt bipunctated tip (Figures 4e & 11e) 3
2. Retrolateral tibial apophysis straight reaching middle of bulb, and cymbial apophysis relatively straight and sharply pointed (Figure 8e)
..... *C. furculatum* Karsch
- Retrolateral tibial apophysis shorter with distinct curve, cymbial apophysis with distinct outward curves (Figure 14e) *C. vansoni* Lawrence
3. Tegular apophysis wide and bilobed with one lobe thin sharply pointed, other one wide and blunt (Figure 4e) *C. africanum* Lessert
- Tegular apophysis single, thin, with tip curved (Figure 11e)
..... *C. minshullae* n. sp.

*Males are only known for four of the eight species and for them a key is presented.

Cheiracanthium africanum Lessert, 1921

(Figures 4a-h & 5)

Cheiracanthium africanum Lessert, 1921: 411; 1929: 137; Lawrence 1949: 32;
Caporiacco 1947: 194; 1949: 433.

Cheiracanthium franganilloi Caporiacco, 1949: 438, **new synonym.**

Cheiracanthium africanum, Roewer 1954: 483.

Cheiracanthium nigropalpatum Schmidt & Jocqué, 1983: 357; Platnick 1989: 439, **new synonym.**

Types:

Cheiracanthium africanum 1F lectotype [**new designation**] [other 4F syntypes could not be traced] & 1M paralectotype [**new designation**] from Tanzania: Kibonoto [Kibognoto/Kibongoto (different spellings for the same place), Kilimanjaro, 0312S/3707E], (Sjöstedt) (MHNG, examined) and 1F & 1M paratypes specimens Tanzania: Mérou [Meru, 0313S/3643E];

Cheiracanthium franganilloi 1F holotype from Kenya: Nairobi, 1500m [0116S/3650E], 1944, (T. Meneghetti) (MCVR, examined);

Cheiracanthium nigropalpatum 1M holotype (& 1 juv. paratype not seen) from Réunion: between Saline-les-Bains and Vulkan [exact co-ordinates not known], Aug. 1979 (G. Schmidt) (MRAC 156.660, examined).

Diagnosis:

Cheiracanthium africanum is recognized by the twisted CT of the female (Figure 4d) and the blunt bipunctated RTA and bilobed TA of the male (Figure 4e-f).

Redescription:

Female. Size (n = 10): TL = 7,97 (5,70 - 9,50); CL = 2,50 (1,70 - 3,40); CW = 2,53 (1,95 - 3,25); OAL = 0,36 (0,30 - 0,40); OAW = 1,02 (0,80 - 1,35); CLL = 0,05 (0,05 - 0,07).

Cephalothorax: yellowish-red, darker anteriorly around eyes; mouthparts dark brown. Sternum yellow, brown along border; SL = 1,18; SW = 1,00. AER straight to slightly recurved; AME-AME = 0,15; AME-ALE = 0,13; AME diameter = 0,13. PER almost straight to slightly procurved; PME-PME = 0,25; PME-PLE = 0,23; PME diameter = 0,13. MOQ wider than long, scarcely narrower in front than back; MOQAW = 0,45; MOQPW = 0,50; CI = 1,00. Chelicerae robust with long fangs; six teeth on cheliceral fang furrow of unequal size; promarginal teeth: PM2 largest; PM1 smallest and almost touching PM2; retromarginal teeth: evenly spaced; RM1 largest; RM3 smallest. Retromarginal teeth closer to fang base with RM3 in line between PM1 and PM2 (Figure 4g).

Legs: yellowish-red; LL:CL = 4,74. Length of leg segments:

	I	II	III	IV	Palp
Femur	3,10	2,45	1,80	2,50	0,90
Patella	1,30	1,00	0,80	1,05	0,40
Tibia	2,90	2,10	1,25	2,15	0,70
Metatarsus	3,25	2,50	2,05	3,10	----
Tarsus	1,40	1,00	0,80	1,00	1,60
Total length	11,95	9,05	6,70	9,80	3,60

Leg setae:

		Proximal	Medial	Distal
Femur I	prolateral	0	0	1
Tibia I	proventral	0	1	0
Metatarsus I	ventral	2	0	1
Femur II	prolateral	0	0	1
Tibia II		0	0	0
Metatarsus II	ventral	2	0	1
Femur III	prolateral	0	1	1
	retrolateral	0	1	1
Tibia III	prolateral	0	0	1
	retrolateral	0	0	1
Metatarsus III	prolateral	0	1	1
	retrolateral	0	1	1
	ventral	2	0	3
Femur IV	prolateral	0	0	1
	retrolateral	0	0	1
Tibia IV	prolateral	0	0	1
Metatarsus IV	prolateral	0	1	1
	retrolateral	1	1	1
	ventral	2	0	3

Abdomen: yellow to olive-green; heart mark dark (Figure 4a) (indistinct in older alcohol specimens.)

Epigynum (Figure 4c-d): a brown bell-shaped depression, longer than wide, with small CO situated posterolaterally on each side. SPER small, spherical, separated from each other and situated close to EF; CT extended anteriorly before turning to curve posteriorly and end in SPER; CT twisted over entire length (Figure 4d); FT originating from ovaries terminating in SPER on medial side.

Male. Size: (n = 10) TL = 6,30 (4,00 - 7,75); CL = 2,24 (1,75 - 2,90); CW = 2,09 (1,80 - 2,50); OAL = 0,33 (0,23 - 0,40); OAW = 0,87 (0,69 - 1,00); CLL = 0,06 (0,05 - 0,07).

Cephalothorax: colouration and eye pattern similar to female, with a small difference in the length of PME-PME (0,23), PME-PLA (0,22) and MOQPW (0,48). SL = 1,00 and SW = 0,90; CI = 1,07. Chelicerae slightly longer and more slender than those of female. Teeth on cheliceral fang furrow similar to those of female, except PM1 separated from PM2 by almost the basal diameter of PM2 (Figure 4h). Legs: similar to female, but longer and more slender (leg I: M = 12,60 / F = 11,95); LL:LC index = 5,63, compared to 4,74 for female. Length of leg segments:

	I	II	III	IV	Palp
Femur	3,20	2,00	1,40	2,00	0,95
Patella	0,85	0,80	0,70	0,70	0,30
Tibia	3,50	1,75	1,15	2,00	0,40
Metatarsus	3,65	2,30	1,75	2,75	----
Tarsus	1,40	0,75	0,60	0,75	1,00
Total length	12,60	7,60	5,60	8,20	2,65

Leg setae:

		Proximal	Medial	Distal
Femur I	prolateral	0	1	1
Tibia I	proventral	1	2	1
	retroventral	0	1	1
Metatarsus I	ventral	2	1	1
Femur II	prolateral	0	1	1
Tibia II	proventral	1	0	0
Metatarsus II	ventral	2	0	1
Femur III	prolateral	0	1	1
	retrolateral	0	1	1
Tibia III	prolateral	0	0	1
	retrolateral	0	0	1
Metatarsus III	prolateral	1	1	1
	retrolateral	1	1	1
	ventral	2	0	3
Femur IV	prolateral	0	1	1
	retrolateral	0	0	1
Tibia IV	prolateral	0	0	1
	retrolateral	0	0	1
Metatarsus IV	prolateral	1	1	1
	retrolateral	1	1	1
	ventral	2	0	3

Abdomen: similar to female, but more slender (Figure 4b).

Palp (Figure 4e-f): yellow, with tarsi darker brown. Tibia with a dark brown RTA, with tip blunt, pointing anteriorly; RTA straight, hardly narrowing towards apex with two very small denticles on blunt tip as seen laterally; curved at base as seen ventrally; VTA rounded, outward bending and blunt. C longer than patella plus tibia, lengthened to narrow blunt point, shorter than bulb; C with CA pointing sharply posterolaterally, intersecting RTA and about same length as latter; TA a dark brown longitudinal process, parallel to CON on lateral side, slightly wider anteriorly, truncated, with extremity bilobed, one lobe rounded, the other sharply pointed; EM long, thin, curving around T to tip of CON.

Synonymy:

The male holotype of *C. nigropalpatum* and female holotype of *C. franganilloi* were compared with the syntypes of *C. africanum*, as well as with all other available material of *C. africanum*. They were found to have the same genital structures and general appearance. The variation in leg setation also falls within the range observed for *C. africanum*. Some discrepancies were observed between setation documentation of the species description of *C. nigropalpatum* and the holotype specimen. However, according to Schmidt (pers. comm.) this is due to a printing error. *Cheiracanthium nigropalpatum* and *C. franganilloi* are considered synonyms of *C. africanum*.

Relationship:

The closest relative of *C. africanum* appears to be *C. imbelle*. This is due to the position of the CO on the epigynal plate and the length of the CT (Figures 4c-d & 10b-c). *Cheiracanthium imbelle* females differ from *C. africanum* in the shape of the CT, the position of the teeth on the fang furrow and the distinct heart mark (Figures 4a, 4d, 4g, 10a, 10c & 10d).

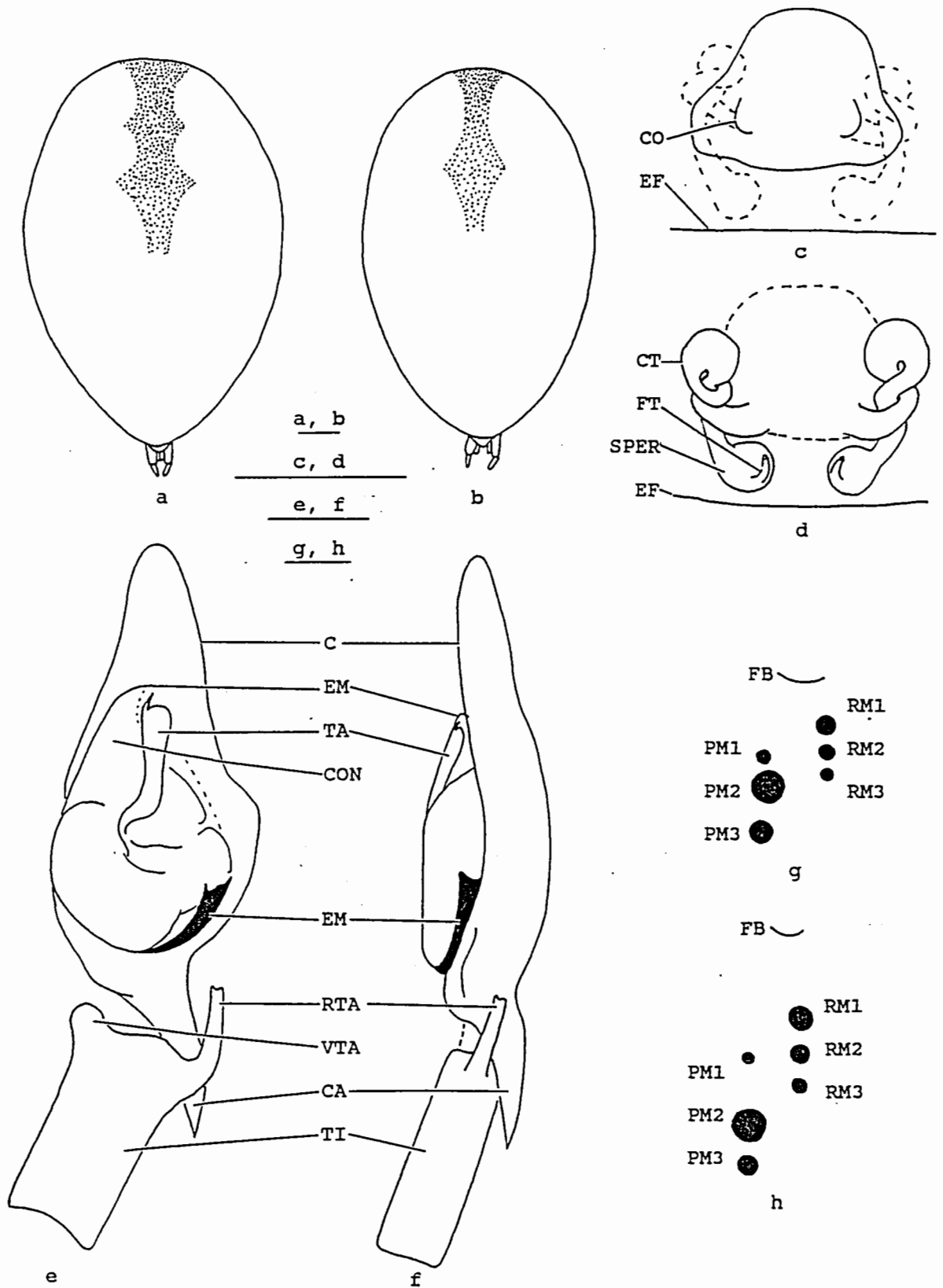


Figure 4. *Cheiracanthium africanum* Lessert: (a) female abdomen; (b) male abdomen; (c) female external epigynum, showing copulatory opening (CO) and epigynal fold (EF); (d) female internal epigynum, showing copulatory tube (CT), fertilization tube (FT), spermathecae (SPER) and epigynal fold (EF); (e-f) male palp, ventral view and lateral view, showing cymbium (C), embolus (EM), tegular apophysis (TA), conductor (CON), tegulum (T), retrolateral tibial apophysis (RTA), ventral tibial apophysis (VTA), cymbial apophysis (CA) and tibia (TI); (g-h) teeth on cheliceral fang furrow of female (g) and male (h), showing fang base (FB) and promarginal (PM) and retromarginal (RM) teeth. (scale lines = 0,25 mm)

Other material examined:

BOTSWANA: Okavango, Mboma Lagoon, Moremi Res., 1922B-1923C, 24 Aug. 1977 (A. Russell-Smith) 1F & 2M (NMBA 6352); Okavango, Mboma Lagoon, Moremi Res., 1915S/2320E, 1 Sept. 1977 (A. Russell-Smith) 1M (NMBA 6357); Thamalahane River, NE of Maun, 24 Jun. 1979 (B. Taylor & A. Morley) 1M (NCAP 83/425);

LESOTHO: Stream nr. Molimo Whutse Hotel, 2924S/2746E, 14 Apr. 1977 (A. Russell-Smith) 1M (NMBA 6377);

NAMIBIA: Aasvoëlnes, 1925S/2015E, 16 Apr. 1991 (V.D. & B Roth) 1M (CASC); Andara-Kavango, Okavango River, 1804S/2129E, 1979 (M.E. Baddeley) 1F & 1M (MRAC 152.834, 152.852);

SA, EASTERN CAPE PROVINCE: Alicedale, Dec. 1916 (F. Cruden) 1F & 1M (AMSA); Dunbrody, 1F (SAMC X11615); Grahamstown, 12 Jul. 1901 (C. Sole) 2F (AMSA); 28 Jan. 1979 (P. Croeser) 1F & 1M (NCAP 82/170); 27 Feb. 1979 (P. Croeser) 1M (NCAP 82/357); 19 Aug. 1979 (P. Croeser) 1F (NCAP 86/122); 12 Nov. 1979 (P. Croeser) 1F (NCAP 82/355); Grahamstown, nr. Lucas Field, St. Andrews College, 17 Aug. 1979 (P. Croeser) 1F & 2M (NCAP 83/426); Grahamstown, Botanical Gardens, 15 Mar. 1981 (P. Croeser) 1M (NCAP 87/635); Middelburg, 3125Ac, 4 May 1972 (E. Holm) 1F & 1M (TMSA 14629, 14633); Middelburg, 3125Ac, 18 Oct. 1972 (E. Holm) 5F & 3M (TMSA 14608, 14609, 14614, 14615, 14616, 14617, 14618, 14620); SA, GAUTENG PROVINCE: Boksburg, 1 Nov. 1982 (A. Booyens) 1M (NCAP 83/10); Bronkhorstspuit, Pretoria (old road), 26 Apr. 1977 (A.S. Dippenaar & I. Vosloo) 1F (NCAP 77/777); Halfway House, Jan. 1972 (J. Finlay) 2F & 2M (NCAP 76/320); Jukskei River, nr. Lanseria, Roodepoort, 4 May 1980 (A. Leroy) 1F (NCAP 81/135); Pretoria, Pyramid area, May 1981 (R. Harris) 1M (NCAP 82/103); Roodeplaat Research Station, Mar. 1971 (J. Finlay) 1M (NCAP 76/336); Roodeplaatdam Nature Reserve: 28 Nov. 1979 (A.S. Dippenaar & M. Stiller) 1F (NCAP 81/780), 30 Jan. 1980 (A.S. Dippenaar) 2F (NCAP 81/804), 19 Mar. 1980 (A.S. Dippenaar) 5F & 3M (NCAP 81/820), 21 Apr. 1980 (M. Stiller) 1F (NCAP 81/825), 13 Nov. 1980 (M. Stiller) 1F (NCAP 81/881), 5

Mar. 1981 (M. Stiller) 1F & 1M (NCAP 81/976), 20 Mar. 1981 (M. Stiller) 3F & 4M (NCAP 81/949), 24 Apr. 1981 (M. Stiller) 3M (NCAP 81/957), 14 May 1981 (M. Stiller) 1M (NCAP 81/846), 22 May 1981 (M. Stiller) 2M (NCAP 81/970), 13 Oct. 1981 (M. Stiller) 1M (NCAP 82/421), 17 Dec. 1981 (A.S. Dippenaar) 3M (NCAP 81/1084, 82/512), 29 Mar. 1983 (A. v/d B. & T.M.) 1M (NCAP 84/183), 23 Jan. 1988 (M. Filmer) 1F (NCAP 88/264); SA, KWAZULU/NATAL PROVINCE: Ashburton, 12 Feb. 1981 (C.J. Cilliers) 1M (NCAP 81/244); Lake Sibaya, NW shores of W. arm, 28 June 1967 (B. Lamoral) 1M (NMSA 9584); between Jozini and Ndumu, 4 Apr. 1977 (A.S. Dippenaar) 1F (NCAP 77/721); Lake Sibaya, E. shores, Zululand, 2732Bc, 14 May 1981 (C. & G. Car) 1M (SAMC C489); Nyala Park Reserve, 2840S/3145E, 4 June 1983 (P.E. Reavell) 1M (NCAP 87/206); 15 km W. Pongola, 3 Apr. 1958 (E.S. Ross & R.E. Leech) 2M (CASC); SA, MPUMALANGA PROVINCE: Belfast, 28 Dec. 1990 (M. Filmer) 1F & 1M (NCAP 91/723); Bergvliet State Forest, Sabie, 19 Sept. 1984 (A. Cilliers & M. Botha) 1M (NCAP 84/850); Dennilton, 10 km from Groblersdal, 20 Apr. 1979 (A.S. Dippenaar) 1F (NCAP 87/260); Horseshoe Waterfalls Road, 19 Sept. 1984 (A.S. Dippenaar) 1M (NCAP 84/877); Kaapmuiden, Nov. 1918 (R.W. Tucker) 2F (SAMC B4290, B4364); Kaapmuiden, 1 Nov. 1918 (R.W. Tucker) 2M (SAMC B4239); Komatipoort, Nov. 1918 (R.W. Tucker) 1M (SAMC B4364); Kruger National Park, Feb. 1962 (Pienaar) 1F & 1M (NMSA 8781); Lydenburg, Apr. 1987 (M. Swart) 1F (NCAP 88/410); between Nelspruit and Papermill, 18 Sept. 1984 (A. van den Berg & A. Cilliers) 1M (NCAP 84/817); between Nelspruit and Papermill, 18 Sept. 1984 (A.S. Dippenaar) 1M (NCAP 84/822, 84/826); 10 km S of Nelspruit, 26 Feb. 1976 (A.S. Dippenaar) 2F & 1M (NCAP 76/89); Ohrigstad, 14 km S. Belfast, 27-29 Dec. 1990 (V.D. & B. Roth) 1F (CASC); Sabie Station, 18 Sept. 1984 (A.S. Dippenaar) 1F & 1M (NCAP 84/840); Sabie-Nelspruit Road, 20 Mar. 1984 (A.S. Dippenaar) 2F (NCAP 84/878); 1 km past Verena, 10 Feb. 1977 (I. Vosloo) 1M (NCAP 77/417); SA, NORTHERN CAPE PROVINCE: Biesjiesfontein, Hutchinson, 9 Oct. 1989 (A. Leroy) 1M & 1F (NCAP 91/355, 91/364); Palmiet Fontein, nr. Hanover, 3F (SAMC X9950, X11914); SA, NORTHWEST PROVINCE: Borakalalo Nature Reserve, 25 & 26 Mar. 1989

(M. Filmer) 2M (NCAP 89/905 & 89/935); SA, FREE STATE PROVINCE: Bethlehem, Zaphira, 27 Oct. 1994 (L.N. Lotz) 1F (NMBA 7035); SA, WESTERN CAPE PROVINCE: Montaque Baths, Nov. 1902 (W.F. Purcell) 1M (SAMC X12674); Oudtshoorn, 29 Oct. 1949 (Malkin) 2F (CASC); Tulbach, Aug. 1903, 3F (SAMC X13287, X13299);

SWAZILAND: Henwoods Halt, 1F (SAMC B9912);

ZIMBABWE: Bulawayo, 2028Ba, 22 Feb. 1985 (J. Minshull) 1M (NMBZ 2738); Cotton Research Institute, Gatooma, Jun. 1981 (J.H. Brettell) 1M (NCAP 88/67); Sable Park, Dutchmans Pool, 1829Dd, 29 May 1983 (J. Minshull) 1F & 1M (NMBZ 1851); Salisbury [Harare], Apr. 1917 (R.W. Tucker) 5M (SAMC B3199, B3205, B3256).

