

## The Euro-mediterranean species of *Icius* (Araneae, Salticidae): a critical revision and description of two new species

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Bonnet's catalogue (1945-1961) includes 43 species of *Icius* distributed in all the zoogeographic regions except for the neotropical and Australian zones. Since from 1940 other 15 new species have been attributed to this genus, which in the last few years has undergone consistent changes in the number of species due to revisions.

Andreeva *et al.* (1984) have proposed to include the genus *Pseudocius* in *Icius*. However, Prószyński (1987) has revised this opinion suggesting the maintenance of the current generic attribution.

Three species were transferred into *Icius* by Wesolowska (1988) from the genera *Heliophanus* and *Salticus*. Such changes have been contested by Prószyński (1987) who included these three species in a new genus.

Prószyński also proposed the transfer of a considerable number of species (some of which recently described by himself) into *Pseudoicius*. He suggested as well the transfer of other species to *Phintella* and other genera. Therefore, in his recent catalogue of the Salticidae (1990), the number of valid *Icius* species is reduced to 33.

The genus's situation is all but definitely settled and only a complete revision of the species ascribed to *Icius* and to related genera will bring a stable order.

In the present article the Euro-me-

diterranean species of *Icius* are considered. According to Prószyński these include 10 valid species, 8 according to Roewer, and 13 according to Bonnet's catalogue. However, accurate descriptions and drawings, essential for correct species identification, only exist for the following species: *I. hamatus* (Koch, C.L., 1846), *I. congener* Simon, 1871, *I. crassipes* (Simon, 1868), *I. subinermis* Simon, 1937. These species are also the ones that have the most citations.

Furthermore Prószyński (1987) has presented drawings of specimen identified, according to the label, as *I. guyoni* and *I. boryi* respectively by Dahl and Thorell. For the other species there are no drawings of the copulatory apparatuses, the descriptions of the specimen are insufficient for their recognition, and the typic material is not conserved.

In this work the status of all the Euro-mediterranean species listed in the above-mentioned catalogues is revised on the basis of the examination of the literature, of the material from Simon's collection and of the specimen collected during researches performed by our Department.

We think to have thus contributed to a more secure definition of *Icius*'s taxonomy for the Mediterranean and European regions. We also describe two new species found during the study of Simon's collection.

## I. Character Analysis

### *Chelicerae*

The males chelicerae, bigger than those of the females, are provided with a very evident dorsal crest. The differences of this structure among the various species are not pronounced with the exception of *Icius insolitus sp. nov.*. In fact, the considerable size of the crest (Fig. 17) constitutes a good differential character of the male specimen of this species.

### *Male pedipalps*

The tibia has a lateral apophysis jutting externally and forward. This apophysis is in contact with the base of the tarsus and blocks its outward movement. The area of the tibia, where the tarsus external basal angle rests on the apophysis base, has a thickening, well evident if the pedipalp is observed from the side, which usually bears a little process (d).

The external tarsal profile can show ventrally, in the proximal part, a variably marked indenture (i).

The very simple bulb has a large posterior portion which overlooks ventrally the tarsus at the tibia. Its central portion has a low subconical relief in the middle. Its distal portion tapers near the apex that brings the embolus; at the base of the embolus there is a variably developed prominence (p). The embolus (e) is simple, pointed at the top, curved, and not longer than the distal portion of the bulb.

All these characters (Figg. 1-12) have good differential value.

### *Female copulatory organs*

The epigynum is a simple sclerotized plate. Underneath, the copulatory canals and the seminal receptacles can be seen due to the plate's transparency. The copulatory canals, opening in the middle of the plate, are relatively straight, thin, and terminate in a highly sclerotized seminal receptacle. The shape of the epigynum does present little variations; on the contrary, the copu-

latory canals' shape (Figg. 13-16) is a good differential character.

### *Distribution of the spines on the tibiae*

To distinguish the *Icius* species, Simon utilized the tibial spines from the first and second pairs of legs. He particularly considered the tibia's ventral spines. The external spines of the first and second tibiae can have a certain differential value. However, exceptions are possible and this character is not to be used as the only discriminant.

There are marked differences between *I. subinermis* and *I. insolitus sp. nov.* and the other species: in the first, the ventral spines are lacking (or there may be a single one) on tibiae I and II; in the others there are generally two spines. Instead, the medial spines have a very similar distribution in all species.

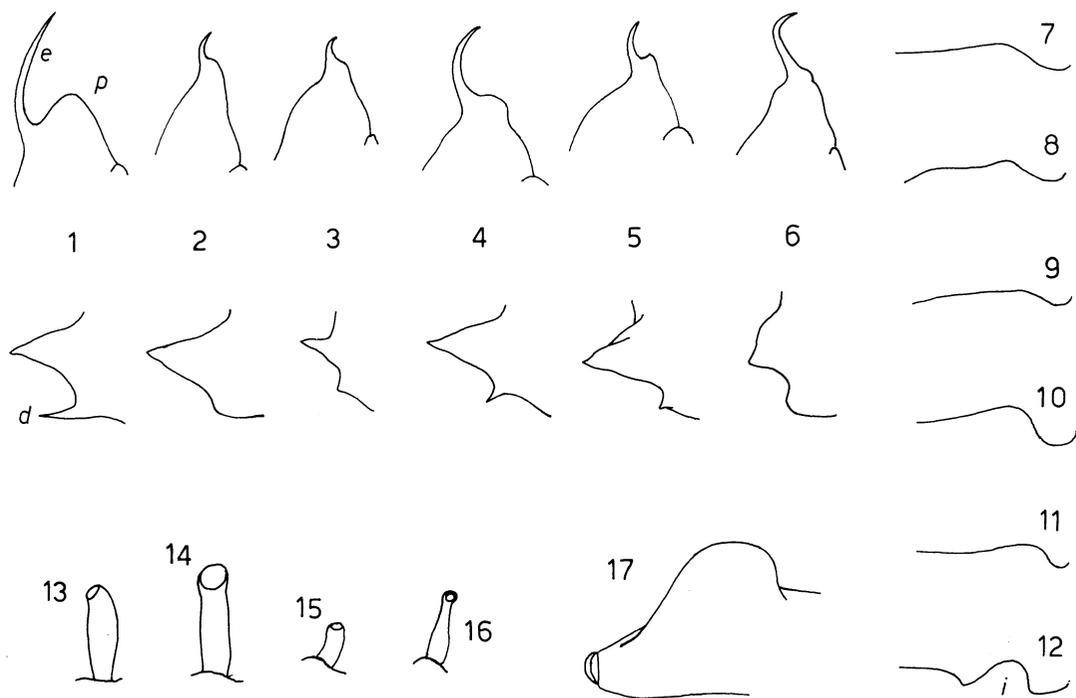
### *Colouration*

The specimen that have been kept for a long time in alcohol have relevant colour alterations. There is also a rather consistent loss of hair. Due to this, it is difficult to give sure diagnostic characters on the basis of colouration.

The common characters of the examined species are given below. Therefore, when describing each species only characters which can be of diagnostic significance will be considered.

The carapace of the examined specimen not preserved long (all belonging to *I. hamatus*) have a very dark dorsal portion with lighter lateral ones. In the males, squamose white hairs are thicker on the anterior margin of the ocular region posterior to the eyes and medially behind the fovea. The margin of the carapace is black and has a dense line of white squamose hairs. In the females, the white squamose hairs do not form particular groupings neither dorsally nor on the margin.

On the specimen that have been conserved longer, the cephalic region of the carapace appears much darker than the



**Fig. 1-17.** Principal differential characters: distal portion of the bulb, tibial apophysis and basal ventral portion of the tarsus profile of the male pedipalp of *I. hamatus* (1, 7), *I. congener* (2, 8), *I. subinermis* (3, 9), *I. crassipes* (4, 10), *I. insolitus n. sp.* (5, 11), *I. simoni n. sp.* (6, 12); left copulatory canal of *I. hamatus* (13), *I. congener* (14), *I. subinermis* (15), *I. simoni n. sp.* (16); laminar crest of the male chelicera of *I. insolitus n. sp.* (17).

rest, particularly in the periocular area. The sternum is more or less light in colour with darker margins. The chelicerae are similarly coloured to the carapace but anteriorly are usually lighter.

