

Some notes on the genus *Citharacanthus* Pocock, 1901 (Theraphosinae: Theraphosidae: Mygalomorphae)

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Summary: This is an attempt, to characterize the genus *Citharacanthus* POCOCK, 1901, with today's knowledge. For this, we look at the historic development within the systematic. A key to the today known species will be developed.

Citharacanthus longipes niger FRANGANILLO, 1931 will be revised and get the status of a own kind. The future name is *Citharacanthus niger* FRANGANILLO, 1931, and *Cyrtopholis sargi* STRAND, 1907 is in future *Citharacanthus sargi* (STRAND, 1907).

Also we discuss the position of *Citharacanthus spinicrus* (LATREILLE, 1818) this species has to be categorized as "nomen dubium incertae sedis". At the end we talk about close relationships within their kind, for future work there is a key to easier identify both sexes.

Materials:

For the examinations the following material was used:

<i>Citharacanthus alayony</i>	holotype MHNH Cuba
<i>Citharacanthus cyaneus</i>	holotype / paratype MHNH Cuba
<i>Citharacanthus livingstoni</i>	paratype SMF Germany
<i>Citharacanthus (longipes) niger</i>	lectotype IESH Cuba
<i>Aphonopelma crinirufus</i>	paratype AMNH New York
<i>Eurypelma spinicrus</i>	determinate collection of material ZMB, IESH, MHNH and NHMV, the names of the identifying authors are not specified.
<i>Eurypelma spinicrus</i>	From Haiti, identified by LUCAS, 1856 from MNHP.

Not available:

<i>Mygale spinicrus</i> LATREILLE, 1818	Holotype in MNHP is missing.
<i>Cyrtopholis sargi</i> STRAND, 1907	Holotype is missing.

Abbreviations of the museums listed above:

MHNH	Museo Historia y Natural Holguin. Cuba
SMF	Senckenberg Museum. Frankfurt / Main
IESH	Instituto de Ecologia y Sistemática, Habana. Cuba
AMNH	American Museum of Natural History, New York
ZMB	Zoologisches Museum Berlin, Germany
NHMV	Natural History Museum Vienna, Austria
MNHP	Museum d'Histoire Naturelle, Paris

Introduction: Until 1939 *Citharacanthus* POCOCK, 1901, was a monotypic genus with the type species *C. longipes* (F.O.P.-CAMBRIDGE, 1897). Only PETRUNKEVITCH placed *Eurypelma spinicrus* LATREILLE, 1818 with it in his catalog of New World spiders. In 1980 the Costa Rican arachnologist VALERIO described further species, namely *Citharacanthus crinirufus* and *Citharacanthus Sclerothrix*. RAVEN, 1985 synonymised *Citharacanthus* with the genus *Plesiopelma* with the species *Plesiopelma Myodes* POCOCK, 1901, *Plesiopelma regina* CHAMBERLIN, 1917 and *Plesiopelma imperatrix* TOLEDO PIZA, 1976.

In 1996, RUDLOFF put the Cuban species *Cyrtopholis cyaneus* RUDLOFF, 1994 (originally described as *Cyrtopholis*) in this genus, and later described - also from Cuba - a new species *Citharacanthus alayoni* RUDLOFF, 1996. In addition in 1996 there also came the Guatemalan species of *Citharacanthus livingstoni* SCHMIDT and WEINMANN, 1996. In this list the subspecies

Citharacanthus longipes niger FRANGANILLO, 1931, postulated by the Cuban arachnologists in 1931 should not go unmentioned.

Digression on *Mygale spinicrus*: LATREILLE, described in 1818 (not 1819 or 1828 as erroneously stated by previous authors) *Mygale spinicrus* as a species from Brazil. The first work, which deals with this species after the first available description was that of the arachnologist WALCKENAER, who described in 1837, the species *Mygale kubana*. WALCKENAER referred in this description to 11 males and one female of a species from Cuba. These animals were from the DE SAGRA's collection and were labeled as *Mygale spinicrus*. WALCKENAER recognized this as an error, but he seems to have been the last person who had argued with the original description. Since *Mygale spinicrus* is a Brazilian species and had been known from there via a certain Monsieur DEL ALANDE.