Distribution:

Except for the drier western part, this species has a wide distribution throughout southern African (Figure 5), with the distribution extending north into the rest of the Afrotropical Region, as seen from type localities.

Habitat:

Most of the specimens were collected from grass (sweepnet), trees (beating), shrubs (beating) and under stones (manually). They also occur on agricultural crops like potatoes, cotton and lucerne. Due to their wide distribution and abundance on crops *C. africanum* may play an important role as biological control agent of agricultural pests. They have never been found inside buildings.

Phenology:

Adult males and females were collected throughout the year, except for June (F) and July (M).

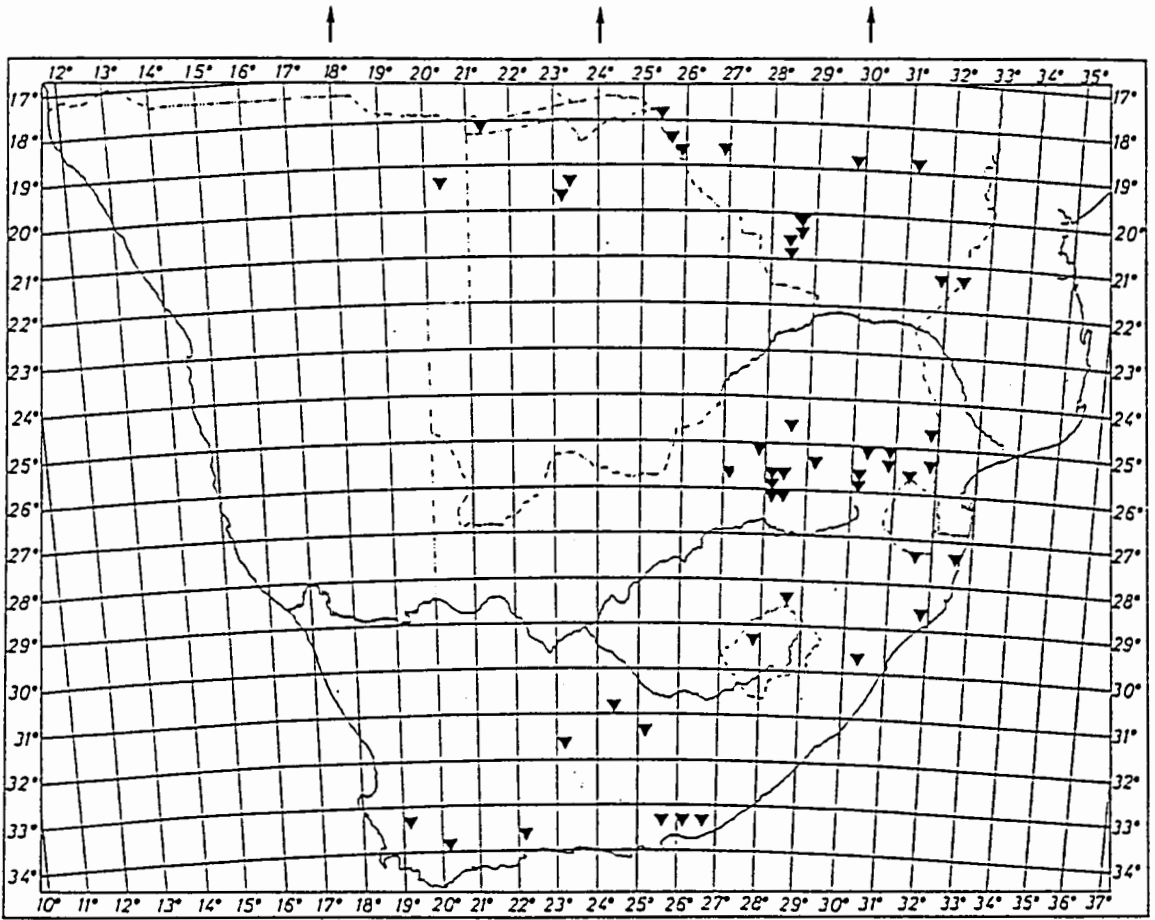


Figure 5. Known distribution of *Cheiracanthium africanum* Lessert in southern African. Arrows show distribution continuing to the north.

Cheiracanthium dippenarae n. sp.

(Figure 6a-d & 7)

Type:

Cheiracanthium dippenarae 1F holotype from SA, Gauteng: Roodeplaatdam Nature Reserve, 17 km NE of Pretoria [2536S/2821E], 29 Apr. 1982 (T. Marren & I. van Rooyen) (NCAP 84/71).

Etymology:

The name is in honor of Dr. A.S. Dippenaar-Schoeman in whose collection the type specimen is housed.

Diagnosis:

Cheiracanthium dippenarae differ from other Afrotropical species by their short CT (Figure 6c). This species is only known from the holotype.

Description:

Female. Size (n = 1): TL = 4,85; CL = 2,05 CW = 1,55; OAL = 0,30; OAW = 0,85; CCL = 0,05.

Cephalothorax: uniform yellowish-red; mouthparts uniform yellowish-red. Sternum yellow, paler along border; SL = 0,95; SW = 0,85. AER straight to slightly recurved; AME-AME = 0,15; AME-ALE = 0,10; AME diameter = 0,10. PER slightly procurved; PME-PME = 0,20; PME-PLE = 0,15; PME diameter = 0,10. MOQ wider than long and narrower anteriorly than posteriorly; MOQAW = 0,35; MOQPW = 0,40; CI = 1,32. Chelicerae robust; cheliceral fang furrow with three teeth on PM and three on RM of unequal size; PM teeth: PM2 largest; PM1 smallest; PM2 closer to PM1 than to PM3; RM teeth: very slightly unequal in size; RM1 largest; RM3 smallest; retromarginal teeth closer to fang base with RM3 almost in line with PM1 (Figure 6d).

Legs: yellow; LL:CL = 3,63. Length of legs:

	I	II	III	IV	Palp
Femur	1,95	1,55	1,10	1,60	0,70
Patella	0,80	0,70	0,60	0,70	0,30
Tibia	1,90	1,10	0,75	1,40	0,40
Metatarsus	1,80	1,15	0,90	1,50	----
Tarsus	1,00	0,60	0,60	0,65	0,60
Total length	7,45	5,10	3,95	5,85	2,00

Leg setae:

		Proximal	Medial	Distal
Femur I	prolateral	0	0	1
Tibia I	prolateral	0	1	0
	ventral	0	1	0
Metatarsus I	ventral	2	0	1
Femur II	prolateral	0	0	1
Tibia II		0	0	0
Metatarsus II	ventral	2	0	1
Femur III	prolateral	0	0	1
	retrolateral	0	0	1
Tibia III	prolateral	0	0	1
	retrolateral	0	0	1
Metatarsus III	prolateral	0	1	1
	retrolateral	0	1	1
	ventral	2	0	3
Femur IV	retrolateral	0	0	1
Tibia IV		0	0	0
Metatarsus IV	prolateral	1	1	1
	retrolateral	0	1	1
	ventral	2	0	3

Abdomen: yellowish-grey; heart mark distinct (Figure 6a).

Epigynum (Figure 6b-c): wider than long; most of the sclerotized epigynal plate depressed; CO small, posteriorly positioned. SPER small; well separated; CT short with a single curve; FT originating from ovaries terminating in SPER posteromedially.

Male: Unknown.

Relationship:

Cheiracanthium dippenarae has no closely related species due to the length and shape of the CT (Figure 6c).

Other material examined:

None.

Distribution:

Known only from the type locality (Figure 7).

Habitat:

Collected from grass with a sweepnet. It occurs sympatrically with *C. africanum*.

Phenology:

This species is rare in occurrence. Only one specimen was collected from the type locality during a four year survey (Dippenaar-Schoeman *et al.* 1989).

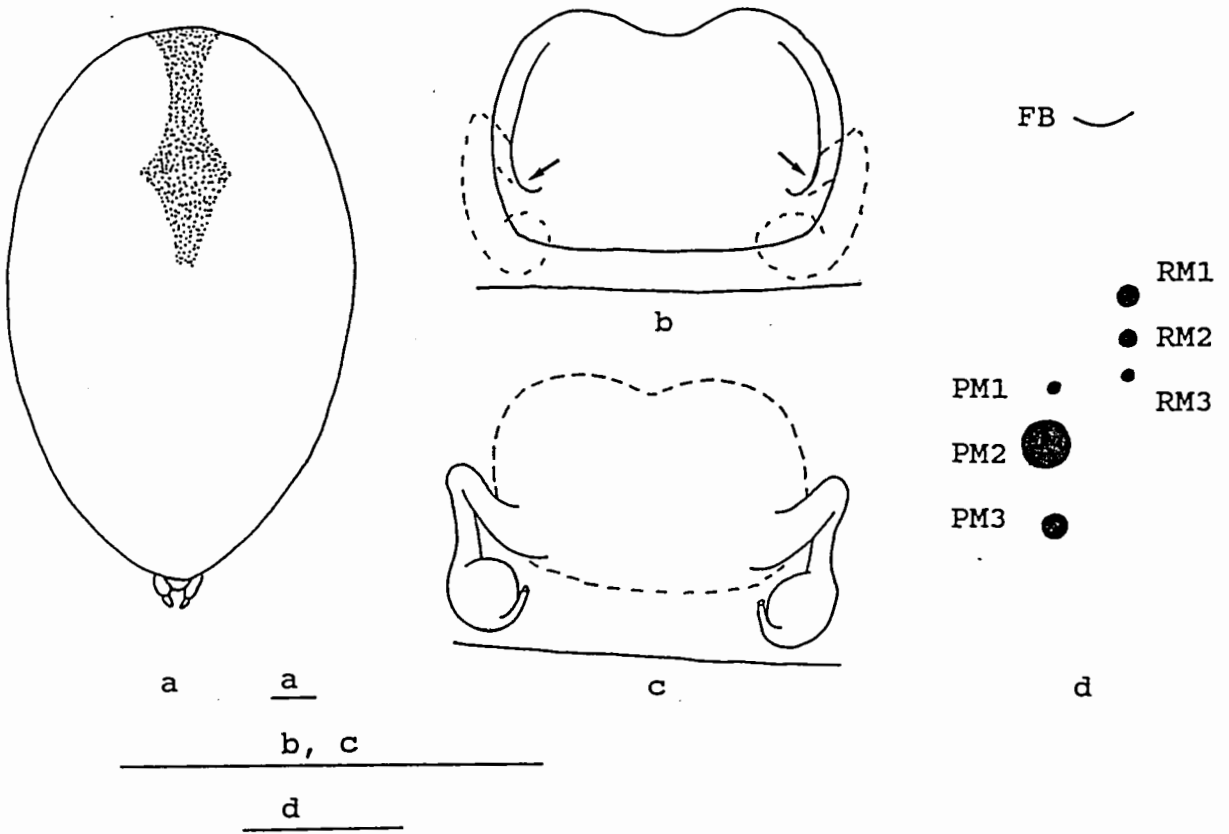


Figure 6. *Cheiracanthium dippenarae* sp. n. female: (a) abdomen (b) external epigynum (arrows indicate CO); (c) internal epigynum; (d) cheliceral fang furrow, showing fang base (FB) and promarginal (PM) and retromarginal (RM) teeth. (scale lines = 0,25 mm)

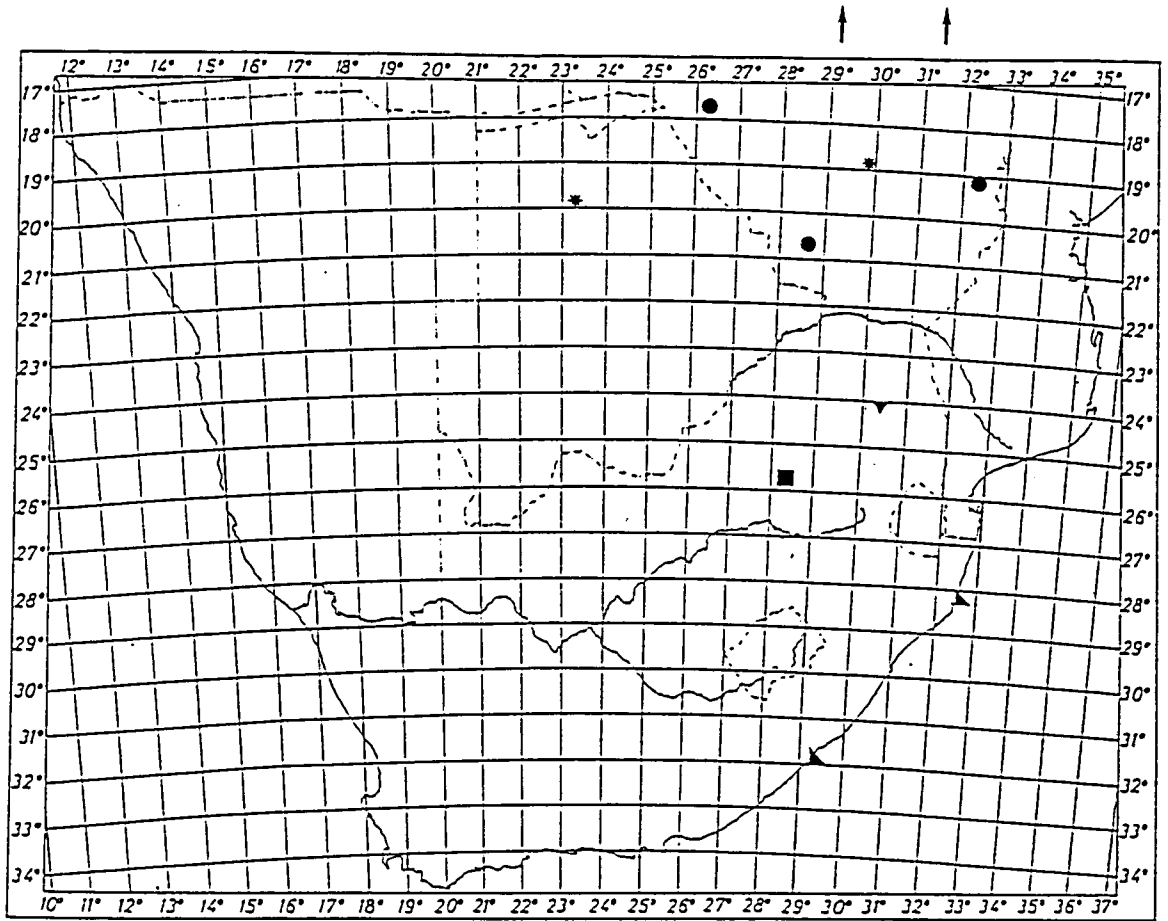


Figure 7. Distribution in southern African of: *C. dippenarae* sp. n. (■); *C. imbelle* Caporiacco (*); *C. minshullae* sp. n. (●); *C. presleyensis* sp. n. (▲); *C. shiluvanensis* sp. n. (▼). Arrows show distribution continuing northwards for *C. imbelle*.

Cheiracanthium furculatum Karsch, 1879

(Figures 8a-h & 9)

Cheiracanthium furculatum Karsch, 1879: 342.*Cheiracanthium melanostoma* Simon, 1910a: 344 (name preoccupied).*Cheiracanthium kiwunum* Strand, 1915: 83, new synonym.*Cheiracanthium mohasicum* Strand, 1915: 85, new synonym.*Cheiracanthium hoggi* Lessert, 1921: 409; 1936: 275; Roewer 1954: 483, new synonym.*Cheiracanthium natalense* Lessert, 1923: 186; Lawrence 1949: 32; Roewer 1954: 484, new synonym.*Cheiracanthium castum* Lawrence, 1927: 44; Roewer 1954: 483, new synonym.*Cheiracanthium inornatum* Lawrence, 1927: 43; 1936: 155; 1947: 32 (name preoccupied, O. Pickard-Cambridge 1874).*Cheiracanthium lawrencei* Roewer, 1951: 444 (replacement name for *inornatum*); 1954: 484, 1442, new synonym.*Cheiracanthium melanostomellum* Roewer, 1951: 444 (replacement name for *melanostoma*, name preoccupied, Thorell 1895); 1954: 484, 1442, new synonym.*Cheiracanthium melanostomellum caboverdense* Schmidt & Piepho, 1994: 107, new synonym.

Types:

Cheiracanthium furculatum 1M holotype from Gabon: Chinchoxo [= Chinchoua], West Africa [0002N/0947E], (Falkenstein) (ZMHB 2962, examined);*Cheiracanthium hoggi* 4M syntypes from Tanzania: Kibonoto [Kibognoto/Kibongoto (different spellings for the same place), Kilimanjaro, 0312S/3707E], (Sjöstedt) (MHNG, examined);

Cheiracanthium castum 1M holotype from Angola: Namakunde [previously part of S.W.A./Namibia, now Angola] [1719S/1550E], Mar. 1923 (R.F. Lawrence) (SAMC B6279, examined);

Cheiracanthium inornatum 1F & 1M syntypes from Namibia: Kunene River [exact co-ordinates not known], Mar. 1923 (R.F. Lawrence) (SAMC B6156, examined); 1F & 3M syntypes from Namibia: Ongandjera [1753S/1505E], Mar. 1923 (R.F. Lawrence) (SAMC B6116, examined);

Cheiracanthium kiwunum 1M holotype from Zaire: Kwidschwi Island, Lake Kiwu [0210S/2901E]; & 1M paratype from Kissenje, N. shore of Lake Kiwu [0125S/2910E], Sept. 1907 (Exp. Hertzog Mecklenburg) (ZMHB 27227 & 27228, examined);

Cheiracanthium melanostoma 1F holotype from Equatorial Guinea: Bahia S. Carlos, Is. Fernando Poo [Bioko Island, 0327N/0836E], (MCSN, examined);

Cheiracanthium melanostomellum caboverdense 1M holotype from Cape Verde Islands: Maio Island, uncultivated land at Calheta, 23 Jan. 1993 (Schmidt & Piepho) (SMFD, examined);

Cheiracanthium mohasicum 1F holotype from Rwanda: Lake Mohasi [0144S/3020E], July 1907 (Schuboltz) (ZMHB 27265, examined);

Cheiracanthium natalense 1M holotype from SA, Kwazulu/Natal: Umzinto [3018S/3039E], Apr. 1914 (G. Hall) (NMSA, DMSA 4.014, examined).

Note: It should be noted that the name *C. lawrencei* could be preferred as the species name for this species as the name *C. furculatum* has not been in use since 1879, except in catalogues, and the name *C. lawrencei* has been in constant use in publications since its inception in 1951.

Diagnosis:

Cheiracanthium furculatum differs from other Afrotropical species by the relative short length of the first part of the CT; the anteriolateral position of the CO; straight CT entering SPER anterolaterally (Figure 8c-d); large bilobed TA and the straight, sharply pointed RTA and CA (Figure 8e-f).

Redescription:

Female. Size (n = 10): TL = 9,95 (7,50 - 11,85); CL = 3,70 (3,10 - 4,40); CW = 3,04 (2,70 - 3,95); OAL = 0,57 (0,50 - 0,65); OAW = 1,58 (1,45 - 1,80); CLL = 0,10 (0,10 - 0,12).

Cephalothorax: yellow, ocular area and mouthparts black-brown. Sternum yellow; slightly darker along border; SL = 1,75; SW = 1,40. AER straight to slightly recurved; AME larger than ALE; AME-AME = 0,20; AME-ALE = 0,23; AME diameter = 0,20; PER procurved; PME larger than PLE; PME-PME = 0,35; PME-PLE = 0,30; PME diameter = 0,15. MOQ wider than long, and wider behind than in front; MOQAW = 0,55; MOQPW = 0,65; CI = 1,22. Six teeth of unequal size on cheliceral fang furrow; PM with three teeth: PM2 largest; PM1 smallest, but relatively large in comparison to those of other species; PM2 closer to PM1 than to PM3; RM with three evenly spaced teeth: RM1 largest; RM3 smallest; RM closer to fang base with PM1 in line between RM2 and RM3 (Figure 8g).

Legs: yellow with tarsal tips darker; LL:CL = 3,73. Length of leg segments:

	I	II	III	IV	Palp
Femur	3,70	2,85	2,20	3,00	1,20
Patella	1,50	1,20	1,10	1,10	0,60
Tibia	3,30	2,50	1,60	2,50	0,60
Metatarsus	3,80	2,80	2,00	2,90	----
Tarsus	1,50	1,00	0,80	1,00	1,00
Total length	13,80	10,35	7,70	10,50	3,40

Leg setae:

		Proximal	Medial	Distal
Femur I	prolateral	0	1	1
Tibia I	ventral	0	2	0
Metatarsus I	ventral	2	0	1
Femur II	prolateral	0	1	1
Tibia II		0	0	0
Metatarsus II	ventral	2	0	1
Femur III	prolateral	0	1	1
	retrolateral	0	1	1
Tibia III	prolateral	0	0	1
	retrolateral	0	0	1
Metatarsus III	prolateral	1	1	1
	retrolateral	1	1	1
	ventral	2	0	3
Femur IV	prolateral	0	0	1
	retrolateral	0	0	1
Tibia IV	prolateral	0	0	1
	retrolateral	0	0	1
Metatarsus IV	prolateral	1	1	1
	retrolateral	1	1	1
	ventral	2	2	3

Abdomen: uniform pale yellow without markings (Figure 8a).