In females the pedipalps are uniformly light; in the males, there are light and dark areas. Generally, the femurs are dark with light distal extremities, the patella is dark dorsally, the tibia is evenly dark, and the tarsus is basally dark and distally light.

The females have uniformly light coloured legs. The males have the first pair of legs dark and the remaining ones light. On specimen conserved for short periods there are rather evident lighter areas on the first pair of legs: tarsi, the dorsal portion of femurs, patellae, tibiae and metatarsii.

Dorsally the opistosoma has chromatic patterns, more marked in the females, due to the colouring of the epider-

mis and to the hairs. On several specimen conserved for a long time the hairs have mostly fallen and only the chromatic pattern of the epidermis can be observed.

## II. Species of uncertain validity

### A. *Icius striatus* (Clerck, 1758)

Bonnet 1957:2284

Prószyński 1990:183 (*nomen dubium*)

The inclusion of *Araneus striatus* Clerk in *Icius* by Bonnet is due to two errors:

1. His reading of Simon's citations, beginning from the one in 1868 (p. 100) which does not take into consideration the opinion expressed by the same in 1871 (p. 59) and thereafter;

2. the acceptance of Walkenaer's attribution (1837) of some Salticidae to this species (sub *Attus*).

*Araneus striatus* was first described by Clerck (1757) and subsequently redescribed by Thorell (1858, p. 152) who named it *Attus (Euophrys) striatus*. Since the original typic material is not available and the Thorell's description is insufficient the generic attribution of this Salticidae will remain problematic. However, the attribution of this species to *Icius* is not credible since so far there are no known species for northern Europe.

Walckenaer (1837, p. 422, 486, 487) sub *Attus* attributed some Salticidae specimens studied by him to the species described by Clerck. This attribution was decidedly contested by Thorell (1873, p. 386) and lastly by Simon (1901, p. 623; 1937, p. 1264 note 1).

Many bibliographical quotations are found for *Icius striatus* (Walckenaer) but this taxon does not have any scientific basis and owes its existence to Simon (1876, p. 59) who considered it a valid specific name instead of an incorrect determination. Since Simon considered *Icius hamatus* Koch synonym of *Icius striatus*, the literature is full of citations regarding *Icius hamatus* under the name of *Icius striatus*.

Obviously the name *striatus* has no basis for prevailing over *hamatus*. In any case, If the specimen ascribed by Walckenaer to *Attus striatus* Clerck could be or not attributed to *Icius hamatus*, it is impossible to establish due to the lack of the typic material and its insufficient description.

In conclusion, *Araneus striatus* Clerck is a Salticidae not belonging to *Icius*, while *Icius striatus* (Walckenaer) does not exist.

In Roewer's catalogue both *Araneus striatus* Clerck and *Attus striatus* Walckenaer are considered «nicht zu deuten».

## B. Species described by Franganillo

### *Icius afolius* Franganillo 1925

Bonnet 1967:2279

Prószyński 1990:180 (n. 1822)

This species was cited, without descrip-

tion, by Franganillo (1925) for Tortosa (Tarragona, Spain). There is no material available and there are no other records of this species.

This species is not cited in Roewer's catalogue.

### *Icius foliosus* Franganillo 1920

Bonnet 1957:2281

Prószyński 1990:181

This species was cited by Franganillo (1920, p. 139) for Damaja (Portugal), in 1925, p. 35 for Tortosa (Tarragona, Spain) in 1926, p.81 (without locality), and by Bacelar (1928, p. 173: citation of Franganillo 1920).

There is neither typic material available nor descriptions and thus this is a «nomen nudum». It is also not mentioned in Roewer's catalogue.

### *Icius miniamus* Franganillo 1910

Bonnet 1957:2283

Roewer 1954:1220

Prószyński 1990:182 (n. 1843)

The description (pp. 19-20) was based on a female specimen from the mouth of the river Mino (Portugal); citations for Lisbon (Portugal) by Franganillo 1925, p. 139; in 1920, p. 35, for la Guardia (Pontevedra, Portugal) and by Bacelar (1928, p. 173: citation of Franganillo 1920).

The description is absolutely insufficient: the abdomen's colouration could correspond to an *Icius* but neither a generic ascription nor a specific one is possible.

No typical material is available.

None of the species described by Franganillo are considered to be utilizable.

For two of them there is no description but only a citation (*Icius afolius*, 1925 and *Icius foliosus*, 1910). For none of the species is there any typical specimen or any other determined material. Also, the descriptions are insufficient for their positive identification. In this situation it is best to consider them all *nomina nuda*.

C. Species described by Lucas

***Icius angustatus*** (Lucas, 1846)

Bonnet 1957:2279

Roewer 1954:1272 (as *Salticus*)

Prószyński 1990:180 (n. 1823)

Lucas described it in 1846 (p. 167, Table 8, Figure 6) as *Salticus angustatus* on a female from Algiers.

Simon in 1876 (p.76) mentions it, still in a foot-note, as being similar «à des *Calliethera* femelles ou à des jeunes»).

Simon in 1937 (p.1264) inserted it within a group of species described by Lucas - also including *Salticus guyoni*, *Salticus boryi* and *Salticus erraticus* - «appartenent certainement au genre *Icius* sans qu'il soit possible de les attribuer à l'une plutôt qu'à l'autre des espèces connues».

Bonnet mentioned this species as *Icius* on the basis of Simon 1937 (p. 1264, note).

***Icius erraticus*** (Lucas 1846)

Bonnet 1957:2280

Roewer 1954:1220 (synonomous of *hamatus*)

Prószyński 1990:181 (n. 1836)

This species was described (on the basis of a female found at Kouba, near Algiers) by Lucas (1846, p. 149) as *Salticus*. Simon named it *Atta erratica* (1864, p.315) but then changed the name to *Attus lucasi* (1868, p.568) since the name *Attus erraticus* was already used by Walckenaer. The species described by Walckenaer was subsequently attributed to the genus *Evophrys*.

In 1876 Simon (p. 57) includes it as a synonym of *Icius notabilis* C.K. In fact, the specimen attributed by Simon to *Icius notabilis* was later recognized by Simon (1937, p. 1216, 1264) as a different species (*Icius subinermis*). In his posthumous work (1937, p. 1264, note 1) Simon includes *Icius erraticus* in a group of species of uncertain attribution.

It is hard to attribute this species to the genus *Icius* on the basis of Lucas's description. In fact none of the known *Icius* have females with the pedipalps and first pair

of legs coloured in the manner described by Lucas.

Strangely Simon cites Lucas's description (1868, p. 568 and 1937, p.1264) but refers to the specimen as a male and a juvenile female. This would seem to indicate that Simon had seen Lucas's material. The footnote on page 1264 from 1937 «corrects» Lucas's descriptions for two other species as well: *Salticus guyoni* is considered a juvenile instead of a female adult and *Salticus angustatus* a female juvenile instead of an adult.

In the possibility that Simon's affirmation of *Salticus erraticus* as a juvenile is correct, then Lucas's specimen could be a young female which cannot be attributed specifically to any species.

The species attribution of the specimen identified as *Icius erraticus* by De Dalmas (1922, island of Giglio) and Kerville (1926, Siria) will be only possible by the examination of the concerned material.

***Icius guyoni*** (Lucas 1846)

Bonnet 1957:2281

Roewer 1954:1220

Prószyński 1990:181 (n. 1839)

This species was described as *Salticus* by Lucas (p. 156) on a female (Setif, Constatine). Its attribution to *Icius* was given as probable by Simon (1876 p.58, 1937 p.1264 note). In his last work Simon cited it as «jeune femelle» (see commentary on *I. erraticus*).

Prószyński (1987, Table 23) shows a drawing of a male pedipalp from a specimen (Biskra, Algeria), preserved in Berlin's Museum, attributed by Dahl to *Icius guyoni*. This male palp is very similar to that of several specimen, examined by us, preserved in the Simon collection of the Parisian Museum and labelled «5414 *Icius sp. nov.* Bon Sauda Biskra Marnia». Neither the females nor the males corresponds to the Lucas' description. Therefore the Dahl's attribution seems to be without foundation.