WALCKENAER was therefore in the right if he set up a new species. The Arachnological posterity continued with this state of affairs but did not make a critical study. All subsequent authors conducted *Mygale Kubana* as a synonym of *Mygale spinicrus*.

In 1857 there also appeared in the M. Ramon de Sagra, published work "Histoire Physique, Politique et Naturelle de l'île de Cuba" a work of Lucas, in which this again told of *Mygale spinicrus*. The collector was also here, as with WALCKENAER, M. Ramon de Sagra before. He provided, for its time, a fairly detailed description with two drawings of the two sexes. (Incidentally Lucas already gave 1828 as the year of the first description.) In 1876 there appeared another work of Lucas, in which he reported *Eurypelma (Mygale) spinicrus* from Haiti. Here, however, was a confusion with the then very common species of *Phormictopus cancerides* (LATREILLE, 1806) (material of the Paris collection examined). On this fact one may also foresee what dubious value we must attach to the identification knowledge of LUCAS. This naturally results from the fact that the knowledge of the species-criteria at the time was generally very poor, they put much emphasis on pilosity and colouration of the animals. Lucas also mentioned incidentally that these species of WALCKENAER and LATREILLE from Brazil are reported by other authors (names not mentioned), but from Cuba. We must however attach more weight to the original work than the work of LUCAS. Also interesting is the fact that the label of LUCAS carries the name *Eurypelma Kubana*, naturally this also implies something about the uncertainty of LUCAS in this identification.

Already in 1871 the Austrian arachnologists Anton ÄUSSERER listed in the first part of his work, "Beiträge zur Kenntnis der Arachniden-Familie der Territelariae" *Eurypelma spinicrus* indicating 1819 as the year of initial description. This is probably the origin of the continuing incorrectly specified date in the literature up to this day. 1875, in part II of his monograph, ÄUSSERER illustrated the genitals from the male and resulted in comparison with some characteristics in *Eurypelma steindachneri* ÄUSSERER. The described species is, moreover, in all respects consistent with the species known from Cuba and today designated as *Eurypelma spinicrus*. PETRUNKEVITCH finally placed this supposed *Eurypelma spinicrus* in the genus *Citharacanthus*. From where his knowledge originated, is not resolved with certainty, PETRUNKEVITCH probably had material of a true *Citharacanthus* from Cuba before he speculated, that this must involve the Latreille species. What is certain is that the specimens determined as *Eurypelma spinicrus* from Cuba were members of the genus *Phormictopus*. The species referred to here must therefore be conducted in the future as *Phormictopus Kubanus* (WALCKENAER, 1837). Although there is a possibility of confusion with the similarly named species *Phormictopus cubensis* CHAMBERLIN, created in 1917 (a homonym is not available), CHAMBERLIN's taxon is however a junior synonym of *P. kubanus*. Also worth mentioning is the different designations of the Cuban arachnologist FRANGANILLO that highlights the confusion about this "species-complex" even more: these placed the species initially in the genus *Xenesthis*, postulated on the other hand, a new genus *Demotarbous*, in which he assimilated the species *spinicrus* and *kubanus*. To complete the chaos, he synonymized *D. spinicrus* in the same work (FRANGANILLO, 1936) in a footnote with *D. kubanus*, although this was already contrary to all rules of nomenclature at that time. To illustrate once again the list of names under which this species has circulated in the literature over the last century and a half:

Mygale spinicrus (1818)
Mygale Kubana 1837
Eurypelma spinicrus 1871
Phormictopus cubensis 1917
Xenesthis Kubanus 1928
Demotarbus Kubanus 1930
Demotarbus spinicrus 1936
Citharacanthus spinicrus 1939
Avicularia spinicrus 1985

Since the holotype is nowhere to be found, this species has to be considered a nomen dubium incertae sedis.