Epigynum (Figure 8c-d): sclerotized; wider than long, with two slightly rimmed concave circles. CO situated anterolaterally; SPER small, well separated; CT curve anterior before curving posteriorly to SPER; posterior part of CT long and not bent before entering SPER anterolaterally; FT enters SPER posteriomedially.

Male. Size (n = 10): TL = 7,60 (5,70 - 10,20); CL = 3,45 (3,10 - 4,20); CW = 2,54 (1,85 - 3,05); OAL = 0,51 (0,45 - 0,55); OAW = 1,20 (1,35 - 1,10); CLL = 0,10 (0,09 - 0,10).

Cephalothorax: yellow to reddish-yellow, eye area and mouthparts black-brown. Sternum yellow, slightly darker along border; SL = 1,75; SW = 1,35. AER straight; AME-AME = 0,10; AME-ALE = 0,15; AME diameter = 0,25. PER procurved;

PME-PME = 0,25; PME-PLE = 0,25; PME diameter = 0,20. MOQ slightly wider than long and very slightly wider behind than in front; MOQAW = 0,60; MOQPW = 0,65; CI = 1,36. Six unequal teeth on cheliceral fang furrow; PM with three evenly spaced teeth: PM2 largest, PM1 smallest; PM1 further removed from PM2 than in female; RM with three evenly spaced teeth: RM1 largest, RM3 smallest; RM closer to fang base than PM with PM1 slightly further from fang base than RM2 (Figure 8h).

Legs: yellow with tarsal tips darker; longer and more slender than in female with LL:CL index = 6,62 compared to 3,73 for female. Length of leg segments:

	I	II	III	IV	Palp
Femur	5,80	4,00	3,15	4,20	1,50
Patella	1,60	1,30	1,30	1,30	0,60
Tibia	6,15	3,45	2,25	3,70	0,60
Metatarsus	6,80	4,55	3,50	5,70	----
Tarsus	2,50	1,40	1,10	1,40	1,50
Total length	22,85	14,70	11,30	16,30	4,20

Leg setae:

		Proximal	Medial	Distal
Femur I	prolateral	0	1	1
Tibia I	ventral	2	8	2
Metatarsus I	ventral	2	1	1
Femur II	prolateral	0	1	1
Tibia II	prolateral	1	0	1
	proventral	1	1	0
	retroventral	1	1	0
Metatarsus II	prolateral	0	1	1
	ventral	2	1	1
Femur III	prolateral	0	1	1
	retrolateral	0	1	1
Tibia III	prolateral	0	1	1
	retrolateral	0	1	1
	ventral	2	0	0
Metatarsus III	prolateral	1	1	1
	retrolateral	1	1	1
	ventral	2	2	3
Femur IV	prolateral	0	1	1
	retrolateral	0	1	1
Tibia IV	prolateral	1	0	1
	retrolateral	1	0	1
	ventral	2	2	0
Metatarsus IV	prolateral	1	1	1
	retrolateral	1	1	1
	ventral	2	8	3

Abdomen: similar to female but more slender (Figure 8b).

Palp (Figure 8e-f): yellow with tarsi black-brown. Tibia slender, as long as patella, twice as long as wide, slightly distended anteriorly; VTA small, curved and sclerotized; RTA dark brown; seen ventrally, slightly bent near basal third; extended straight forward and slightly contracted towards sharp point; RTA viewed laterally, slightly swollen at base; tapers to a sharp point. Cymbium longer than tibia and patella combined; elongated anteriorly to a narrow, blunt point shorter than bulb; basal part of C obliquely truncated and angular; outer side extending posteriorly and tapering to form a sharply pointed CA; CA nearly straight, pointing obliquely outwards, and slightly shorter than RTA; bulb with a long, slender, black EM originating medially from outer edge encircling T; tip in line with white, membranous CON; outer edge of CON rests on inner lobe of bilobed, dark brown TA; both lobes of TA blunt and broad; outer lobe of TA differing slightly intraspecifically in shape, size and sclerotization and is larger than inner lobe.

Synonymy:

The type material of *C. hoggi*, *C. castum*, *C. lawrencei*, *C. kiwunum*, *C. melanostomellum*, *C. melanostomellum caboverdense*, *C. mohasicum* and *C. natalense* were compared with type and all available material of *C. furculatum*. It was found to be similar in genital structure and general appearance and no discernable major differences could be found that could not be attributed to intraspecific variation. Lawrence (1927) erroneously described *C. castum* as having only two RM and two PM, while it in fact has three of each. Lessert (1923) compared *C. natalense* with *C. hoggi* and reported that the TA and RTA differ in shape. This difference was found to be part of the natural intraspecific variation observed during this study. The number of setae on the legs, especially ventrally on metatarsi I and IV, was another character found to vary intraspecifically. *Cheiracanthium hoggi*, *C. castum*, *C. lawrencei*, *C. kiwunum*, *C. melanostomellum*, *C. melanostomellum caboverdense*, *C. mohasicum* and *C. natalense* are therefore considered synonyms of *C. furculatum*.

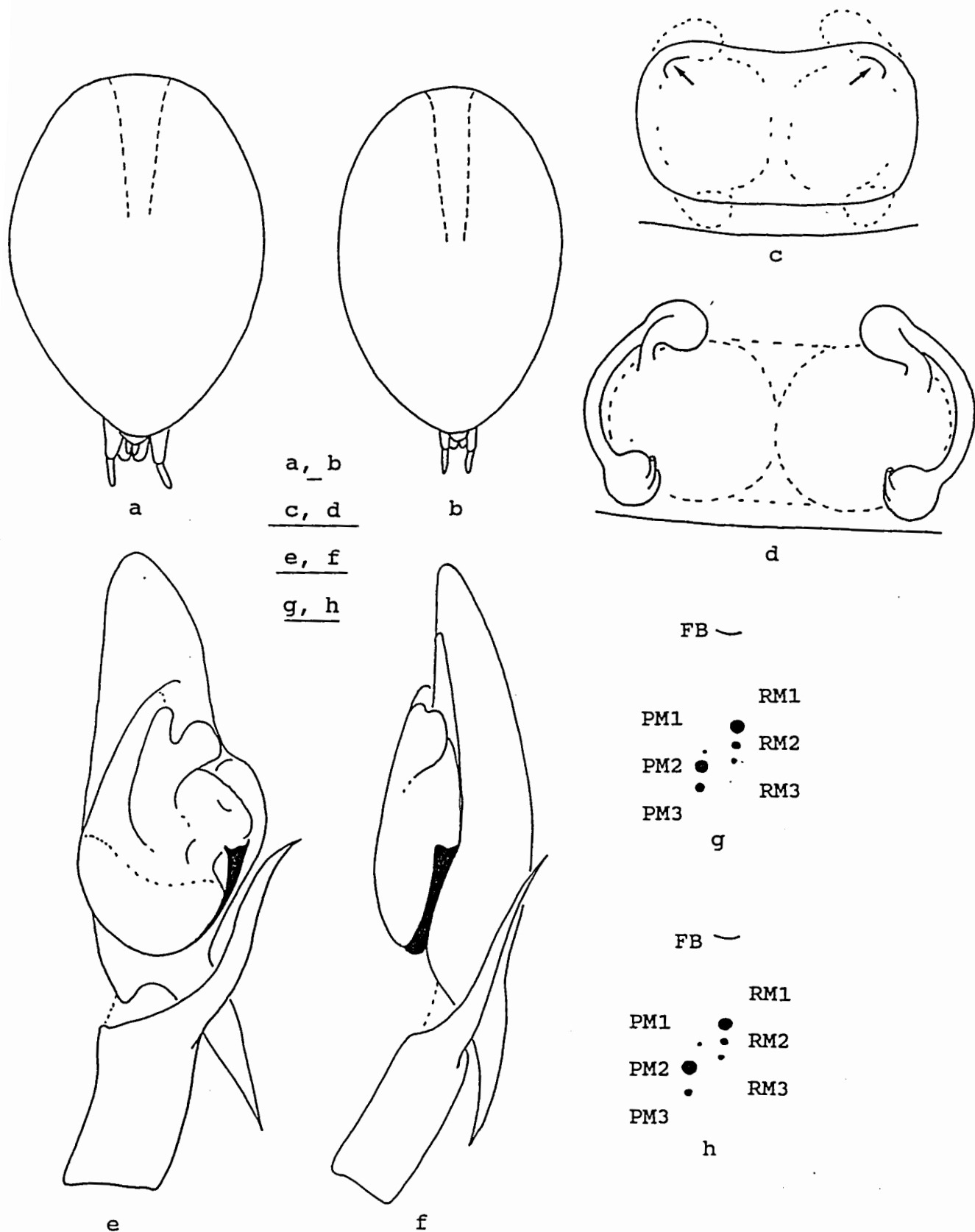


Figure 8. *Cheiracanthium furculatum* Karsch: (a) female abdomen; (b) male abdomen; (c) female external epigynum (arrows indicate CO); (d) female internal epigynum; (e) male palp, ventral view; (f) male palp, lateral view; (g-h) teeth on cheliceral fang furrow of female (g) and male (h), showing fang base (FB) and promarginal (PM) and retromarginal (RM) teeth. (scale lines = 0,25 mm)

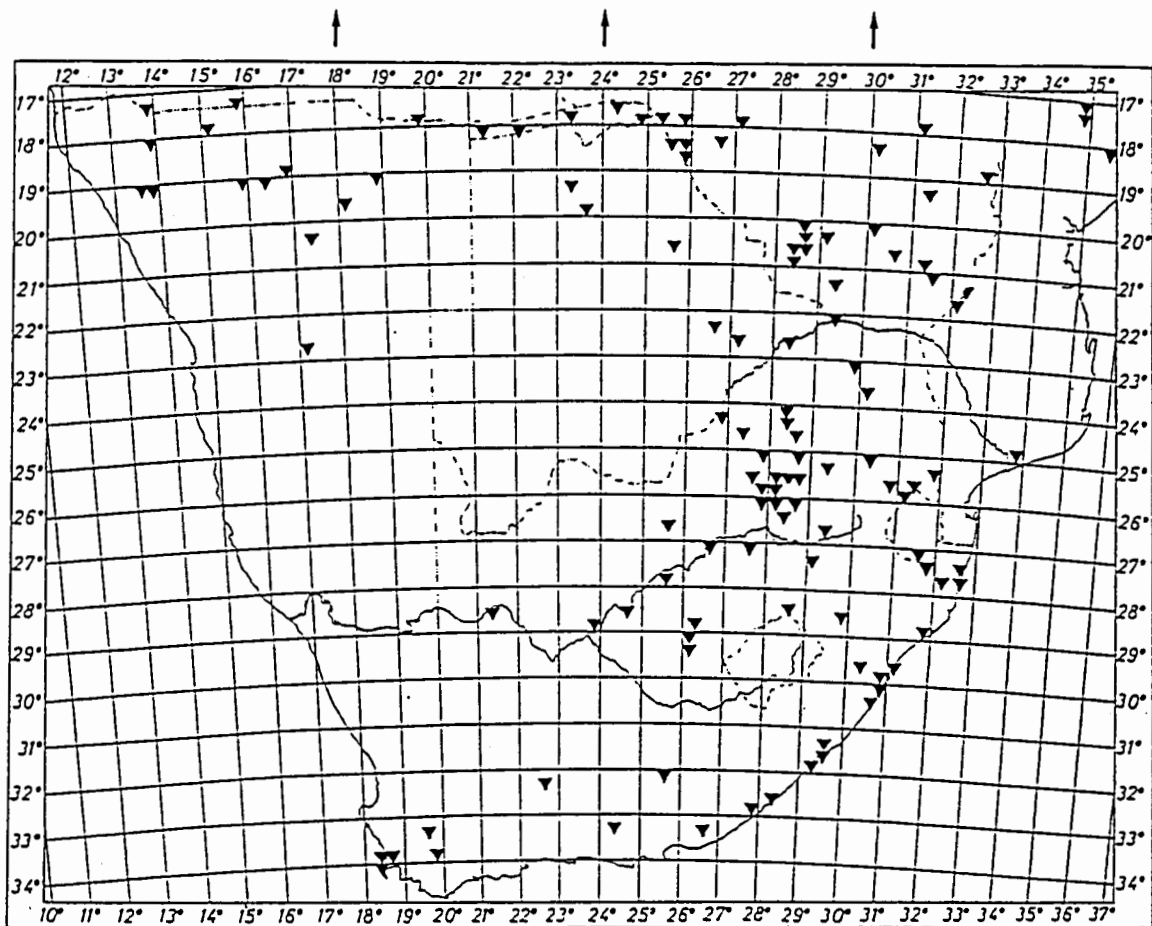


Figure 9. Known distribution of *Cheiracanthium furculatum* Karsch in southern African. Arrows show distribution continuing to the north.

Relationship:

The closest relative of *C. furculatum* is *C. presleyensis*, due to the general similarity in female genitalia (Figures 8c-d & 12b-c). However, the males of *C. presleyensis* are unknown, which might change the relationships.

Other material examined:

NO LOCALITY DATA: 1M [labeled *C. hoggi*] (OXUM B2179); 1F & 1M [labeled *C. natalense*] (OXUM B2179);

BOTSWANA: Makarikari, 2025Da 1F (TMSA 5974); Maun, Crocodile Camp, 1956S/2331E, 23 June 1979 (B. Taylor) 1M (NCAP 86/114); Moremi Nature Reserve, 7 July 1983 (R. Harris) 1M (NCAP 83/276); Palapye, 23 Dec. 1980 (P. Reavell) 1F (NCAP 81/81); Serowe, June 1988 (P. Forchhammer) 1F (CASC), July 1989 (P. Forchhammer) 1F (CASC), Aug 1989 (P. Forchhammer) 4M (CASC), Sept. 1989 (P. Forchhammer) 2F & 1M (CASC), Oct. 1989 (P. Forchhammer) 1M (CASC), Dec. 1989 (P. Forchhammer) 1F (CASC), Mar. 1990 (P. Forchhammer) 1F & 1M (CASC);

MOZAMBIQUE: Bas Sangadze (P. Lesne) 1F & 2M (MHNG); Masiene, nr. Chai Chai, Dec. 1923 (R.F. Lawrence) 1F (SAMC B7170); Nova Coupanga [Nova Chupanga] (P. Lesne) 1M (MHNG); Sinjal (H.B. Cott) 1M (MHNG);

NAMIBIA: Andara-Kavango, Okavango River, 1804S/2129E, 1979 (M.E. Baddeley) 2F & 4M (MRAC 152.795, 152.856); Grootfontein, Jan. 1919 (R.M. Lightfoot) 1F (SAMC B4628), Jan. 1920 (R. Tucker) 1M (SAMC B5067); Halali, 1902S/1628E, 11 Oct. 1986 (E. Marais) 1F (SMWN 40522); Katima Mulilo, Caprivi, 21 Apr. 1991 (V.D. & B. Roth) 1M (CASC); Namutoni, 1848S/1656E, 7 Nov. 1986 (C. Ficq) 1M (SMWN 41193); Narugas, Jan. 1920 (R. Tucker) 1M (SAMC B5033); Okaukuejo, 1910S/1553E, 12 Oct. 1986 (T. Archibald) 1M (SMWN 40582); Omega, W. Caprivi, 1822Aa, (E. Marais) 1M (SMWN 41789); Ongandjera, Mar. 1923 (R.F. Lawrence) 2F (SAMC B6753); Otjinjerese, Jan.- Apr. 1926 (Museum Exp.) 1F (SAMC B7077);

Rundu-Kavango, Okavango River, 1755S/1946E, May 1979 (M.E. Baddeley) 1M (MRAC 152.147); Sesfontein, Feb. 1925 (Museum Exp.) 4F (SAMC B6664, B6669); Sitwa near Choy, 10 km S. Kongola, camp of "Water Affairs", 1750S/2325E, 18 Oct. 1987 (R. Jocqué) 1F (MRAC 168.608); Warmbad, Feb. 1925 (Museum Exp.) 1F & 1M (SAMC B6651); nr. Waterberg, 9 Apr. 1991 (V.D. & B. Roth) 1F (CASC); Windhoek, Mar. 1991 (V.D. & B. Roth) 1M (CASC); Windhoek, 2217Ca, 9 Apr. 1993 (M.J. Anjos-Dias) 1M (SMWN 43135);

SA, EASTERN CAPE PROVINCE: Cradock, 25 Oct. 1989 (M. de Jager) 1F (NCAP 90/462); East London, 1F (AMSA 2785); East London, Pineapple Research Station, June 1977 (G. Petty) 2F (NCAP 77/1123), 2 Dec. 1977 (G. Petty) 1M (NCAP 77/1092), Dec. 1980 (D. Keetch) 1M (NCAP 85/169); Grahamstown, 12 July 1901 (C. Sole) 1F & 1M (AMSA), 9 July 1978 (S. Gilbert) 1F (NCAP 82/371), 6 July 1980 (P.M.C. Croeser) 1M (NCAP 82/25), 1981 (P. Croeser) 1F & 1M (NCAP 82/372, 86/98); Kentani, 1903, 1F (SAMC X13092), 1914 (A. Pegler) 1M (SAMC B68); Lusikisiki, Mzimhlava River mouth, 3123S/2931E, Jan. 1980 (M.E. Baddeley) 2M (MRAC 166.778, 166.837), Feb. 1980 (M.E. Baddeley) 1F & 1M (MRAC 166.630); Port St. Johns, 3138S/2932E, Nov. 1980 (M.E. Baddeley) 1M (MRAC 166.548); Presley Bay, 13 Mar. 1975, 1F (SAMC C1904); SA, GAUTENG PROVINCE: Centurion, Irene, 18 Dec. 1988 (A.S. Dippenaar) 1M (NCAP 89/194); Centurion, Wierda Park, 15 Jan. 1989 (E. Robson) 1F & 1M (NCAP 91/658); Daspoort, Pretoria, 17 Mar. 1907, 1M (SAMC B196); Dunnottar, 21 Feb. 1987 (E. Opperman) 1F (NCAP 91/657); Edenville, 24 Apr. 1967 (Solomon) 1F (NCAP 76/378); Hartebeestpoortdam, Plot nearby, 15 Jan. 1982 (T. Marren) 2F (NCAP 82/91), 15 Feb. 1982 (T. Marren) 1F (NCAP 82/183); Johannesburg, 1M (SAMC X4211), 7 Jan. 1966, 1F (AMSA), 6 Sept. 1990 (M. Filmer) 1M (NCAP 91/127); Johannesburg, Hurlingham, 28 Feb. 1965, 1F (AMSA); Johannesburg, Melville, 14 Feb. 1987 (P. Boxall) 1F (NCAP 87/328); Johannesburg, Parkhurst, Sept. 1963, 1F (AMSA X.42); Johannesburg, Parktown North, Oct. 1986 (M. Filmer) 1M (NCAP

87/49), 17 Nov. 1986 (S. Filmer) 1F (NCAP 87/64), Nov. 1986 (M. Filmer) 1M (NCAP 87/68), 10 Feb. 1988 (M. Filmer) 1F (NCAP 88/146); Johannesburg, southern suburbs, 18 Jan. 1991 (J. Evans) 1F (NCAP 91/108); Johannesburg, Windsor Park, 4 Jan. 1991 (M. Wilson) 1F (NCAP 91/107); Johannesburg, Wits, 24 Jan. 1966, 1F (AMSA), 21 Mar. 1966, 1F (AMSA); Kempton Park, 2607S/2814E, 1 Jan. 1986 (R. Pienaar) 1F (NCAP 86/651), 14 Apr. 1987 (D.A. Reynecke) 1M (NCAP 90/362), 26 Apr. 1987 (L. Raubenheimer) 1F (NCAP 91/1094), Oct. 1989 (A. Pritchard) 1M (NCAP 90/39); Pretoria, 17 Mar. 1966 (P. Luus) 1F (NCAP 76/1864), 8 July 1974 (G. Swanepoel) 3M (NCAP 76/331), 9 Apr. 1975 (E. Theron) 1F (NCAP 76/201), 7 Nov. 1975 (C. Colijn) 1F (NCAP 76/1610), 26 Mar. 1976 (U. Burger) 1F (NCAP 76/465), 3 Feb. 1977 (I. Vosloo) 1F (NCAP 77/491), 8 Apr. 1978 (A.S. Dippenaar) 1F (NCAP 78/388), 5 Dec. 1980 (B. Vermeulen) 1M (NCAP 81/642), 16 July 1981 (A. Tuffin) 1F (NCAP 81/730), 24 Feb. 1983 (J. Bruijns) 1F (NCAP 83/202), 15 Jan. 1986 (C. Smith) 1F (NCAP 87/84), 20 Jan. 1986 (S. Nesor) 1F (NCAP 86/20), 1987 (J.S. Theron) 1M (NCAP 90/358), 1987 (P. Lombaard) 1F (NCAP 91/593), Jan. 1987 (J. Botha) 2M (NCAP 87/526), 16 Feb. 1987 (J.P. Coetzee) 1F (NCAP 88/259), 1987 (P. Lombaard) 1M (NCAP 91/614), 21 Apr. 1987 (W.F. Koch) 1F (NCAP 91/1181), 20 July 1987 (N. Dippenaar) 1F (NCAP 89/195), 30 Sept. 1987 (H. de Beer) 1M (NCAP 87/846), 10 Feb. 1989 (B. Sunkel) 1F (NCAP 89/313), Apr. 1989 (J. Clarke) 2F (NCAP 89/524), 20 Nov. 1990 (R. Oberprieler) 1F (NCAP 91/90); Pretoria, 2545S/2812E, Apr. 1987 (M. Prinsloo) 1M (NCAP 88/352), 3 Apr. 1987 (H. Scheepers) 1F & 2M (NCAP 90/341, 91/1133), 15 Apr. 1987 (H. Strassen) 1F (NCAP 91/236), 20 Apr. 1987 (P.C. Bosch) 1M (NCAP 88/327); Pretoria, Brooklyn, 22 Nov. 1988 (B. Sunkel) 1F (NCAP 89/156); Pretoria, Capital Park, 3 Mar. 1987 (Potgieter) 2F (NCAP 90/314); Pretoria, 2528Da, 13 Mar. 1960 (CSIR Water Res.) 1F (TMSA 12843); Pretoria, Lynwood Glen, 2545S/2812E, 25 Jan. 1987 (S. Nesor) 1F (NCAP 87/825), 12 Mar. 1987 (M. Vogt) 1F (NCAP 88/325); Pretoria, Rietfontein, 2 Sept. 1986 (D. Niewenhuys) 1F (NCAP 86/271);