**Icius boryi** (Lucas 1846)

Bonnet 1957:2279

Roewer 1954:1220 (synonymous with *hamatus*)

Prószyński 1990:180 (n. 1825)

On the basis of a female specimen from Bone, Algeria, this species was described by Lucas as a *Salticus*.

Simon (1864, p. 316) believed that it should probably be attributed to *Atta* and later (1876, p.59) includes it as a synonym of *Icius striatus* Walckenaer. Simon finally (1937) includes it in Lucas's *Icius* group of impossible specific attribution (see commentary to *I. erraticus*).

Prószyński (1987, Tables 48-49) gives the drawings of the genital apparatus of two females conserved at the Museum of Copenhagen with the label «*Marpissa boryi* Bona Meinert / Thorell det.». Prószyński pointed out the similarity of these specimen with *Icius hamatus*. Despite they were found at the same site as the female described by Lucas, one cannot be certain of its specific ascription.

As we can see from the previous survey, it is impossible to ascribe with certainty specimen of *Icius* to the species described by Lucas since neither the typical specimen nor any drawings or descriptions of the copulatory apparatuses are available.

Therefore we think advisable to consider «nomina nuda» these species. Refusing this choice will cause a series of synonymic histories more and more hard to disentangle.

**III. Valid Species****Icius hamatus** (Koch C.L. 1846)

*Marpissa hamata*: Koch C.L., 1846, p. 67 (*n.sp.*), tab. 448, Fig. 1132 (F)

*Icelus notabilis*: Koch C.L., 1846, p. 174 (*n.sp.*), tab. 460, Fig. 1225 (M)

*Icius congener*: Cantarella 1980, p. 58 (F)

*Icius hamatus* : Simon 1937, p.1216-17 (MF), p. 1264, Fig. 1946 (M)

*Icius hamatus* : Roewer 1954, p. 1220

*Icius hamatus* : Bonnet 1957, p. 2281

*Icius hamatus* : Prószyński 1976, pp. 72, 154, 186, map. 97, Figg. 233, 403-406 (M)

*Icius hamatus* : Cantarella, 1982 pp. 246, 247 (MF)

*Icius hamatus* ; Hansen, 1982 p. 57, Figg. 1-2 (M)

*Icius hamatus* : Alicata e Cantarella, 1984 p. 138 (MF)

*Icius hamatus* : Andreeva and Alii, 1984 pp. 353-54, Figg. 1-5 (MF)

*Icius hamatus* : Prószyński 1984, Fig. p. 41 (from a female specimen labelled «*Euophrys altera* Sim. Andalusien 1884.I.18» in L. Koch coll., Wien Museum)

*Icius hamatus* : Alicata e Cantarella, 1986 p. 189 (M)

*Icius hamatus* : Prószyński 1987, p. 47 (M)

*Icius hamatus* : Prószyński 1990:181 (n. 1840)

*Icius striatus* : Simon 1876, p. 59 (MF)

*Examined material:*

Paris Museum: 890 *Icius erraticus=striatus* Banyuls E.S det., 2 FF, 4 MM (*Icius hamatus* (C.L.K.) det. Prószyński 1984, cfr. Próz. 1984:353, Figg. 1-5); 25700 *congener* E.S. 47 FF.

Berlin Museum: *Marpissa hannata* C.L. Koch, Syntypus ZMB/574 (F)

## Our material:

MALTA: B Kara 5-1-75 1M, 4FF; Kirkop 23-9-75 1F; B Kara 23-6-77 1M; Upper Busket 17-4-77 1 juv.; Attard 3-5-81 1 F;

SICILIA: Caronia, sughereta m 350 24-5-88 1 F; Valle del S. Barbaro (Caronia) m 550 19-5-88 1 M; Pedara 5-5-65 1F; Palazzelli (Scordia) 11-4-91/8-9-91 17 MM, 13 FF, 40 juv; Fonti Ciane (Siracusa) 7-5-91/9-8-91 3 MM, 3 FF, 12 juv.; Piana di (Catania) 6-3-91, 24-5-91 1 M, 1 F, 1 juv.; Passo Cavaliere (Piana di Catania) 13-7-91, 2-4-91 1 M, 1 F; Lentini (Siracusa) 9-3-91, 19-3-91 2 FF; Salina (Aeolian islands) 4-12-84 2 MM; Ustica 25-5-67 1 M.

CALABRIA: Reggio Calabria 7-3-91/6-8-91 2 MM, 2 FF, 6 juv.

MONTE POLLINO: Piano sotto Pollinello 13-5-53 1 F; Colloredo 14-6-51 1 F; 13-6-53 1 M, 1 F

ALGERIA: Foresta di Yakouren 20-4-68 1 M.

Sizes: males 3,2 - 5,4; females 4,7 - 6,6

Today the male of this species can be considered easily identifiable because there are several drawings of the bulb. The identification of the female is more problematic and all the drawings of the copulatory apparatus in the literature are recent. There are many variations in the chromatic patterns of the abdomen and this character cannot presently be used for specific attributions.

Due to this difficulty one cannot be sure of the citations of female specimen that are not accompanied by drawings of the copulatory apparatus, which is rather variable.

Several of the numerous citations recorded by Bonnet (1957) should be verified, since some of them could be not reliable synonyms. This is the case of *Attus striatus* of Simon 1868 attributed by the same (1937) to *I. hamatus*. In fact, the bulb drawing reported by Simon (1868, T. 6, Fig. 3) proves the attribution as erroneous and suggests its ascription to *I. subinermis*.

#### Description

##### Male

The cheliceral crest is moderately developed and is proportionally larger in bigger specimen.

The pedipalps can vary in colour. Seen dorsally the femur's extremity is light and the patella, tibia and tarsus are darker (often the tibia is darker than the patella). The triangular tibial apophysis (Fig. 1,18-20) is pointed with a hook-like apex, while the thickening at its base has a thin sharpened process.

The bulb's embolus is quite elongate and falciform; the distal portion is fairly tapered and the apical prominence at the base of the embolus is very developed (Fig. 1, 19).

The dorsal pattern of the opistosoma is shown in Fig. 35-36.

##### Female

The dorsal chromatic pattern of the opistosoma (Fig. 31-34) is rather variable and is determined by the colouring of the