The two postulated species of VALERIO, *crinirufus* and *sclerothrix*, dispense with the stridulatory organs on trochanter I which are typical for this genera. They have only a few simple thorn bristles within a field of plumose setae. On the coxae there is a field of small spines, we know from *Citharacanthus* and *Aphonopelma*. In other respects thorn bristles or strong, short spines are not uncommon even in *Aphonopelma*. We find this feature for example in *Aphonopelma armada* (Chamberlin, 1940), and numerous other species. Also addressing the large variation and diversity of the female genitalia for a parallelism of both genres. Due to the missing, genus typical stridulating apparatus VALERIO's species can't be true *Citharacanthus* and also need to be placed under *Aphonopelma*.

The synonymy of RAVEN was revoked in 1996 by PEREZ-MILES et al. The species *Citharacanthus livingstoni* SCHMIDT & WEINMANN, 1996, must count as a real *Citharacanthus*, although they, as well as the Cuban species *Citharacanthus alavoni* and *Citharacanthus cyaneus*, have several deviations from the generic type. An additional, fairly close with *C. livingstoni* related species, is *Cyrtopholis sargi* STRAND, 1907. It has on coxa I a field of stridulating thorn bristles and, like *C. livingstoni*, plumose setae are on femur I. Both features, which exclude this species as a representative of *Cyrtopholis*. In the future, they must be known as *Citharacanthus sargi* (STRAND, 1907).

So far the only subspecies of the genus, *Citharacanthus longipes niger* FRANGANILLO, 1931 proved to be by investigation of the type in the Instituto de Ecología y Sistemática in Havana a good, separate species and thus must be referred to as *Citharacanthus niger* FRANGANILLO, 1931. For some time now there is also a *Citharacanthus* spec. from Guatemala sold in the pet trade. After examination of material from these imports, I found that it is a species of the genus *Crassiscrus* REICHLING & WEST, 1996, however apparently not the described species of REICHLING & WEST *Crassiscrus lamanai*, but an additional, as yet undescribed species.

Diagnosis of the genus *Citharacanthus*

- Two tibial apophysis.
- Bulb tapering to a point, however with a distinct keel, ventral-apically sawed.
- Spermathecae in two parts, arches at the sides facing each other more or less, not connected at the base.
- Trochanter I with lyra made of strong plumose bristles.
- Palpal trochanter with stridulation bristles or with short spines.
- Coxa I and sometimes the palpal coxa, with thorns or small spatulate or lancet-shaped stridulation bristles (such bristles are there but not at the palpal coxa).
- Scopula of the fourth pair of legs complete, or divided by a band of setae.

Displayed within the genus are variations of some characters that are unsatisfactory for taxonomists, so that three distinct taxonomic groups can be formed. It would be easy to create two new genera,

however, I believe it unfavorable for the subfamily Theraphosidae by forming very small groups to make it even more confusing.

I wish for these species, for a better overview within the genus to be divided into three group species. These species groups are:

cyaneus-group (isolated occurrences in the Greater Antilles)

livingstoni-group (Guatemala)

longipes-group (Mexico-Guatemala)

Characterisation of the species groups

longipes-group: Central American mainland (Mexico to Guatemala)

- Coxae with spine pad
- Stridulation bristles on at least trochanter I
- Type I urticating hair

Types: *Citharacanthus longipes*

cyaneus-group: Cuba (Greater Antilles)

- Coxae always without thorn field, but partially arranged stridulation bristles on coxa I
- Pronounced thick lyra over plumose setae on trochanter I, unfeathered or significantly weaker bristles on palpal coxa
- Type I and III urticating hair

Types: *Citharacanthus alayoni*, *Citharacanthus cyaneus*, *Citharacanthus niger*

livingstoni-group: Guatemala

- A lot of plumose setae on coxa I
- Spatula-shaped feathery hairs on femur I
- Type I urticating hair