Pretoria, Sinoville, 28 Feb. 1987 (J.M. Mülders) 1M (NCAP 90/335); 4 Mar. 1987 (J.M. Mülders) 1F (NCAP 90/348); 1989 (P. van Niekerk) 1F (NCAP 90/435); Pretoria, University, 2545S/2812E, 31 Mar. 1987 (L.D. van der Bank) 1F (NCAP 88/889), 2 Apr. 1987 (A. Davis) 1F (NCAP 88/96); Pretoria, Villeria, 27 Apr. 1983 (E.K. Hartwig) 1F (NCAP 83/201); Randfontein, 14 Nov. 1973 (C. Colijn) 1M (NCAP 76/1190); Roodeplaatdam Nature Reserve, Mar. 1971 (J. Finlay) 1M (NCAP 76/336); Roodeplaat, 15 Jan. 1980 (A.S. Dippenaar & M. Stiller) 1F (NCAP 81/799); Roodeplaat, 2537S/2822E, 23 Jan. 1988 (P. Boxall) 1F (NCAP 88/145); Rust-de-Winter, Mar. 1973 (L. Pretorius) 1F (NCAP 76/1839); Welgegund, nr. Hartebeestpoortdam, Pretoria area, 26 Aug. 1981 (T. Marren) 1M (NCAP 82/301), Oct. 1982 (T. Marren) 1F (NCAP 83/100); SA, KWAZULU/NATAL PROVINCE: Durban, Oct. 1896 (J.P. Cregoe) 1F & 1M (SAMC X975, X3834); Empangeni, 11 Apr. 1981 (P. Reavell) 1F (NCAP 81/190); Ladysmith Natal Midlands, Klip river "Dawn Pride", 2833S/2947E, Oct. 1980 (H.D. Shaw-Copeland) 1F & 1M (MRAC 166.457); Lake Sibaya, E. side, 26 June 1967 (B. Lamoral) 1M (NMSA 9563); Lake Sibaya, NW shores of W. arm, 28 June 1967 (B. Lamoral) 1F (NMSA 9584); Makabeni, upper Umkomaas, Dec. 1903 (Fry) 1F (SAMC X13614); Manderston, Dec. 1961 (H. Bustin) 1F (NMSA 8755); Mazengwena, Maputoland, 27 Dec. 1980 (M. Bruton) 1M (NCAP 82/166); Pietermaritzburg, Dec. 1938 (R.F. Lawrence) 1M (NMSA 2971), Jan. 1940 (R.F. Lawrence) 1F & 1M (NMSA 2907), Dec. 1943 (R.F. Lawrence) 1F (NMSA 4207), June 1957 (Y. Lawrence) 2F (NMSA 6844); Pinetown, Sept. 1917 (H.W. Bell-Marley) 1F (AMSA); Pongola, 6 June 1967 (H. van Ark) 1M (NCAP 85/37); Shafton House, Apr. 1921 (R.E. Simmons) 1F (SAMC B5696); Sodwana, Zululand, 2732Da, 8 May 1981 (C.A. Car) 1M (SAMC C644); Sydenham, Apr. 1915 (W. Bell-Marley) 1F (SAMC B1172); University of Zululand, 1 Aug. 1977 (P. Reavell) 1M (NCAP 84/648); SA, MPUMALANGA PROVINCE: Barberton, 1M (SAMC X4189); Barberton dist., Komatipoort, 2531Bd, 4 June 1972 (M. Trof) 1F (TMSA 12871); Delmas, 15 Jan. 1989 (H. Botha) 1M (NCAP 91/245);

Kaapmuiden, 1 Nov. 1918 (R.W. Tucker) 1F (SAMC B4239); Loskopdam, 10 Oct. 1989 (M. Filmer) 1F (NCAP 90/95); Lydenburg, Sept. 1988 (R. Filmer) 1M (NCAP 89/247); Middleburg, 30 Mar. 1958 (E.S. Ross & R.E. Leech) 1F (CASC); Nelspruit, 2530S/3058E, 15 Sept. 1986 (C. Pietersen) 1M (NCAP 86/420); SA, NORTHERN PROVINCE: "Al-te-Ver", Maasstroom, 18 Aug. 1976, 1M (NCAP 76/1364); Crocodile & Marico River Junction, NW. Transvaal, Nov. 1918 (R.W. Tucker) 1F (SAMC B3687); Mooketsi (E.T. Rossouw) 1F (NCAP 91/238); Nylsvlei, Naboomspruit, Mar.-Aug. 1976 (G. Ferreira) 1M (NCAP 78/472), Jan.-Dec. 1977 (G. Ferreira) 1M (NCAP 78/545); Thabazimbi, 28 Feb. 1987 (C. Gerber) 1M (NCAP 91/587); Waterberg, Feb. 1920 (R.W. Tucker) 1M (SAMC B5588); SA, NORTHERN CAPE PROVINCE: Hartswater, Jan Kempdorp, 2724Dd, July 1972 (E. Holm) 1F & 1M (TMSA 14128, 14130), Oct. 1972 (E. Holm) 2F & 1M (TMSA 14132, 14134, 14136); Upington (F. Gollies?) 1M (SAMC B5244); SA, NORTHWEST PROVINCE: Barberspan, 2635S/2535E, 13 Jan. 1986 (V. Morgan) 1M (NCAP 87/499), 31 Jan. 1987 (K. Morgan) 1F (NCAP 87/501), 3 June 1988 (K. Morgan) 1F (NCAP 91/816); Borakalalo Nature Reserve, 27 Jan. 1989 (S. Langton) 1F (NCAP 89/956), 27 Mar. 1989 (M. Filmer) 1M (NCAP 89/604); Brits, 2539S/2745E, 1984-85 (R. Watmough) 1M (NCAP 82/28); 3 Feb. 1987 (J. Botha) 1F (NCAP 89/248); 17 Feb. 1987 (H. van Hamburg) 1F (NCAP 87/261); 16 Mar. 1987 (H. van Hamburg) 1F (NCAP 87/356); 1 July 1987 (D. van Heerden) 1F (NCAP 87/790); 1 Apr. 1988 (A. van den Berg) 23F & 18M (NCAP 89/551); SA, FREE STATE PROVINCE: Bloemfontein, 2908S/2610E, 28 Aug. 1985 (S. Louw) 1F (NMBA 1011), 10 Nov. 1987 (S. Louw) 1M (NMBA 2775), 9 Mar. 1988 (V. R. Strydom) 1F (NMBA 2840), 25 Sept. 1988 (S. Louw) 1M (NMBA 2985), 30 Oct. 1989 (L.N. Lotz) 1M (NMBA 3300), 13 Mar. 1990 (S. Louw) 1F (NMBA 5357), 15 Oct. 1991 (S. Louw) 1M (NMBA 5818), 1 Jan. 1992 (E. Lotz) 1M (NMBA 5862), 28 Jan. 1992 (E. Lotz) 1M (NMBA 6001), 17 Aug. 1992 (D. de Swart) 1F (NMBA 6083), 17 Feb. 1993 (L.N. Lotz) 1F (NMBA 6119), 5 Mar. 1993 (L.N. Lotz) 1F & 1M

(NMBA 6120); Bloemfontein, Glen, 2826Cd, 1972 (E. Holm) 1M (TMSA 14584), Feb. 1972 (E. Holm) 1F & 1M (TMSA 14117, 14119), May 1972 (E. Holm) 1M (TMSA 14519), Sept. 1972 (E. Holm) 2M (TMSA 14537, 14539), Oct. 1972 (E. Holm) 5F & 15M (TMSA 14532, 14533, 14534, 14537, 14540, 14542, 14543, 14545, 14546, 14548, 14551, 14553, 14557, 14561, 14562, 14563, 14564, 14566, 14568, 14570), Nov. 1972 (E. Holm) 7F & 10M (TMSA 14571, 14575, 14578, 14581, 14588, 14589, 14590, 14593, 14596, 14597, 14598, 14599, 14600, 14601, 14603, 14606, 14607); Bloemfontein, Koppieskraal 407, 2924S/2611E, 16 Jan. 1986 (Museum Staff) 1F (NMBA 1364); Bothaville, Deelfontein 482, 2707S/2635E, Aug. - Oct. 1986 (Museum Staff) 1F (NMBA 1892); Greenlands, between Sasolburg & Koppies, 16 Nov. 1987 (H. Joubert) 1F (NCAP 87/933), 3 Feb. 1988 (J. Joubert) 1F (NCAP 88/198); Harrismith, Witkrans, 26 Oct. 1994 (L.N. Lotz) 1M (NMBA 7015); Hoopstad, Swartsrus 1193, 2745S/2530E, 18-19 Nov. 1985 (Museum Staff) 1F (NMBA 1188); SA, WESTERN CAPE PROVINCE: Beaufort West, Dec. 1972, 1F (SAMC C1267); Bellville, 3353S/1839E, 10 July 1992 (L.N. Lotz) 1M (NMBA 6048), 11 July 1992 (L.N. Lotz) 2F (NMBA 6044, 6094); Cape Town, 25 Mar. 1975 (Miss. Berrang) 1F (NCAP 76/1059); Cape Town, 3318Cd, 13 Mar. 1982 (Dr de Decker) 1M (SAMC C981); Cape Town, 3356S/1828E, 5 May 1992 (J. Irish) 1F (NMBA 6038); De Doorns, 15 Mar. 1981 (A. Urbin) 1M (NCAP 81/1136); Fish Hoek, 23 Apr. 1992 (N. Larsen) 1F (SAMC C3226), June 1992 (N. Larsen) 1F (SAMC C3227); Robertson, McGregor, 3357S/1949E, 9 Mar. 1993 (N. Larsen) 1F (NMBA 6254);

SWAZILAND: Henwoods Halt, 2F (SAMC B9912);

ZIMBABWE: Baviaans Kop, Umtali, June 1902 (Patrick) 1F (SAMC X12556); Bulawayo, May 1917 (R.W. Tucker) 1F (SAMC B3299); Bulawayo, Matsheumhlope, 2028Ba, 27 Nov. 1979 (C.A. Car) 1F (NMBZ 489); Gatooma Research Station, 3 May 1973 (J.H. Brettell) 1M (NCAP 76/1244); Gonarezhou National Park, Mabalauta, 2132Cc, 24 June 1985 (P. Kagoro) 1F (NMBZ 3466); Gonarezhou

National Park, Mwatombo, 2132Cc, 25 June 1985 (P. Kagoro) 1F & 1M (NMBZ 3490); Hippo Pools, R., Lowveld, 2030Da, 18 Dec. 1965 (Palgrave) 1F (NMBZ 1545); Katombora Campsite, 1725Cd, 25 Aug. 1986 (Falcon College-NHMZ) 1F & 1M (NMBZ 4734); Salisbury [Harare], 7 Sept. 1917 (Rev. J. O'Neil) 2F (SAMC B3848, B3856), Apr. 1917 (R.W. Tucker) 2F & 3M (SAMC B3096, B3198, B3206, B3251); Umtali, Mar. 1957 (N.L.H. Krauss) 1F (AMNH).

Distribution:

This species has been collected throughout the southern African Region (Figure 9), as well as from Angola, Cape Verde Islands, Gabon, Rwanda, Tanzania and Zaire.

Habitat:

Of the *Cheiracanthium furculatum* specimens with habitat data examined 43% were collected from crops; 39,5% were synanthropic; 9,5% from woodland; 4,5% from grassveld; 2% from coastal forests; and 1,5% from under stones. Thus *C. furculatum* could be of importance as biological control agents due to its common distribution in agroecosystems.

Since *C. furculatum* is a synanthropic and the only species found to occur in houses, it is also of medical importance and probably responsible for most of the spider bites reported in southern Africa.

Phenology:

Adults were collected throughout the year.

Cheiracanthium imbelle Caporiacco, 1947

(Figures 7 & 10a-d)

Chiracanthium imbelle Caporiacco, 1947: 195.

Chiracanthium nairobi Caporiacco, 1949: 435.

Cheiracanthium imbelle, Roewer 1954: 484.

Cheiracanthium nairobi, Roewer 1954: 484, new synonym.

Types:

Cheiracanthium imbelle 1F lectotype, [new designation], & 6 immature paralectotypes, [new designation], from Tanzania: Arusha, East Africa [0320S/3623E], 1905 (Kittenberger) (HNHM, examined).

Cheiracanthium nairobi 1F holotype from Kenya: Nairobi [0116S/3650E], 1944 (T. Meneghetti) (MCVR, examined).

Note: During a close examination of the type material (*C. imbelle* and *C. nairobi*) a few discrepancies were found with regard to the number of teeth on the cheliceral fang furrow; leg measurements; and number of setae on the legs, as given in original description.

Diagnosis:

Cheiracanthium imbelle differs from other species of the Afrotropical Region by the distinct shape of the CT, *i.e.* long with one central bend on the anterior edge of the epigynum (Figure 10c). Male unknown.

Redescription:

Female. Size (n = 6): TL = 7,33 (5,67 - 9,30); CL = 2,72 (1,75 - 3,40); CW = 2,50 (1,90 - 2,85); OAL = 0,43 (0,30 - 0,50); OAW = 1,10 (0,70 - 1,30); CLL = 0,09 (0,05 - 0,10).

Cephalothorax: yellow, ocular area and clypeus slightly darker; mouthparts red-brown, labium slightly paler than mouthparts. Sternum yellow, darker around border; SL = 1,50; SW = 1,25. AER slightly recurved; AME-AME = 0,20; AME-ALE = 0,20; AME diameter = 0,15; PER slightly procurved; PME-PME = 0,30; PME-PLE = 0,30; PME diameter = 0,15. MOQ wider than long and slightly narrower anteriorly than posteriorly; MOQAW = 0,50; MOQPW = 0,60; CI = 1,24. Six teeth of unequal size on cheliceral fang furrow; PM with three teeth: PM2 largest, PM1 smallest; PM2 closer to PM1 than to PM3; RM with three evenly spaced teeth: RM1 largest, RM3 smallest; RM closer to fang base with PM1 in line with RM2 (Figure 10d).

Legs: yellow; LL:CL = 3,94. Length of leg segments:

	I	II	III	IV	Palp
Femur	3,60	2,75	2,25	3,10	1,15
Patella	1,20	1,15	0,90	1,10	0,50
Tibia	3,25	2,30	1,60	2,50	0,85
Metatarsus	3,50	2,65	2,20	3,20	----
Tarsus	1,65	1,00	0,80	1,00	1,00
Total length	13,20	9,85	7,75	10,90	3,50

Leg setae:

		Proximal	Medial	Distal
Femur I	prolateral	0	1	1
Tibia I	ventral	0	2	0
Metatarsus I	ventral	2	0	1
Femur II	prolateral	0	0	1
Tibia II	ventral	0	0	0
Metatarsus II	ventral	2	0	1
Femur III	prolateral	0	0	1
	retrolateral	0	0	1
Tibia III	prolateral	0	0	1
	retrolateral	0	0	1
Metatarsus III	prolateral	1	1	1
	retrolateral	1	1	1
	ventral	2	0	3
Femur IV	prolateral	0	0	1
	retrolateral	0	0	1
Tibia IV	retrolateral	0	0	1
Metatarsus IV	prolateral	1	1	1
	retrolateral	1	1	1
	ventral	2	1	3

Abdomen: yellowish-grey; heart mark indistinct (Figure 10a).

Epigynum (Figure 10b-c): sclerotized, wider than long; most of anterior area depressed; CO situated on posterolateral edge of depression; CT curves anteriorly; then bends back on itself curving posteriorly to enter anterolateral side of small, well-separated SPER; FT enters SPER posteromedially.

Male: Unknown.

Relationship:

The closest relative of *C. imbelle* is *C. africanum*, due to the posterior position of the CO on the epigynal plate and the length of the CT (Figures 4c-d & 10b-c). Males of *C. imbelle* are unknown and could not be taken into consideration. *Cheiracanthium imbelle* differs from *C. africanum* in the shape of the CT, the position of the teeth on the fang furrow and the distinct heart mark (Figures 4a, 4d, 4g, 10a, 10c & 10d).

Other material examined:

BOTSWANA: Thamalakabe River, 29 Dec. 1980 (P. Reavell) 1F (NCAP 81/83);
 ZIMBABWE: Kemavanga Camp, Mavuradonha Wilderness Area, 1631Ac, 3 Apr. 1991 (F. Nyathi) 1F (NMBZ 8896); Kemavanga River, 1631Ac, 24 Aug. 1989 (J. Minshull) 1F (NMBZ 8212); Sable Park, Table Bay, 1829Dd, 28 May 1983 (J. Minshull) 1F (NMBZ 1816).

Distribution:

Known from Tanzania, Kenya, Botswana and Zimbabwe. Figure 7 depicts the southern African distribution.

Habitat:

Material collected in Botswana (NCAP 81/83) was found on reeds and grasses. No other data available.

Phenology:

Females collected in December, April, May and August.

Abdomen: yellowish-grey; heart mark indistinct (Figure 10a).

Epigynum (Figure 10b-c): sclerotized, wider than long; most of anterior area depressed; CO situated on posterolateral edge of depression; CT curves anteriorly; then bends back on itself curving posteriorly to enter anterolateral side of small, well-separated SPER; FT enters SPER posteromedially.

Male: Unknown.

Relationship:

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Other material examined:

BOTSWANA: Thamalakabe River, 29 Dec. 1980 (P. Reavell) 1F (NCAP 81/83);
 ZIMBABWE: Kemavanga Camp, Mavuradonha Wilderness Area, 1631Ac, 3 Apr. 1991 (F. Nyathi) 1F (NMBZ 8896); Kemavanga River, 1631Ac, 24 Aug. 1989 (J. Minshull) 1F (NMBZ 8212); Sable Park, Table Bay, 1829Dd, 28 May 1983 (J. Minshull) 1F (NMBZ 1816).

Distribution:

Known from Tanzania, Kenya, Botswana and Zimbabwe. Figure 7 depicts the southern African distribution.

Habitat:

Material collected in Botswana (NCAP 81/83) was found on reeds and grasses. No other data available.

Phenology:

Females collected in December, April, May and August.

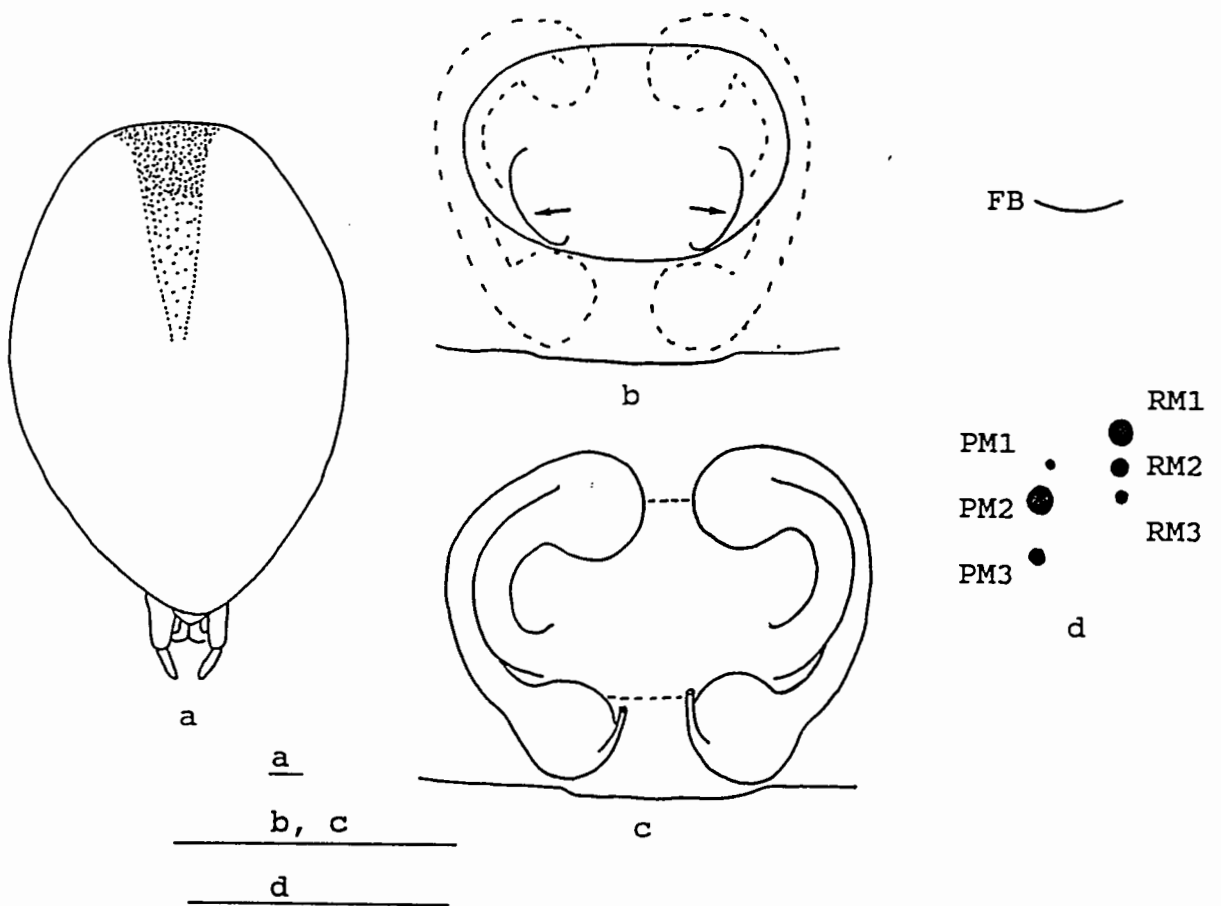


Figure 10. *Cheiracanthium imbelle* Caporiacco female: (a) abdomen (b) external epigynum (arrows indicate CO); (c) internal epigynum; (d) cheliceral fang furrow, showing fang base (FB) and promarginal (PM) and retromarginal (RM) teeth. (scale lines = 0,25 mm)

Cheiracanthium minshullae n. sp.