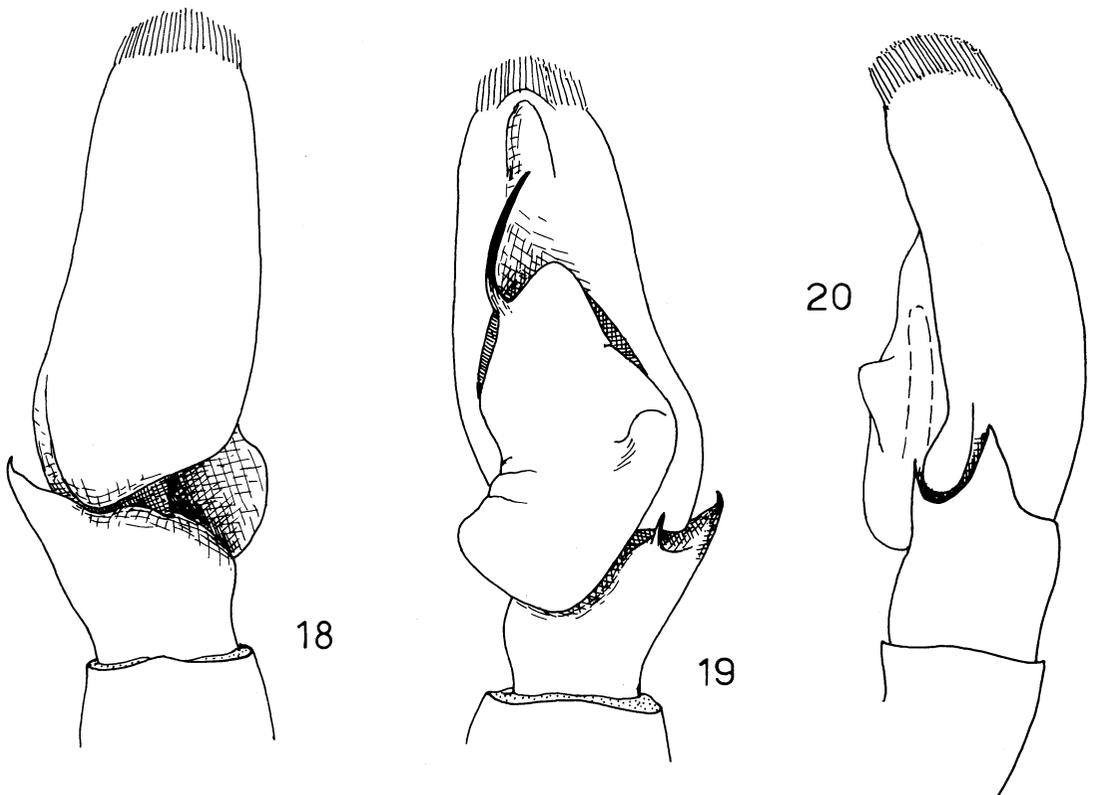
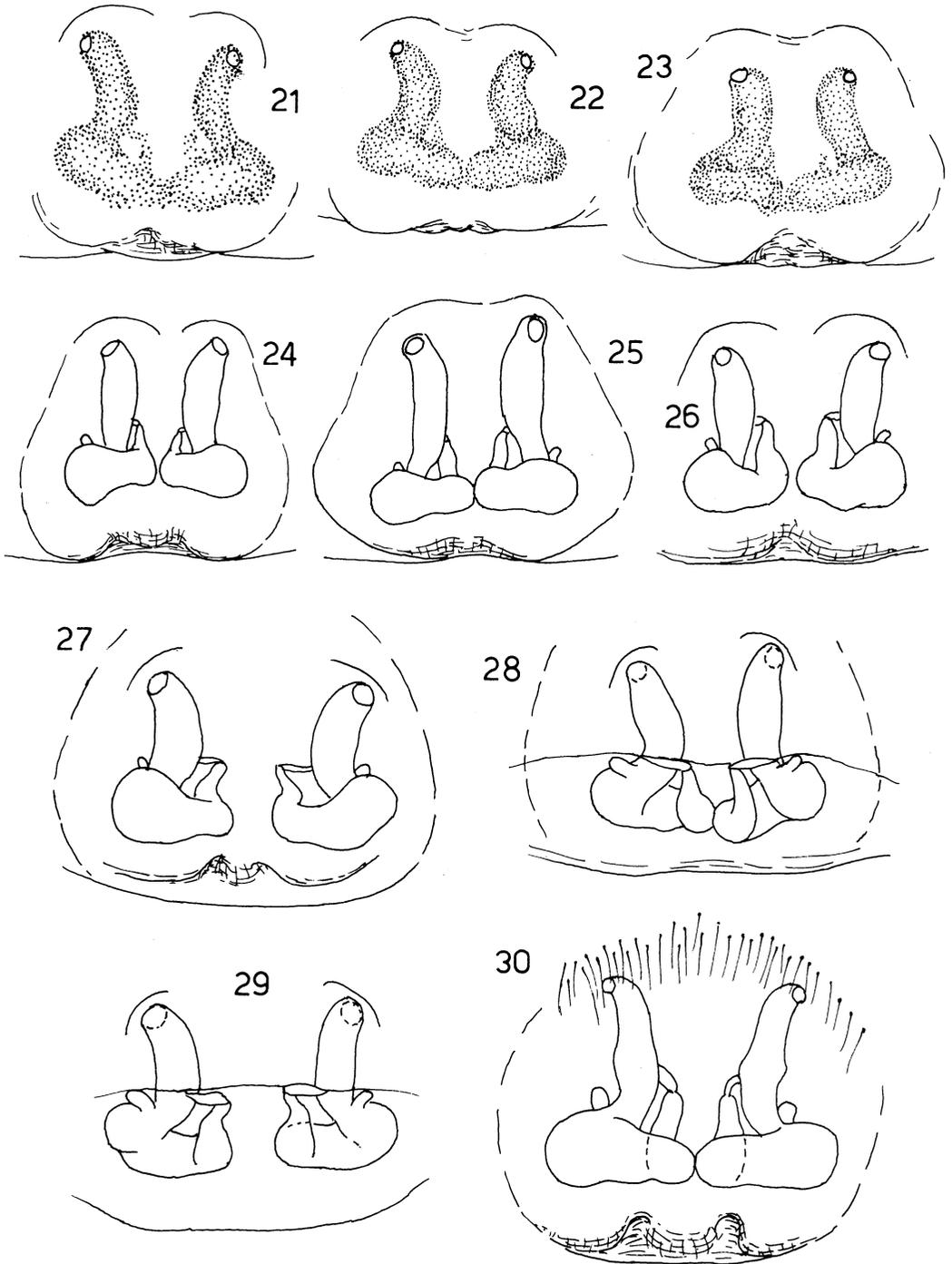
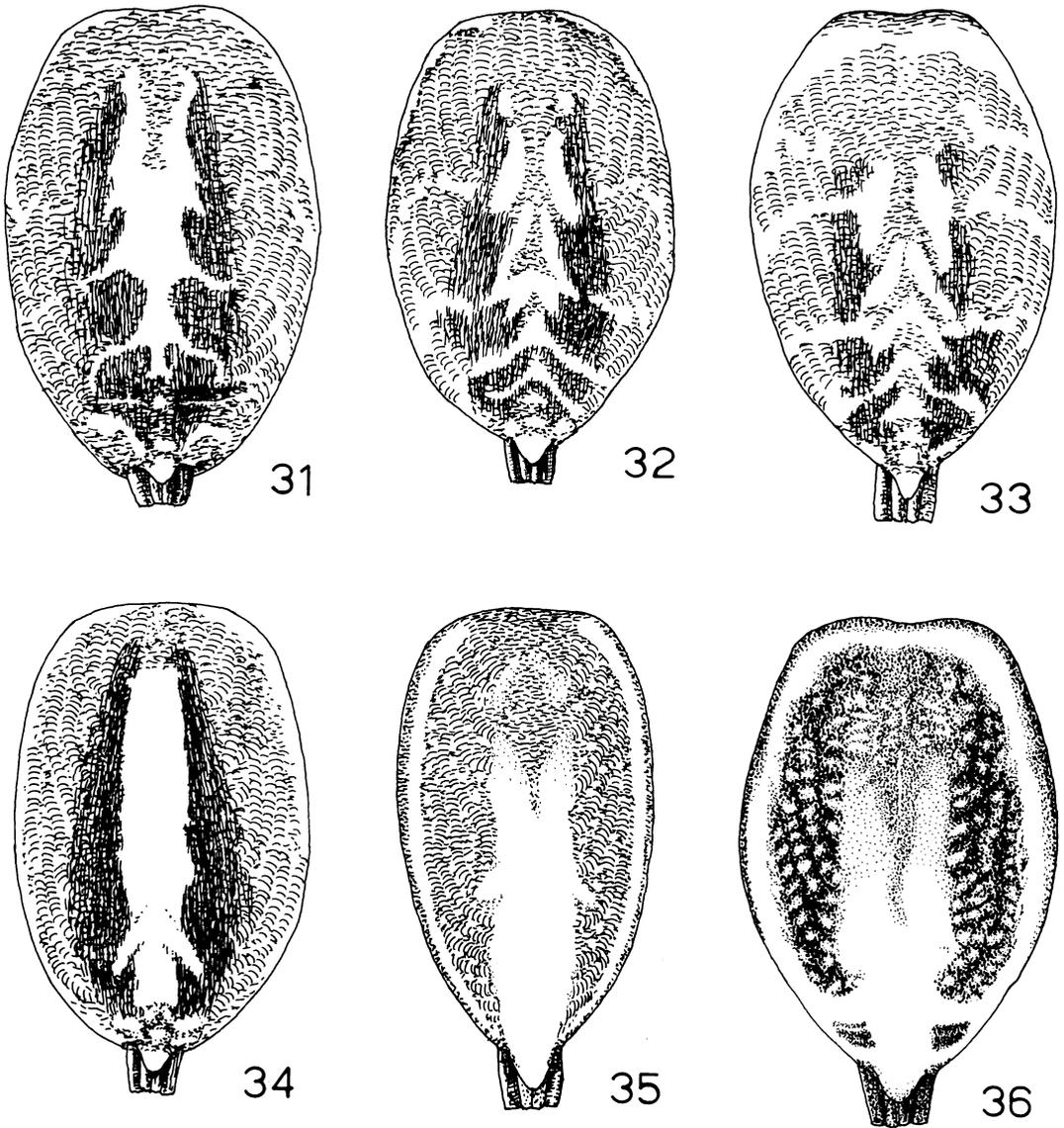


Fig. 18-20. Male left pedipalp of *Icius hamatus* (Sicilia): tibia, tarsus and bulb seen dorsally (18), ventrally (19) and laterally (20).