Types: *Citharacanthus livingstoni*, *Citharacanthus sargi*

Key for the known species

1. Tarsal scopula IV divided by a band of setae..... 2
- Tarsal scopula clearly complete on the whole length..... 3
2. Bright light red coloration, Cephalus area contrasting dark or purple (Male rusty brown).....
..... *Citharacanthus cyaneus* (Eastern Cuba)
- Black or dark brown, red abdominal hairs..... *Citharacanthus alayoni* (Eastern Cuba)
3. Coxa I with or without spines, never with plumose setae..... 4
- Coxa I with plumose setae..... 5
4. Coxa I with spines..... 6
- coxa I without spines, plumose setae on trochanter I and palpal trochanter; PLE as large as PME.....
..... *Citharacanthus niger* (Western Cuba)
5. Lyra on trochanter II..... *Citharacanthus livingstoni* (Guatemala)
- Without such lyra..... *Citharacanthus sargi* (Guatemala)
- Femur I without these bristles..... 6

6. Plumose setae present only on trochanter I, palpal trochanter only with spines.....
..... *Citharacanthus longipes* (Mexico, Guatemala)

Family relations: The only clue to the reliable distinction from *Aphonopelma* seems to be the presence of stridulating organs on the trochanters of the first pair of legs and palps, if one ignores the fact that some species, especially the Central American *Aphonopelma* species, have the base connected on the seminis receptacula. The field of small spines on coxa I and the genital morphology tally otherwise entirely consistent with the characteristics of the *Aphonopelma* genus. Even the morphological variation in the width of the genitals is very similar to *Aphonopelma*. During the development phase of the nymph stages of *Citharacanthus* one can observe the development of the stridulatory organs very well: In the early stages the lyra is not formed, and without stridulation organs the spider differs from relatives at this point in the slightest way. With progressing development slightly stronger setae occur on the trochanters, which gradually, from moult to moult, develop into feathered stridulating bristles. We found in some members of the genus *Aphonopelma* such hair or thorn bristles as a precursor of stridulating bristles. All these points lead to the conclusion that *Aphonopelma* could be the immediate precursor of the genus *Citharacanthus*. The very distinct morphological proximity speaks for only a brief separation of the two genera. *Citharacanthus* is regionally restricted to Central America, a region which can be rightly regarded as a stronghold of the genus *Aphonopelma*. The distribution area of *Aphonopelma* expands, however, towards the north to the Nearctic. *Citharacanthus livingstoni* reveals even more familial relationships: This species has, in addition to the trochanter I stridulating setae such plumose setae also on the femur I. Such plumose setae are however a typical characteristic of the genus *Brachypelma*, of which certain species exhibit plumose setae on the trochanters. *Brachypelma*, however, differs significantly by the one-piece spermathecae. It will be more difficult with *Brachypelmides* SCHMIDT & KRAUSE, 1994. Here the spermathecae is divided almost to the base and is very similar to the type of *Citharacanthus*. This genus has, however, on the retrolateral femur IV a scopula of plumose setae. This is different, in addition to the genital morphology, also from *Brachypelma*. Smith rejects this genus (*Brachypelmides*) and considers it a synonym of *Brachypelma*. SCHMIDT has (oral communication), another species from Mexico, so that this genus should be fully acknowledged. I follow SCHMIDT in this case fully. *Citharacanthus cyaneus* and *Citharacanthus alayoni* have some morphological parallels to *Cyrtopholis*. Some individuals lack stridulating setae on coxa I and can therefore, since tarsus IV is divided by a band of setae, be easily confused with *Cyrtopholis*. *Citharacanthus cyaneus*, however, has at the apical embolus a slight indentation ventrally. This feature is unknown in *Cyrtopholis*. The fact that a division of the scopula on tarsus IV may be present or absent is also known from other genera. Such a genus, for example is *Sericopelma*. In addition, the tarsal division is a feature that occurs in the rather small species of the genus, whereas the large species have mostly complete tarsi. We may indeed observe in juvenile and subadult stages of all major Theraphosinae that initially they always have a tarsal division however they then lose this with advancing age (PEREZ-MILES, 1994). *Cyrtopholis* can however, on the basis of the shape of the spermathecae be undoubtedly separated from *Citharacanthus*. The spermathecae of *Cyrtopholis* always has a cone-shaped base structure (with and without over formed heads), *Citharacanthus* on the other hand always has spermathecae, which are always more significantly arched the on side facing each other, than on the opposite side. In addition *Cyrtopholis* species have very many, especially in older stages, wart-like growths on the spermathecae. Such structures are always absent in *Citharacanthus*. Often in the past there has been confusion with a Cuban *Phormictopus* species. This is not necessarily a sign of inadequate knowledge, but a result of the, still to this day, quite difficult definability of these genres. To distinguish it from the *Phormictopus*, quite conveniently there exists on femur IV retrolateral, a dense scopula of plumose setae. Sometime after the final moult, this structure can however, be rubbed off so that it can lead to a false conclusion in this regard,