(Figures 7 & 11a-h)

Types:

Cheiracanthium minshullae 1F holotype from Zimbabwe: Matopos National Park, Maleme Rest Camp, 2033S/2830E, 4 Feb. 1987 (J. Minshull) (NMBZ 5482); 1M allotype from Zimbabwe: Matopos National Park, Maleme Rest Camp, 2033S/2830E, 10 Feb. 1989 (J. Minshull) (NMBZ 7668). Paratypes: 5F from Zimbabwe: Baviaans Kop, Umtali [co-ordinates not known]: June 1902 (Patrick) 3F (SAMC X12555, X12562), 7-12 Feb. 1988 (J. Minshull) 1F (NMBZ 6277); and Sijarira Forestry Commission Camp, 1734S/2729E, Jan. 1986 (M. Varley) 1F (NMBZ 4406).

Etymology:

The name is in honor of the late Mrs. Jacque Minshull, collector of the primary types.

Diagnosis:

Cheiracanthium minshullae is recognized by the distinct anterior curve of the CT (Figure 11c-d) and by the EM originating distally on the tegulum, the long, curved CA, bipunctated RTA and the thin, hooked TA (Figure 11e-f).

Description:

Female. Size (n = 6): TL = 8,73 (6,85 - 12,80); CL = 3,48 (3,05 - 4,60); CW = 2,64 (2,25 - 3,55); OAL = 0,49 (0,45 - 0,55); OAW = 1,52 (1,30 - 2,05); CLL = 0,10 (0,09 - 0,10).

Cephalothorax: yellow; mouthparts reddish-yellow. Sternum pale yellow, slightly darker anterior along border; SL = 1,40; SW = 1,25. AER relatively straight; AME-AME = 0,20; AME-ALE = 0,20; AME diameter = 0,15. PER slightly procurved;

PME-PME = 0,25; PME-PLE = 0,25; PME diameter = 0,15. MOQ wider than long and narrower anteriorly than posteriorly; MOQAW = 0,50; MOQPW = 0,55; CI = 1,32. Chelicerae robust with long fangs, but not as long as those of male; six teeth of unequal size on cheliceral fang furrow; PM with three teeth: PM2 largest, PM1 smallest; PM2 closer to PM1 than to PM3; RM with three evenly spaced teeth: RM1 largest, RM3 smallest; RM closer to fang base with PM1 in line with RM3 (Figure 11g).

Legs: pale yellow; LL:CL = 3,63. Length of leg segments:

	I	II	III	IV	Palp
Femur	3,00	2,40	1,90	2,60	0,85
Patella	1,25	1,10	0,85	1,00	0,40
Tibia	2,90	2,00	1,30	2,00	0,50
Metatarsus	3,25	2,25	1,70	2,80	----
Tarsus	1,20	0,80	0,70	0,80	0,90
Total length	11,60	8,55	6,45	9,20	2,65

Leg setae:

		Proximal	Medial	Distal
Femur I	prolateral	0	1	1
Tibia I	ventral	0	2	0
Metatarsus I	ventral	2	0	1
Femur II	prolateral	0	1	1
Tibia II		0	0	0
Metatarsus II	ventral	2	0	1
Femur III	prolateral	0	1	1
	retrolateral	0	1	1
Tibia III	prolateral	0	0	1
	retrolateral	0	0	1
Metatarsus III	prolateral	1	1	1
	retrolateral	1	1	1
	ventral	2	0	3
Femur IV	prolateral	0	0	1
	retrolateral	0	0	1
Tibia IV	prolateral	0	0	1
	retrolateral	0	1	1
Metatarsus IV	prolateral	1	1	1
	retrolateral	1	1	1
	ventral	2	2	3

Abdomen: yellowish-grey; heart mark indistinct (Figure 11a).

Epigynum (Figure 11c-d): sclerotized, wider than long with central area depressed; CO situated medially on anterior edge of depression; CT curved in almost full-circle before proceeding posteriorly to enter the small, well-separated SPER anterolaterally; FT enters SPER posteromedially.

Male. Size (n = 1): TL = 6,15; CL = 2,27; CW = 2,05; OAL = 0,35; OAW = 1,10; CLL = 0,05.

Cephalothorax: yellow; mouthparts yellow with reddish-brown fangs. Sternum pale yellow; SL = 1,35; SW = 1,15. AER slightly recurved; AME-AME = 0,15; AME-ALE = 0,20; AME diameter = 0,10. PER slightly procurved; PME-PME = 0,20; PME-PLA = 0,25; PME diameter = 0,10. MOQ wider than long and narrower anteriorly than posteriorly; MOQAW = 0,35; MOQPW = 0,40; CI = 1,11. Chelicerae and fangs long and slender; six teeth of unequal size on cheliceral fang furrow; PM with three evenly spaced teeth: PM2 largest, PM1 smallest and slightly inside fang furrow; RM with three evenly spaced teeth: RM1 largest, RM3 smallest; RM closer to fang base with RM3 and PM1 not in line and a small distance apart (Figure 11h).

Legs: similar to female, but longer and more slender (leg I: M = 16,85 / F = 11,60); LL:LC index = 7,42 compared to 3,63 for female. Length of leg segments:

	I	II	III	IV	Palp
Femur	4,20	3,05	2,20	3,20	1,50
Patella	1,25	1,00	0,85	1,00	0,45
Tibia	4,70	2,95	1,70	2,85	0,65
Metatarsus	4,95	3,10	2,10	3,30	----
Tarsus	1,75	1,00	0,75	0,90	1,40
Total length	16,85	11,10	7,60	11,25	4,00

Leg setae:

		Proximal	Medial	Distal
Femur I	prolateral	0	0	1
Tibia I	prolateral	1	1	0
	ventral	1	1	0
Metatarsus I	ventral	1	0	1
Femur II	prolateral	0	1	1
Tibia II	prolateral	1	1	0
	ventral	1	1	0
Metatarsus II	prolateral	1	0	1
	retrolateral	0	1	1
	ventral	2	2	1
Femur III	prolateral	0	0	1
	retrolateral	0	1	1
Tibia III	prolateral	0	0	1
	retrolateral	0	0	1
	ventral	1	0	1
Metatarsus III	prolateral	0	1	1
	retrolateral	0	1	1
	ventral	2	2	3
Femur IV	prolateral	0	1	1
	retrolateral	0	0	1
Tibia IV	retrolateral	1	1	0
	ventral	2	1	0
Metatarsus IV	prolateral	1	0	1
	retrolateral	1	0	1
	ventral	2	2	3

Abdomen: yellowish-grey with distinct brown heart mark (Figure 11b).

Palp (Figure 11e-f): yellow, with tarsi yellowish-grey. Tibia longer than patella, armed distolaterally with a brown-black RTA, which points anteriorly and is not much longer than length of tibia-tarsus joint; RTA straight, hardly narrower anteriorly with two very small denticles at extremity; external denticle curving slightly inward and slightly longer than internal denticle; VTA small and blunt. Tarsi longer than patella, with C lengthened to an obtuse point, which is shorter than bulb; CA long and with a thin curved tip intersecting RTA and curving around tibial

apex, ending ventrally of tibia and much longer than RTA; TA parallel to CON, situated on external side, long and thin with tip hooked towards CON; EM long and thin, originates between CON and C and curving around T, ending next to CON.

Relationship:

The closest relative of *C. minshullae* is *C. africanum*, due to the general similarity in the male retrolateral tibial apophysis (Figures 4e-f & 13e-f). However, in the female the two species differ markedly in the shapes of the copulatory tubes (Figures 4d & 11d).

Other material examined:

None.

Distribution:

Only known from Zimbabwe (Figure 7).

Habitat:

No data.

Phenology:

Females collected during February and June and male collected during January.

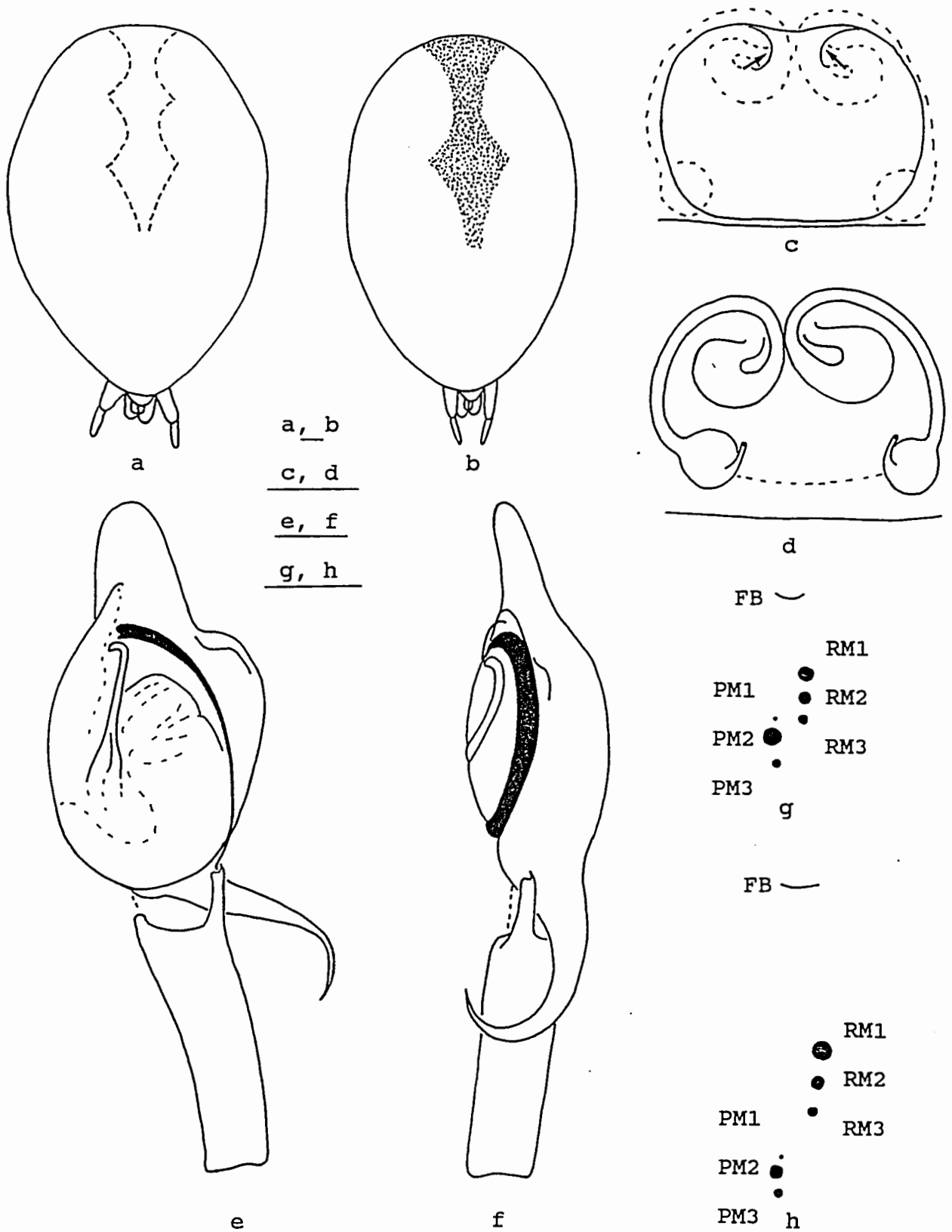


Figure 11. *Cheiracanthium minshullae* sp. n.: (a) female abdomen; (b) male abdomen; (c) female external epigynum (arrows indicate CO); (d) female internal epigynum; (e) male palp, ventral view; (f) male palp, lateral view; (g-h) cheliceral fang furrow of female (g) and male (h), showing fang base (FB) and promarginal (PM) and retromarginal (RM) teeth. (scale lines = 0,25 mm)

Cheiracanthium presleyensis n. sp.

(Figure 7 & 12a-d)

Types:

Cheiracanthium presleyensis 1F holotype from SA, Eastern Cape Province: Presley Bay [3152S/2915E], 13 Mar. 1975 (SAMC C1904); 1F paratype from SA, Kwazulu/Natal: Cape Vidal [2807S/3233E], 18 Apr. 1992 (A. Leroy) (NCAP 93/352).

Etymology:

The name is taken from the type locality.

Diagnosis:

Cheiracanthium presleyensis differs from other Afrotropical species by the small bend in the CT before it enters the SPER and from *C. vansoni* by the smaller SPER (Figure 12c). Male unknown.

Description:

Female. Size (n = 2): TL = 7,80 (7,40 - 8,20); CL = 3,13 (3,10 - 3,15); CW = 2,48 (2,35 - 2,60); OAL = 0,50 (0,50 - 0,50); OAW = 1,30 (1,25 - 1,35); CLL = 0,09 (0,08 - 0,10).

Cephalothorax: yellow; eye area and mouthparts red-brown. Sternum yellow; darker along border; SL = 1,40; SW = 1,30. AER very slightly recurved; AME-AME = 0,20; AME-ALE = 0,20; AME diameter = 0,15. PER very slightly procurved; PME-PME = 0,30; PME-PLE = 0,30; PME diameter = 0,15. MOQ wider than long and slightly narrower anteriorly than posteriorly; MOQAW = 0,50; MOQPW = 0,60; CI = 1,26. Chelicerae robust with long fangs; six teeth of unequal size on cheliceral fang furrow; PM with three teeth: PM2 largest, PM1 smallest; PM2 closer to PM1

than to PM3; RM with three evenly spaced teeth: RM1 largest, RM3 smallest; RM closer to fang base with PM1 more or less in line with RM2 and PM2 in line with RM3 (Figure 12d).

Legs: yellow; LL:CL = 4,67. Length of leg segments:

	I	II	III	IV	Palp
Femur	4,00	2,75	2,00	3,00	0,90
Patella	1,50	1,25	1,00	1,25	0,45
Tibia	3,55	2,20	1,45	2,25	0,75
Metatarsus	4,00	2,50	1,90	3,10	----
Tarsus	1,65	0,95	0,75	0,95	1,05
Total length	14,70	9,65	7,10	10,55	3,15

Leg setae:

		Proximal	Medial	Distal
Femur I	prolateral	0	1	1
Tibia I	ventral	0	2	0
Metatarsus I	ventral	2	0	1
Femur II	prolateral	0	1	1
Tibia II		0	0	0
Metatarsus II	ventral	2	0	1
Femur III	prolateral	0	1	1
	retrolateral	0	1	1
Tibia III	prolateral	0	0	1
	retrolateral	0	0	1
Metatarsus III	prolateral	1	1	1
	retrolateral	1	1	1
	ventral	2	0	3
Femur IV	prolateral	0	0	1
	retrolateral	0	0	1
Tibia IV	prolateral	0	0	1
	retrolateral	0	0	1
Metatarsus IV	prolateral	1	1	1
	retrolateral	1	1	1
	ventral	2	0	3

Abdomen: yellowish-grey; heart mark indistinct (Figure 12a).

Epigynum (Figure 12b-c): sclerotized, wider than long with most of central area depressed. CO situated on anterolateral edge of depression; CT curve medial, where it loops back laterally, curving posteriorly to enter with a slight bend anterolaterally in the small, well-separated SPER; FT enters SPER posteromedially.

Male: Unknown.

Relationship:

The closest relative to *C. presleyensis* is *C. vansoni*, due to the general similarity in the female's genitalia, specifically the slight bend in the CT before it enters the SPER (Figures 12c & 14d). *Cheiracanthium vansoni* differs from *C. presleyensis* in the size of the SPER and the position of the CO on the epigynal plate (Figures 12b-c & 14c-d).

Other material examined:

None.

Distribution:

East coast of South Africa, only recorded from 28°S to 32°S (Figure 7).

Habitat:

Coastal forest.

Phenology:

Females collected during March and April.

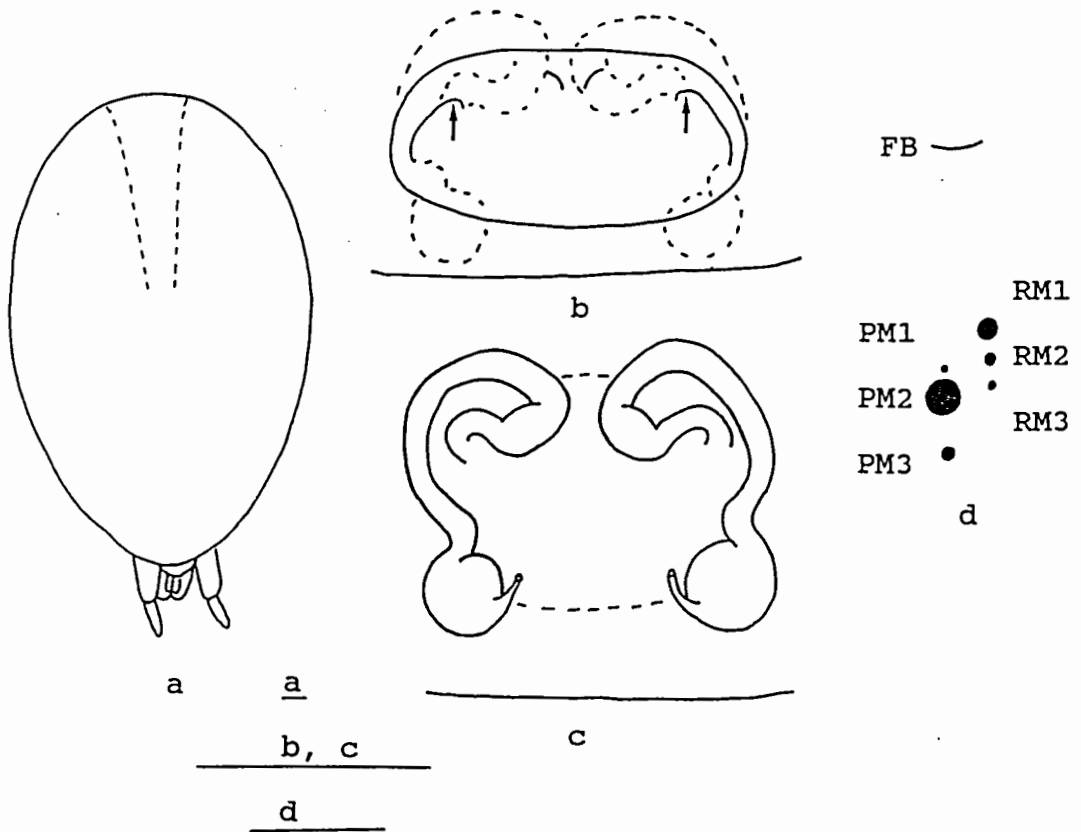


Figure 12. *Cheiracanthium presleyensis* sp. n. female: (a) abdomen (b) external epigynum (arrows indicate CO); (c) internal epigynum; (d) cheliceral fang furrow, showing fang base (FB) and promarginal (PM) and retromarginal (RM) teeth. (scale lines = 0,25 mm)

Cheiracanthium shiluvanensis n. sp.

(Figure 7 & 13a-d)

Types:

Cheiracanthium shiluvanensis 1F holotype and 1F paratype from SA, Mpumalanga Province: Shiluvane, nr. Leydsdorp [2402S/3017E], June 1903 (SAMC X13396).

Etymology:

The name is taken from the type locality.

Diagnosis:

Cheiracanthium shiluvanensis differs from other Afrotropical species by the small cup-shaped epigynal plate, the first part of the CT being anterior of the posterior proceeding part of the loop, the CT entering the SPER anteromedially (Figure 13c), as well as their large body size (11,85 - 12,15 mm). Male unknown.

Description:

Female. Size (n = 2): TL = 12,00 (11,85 - 12,15); CL = 5,80 (5,60 - 6,00); CW = 4,25 (4,20 - 4,30); OAL = 0,73 (0,70 - 0,75); OAW = 2,43 (2,30 - 2,55); CLL = 0,18 (0,15 - 0,20).