**Figg. 21-30.** Female copulatory apparatuses of *Icius hamatus* seen ventrally without KOH treatment (21-23) and after KOH treatment seen ventrally (24-27, 30) and dorsally (28-29): specimen of the Paris Museum (22-25) and from Sicilia (21, 26-29) and syntypus from Berlin Museum (30).



**Figg. 31-36.** Colour pattern of the female (31-34) and male (35-36) opistosoma of *Icius hamatus*: specimen of the Paris Museum (32-34), from Sicilia (31,36) and from Ustica (35). All the specimen have lost their hairs partially (31-34) or completely (35-36).

epidermis and by the variably coloured hairs (white, reddish, and brown). The posterior margin of the epigynum shows a variable indenture. The copulatory canals (Figg. 13, 21-30) are more or less bent towards the inner area of the central zone; their apices are narrower and bent towards

the outside. The opening's diameter is inferior to that of the canal.

#### *Distribution*

On the basis of the examined material and of the verified citations, the ascertained

distribution results: Iberic peninsula, France, Italian peninsula, Sicily, Balcanic peninsula and Algeria.

**Icius congener** Simon 1871

*Icius congener*: Simon 1871 p. 184 (MF)

*Attus nebulosus*: Simon 1868 p.572 (MF)

*Icius congener*: Simon 1876 p. 58 (MF)

*Icius congener*: Simon 1937 p. 1216-17 (MF), 1264, Fig. 1948 (F)

*Ycius congener*: Bonnet 1957, p. 2280

*Icius congener*: Prószyński 1976 Map 96

*Icius congener*: Prószyński 1987 p.46 Figg. M

*Icius congener*: Prószyński 1990, p. 181 (n. 1829)

*Icius nebulosus*: Roewer 1954, p. 1220

*Examined material:*

Paris Museum: 890, *Icius congener* E.S., Gallia merid. 1 M; 25700 *congener* E.S., 51 F (only 2 really belonging to *I. congener*)

*Sizes*: males 3,5; females 5,2 -5,3.

First collected specimen of this species were erroneously ascribed by Simon (1868) to «*Attus nebulosus* Koch». This taxon, really named *Dendryphantes* by Koch (1846), is now synonym of *D. nidicolens* (Walck., 1802). In 1871 Simon realized the error and named it *Attus congener*. However, the first description that allows the identification of the male is Simon's in 1876. Judging from descriptions of 1868 and 1871 it seems that Simon was not yet able to distinguish this species from similar ones. In fact, considering the description of the tibia apophysis, it is probable that Simon's male description of 1871 refers to *I. hamatus*.

The first account of *congener*'s epigynum is in Simon's posthumous work (1937).

In Rower's catalogue (1954) this species appears as *Icius nebulosus* Simon and *congener* is one of its synonyms. This choice of Roewer's seems completely arbitrary since the name *nebulosus* was used by Simon for an incorrect identification and then amended in 1871. In this work, he attributed the examined specimen to the new species and gave a description of the differentiating

characters that separate it from related species. But, as already pointed out, the first positive identification of this species is only dated 1876.

The males are positively identifiable due to the shape of the bulb's apex and to the shape of the tibial apophysis. There may be some confusion in the identification between female specimen of *congener* and *hamatus*, owing to their similarity.

Simon's identified female *congener* specimens show a wide variety of chromatic patterns and seminal receptacle shapes. After comparing female *hamatus* from various sites we came to the conclusion that, with the exception of two specimen, the shape of the female attributed to *congener* by Simon are within the range of *hamatus*'s variability. Only two specimen are clearly different and can be attributed to *congener*. In these specimen the copulatory canals are long, straight and widen at the aperture so that its diameter is greater than that of the canal.

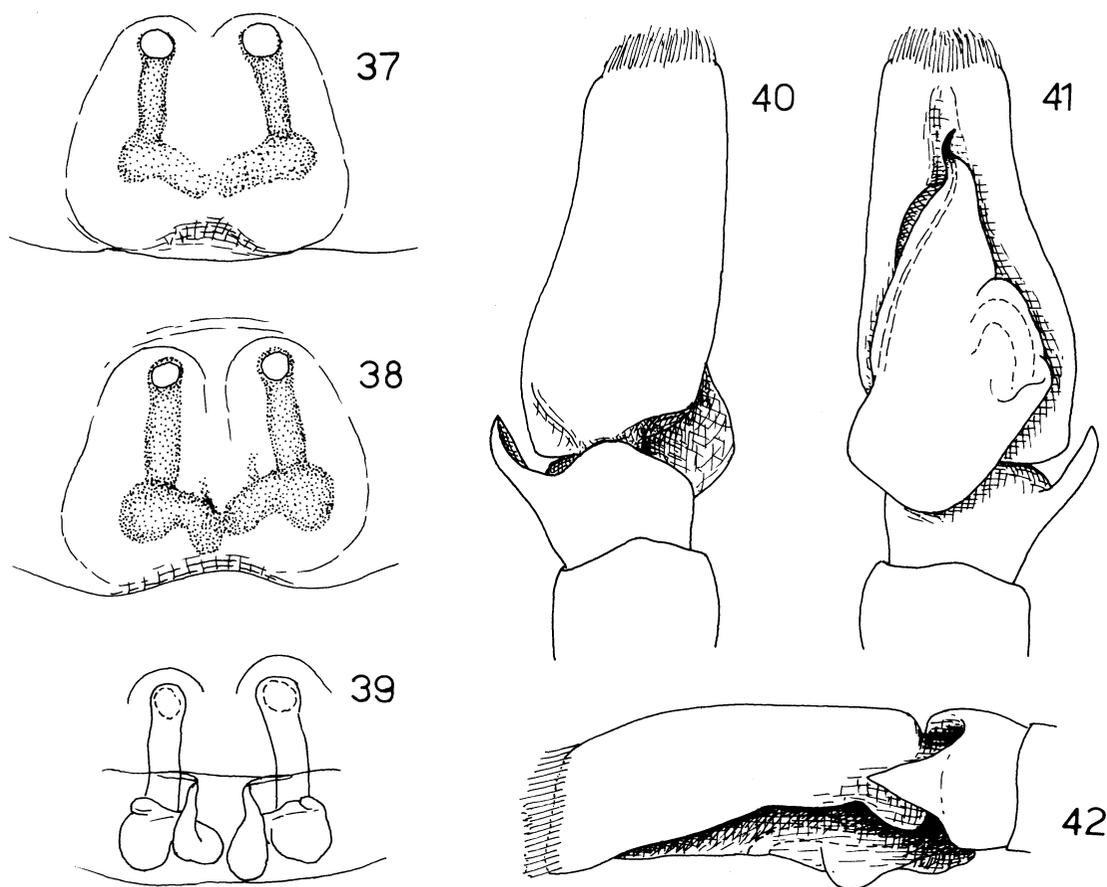
Simon (1937) in his identification key gave much importance to the shape of the female *Icius* copulatory canals: «Assez courtes, en massue, convergeant fortement en dedans» in *hamatus* and «très fines, beaucoup plus longues, droites et parallèles» in *congener*.