especially since the genitals can match entirely with those of many *Citharacanthus* species. In older alcohol material, such as we find particularly in museums, this hair structure can as well as the urticating hair, be completely lost. In general, however, *Phormictopus* has on the coxae of the palps a distinct lyra of plumose setae, which is absent in *Citharacanthus*. This lyra is also seldom lost, and even then visible stumps still remain behind. Other genera, which could lead to confusion and ambiguity are *Apachepelma*, *Chromatopelma* and *Stichoplastoris*. *Apachepelma* can be separated on the basis of the genital structure. The spermathecae is always joined at the base and arches outward and inward equally. *Chromatopelma* on the other hand has a one-piece spermathecae, also all three of these genera do not possess a lyra of plumose setae. With certainty there can naturally be no precise conclusions from these characteristic relations on the genuine close relationships between the species. Purely hypothetically one could naturally view *Aphonopelma* as a sister genus. It would be fitting if the structure of the field of spines on the femur and coxa represents a precursor of stridulation organs. Also points in this direction the juvenile development of the lyra-bearing species.

Finally, *Eupalaestrus* and *Crassicrus* REICHLING & WEST. 1996 must be considered especially as at the present, already in the pet trade, a species of the new genus *Crassicrus* is in circulation under the pseudonym *Citharacanthus*. However, as these genera seem to stand very close to *Eupalaestrus*, both are to be cited in the following key as well. There are also real parallels to *Aphonopelma*. Both genera can however be easily distinguished from *Aphonopelma* by the significantly thickened tibia IV. Last but not least the genus *Nesipelma* should also be mentioned. Here we also find on the trochanters a stridulating organ like that in *Citharacanthus* and *Cyrtopholis*. The initial description does not provide further details as to whether or not the coxae possess a field of thorns. Exact kinship relations can't, unfortunately, be clarified on the basis of the description, I am sure, however, that this species is placed very close to *Citharacanthus* or *Cyrtopholis*. Finally I would like still to mention *Acanthoscurria antillensis* Pocock, 1903. This species was described as *Acanthoscurria*, which is based on the fact that the male has only one apophysis, however, it contradicts all the other features in the genus diagnosis of *Acanthoscurria*. Morphologically it is very close to *Citharacanthus*, However, the small tibial apophysis of the male is rudimentarily formed and the species has in contrast to *Citharacanthus* a scopula on the retrolateral femur IV. These are with this species thus an undescribed genus, which also appears to be created in the evolutionary melting pot of the still relatively young Central American fauna.

Key to the related genera within the Theraphosinae

- | | | |
|---|--|--|
| 1 | Lyra of stridulating bristles on coxa I..... | 2 |
| - | No Lyra of plumose setae on coxae, possibly some simple, normal shaped, not significantly
lancet-shaped bristles..... | 4 |
| 2 | On retrolateral femur IV distinct scopula of plumose setae, coxa I and palpal coxa with lyra
..... | <i>Phormictopus</i> |
| - | No scopula on femur IV..... | 3 |
| 3 | Femurs of legs I and the palps with spatulate, plumose setae, coxae with lots of plumose
setae..... | <i>Citharacanthus</i> (<i>livingstoni</i> -group) |
| - | Femurs without plumose setae, coxae on leg I with some plumose setae | <i>Citharacanthus</i> (<i>cyaneus</i> -group) |
| 4 | Femur IV retrolateral without scopula of plumose setae..... | 5 |
| - | Femur IV retrolateral with distinct scopula of plumose setae..... | <i>Brachypelmides</i> |