Cephalothorax: yellow; ocular area, mouthparts and labium red-brown. Sternum evenly yellow; SL = 2,40; SW = 2,10. AER relatively straight; AME-AME = 0,35; AME-ALE = 0,55; AME diameter = 0,25. PER slightly procurved; PME-PME = 0,60; PME-PLE = 0,65; PME diameter = 0,20. MOQ wider than long and narrower anteriorly than posteriorly; MOQAW = 0,75; MOQPW = 0,95; CI = 1,36. Chelicerae robust; six teeth of unequal size on cheliceral fang furrow; PM with three unevenly spaced teeth: PM2 largest, PM1 smallest; PM2 slightly closer to PM1 than to PM3; RM with three evenly spaced teeth: RM1 largest, RM3 smallest; RM closer to fang base with PM1 almost in line with RM2 (Figure 13d).

Legs: yellow; LL:CL = 4,57. Length of leg segments:

	I	II	III	IV	Palp
Femur	6,50	4,85	3,00	4,95	2,00
Patella	2,60	2,10	1,75	1,95	0,85
Tibia	6,55	4,00	2,70	6,50	1,25
Metatarsus	7,65	5,10	3,65	7,10	----
Tarsus	2,30	1,45	1,20	2,25	1,60
Total length	25,60	17,50	12,30	22,75	5,70

Leg setae:

		Proximal	Medial	Distal
Femur I	prolateral	0	1	1
Tibia I	ventral	0	2	1
Metatarsus I	ventral	2	1	1
Femur II	prolateral	0	1	1
Tibia II	ventral	0	2	0
Metatarsus II	ventral	2	1	1
Femur III	prolateral	0	1	1
	retrolateral	0	1	1
Tibia III	prolateral	0	0	1
	retrolateral	0	1	1
Metatarsus III	prolateral	1	1	1
	retrolateral	1	1	1
	ventral	2	2	3
Femur IV	prolateral	0	1	1
	retrolateral	0	0	1
Tibia IV	prolateral	0	0	1
	retrolateral	0	0	1
Metatarsus IV	prolateral	1	1	1
	retrolateral	1	1	1
	ventral	2	2	3

Abdomen: yellowish-grey; heart mark indistinct (Figure 13a).

Epigynum (Figure 13b-c): sclerotized, wider than long with a central depression; CO situated on anterolateral edge of depression; CT curving anteromedially where it bends back to curve posteriorly, entering anteromedially in the small, well-separated SPER; FT enters SPER posteromedially.

Male: Unknown.

Relationship:

The closest relatives of *C. shiluvanensis* are *C. presleyensis* and *C. vansoni*, due to the general shape of the female's genitalia (Figures 12c, 13c & 14d). The main similarity is in the bend of the CT of *C. presleyensis* and *C. vansoni*, with the CT anteromedially entering the SPER of *C. shiluvanensis*, representing a continuation of the bend medially instead of turning laterally at the end (Figures 12c, 13c & 14d). As the male of *C. shiluvanensis* is unknown, its relationship with the other *Cheiracanthium* species is not known.

Other material examined:

None.

Distribution:

Known only from the type locality (Figure 7).

Habitat:

No data.

Phenology:

Female specimens collected in June.

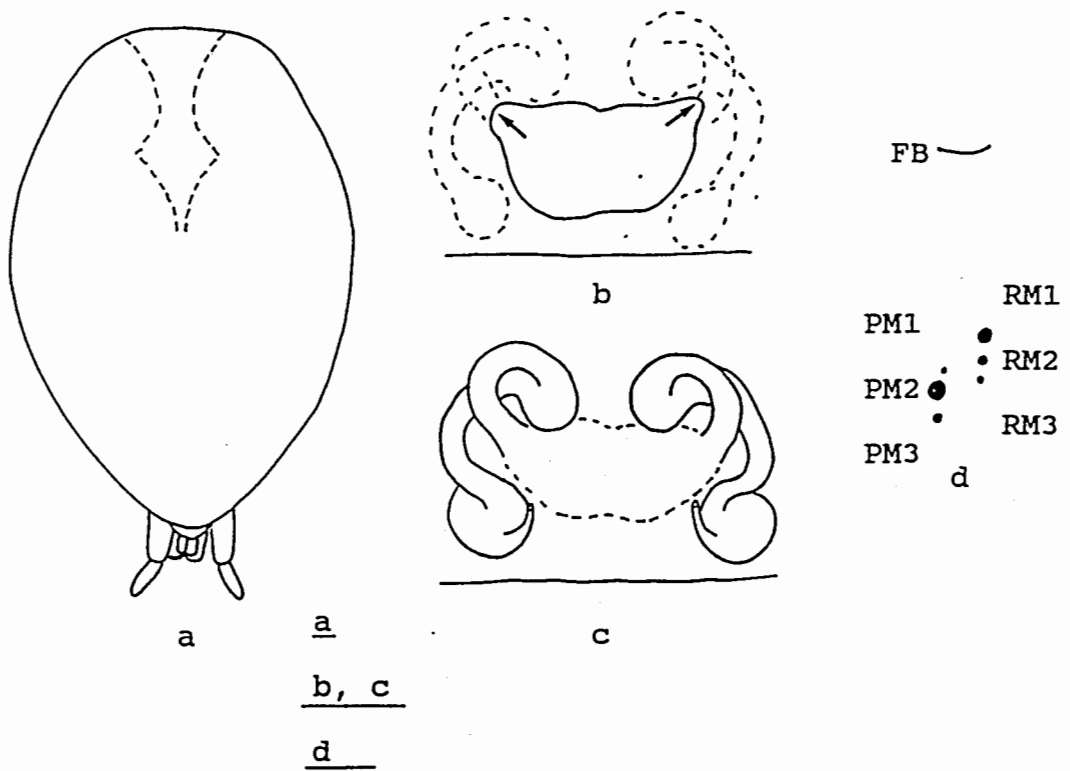


Figure 13. *Cheiracanthium shiluvanensis* sp. n. female: (a) abdomen (b) external epigynum (arrows indicate CO); (c) internal epigynum; (d) cheliceral fang furrow, showing fang base (FB) and promarginal (PM) and retromarginal (RM) teeth. (scale lines = 0,25 mm)

Cheiracanthium vansoni Lawrence, 1936

(Figures 14a-h & 15)

Cheiracanthium vansoni Lawrence, 1936: 155; Roewer 1954: 486.

Types:

Cheiracanthium vansoni 1F holotype from Botswana: Chobe district, Kasane, 1748S/2509E, 26 July 1930 (V. FitzSimons) (TMSA 5938, examined).

Diagnosis:

Cheiracanthium vansoni differs from other Afrotropical species by the large SPER of the female (Figure 14d) and the curved RTA of the male (Figure 14e-f).

Redescription:

Female. Size (n = 10): TL = 6,34 (4,50 - 8,30); CL = 2,38 (2,10 - 2,95); CW = 1,88 (1,65 - 2,15); OAL = 0,37 (0,35 - 0,45); OAW = 0,98 (0,85 - 1,20); CLL = 0,05 (0,05 - 0,06).

Cephalothorax: uniformly yellow, thickly covered with silky hair; mouthparts pale reddish-brown. Sternum uniform yellow; SL = 1,05; SW = 0,90. AER slightly recurved; AME-AME = 0,15; AME-ALE = 0,15; AME diameter = 0,10. PER slightly procurved; PME-PME = 0,20; PME-PLE = 0,20; PME diameter = 0,10. MOQ slightly wider than long and slightly wider posteriorly than anteriorly; MOQAW = 0,35; MOQPW = 0,40; CI = 1,66. Six teeth of unequal size on cheliceral fang furrow; PM with three unevenly spaced teeth: PM2 largest, PM1 smallest; PM2 closer to PM1 than to PM3; RM with three evenly spaced teeth: RM1 largest, RM3 smallest; RM closer to fang base with PM1 almost in line with RM3 (Figure 14g).

Legs: yellow; LL:CL = 3,28. Length of leg segments:

	I	II	III	IV	Palp
Femur	2,15	1,35	1,20	1,85	0,70
Patella	0,90	0,70	0,65	0,80	0,30
Tibia	2,30	1,25	0,90	1,55	0,45
Metatarsus	2,35	1,40	1,25	2,00	----
Tarsus	1,00	0,55	0,50	0,55	0,75
Total length	8,70	5,25	4,50	6,75	2,20

Leg setae:

		Proximal	Medial	Distal
Femur I	prolateral	0	1	1
Tibia I	ventral	0	2	0
Metatarsus I	ventral	2	0	1
Femur II	prolateral	0	0	1
Tibia II		0	0	0
Metatarsus II	ventral	2	0	1
Femur III	prolateral	0	0	1
	retrolateral	0	0	1
Tibia III	prolateral	0	0	1
	retrolateral	0	0	1
Metatarsus III	prolateral	1	1	1
	retrolateral	1	1	1
	ventral	2	0	3
Femur IV	retrolateral	0	0	1
Tibia IV	retrolateral	0	0	1
Metatarsus IV	prolateral	1	0	1
	retrolateral	1	0	1
	ventral	2	0	3

Abdomen: yellow to pale cream in older alcohol material; heart mark indistinct, with surrounding area of lighter pigmentation (Figure 14a).

Epigynum (Figure 14c-d): sclerotized, wider than long with central area depressed, deepest in anteromedian area where CO is situated; CT widening into an almost spherical structure at CO before curving posteriorly; slight bent before entering SPER; SPER large in comparison with other species.

Male, described here for the first time. Size (n = 10): TL = 4,94 (4,20 - 5,55); CL = 2,03 (1,75 - 2,35); CW = 1,79 (1,45 - 2,00); OAL = 0,35 (0,30 - 0,40); OAW = 0,77 (0,70 - 0,90); CLL = 0,05 (0,05 - 0,05).

Cephalothorax: yellow; circles around eyes and mouthparts darker. Sternum uniform yellow; SL = 1,15; SW = 0,85. AER slightly recurved; AME-AME = 0,10; AME-

ALE = 0,10; AME diameter = 0,15. PER slightly procurved; PME-PME = 0,15; PME-PLE = 0,15; PME diameter = 0,10. MOQ slightly wider than long and slightly wider posteriorly than anteriorly; MOQAW = 0,35; MOQPW = 0,40; CI = 1,24. Six teeth of unequal size on cheliceral fang furrow; PM with three evenly spaced teeth: PM2 largest, PM1 smallest; RM with three evenly spaced teeth: RM1 largest, RM3 smallest; RM closer to fang base with PM1 in line with RM2 (Figure 14h).

Legs: yellow; longer and more slender than in female with LL:CL index = 6,83 compared to 3,28 for female. Length of leg segments:

	I	II	III	IV	Palp
Femur	3,60	2,45	1,95	2,55	0,95
Patella	1,05	0,95	0,75	0,80	0,35
Tibia	3,95	2,25	1,50	2,40	0,50
Metatarsus	4,10	2,65	2,10	3,20	----
Tarsus	1,65	0,90	0,75	0,80	1,10
Total length	14,35	9,20	7,05	9,75	2,90

Leg setae:

		Proximal	Medial	Distal
Femur I	prolateral	0	1	1
Tibia I	ventral	2	6	2
Metatarsus I	ventral	2	0	1
Femur II	prolateral	0	1	1
	retrolateral	0	1	1
Tibia II	prolateral	0	0	1
	retrolateral	1	0	1
	ventral	1	1	0
Metatarsus II	prolateral	1	0	0
	ventral	2	0	1
Femur III	prolateral	0	1	1
	retrolateral	0	1	1
Tibia III	prolateral	0	1	1
	retrolateral	0	1	1
	ventral	2	0	0
Metatarsus III	prolateral	1	1	1
	retrolateral	1	1	1
	ventral	2	2	3
Femur IV	prolateral	0	1	1
	retrolateral	0	1	1
Tibia IV	prolateral	0	1	1
	retrolateral	0	1	1
	ventral	2	0	0
Metatarsus IV	prolateral	1	1	1
	retrolateral	1	1	1
	ventral	2	4	3

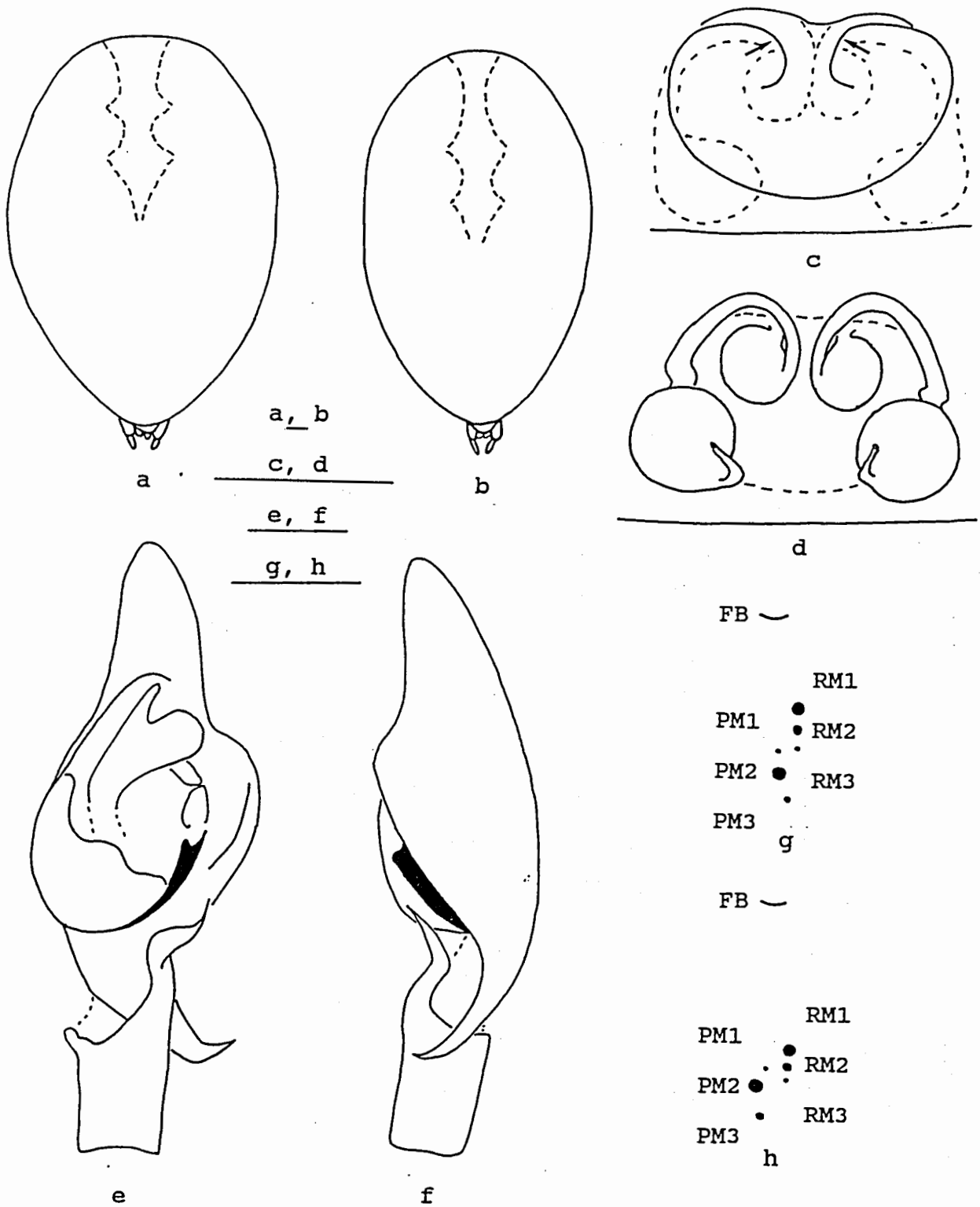


Figure 14. *Cheiracanthium vansoni* Lawrence: (a) female abdomen; (b) male abdomen; (c) female external epigynum (arrows indicate CO); (d) female internal epigynum; (e) male palp, ventral view; (f) male palp, lateral view; (g-h) cheliceral fang furrow of female (g) and male (h), showing fang base (FB) and promarginal (PM) and retromarginal (RM) teeth. (scale lines = 0,25 mm)

Abdomen: Similar to female, but more slender (Figure 14b).

Palp (Figure 14e-f): yellow with C yellowish-brown; C slightly longer than femur. RTA dark brown, curving laterally about midway along its length, tip sharp, curving slightly back distally; VTA small, rounded; CA dark brown, curved laterally about last third of length, ending in a sharp tip; EM long, thin and curves around T, ending at tip of CON; TA bilobed, with external lobe flat, round and larger than internal lobe which is pointed and triangular in two planes.

Relationship:

The closest relative to *C. vansoni* is *C. presleyensis*, due to the general similarity in the females's genitalia, specifically the slight bend in the CT before it enters the SPER (Figures 12c & 14d). Since only the males of *C. vansoni* are known, no comparison with the males of *C. presleyensis* could be made. *Cheiracanthium vansoni* mainly differs from *C. presleyensis* in the size of the SPER and the position of the CO on the epigynal plate (Figures 12b-c & 14c-d).

Other material examined:

BOTSWANA: Boro River, 1923Ca, 4 Dec. 1983 (J. Roff) 1M (NMBZ 1987); Serowe: July 1989 (P. Forchhammer) 1F & 1M (CASC), Aug. 1989 (P. Forchhammer) 1F & 2M (CASC), Dec. 1989 (P. Forchhammer) 1F (CASC), Jan. 1990 (P. Forchhammer) 2F & 2M (CASC), Mar. 1990 (P. Forchhammer) 1M (CASC);

NAMIBIA: Andara-Kavango, Okavango River, 1804S/2129E, 1979 (M.E. Baddeley) 4F (MRAC 152.852); S. of Mushare, 1837S/1653E, 19 May 1986 (E. Griffin) 1F (SMWN 40301); Zais, Maltahohe district, 2416Aa, 28 Oct. 1990 (Marilyn) 3F & 1M (SMWN 42406, 42407);

SA, GAUTENG PROVINCE: Roodeplaatdam Nature Reserve: 27 Nov. 1979 (E. Ueckermann) 1M (NCAP 81/465), 9 Dec. 1980 (M. Stiller) 1M (NCAP 81/913), 29

Jan. 1981 (M. Stiller) 1M (NCAP 81/929), 20 Feb. 1981 (M. Stiller) 1M (NCAP 81/946), 2 Dec. 1982 (A. v/d Berg & T. Marren) 1M (NCAP 84/90); SA, KWAZULU/NATAL PROVINCE: Fanies Camp, St. Lucia Park, 28S/3230E, 24 Jan. 1991 (V.D. & B. Roth) 1F (CASC); Mkuzi, 22 Feb. 1989 (M. Filmer) 1F (NCAP 90/104); 20 km Inland from Empangeni, Nels Vosloo's Farm, 18 June 1983 (P.E. Reavell) 1M (NCAP 87/164); Mtambanana [Ntambanana], 29 Dec. 1979 (P. Reavell) 1M (NCAP 81/623); ca. 30 km from Pongola, Golela Road, 22 Aug. 1980 (M.K.P. Meyer) 1M (NCAP 81/358); Vergeval, Pongola, Ngotsche district, 14-20 June 1967- 20 May 1968 (A.S. Dippenaar) 5F & 1M (NCAP 76/1940); SA, MPUMALANGA PROVINCE: Groblersdal, 25 Mar. 1994 (H. Loots) 1F (NCAP 94/307); SA, NORTHERN PROVINCE: Dendron: 13 Apr. 1967 (A.S. Dippenaar) 1F & 2M (NCAP 76/367), 21 May 1970 (A.S. Dippenaar) 2F & 2M (NCAP 93/887); Amsterdam, Dendron, Zoutpansberg dist., 13 Apr. 1967 (A.S. Dippenaar) 1M (NCAP 76/368); Messina, 2230Ac, 4-18 Dec. 1972, 1F & 3M (TMSA 12868); Thabazimbi, Northam, 2427Cd, Oct. 1972 (Holm) 1M (TMSA 14109); SA, NORTHWEST PROVINCE: Buffelspoortdam, July 1988 (L. Prendini) 1M (NCAP 89/990); Pilansberg Nature Reserve, 2 Mar. 1985 (A. Leroy) 1F (NCAP 87/451); ZIMBABWE: Cheb Farm Homestead, 2029Ac, 4-5 Oct. 1988 (F. Nyathi) 2F (NMBZ 7166); Doddieburn Farm, Doddieburn H.Q., 2129Ad, 14 Apr. 1986 (F. Nyathi) 1M (NMBZ 4463); Doddieburn Farm, Umzinguane River nr. Doddieburn H.Q., 2129Ad, 12 Dec. 1985 (J. Minshull) 1M (NMBZ 4042); Glenmore Farm, 2028Ca, 26 Sept. 1988 (F. Nyathi) 1M (NMBZ 7005); Gonarezhou National Park, Chipinda Pools H.Q., 2131Bd, 12 Feb. 1986 (C. Sharp) 1F (NMBZ 5327); Gutu Mission, 1931Ca, 25 Oct. 1988 (T. Volpers) 1M (NMBZ 7309); Humani Ranch, Store Camp, 2032Cb, 8-13 Apr. 1987 (Falcon College-NHMZ) 2F (NMBZ 5922 & 6073); Katombora Campsite, 1725Cd, 30 Aug. 1986 (Falcon College-NHMZ) 1F (NMBZ 4958); Kwiti River Dam, 2027Db, 28 Sept. 1988 (F. Nyathi) 1F (NMBZ 7102); Matopos National Park, Hovi-Mpopoma Confluence, 2028Cb, 13 Dec. 1992

(F. Nyathi) 1M (NMBZ 10376); Matopos National Park, Linyange, 2028Cb, 12 Feb. 1993 (Falcon College-NHMZ) 1M (NMBZ 10657); Matopos National Park, Maleme Rest Camp, 2028Da, 7-12 Feb. 1988 (J. Minshull) 1M (NMBZ 6278); Matopos National Park, Mpopomadam, 2028Cc, 11-13 Dec. 1992 (F. Nyathi) 1M & 1F (NMBZ 10397, 10413); Matopos National Park, Nswatugi Turnoff, 2028Cb, 9 Feb. 1989 (J. Minshull) 1M (NMBZ 7675); Matopos National Park, Zhamando Platform, 2028Cb, 15 Dec. 1992, 1M (NMBZ 10358); Sentinel Ranch, 2229Ba, 16-17 Apr. 1990 (Falcon College-NHMZ) 1F & 4M (NMBZ 9916 & 9986); Sentinel Ranch, Hunters Camp, 2229Ba, 15-17 Apr. 1990 (Falcon College-NHMZ) 1M & 2F (NMBZ 9958 & 9959); Sentinel Ranch, Tomgani dam, 2229Ba, 8 Apr. 1992 (Falcon College-NHMZ) 1M (NMBZ 10137).