However, this distinction cannot be completely confirmed. *Hamatus*'s canals are of very variable length and can be as long as those from *congener* specimen; but they always have the narrow apical portion curving outwardly with the opening's diameter considerably smaller than that of the canal.

*Description*

Male

Cheliceral crest poorly developed. Pedipalp trochanter and femur rather dark in colour but lighter at distal portion. Patella on the whole light but dorsally darker. Tibia and tarsus darker than patella. Tarsus lighter at apical region. Elongate triangular tibial apophysis (Fig. 2, 40-42)



**Figg. 37-42.** Male pedipalp and female copulatory apparatus of *I. congener*: epigynum seen ventrally without KOH treatment (37-38) and dorsally after the treatment (39); tibia, tarsus and bulb seen dorsally (40), ventrally (41) and laterally (42).

directed outward while apex's short tip turns inward; thickening at its base without process (Fig. 2,42).

Embolum moderately curved and very small; distal portion of bulb much longer than wide with barely accentuated prominence (Fig. 2,41).

The specimen had lost almost completely its opistosomal hairs and thus only the chromatic pattern of the epidermis determined by the epidermal pigmentation can be seen (Fig. 45).

#### Female

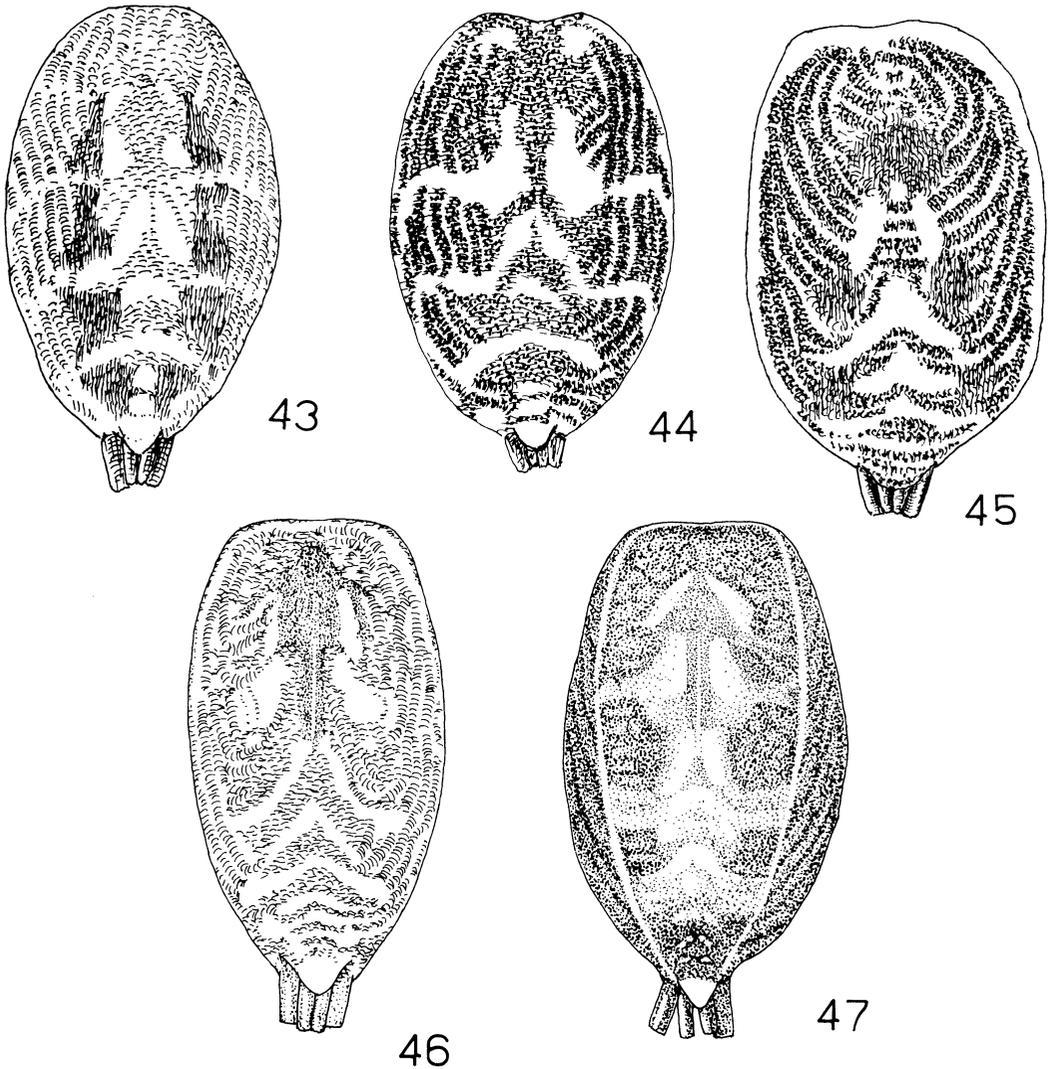
In one of the two specimen there are traces of the original blond and reddish hairs

on the opistosoma. The epidermis's colouration is evident: dark back with a central lighter pattern similar to that of the male but much more accentuated (Figg. 43-44).

The epigynum (Figg. 37-38) has an indented posterior margin. The anterior margin is marked in correspondence with the large openings of the copulatory canals. The canals (Figg. 14,37-39) are straight, parallel, widened at the opening that is in line with the canal.

#### Distribution

Simon (1937) states the presence of this species in Corsica, Italy, Sicily, Spain, and



**Figg. 43-47.** Colour pattern of the female (43-44) and male (45-47) opisthosoma of *Icius congener* (43-45), *I. crassipes* (46) and *I. insolitus n.sp.* (47). All the specimen have lost their hairs partially (43, 45) or completely (44, 46-47).

Algeria. The material from his collection studied by us is entitled «Southern Gaul» for the male and no indication into the tube containing the numerous females. Prószyński (1976, map 96) ascertained their presence also in north Africa. If we consider reliable the citations based on the identification of males, its presence could also be considered sure in the Italian peninsula, and Sardinia.

Therefore, its distribution gravitates around the western Mediterranean.

***Icius subinermis* Simon 1937**

*Icius subinermis*: Simon 1937 p.1216-1217, Figg. 1945, 1947 (M,F)

*Icius subinermis*: Bonnet 1957, p. 2284

*Icius subinermis*: Prószyński 1976 pp. 72, 154, 186, map 98, Figg. 234, 399-402 (M,F)

*Icius subinermis*: Andreeva et. al. 1984 p. 355 (M, F)  
*Icius subinermis*: Prószyński 1990, p. 183 (n. 1850)  
*Attus striatus*: Simon 1868, p. 566, Pl. 2, Fig. 3 (M)  
*Attus notabilis*: Simon 1871, p. 183  
*Icius notabilis*: Simon 1876, p. 57  
*Icius notabilis*: Roewer 1954, p. 1220  
*Icius notabilis*: Kraus 1955 p. 392 Fig. 37-39 (M,F)

*Examined material:*

Paris Museum: 893 *Icius subinermis* E.S. Gallia merid. ♂ MM, 1juv.; 25582 *subinermis* E.S. 21 FF (without locality); 25700 *congener* E.S. FF. (partim: 2 FF)

Sizes: males 3 - 4,1; females 4,1 - 5,9

The name *subinermis* was given by Simon in his posthumous publication to a species previously identified by him as *Icius notabilis* C.L.Koch. In fact, he had reached the conclusion that this taxon (*notabilis* sub *Icelus*) in reality corresponded to the O of *Icius hamatus* (*Marpissa hamata* in Koch 1846).

The history of the synonyms pertaining to this species is particularly complicated. In 1868 Simon described the male and female specimen attributed to *Salticus erraticus* Lucas. Since he had transferred the taxon to *Attus*, Simon changed its specific name to *lucasi* since *erraticus* was preoccupied by *Attus erraticus* Walckenaer (now *Euophrys erratica*).

In 1871 (p.183) Simon states this species is synonym of *notabilis* C.K. and thus dropped the name *lucasi*.