5	Spermathecae clearly in one piece, bulb broadens again after narrowing, on femur I basal plumose setae.....	<i>Brachypelma</i>
-	Spermathecae clearly in two parts.....	6
6	lyra of stridulating bristles on coxae I and palpal coxae.....	7
-	No such lyra present.....	9
7	Coxae I with short spines.....	8
8	With scopula on retrolateral femur IV. One tibial apophysis.....	<i>Acanthoscurria antillensis</i>
-	Without scopula, 2 tibial apophysis.....	<i>Citharacanthus (longipes-group)</i>
-	Coxae I and palpal coxae without spines.....	9
9	Lyra on trochanter of the palp weaker than leg I, less bristles.....	<i>Cyrtopholis</i>
-	Lyra on trochanter of the palp greater than on leg I, more bristles.....	<i>Nesipelma</i>
10	Tarsal scopula divided on at least leg IV.....	11
-	Tarsal scopula undivided.....	12
11	Tarsal scopula divided only on leg IV.....	<i>Stichoplastoris</i>
-	Tarsal scopula divided on III and IV.....	<i>Apachepelma</i>
12	Tibia IV distinctly thickened.....	13
-	Tibia IV normal.....	14
13	Retrolateral scopula present on femur IV.....	<i>Eupalaestrus</i>
-	No such scopula present.....	<i>Crassicrus</i>
14	Spermathecae in two parts, bulb, more or less ending in a point.....	<i>Aphonopelma</i>

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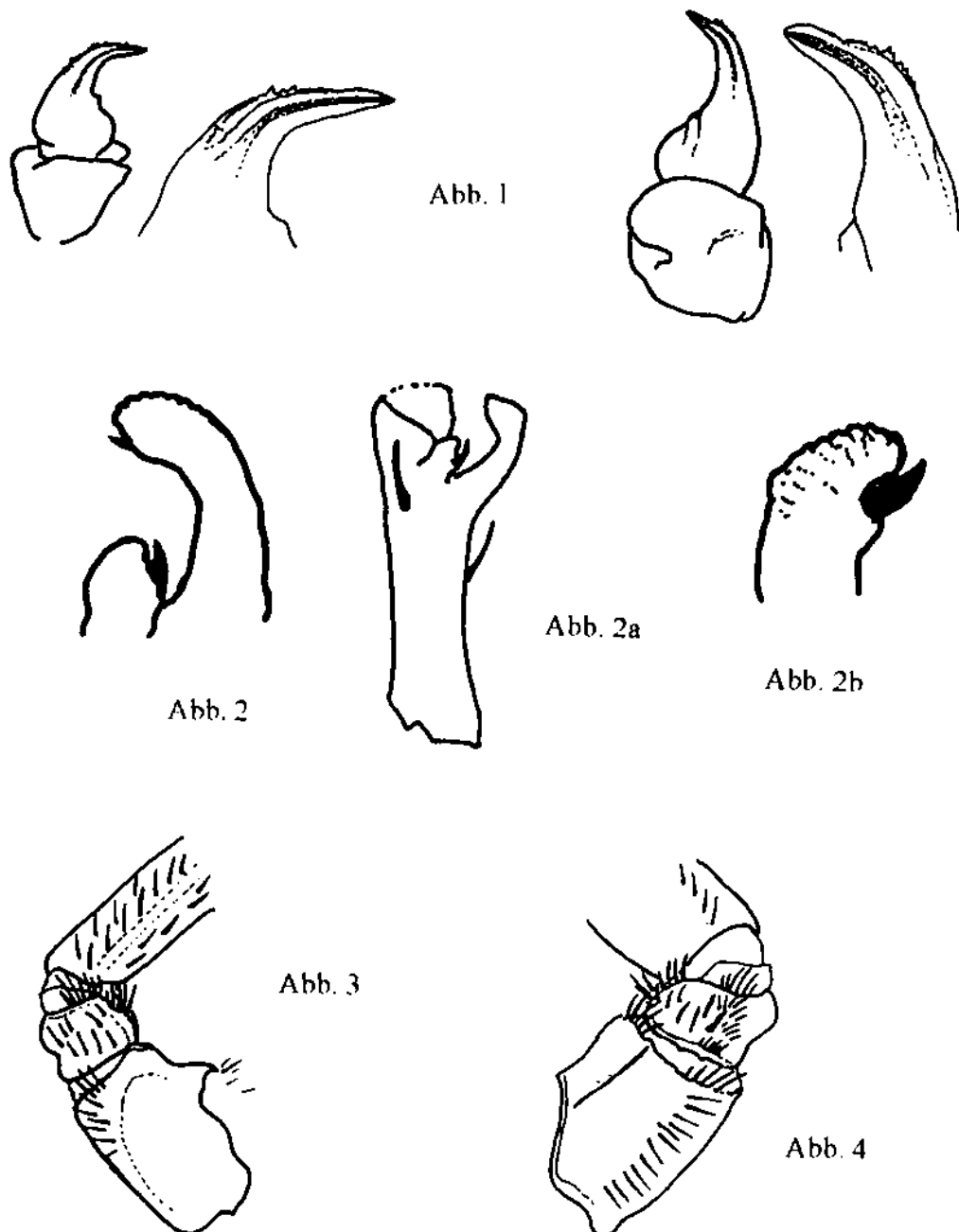
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Figures