Distribution:

This species is only known north of 29°S (Figure 15).

Habitat:

Habitat data indicate that 61,3% of the *C. vansoni* specimens were collected from bushes and trees, 22,6% from grassveld, 12,9% from wasp nests and 3,2% from cotton.

Phenology:

Adults were collected throughout the year, except for November when no females were collected.

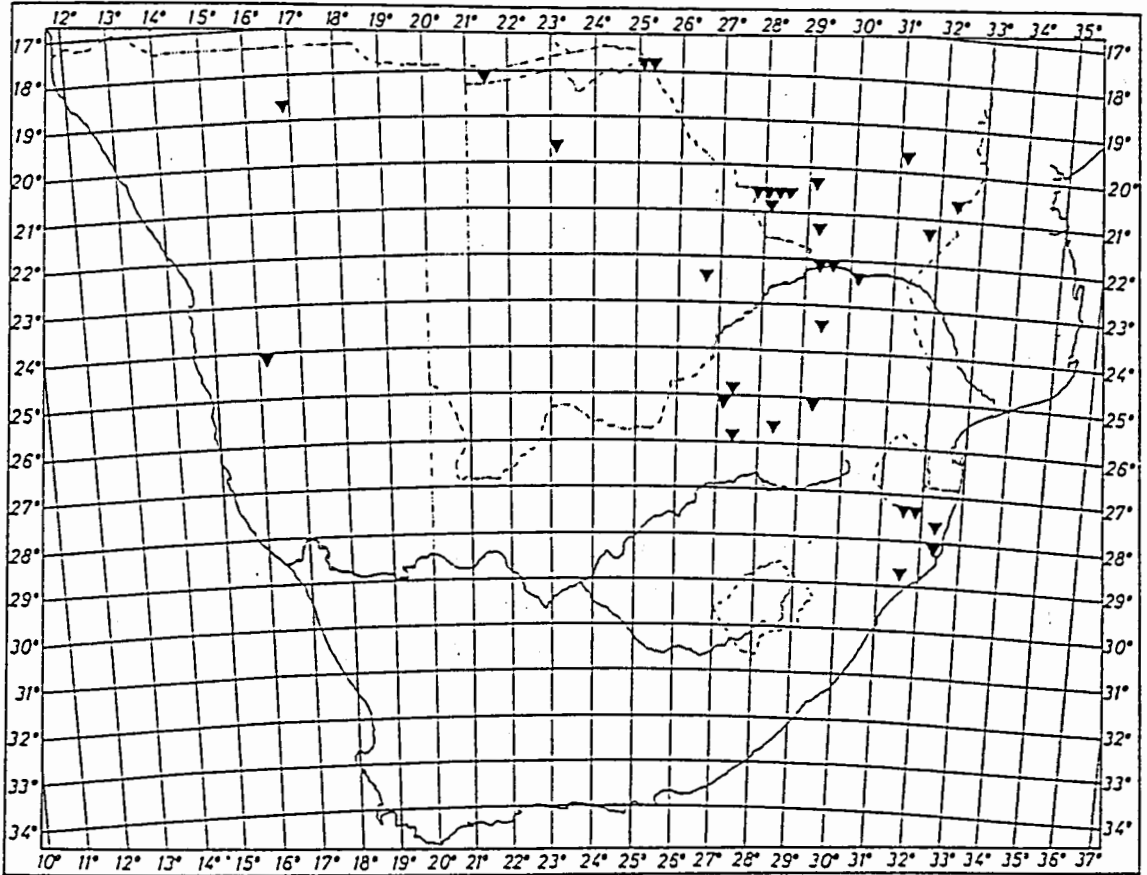


Figure 15. Known distribution of *Cheiracanthium vansoni* Lawrence in southern African.

*Nomen dubium**Cheiracanthium hottentotum* Strand, 1907

Cheiracanthium hottentotum Strand, 1907a: 543; Strand 1907b: 685.

Type:

Cheiracanthium hottentotum 1 subadult F holotype from SA, Cape [precise locality unknown] (Brady) (type probably lost during World War II).

Diagnosis:

The description of this species was based on a subadult specimen and proper identification would therefore be impossible. According to Dr. W. Schawaller of the 'Staatliches Museum für Naturkunde', Stuttgart (pers. comm.) this specimen, with other specimens of Strand, were probably destroyed during World War II and can therefore not be evaluated taxonomically. For these reasons this species should be considered as a *nomen dubium*.

GENUS *Cheiramiona* new genus
(Figures 16a-f, 17a-f, 18a-g & 19g-h)

Diagnosis:

Differs from other clubionid genera by the darkly pigmented leg joints, as well as the spinnerets encircled with dark pigmentation (Figures 17a & 18f). Females without femoral setae, males with less than three setae on legs III and IV, females without tibial setae, males with tibia I having less than three setae. Females with epigynal plate small and oval; large, close together, kidney-shaped SPER with CT's entering medially (Figure 16d-f). Males with short blunt RTA's, with internal toothlike spikes in some species, (Figure 18a-e); cymbium almost twice as long as wide, without a basal cymbial apophysis; tegulum with a medial apophysis; embolus short and thick; conductor indistinct; bulb large, covering about two thirds of cymbium (Figure 18a-e).

Type species: *Cheiracanthium clavigerum* Simon, 1897.

Etymology:

The name refers to the close relationship of the new genus with *Cheiracanthium*, the prefix *Cheira-* indicates the close relationship to the *Cheiracanthium* species, and *mion* (= smaller: Greek) refers to the smaller size. The name is feminine in gender.

Description:

Female. Size: TL = 5,15 - 7,80 mm.

Colour: cephalothorax yellow to orange; legs yellow with areas around joint and patella darkly pigmented (Figure 18f); abdomen yellow to pale grey; brown heart

mark usually present, as well as brownish coloured chevron marks dorsally on the posterior half of the abdomen (Figure 17b-f); spinnerets with brownish ring; venter with a pale brown mark between spinnerets and EF (Figure 17a). Colours more noticeable in live specimens.

Cephalothorax: sub-ovoid seen dorsally, longer than wide; widest between coxa II; anterior part of cephalic region highest; fovea absent as in *Cheiracanthium* (Figure 3a). Eyes: eight in two transverse rows, uniform in size; AME sometimes slightly larger than other eyes; PER slightly longer than AER; AER slightly recurved; PER slightly procurved; MOQ wider than long and wider posteriorly than anteriorly; clypeus length less than AME diameter. Labium longer than wide, extending past middle of endites; roughly spear-shaped with apex truncated; scopula on anterior edge (Figure 18g); endites longer than wide with lateral edge concave but without transverse or oblique depression ventrally; anterior and posterior ends about the same width; scopulae mostly on medial edge anterior of labium, thinning out on anterior edge (Figure 18g). Sternum heart-shaped, truncated anteriorly and narrowing posteriorly to end as a blunt point between coxa IV; lateral edges scalloped; almost as wide as long; widest between coxa I and II (Figure 18g).

Chelicerae: robust, moderately long, with long fangs; fang furrow with three to seven PM and one or five to six RM teeth (Figures 19g-h); total of fang furrow teeth either more than or less than six teeth, but never six as in *Cheiracanthium* specimens studied. Arrangement and number of teeth on fang furrow are of intraspecific value.

Legs: long, with two tarsal claws, claw tufts and scopulae on tarsi and distal part of metatarsi; trichobothria present on all legs; all trochanters notched; leg I longer than leg IV, on average 50,42-62,05% longer, compared to *Cheiracanthium* where leg I is

12,52-39,34% longer; leg formula is I:IV:II:III. Femora and patellae without stout setae; tibiae usually without stout setae; metatarsi I and II each with an unpaired ventral seta at distal end.

Abdomen: Elongate-oval, without anterodorsal stout setae; heart mark present, ranging from pale to a distinct brown elongate mark starting anteriorly and reaching about two thirds towards the posterior end (Figure 17b-f). Six spinnerets; middle pair smallest, almost hidden by anterior and posterior pairs; anterior pair conical, contiguous and paler and not more sclerotized than posterior pair; posterior pair pale brown to dark brown, longer than anterior pair and two-jointed; conical apical segment distinct, but not as prominent as in *Cheiracanthium*.

Epigynum: Externally in most species unsclerotized, except along edge of EF and CO; CO situated close together in small epigynal plate; CT short, anteriorly or posteriorly extended from CO, entering the large kidney-shaped SPER medially or posteromedially; SPER situated close together (Figure 16d-f).

Male. Size: TL = 3,25 - 8,25 mm.

Males and females very similar in appearance; male slightly slimmer with longer legs with more and stronger setae; leg I longer than leg IV by 44,00-117,56%, compared to *Cheiracanthium* where leg I is 40,18-53,66% longer; some species with one seta prolateral and / or retrolateral on all femora; arrangement and size of PM and RM teeth differ only slightly between males and females of same species.

Palp: Tibia with short, blunt RTA; RTA often provided with a small internal tooth-like spike; cymbium almost twice as long as wide, without a basal CA; tegulum with a median apophysis; tegular apophysis absent; embolus short and thick; conductor indistinct; bulb large, covering about two thirds of C (Figure 18a-e).

Relationships:

Cheiramiona is closely related to *Tecution* with which it shares the following characters: leg I longer than leg IV; absence of secondarily strengthened setae on femur and tibia II; presence of a median apophysis; kidney-shaped spermathecae; short copulatory tubes; and copulatory opening medial of the spermathecae. It is also related to *Cheiracanthium* with which it shares: absence of stout anterodorsal abdominal setae; absence of setae on palps and dorsally on femora; presence of one unpaired seta ventrodistally on metatarsus I and II; and trochanters with distinct notches. The relationship of the genus *Cheiramiona* with some of the other clubionid genera of the Afrotropical Region is still unknown, but it can be differentiated from *Carteroniella*, *Clubiona* and *Bucliona* by leg I being longer than leg IV, from *Helebiona* and *Tecution* by the absence of a cymbial apophysis and from *Carteronius* by the absence of a fovea.

Distribution:

Known from Tanzania and southern Africa.

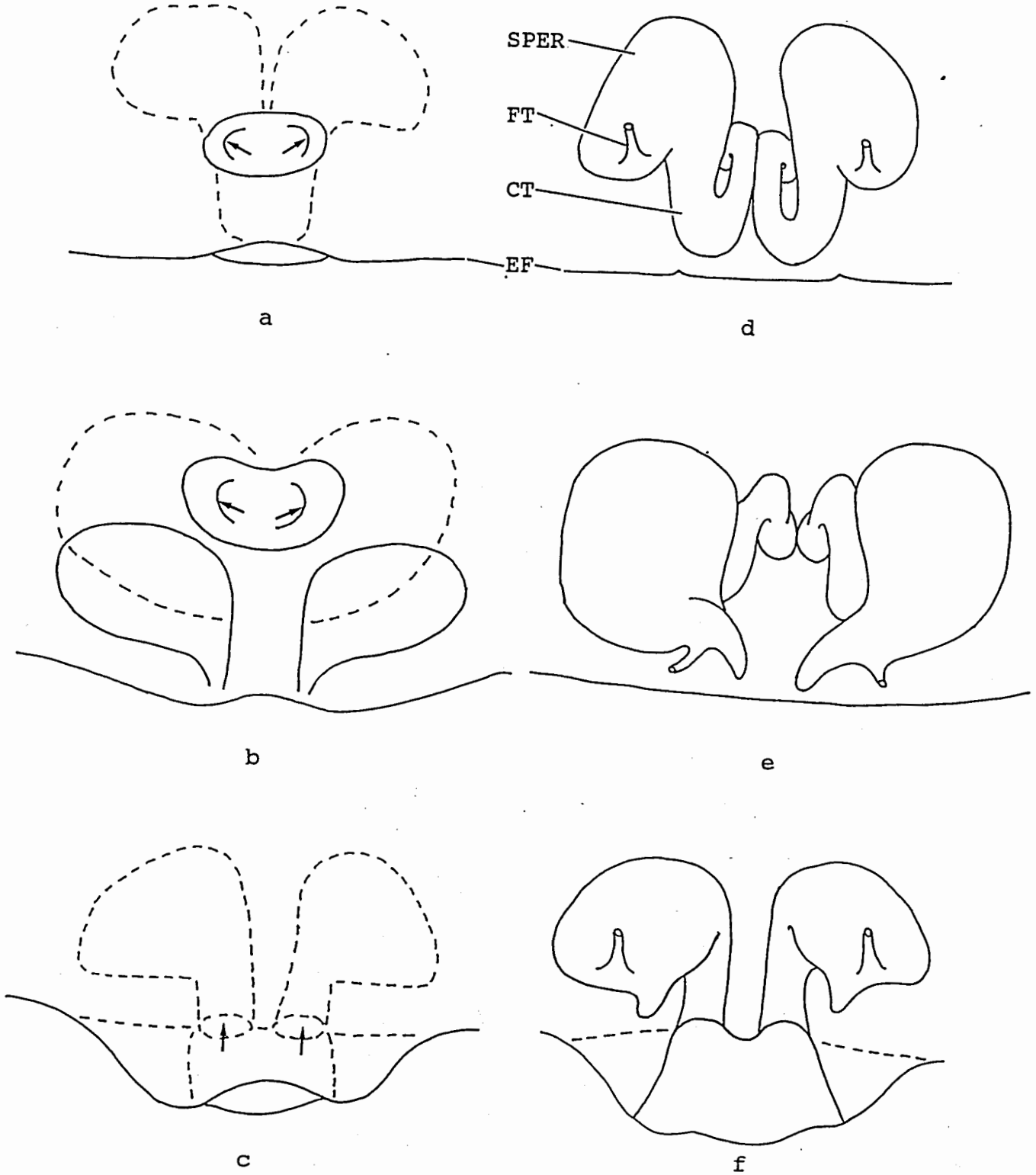


Figure 16. (a-c) External and (d-f) internal female epigyna of *Cheiramiona* spp.: (a) *C. clavigerum* (Simon); (b) *C. silvicolum* (Lawrence); (c) *C. simplicitarse* (Simon); (d) *C. clavigerum* (Simon), showing spermathecae (SPER), fertilization tube (FT), copulatory tube (CT) and epigynal fold (EF); (e) *C. silvicolum* (Lawrence); (f) *C. simplicitarse* (Simon). Arrows showing copulatory openings.

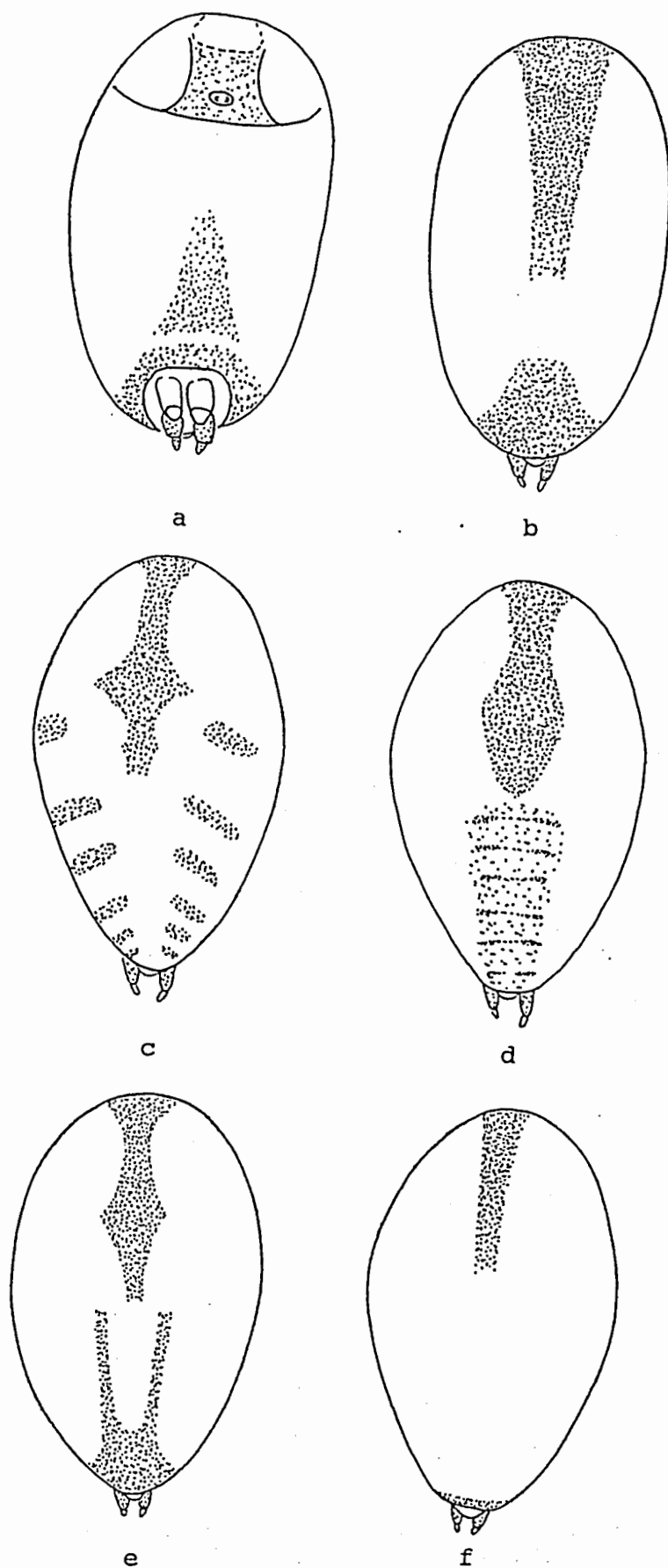


Figure 17. (a) Ventral and (b-f) dorsal abdomens of *Cheiramiona* spp.: (a-b) *C. akermani* (Lawrence); (c) *C. clavigerum* (Simon); (d) *C. filipes* (Simon); (e) *C. silvicolum* (Lawrence); (f) *C. simplicitarse* (Simon).

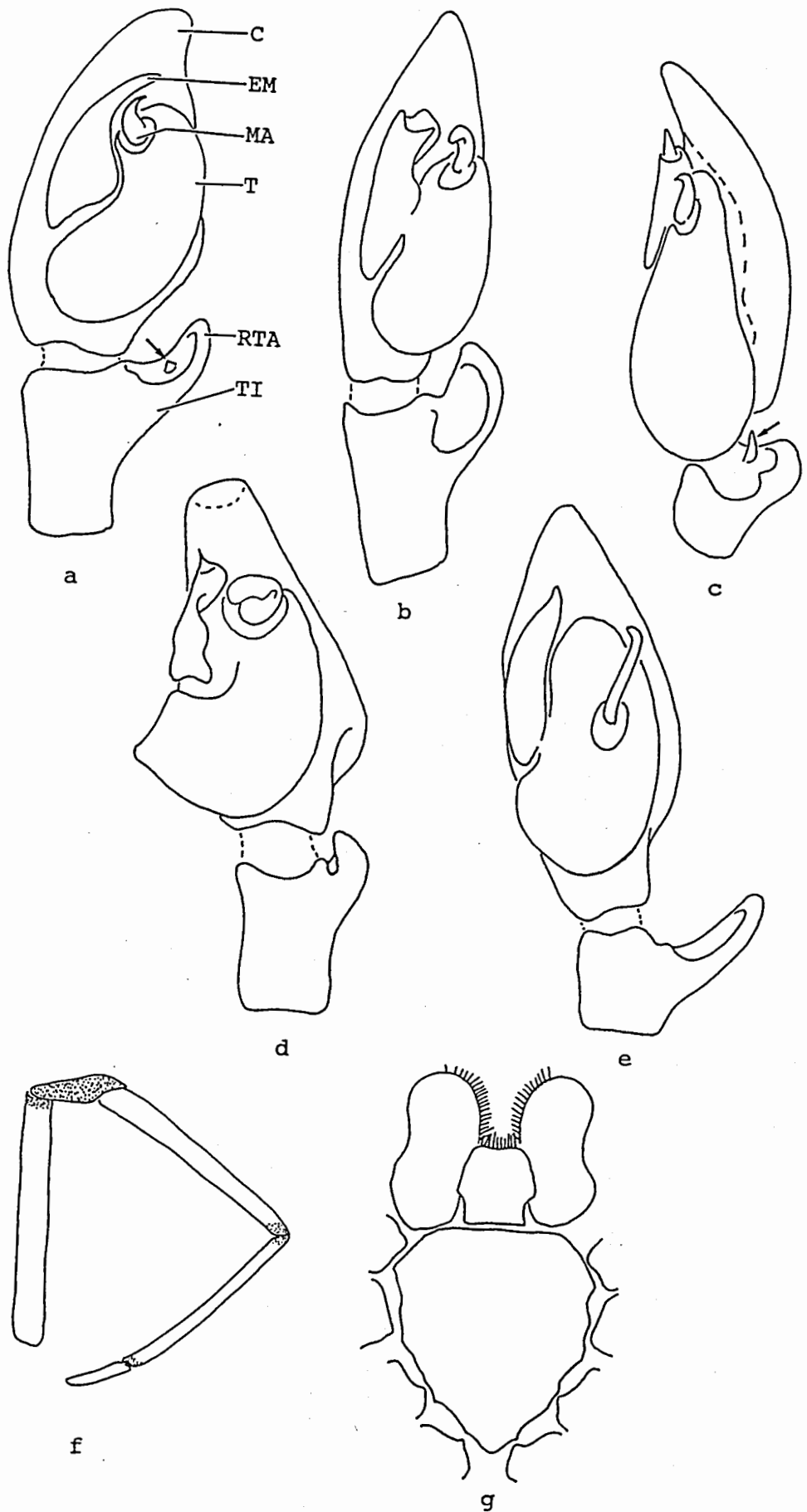


Figure 18. *Cheiramiona* spp.: (a-e) male palps: (a) *C. akermani* (Lawrence), showing cymbium (C), embolus (EM), median apophysis (MA), tegulum (T), retrolateral tibial apophysis (RTA) and tibia (TI); (b) *C. clavigerum* (Simon); (c) *C. filipes* (Simon); (d) *C. silvicolum* (Lawrence); (e) *C. simplicitarise* (Simon); (f) *C. akermani* (Lawrence) leg I with brown pigmentation on distal part of leg segments and patella; (g) *C. akermani* (Lawrence) ventral view of cephalothorax, showing mouthparts and sternum. Arrows indicate the internal tooth-like spike on the RTA of *C. akermani* and *C. filipes*.