The specific name *notabilis* is maintained in Simon's work of 1876 (p. 57) in which he provides the first keys for the identification of *Icius* in France. It is probable that subsequent citations of several A.A. referring to *Icius notabilis* are based on this work.

From 1937, as already stated, the species has assumed its present name. However, in Roewer's catalog it was termed *Icius notabilis* (Simon 1871). According to us this choice is not justifiable and in any case creates confusion. Prószyński 1990 mentions it under the name *subinermis* (n. 1859, p. 183).

This species is clearly distinguishable

from other species due to the male pedipalp and bulb and by the female epigynum and copulatory canals.

As previously explained, on the basis of the bulb drawing, the «*Attus striatus* Clerck» cited by Simon 1868 must be attributed to this species.

*Description*

Male

The cheliceral crest is poorly developed. Pedipalp femur is dark except for the distal portion that is light in colour. At the base, the tarsus is darker than the tibia. The tibial process (Fig. 3, 51-53) is small, directed outwards and with a sharp apex bent forward; thickening at its base with a process barely visible. The embolus is short and uniformly curved. The distal portion of the bulb (Fig. 3, 52) is about as long as it is wide with a barely noticeable apical prominence.

The dorsal pattern of the opistosoma can be seen in Fig. 57- 58.

Female

The dorsal pattern of the opistosoma is shown in Fig 54- 56.

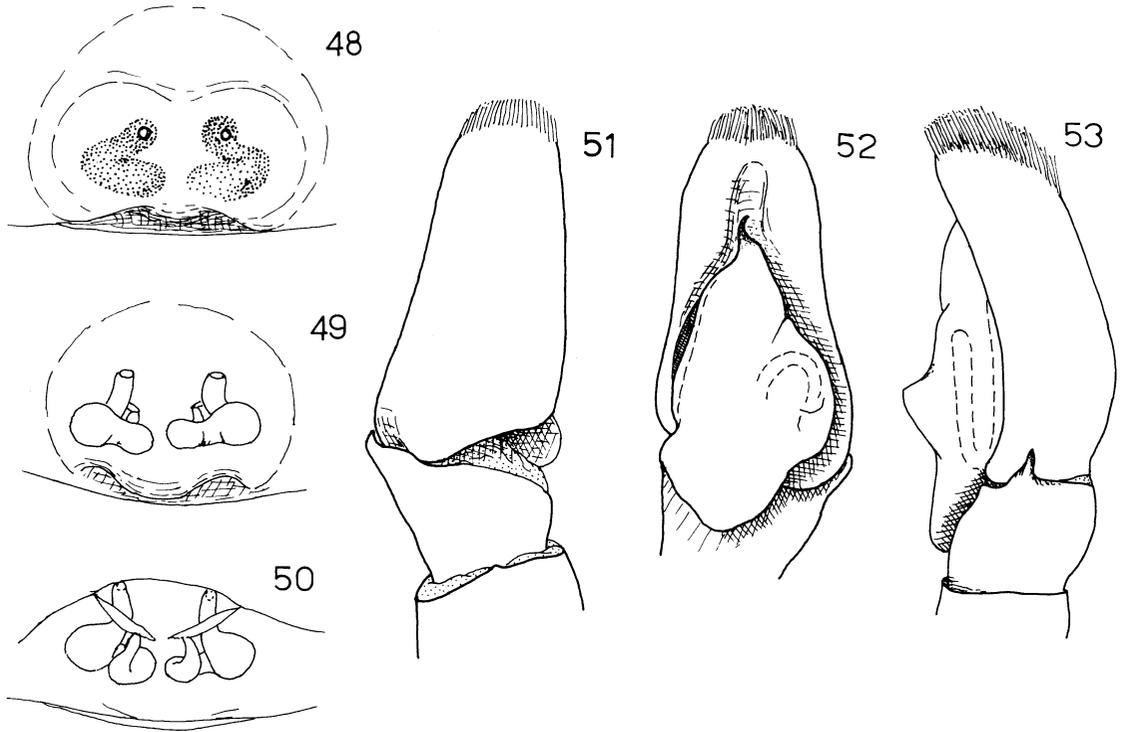
The posterior margin of the epigynum is strongly convex; the copulatory canals (Fig. 15, 48-50) are short and with a variable slant.

*Distribution*

According to Simon (1937), this species is present in all the western Mediterranean region. Prószyński (1976) records with a question mark the citation for the Iberic peninsula (except for Catalonia), for North Africa and for Italy. The real distribution can be defined only after the re-examination of the material concerning the citations.

***Icius crassipes*** (Simon 1868)

*Attus crassipes* sp. nov.: Simon 1868 p.574 (MF)  
*Icius crassipes*: Simon 1876 p. 56 (M)



**Figg. 48-53.** Male and female copulatory apparatuses of *Icius subinermis*: epigynum without KOH treatment (48) and after the treatment (49, ventral view and 50, dorsal view); tibia, tarsus and bulb seen dorsally (51), ventrally (52) and laterally (53).

- Icius crassipes*: Simon 1899 p. 85  
 « « : Simon 1937 pp. 1216, 1264  
 « « : Roewer 1954:1219  
 « « : Bonnet 1957:2280  
 « « : Prószyński 1987 p. 47 Fig. M  
 « « : Prószyński 1990:181 (n.1830)

*Material examined:*

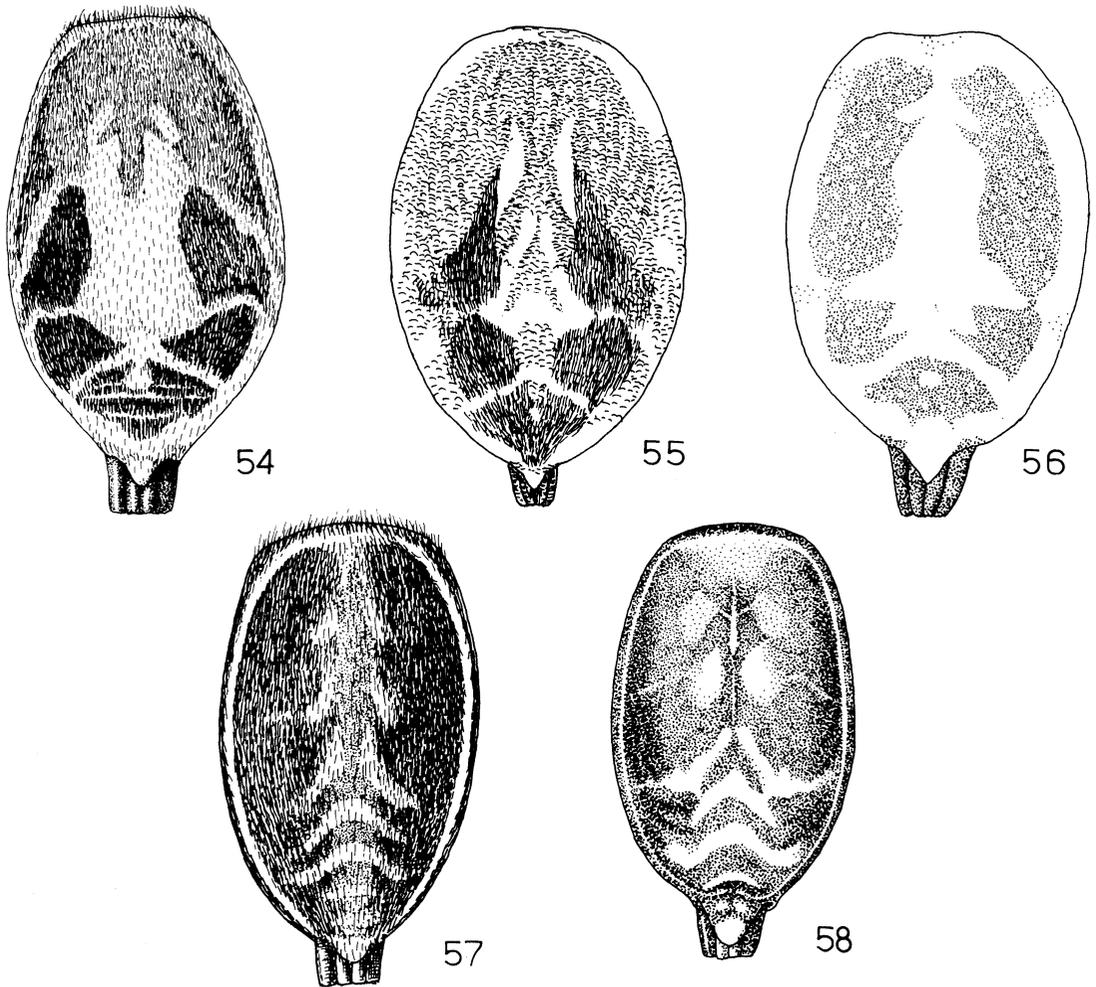
Paris Museum: 894 *Icius crassipes* E.S. Constantine!, 19 MM  
 Our material: Tunisia, 34 km da El Kef 14-4-1969, 1 M, 1 juv.