Citharacanthus niger (drawings of the holotype by Nils Navarro, MHNH-Cuba): 1. Bulb, retrolateral and prolateral; 2, 2a and 2b Tibial apophysis prolateral; 3. Coxa, trochanter and femur of the palp; 4. Coxa, trochanter femur and leg I; 5. Cephalothorax, 5a Ocular tubercle; 6 Sternum, labium and coxae of the pedipalps; *Citharacanthus cyaneus* (Drawings RUDLOFF): 7. Bulb, prolateral and retrolateral; 8 Prolateral tibial apophysis; *Citharacanthus alayoni* (Drawings RUDLOFF): 9 Bulb, retrolateral and prolateral; 10. Prolateral tibial apophysis.



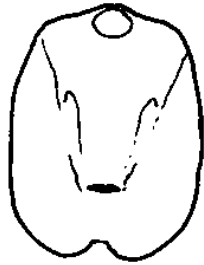


Abb. 5



Abb. 5a

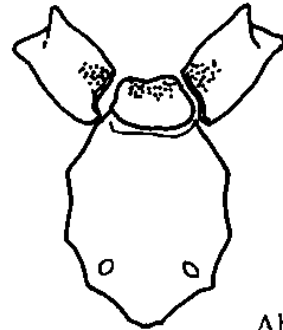


Abb. 6



Abb. 7

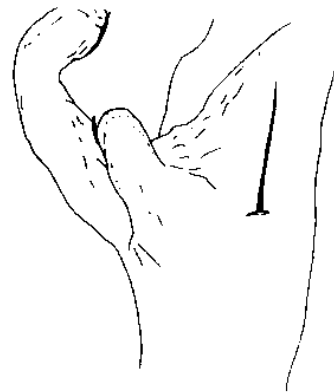


Abb. 8

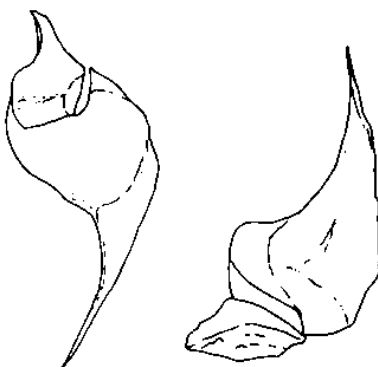


Abb. 9

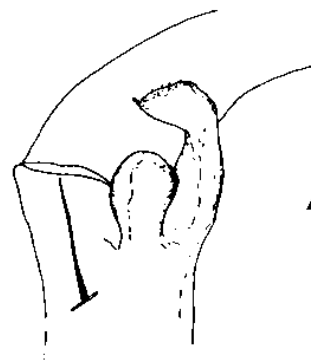


Abb. 10