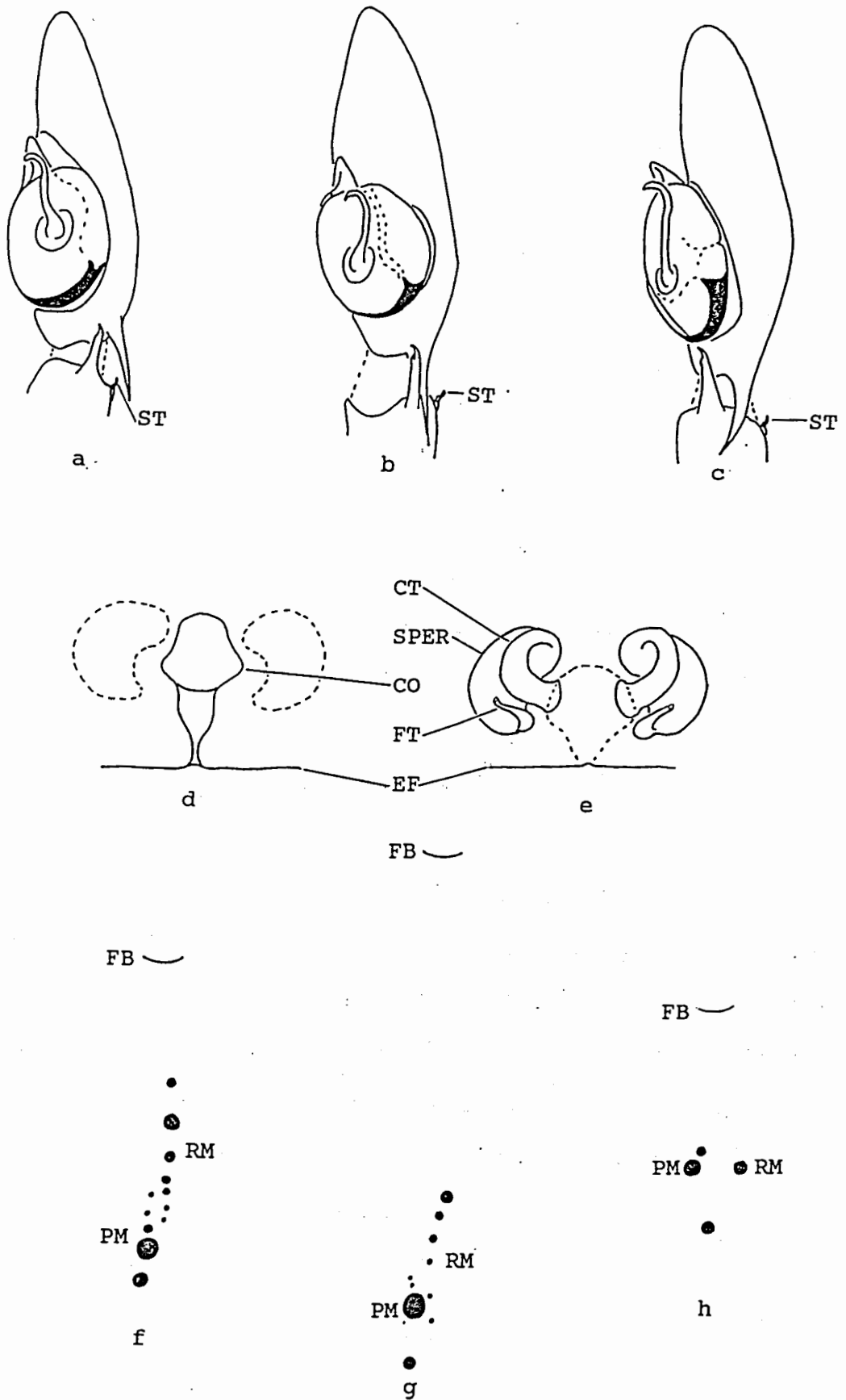


Figure 19. (a-c) *Tectonion* male palp, showing setae (ST): (a) *T. planum* (O. Pickard-Cambridge); (b) *T. mellissi* (O. Pickard-Cambridge); (c) *T. helenicola* Benoit; (d-e) *T. planum* female epigynum: (d) external, showing copulatory opening (CO) and epigynal fold (EF); (e) internal, showing copulatory tube (CT), fertilization tube (FT), spermathecae (SPER) and epigynal fold (EF). (f-h) Cheliceral fang furrow showing fang base (FB), promarginal (PM) and retromarginal (RM) cheliceral teeth: (f) *Tectonion planum* (O. Pickard-Cambridge); (g) *Cheiramiona akermani* (Lawrence); (h) *Cheiramiona simplicitarse* (Simon).

Species transferred to *Cheiramiona*:

Cheiramiona akermani (Lawrence, 1942), **comb. nov.**

Cheiracanthium akermani Lawrence, 1942: 170.

Type: NMSA 2076, SA: Kwazulu/Natal, Pietermaritzburg [2936S/3023E], 1917, Akerman, 1M holotype (examined) (Figures 17a-b & 18a, 18f & 18g).

Cheiramiona clavigerum (Simon, 1897), **comb. nov.**

Cheiracanthium clavigerum Simon, 1897a: 8.

Type: MNHN 18565, SA: Kwazulu/Natal, Zululand, C. Martin, 2F & 3M syntypes (examined) (Figures 16a, 16d, 17c & 18b).

Cheiramiona filipes (Simon, 1898), **comb. nov.**

Cheiracanthium filipes Simon, 1898: 206; Lessert 1929: 140; 1936: 275.

Type: SA: Kwazulu/Natal, 1M holotype (could not be traced) (Figures 17d & 18c).

Note: A female and male specimen studied by Lessert (1929) from Umbilo, Kwazulu/Natal, as well as a female specimen mentioned by Lessert (1936) from Charre, Kwazulu/Natal, could also not be traced. Specimens received from MNHN as the type material, MNHN 16114, Madagascar: Tamatave, 1F, 3M & 2imm (examined), proved not to be the type material.

ABSTRACT

The southern African representatives of *Cheiracanthium* C.L. Koch, 1839 are revised after examining 617 adult specimens. Eight species of *Cheiracanthium* are recognized from this region, four are new (*C. dippenarae*, *C. minshullae*, *C. presleyensis* and *C. shiluvanensis*) and four are redescribed (*C. africanum* Lessert, 1921, *C. furculatum* Karsch, 1879, *C. imbelle* Caporiacco, 1947 and *C. vansoni* Lawrence, 1936). Eleven species are synonymized (*C. franganilloi* Caporiacco, 1949 and *C. nigropalpatum* Schmidt & Jocqué, 1983 = *C. africanum* Lessert, 1921; *C. kiwunum* Strand, 1915, *C. mohasicum* Strand, 1915, *C. hoggi* Lessert, 1921, *C. natalense* Lessert, 1923, *C. castum* Lawrence, 1927, *C. lawrencei* Roewer, 1951, *C. melanostomellum* Roewer 1951 and *C. melanostomellum caboverdense* Schmidt & Piepho, 1994 = *C. furculatum* Karsch, 1879; *C. nairobii* Caporiacco, 1949 = *C. imbelle* Caporiacco, 1947). The male of *C. vansoni* Lawrence, 1936 is described for the first time. *Cheiracanthium hottentotum* Strand, 1907 is considered a *nomen dubium*. The study resulted in the recognition of a new genus, *Cheiramiona*, and this resulted in the transfer of six species (*C. clavigerum* Simon, 1897, *C. filipes* Simon, 1898, *C. simplicitarise* Simon, 1910, *C. hewitti* Lessert, 1921, *C. silvicolum* Lawrence, 1938 and *C. akermani* Lawrence, 1942) to the new genus. keys are provided to the clubionid genera known from the Afrotropical Region as well as the *Cheiracanthium* species known from southern Africa. Distributional and habitat data are given for the eight *Cheiracanthium* species recorded from southern Africa. Medical and agricultural importance as well as relationships are also discussed.

(Key words: *Cheiracanthium*, *Cheiramiona*, Araneae, Clubionidae, systematics, southern Africa.)

OPSOMMING

Die suider Afrika spesies van *Cheiracanthium* C.L. Koch, 1839 is hersien en hiervoor is 617 volwasse eksemplare ondersoek. Agt spesies van *Cheiracanthium* word erken uit hierdie streek, waarvan vier nuut is (*C. dippenarae*, *C. minshullae*, *C. presleyensis* en *C. shiluvanensis*) en vier herbeskryf is (*C. africanum* Lessert, 1921, *C. furculatum* Karsch, 1879, *C. imbelle* Caporiacco, 1947 en *C. vansoni* Lawrence 1936). Elf spesies is gesinonimiseer (*C. franganilloi* Caporiacco, 1949 en *C. nigropalpatum* Schmidt & Jocqué, 1983 = *C. africanum* Lessert, 1921; *C. kiwunum* Strand, 1915, *C. mohasicum* Strand, 1915, *C. hoggi* Lessert, 1921, *C. natalense* Lessert, 1923, *C. castum* Lawrence, 1927, *C. lawrencei* Roewer, 1951, *C. melanostomellum* Roewer 1951 en *C. m. caboverdense* Schmidt & Piepho, 1994 = *C. furculatum* Karsch, 1879; *C. nairobi* Caporiacco, 1949 = *C. imbelle* Caporiacco, 1947). Die mannetjie van *C. vansoni* Lawrence, 1936 is vir die eerste keer beskryf. *Cheiracanthium hottentotum* Strand, 1907 word as 'n *nomen dubium* beskou. 'n Nuwe genus, *Cheiramiona*, word beskryf en ses spesies hierheen oorgeplaas (*C. clavigerum* Simon, 1897, *C. filipes* Simon, 1898, *C. simplicitarse* Simon, 1910, *C. hewitti* Lessert, 1921, *C. silvicolium* Lawrence, 1938 en *C. akermani* Lawrence, 1942). 'n Sleutel word voorsien vir die clubionid genera bekend uit die Afrotropiese wyk, sowel as die suider Afrikaanse spesies van *Cheiracanthium*. Verspreiding en habitat data word voorsien en mediese en landboukundige belang en verwantskappe word bespreek vir die agt suider Afrikaanse spesies van *Cheiracanthium*.

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APPENDIX A

Cheiracanthium species known from the Afrotropical Region: synonymy and distribution.

SPECIES	SYNONYMY	TYPE/COLLECTION	DISTRIBUTION
<i>abyssinicum</i> Strand, 1906 <i>aculeatum</i> Simon, 1884		F & M syntypes (NHMS, lost) F & M syntypes (MNHN, M examined, F lost?)	Ethiopia Sudan
<i>affine</i> Kulczynski, 1901 * <i>africanum</i> Lessert, 1921	<i>franganilloi</i> Caporiacco, 1949 n. syn. <i>nigropalpatum</i> Schmidt & Jocqué, 1983 n. syn.	M holotype (HMNH, lost) 1F lecto- & 1M paralectotype (MHNG, examined) 1F holotype (MCVR, examined) 1M holotype (MRAC, examined)	Ethiopia East & southern Africa & Réunion
<i>agnosticum</i> Strand, 1906 <i>bibundicum</i> Strand, 1908 <i>camerunense</i> Strand, 1906 <i>debile</i> Simon, 1890 <i>denisi</i> Caporiacco, 1939 * <i>dippenaarae</i> n. sp. <i>escalerai</i> Simon, 1903 * <i>furculatum</i> Karsch, 1879	<i>castum</i> Lawrence, 1927 n. syn. <i>hoggi</i> Lessert, 1921 n. syn. <i>inornatum</i> Lawrence, 1927 n. syn. <i>kiwunum</i> Strand, 1915 n. syn. <i>melanostoma</i> Simon, 1910 n. syn. <i>melanostomellum caboverdense</i> Schmidt & Piepho, 1994 n. syn. <i>mohasicum</i> Strand, 1915 n. syn. <i>natalense</i> Lessert, 1923 n. syn.	F & imm. M syntypes (NHMS, lost) 1F holotype (MWNH, lost) F syntype(s) (NMLG, lost) 4F & 1M syntypes (MNHN, examined) 1M holotype (MZUF, examined) 1F holotype (NCAP, examined) F syntype(s) (could not be traced) 1M holotype (ZMHB, examined) 1M holotype (SAMC, examined) 4M syntypes (MHNG, examined) 1F & 1M syntypes (SAMC, examined) 1M holotype (ZMHB, examined) 1F holotype (MCSN, examined) 1M holotype (SMFD, examined) 1F holotype (ZMHB, examined) 1M holotype (NMSA, examined)	Ethiopia Cameroon Cameroon Yemen Ethiopia South Africa Equatorial Guinea East, Central & southern Africa
<i>geniculosum</i> Simon, 1885 <i>halophilum</i> Schmidt & Piepho, 1994		M syntype(s) (could not be traced) 1F holo- & 1F & 2M paratypes (SMFD, examined)	Senegal Cape Verde I.
* <i>hottentottum</i> Strand, 1907 * <i>imbelle</i> Caporiacco, 1947	<i>nomen dubium</i>	1 imm. holotype (NMLG, lost) 1F lecto- & 6 imm. paralectotypes (MZUF, examined)	South Africa Botswana, Kenya, Tanzania & Zimbabwe
* <i>jocularis</i> Simon, 1910	<i>nairebii</i> Caporiacco, 1949 n. syn.	1F holotype (MCVR, examined) 1F & 1F & 1 immature syntypes (MNHN/MCSN, examined) 1M holotype (MHNG, examined) 2M syntypes (MNHN, examined) 1M holotype (MHNG, examined) 1F & 1M syntypes (MZUF, examined) F & M syntypes (could not be traced) M syntype(s) (could not be traced) 1F holo-, 1M allo- & 9F paratypes (NMBZ/SAMC, examined) 1F & 1M syntypes (MNHN, examined)	Principe I. Tanzania Madagascar Tanzania Kenya Guinea-Bissau Ethiopia Zimbabwe
<i>kibonotense</i> Lessert, 1921 <i>leucophaeum</i> Simon, 1896 <i>ludovici</i> Lessert, 1921 <i>mauense</i> Caporiacco, 1949 <i>mellitum</i> Simon, 1910 <i>micheli</i> Simon, 1901 * <i>minshullae</i> n. sp.		1F & 1M syntypes (NHMS, lost) F syntype(s) (NHMS, lost) 1F holotype (NHRS, examined)	Ethiopia eastern Africa Ethiopia Cameroon
<i>molle</i> L. Koch, 1875 <i>pallicolor</i> Strand, 1906 <i>pauciaculeis</i> Strand, 1906 <i>peregrinum</i> Thorell, 1899			

SPECIES	SYNONYMY	TYPE/COLLECTION	DISTRIBUTION
<i>perincertum</i> Caporiacco, 1940 * <i>presleyensis</i> n. sp.		F syntype(s) (could not be traced) 1F holo- & 1F paratype (SAMC/NCAP, examined)	Ethiopia South Africa
<i>proximum</i> Kulczynski, 1901		M syntype(s) (HMNH, lost)	Ethiopia
<i>punctipedellum</i> Caporiacco, 1949		1F holotype (MCVR, examined)	Kenya
<i>reimoseri</i> Caporiacco, 1940		M syntype(s) (could not be traced)	Ethiopia
<i>ruwenzoricola</i> Strand, 1915		1F holotype (ZMHB, examined)	Uganda
<i>sansibaricum</i> Strand, 1907		F syntype(s) (NMLG, lost)	Zanzibar
<i>schenkeli</i> Caporiacco, 1949		1F holotype (MCVR, examined)	Kenya
* <i>shiluvanensis</i> n. sp.		1F holo- & 1F paratype (SAMC, examined)	South Africa
<i>simplex</i> Thorell, 1899		1F holotype (NHRS, examined)	Cameroon
<i>socotrense</i> Pocock, 1903		M syntype(s) (could not be traced)	Socotra
<i>somalinum</i> Pavesi, 1895		F & M syntypes (could not be traced)	Somalia
<i>subyemenense</i> Caporiacco, 1947		1F holotype (could not be traced)	Ethiopia
<i>tenuipes</i> Roewer, 1961		1M holotype (could not be traced)	Senegal
<i>tetragnathoide</i> Caporiacco, 1949		1M holotype (MZUF, examined)	Kenya
* <i>vansoni</i> Lawrence, 1936		1F holotype (TMSA, examined)	Botswana & South Africa
<i>verneti</i> Lessert, 1929		1M holotype (MHNG, examined)	Zaire
<i>yemenense</i> Simon, 1882		1M holotype (could not be traced)	Yemen, Somalia

* (species discussed in text)

APPENDIX B

Cheiramiona species known from the Afrotropical Region: synonymy and distribution.

SPECIES	SYNONYMY	TYPE/COLLECTION	DISTRIBUTION
* <i>akermani</i> (Lawrence, 1942)		1M holotype (NMSA, examined)	South Africa
* <i>clavigerum</i> (Simon, 1897)		2F & 3M syntypes (MNHN, examined)	South Africa
* <i>filipes</i> (Simon, 1898)		M syntype(s) (NMSA, lost)	South Africa
* <i>hewitti</i> (Lessert, 1921)		1M holotype (MHNG, examined)	Tanzania
* <i>silvicolum</i> (Lawrence, 1938)		1F & 3M syntypes (NMSA, examined)	South Africa
* <i>simplicitarse</i> (Simon, 1910)		5F & 3M syntypes (ZMHB, examined)	Namibia

* (species discussed in text)

APPENDIX C

The debate on the higher taxonomic placement of *Cheiracanthium* C.L. Koch, 1839.

The generic relationships of the Clubionidae are at present still in a state of turmoil and an accurate picture will only be possible after a generic revision and redefinition of the family Clubionidae. Such a revision and redefinition will probably lead to the splitting off of some of the genera to other families, as have already been implied for *Cheiracanthium* by Lohmander (1945), Lehtinen (1967), Platnick & Shadab (1989) and Bonaldo & Brescovit (1992). Lohmander (1945) placed *Cheiracanthium* under Liocraninae and suggested that it could even be placed in its own subfamily because of the specialization of the copulatory organs. Lehtinen (1967) placed *Cheiracanthium* in the family Clubionidae, but stressed that it is not distinctly related to *Clubiona* and is in need of a revision. Platnick & Shadab (1989) took this idea further and in looking at the spinnerets suggested that *Cheiracanthium* may prove to be a plesiomorphic miturgid rather than a clubionid, on account of the moderately long second segment of the posterior lateral spinnerets. The placement of *Cheiracanthium* in Miturgidae is also suggested by Bonaldo & Brescovit (1992), but they also suggested that a revisionary study of the genera of the Clubionidae was firstly needed.

Bonaldo, Ramirez & Brescovit (pers. comm.) are transferring *Cheiracanthium* from the Clubionidae to the subfamily Eutichurinae of the family Miturgidae. This placement in the Miturgidae was justified by the following synapomorphies shared with the Eutichurinae: canoe-shaped spinning field and the long distal segment of the posterior lateral spinnerets, the reduction of the fovea, the widely spaced eyes and the presence of a retrolateral projecting cymbial apophysis. Two other Afrotropical genera, *Tecution* and *Helebiona*, will also be transferred to the Miturgidae (Eutichurinae).

Bonaldo (pers. comm.) also mentions interesting unidentified African eutichurines without cymbial apophyses and fovea. These specimens are probably *Cheiramiona* species. If so, *Cheiramiona* will also have to be accommodated in the Miturgidae.