*Sizes:* males 3,9 - 4,6.

Simon (1868) describes this species as *Attus* based upon material from Spain but in a foot-note he specifies that the male is not «très-adulte». Subsequently (1876) Simon attributed it to *Icius* and included it among the species present in France. Simon describes the male's bulb as «bulbe atténué

dans les haut, prolongé par un stylum courbé aussi long que la portion retrécie». He also specified that the adult female was unknown. Therefore the description given in 1868 was probably referring to a juvenile female. Subsequently Simon cites it for Algeria (1899).

*Icius crassipes* is also mentioned in two foot-notes in Simon's posthumous publication (1937 p. 1216 and p. 1264). Here he states that it does not belong to French fauna since the material described in 1876 came from Spanish mountains. Simon also states the species is present in Spain and Algeria. He claims that the bulb of *crassipes* and that of *subinermis* are similar. This is surprisingly in contrast with the description of *crassipes* dating from 1876 (see the description of *Icius insolitus n.sp.*).



**Figg. 54-58.** Colour pattern of the female (54-56) and male (57-58) opistosoma of *Icius subinermis*. Some specimen have lost their hairs partially (55) or completely (56,58).

*Description*

**Male**

The cheliceral crest is moderately developed. The pedipalp joints are rather dark without accentuated colour variations. The tibial process (Figg. 4,59-61) is triangular and has a sharp apex that curves forward; thickening at its base with an evident process. The distal portion of the bulb (Figg. 4,59) is larger than it is long with a not very accentuated rounded apical prominence. It has a slender, falciform embolus that is approximately as long as the distal portion.

The first pair of legs have dark femurs that are lighter in colour at the tips. The patella is lighter; the tibia and metatarsus are slightly darker than the patella. The metatarsus is darker at the distal region than the tarsus. The other legs are light in colour.

The opistosoma pattern is shown in Fig. 46.

*Distribution*

*Icius crassipes*'s presence is established for Spain, Algeria and Tunisia.

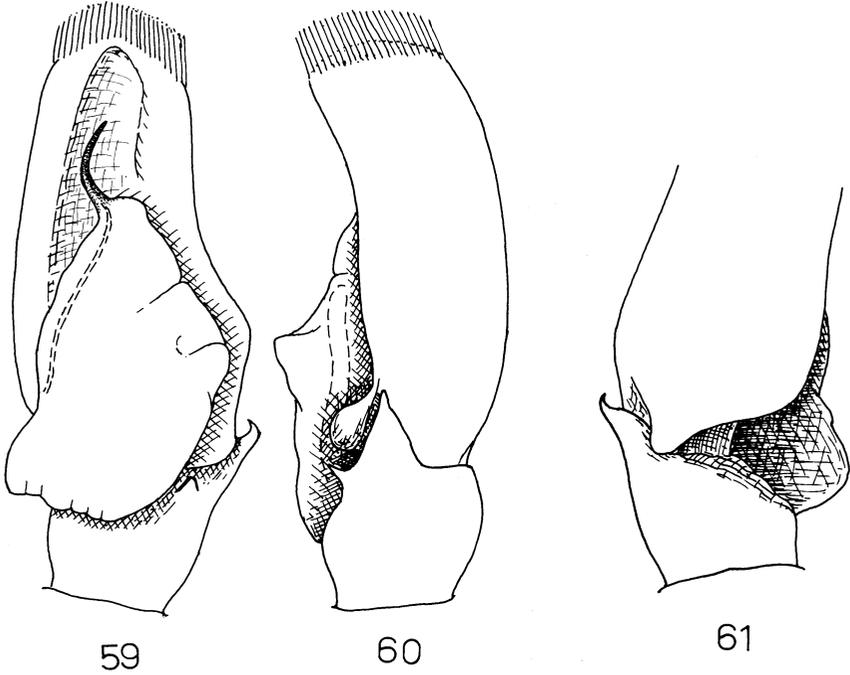


Fig. 59-61. Tibia, tarsus and bulb of the left male pedipalp of *Icius crassipes* seen ventrally (59), laterally (60) and ventrally (61).

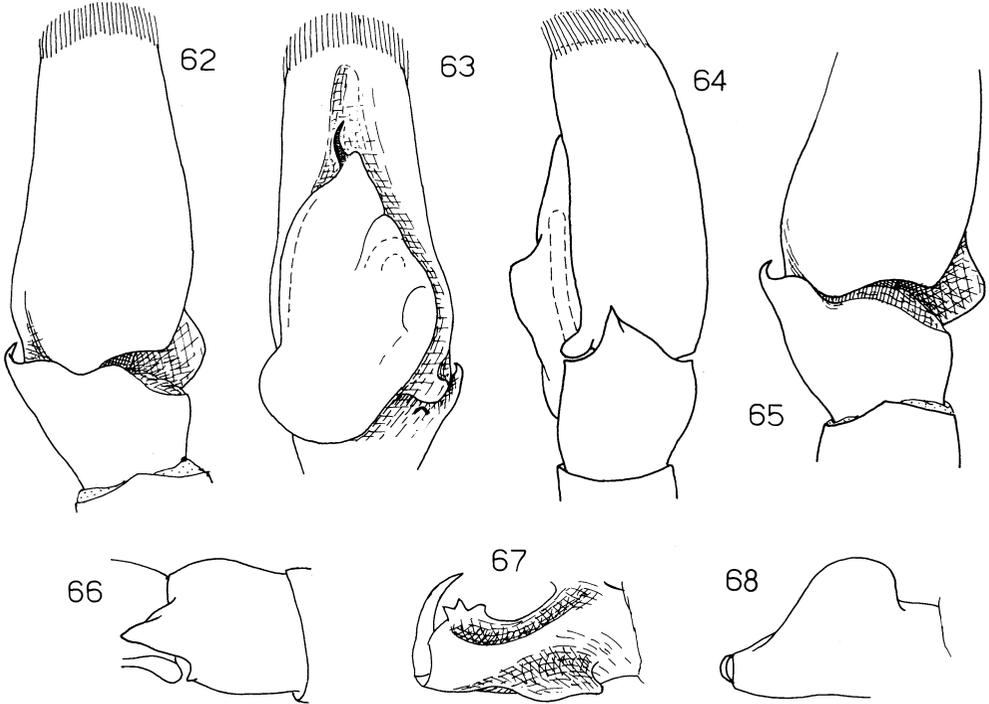


Fig. 62-68. Left male pedipalp and chelicera of *Icius insolitus* n.sp.: tibia, tarsus and bulb of two specimen seen dorsally (62, 65), ventrally (63) and laterally (64, 66); chelicera seen dorsally (67) and laterally (68).

***Icius insolitus* n. sp.**

*Icius crassipes*; Simon 1937 p. 1216, (*partim* ?)

*Material examined:*

Paris Museum: 894 *Icius crassipes* E.S. Constantine!, 4 MM

In the material identified by Simon as *crassipes* we found some specimen with bulbs fairly similar to that of *subinermis*, but they were quite different from all other *Icius* by the huge dimensions of the cheliceral laminar crest. Further on we describe these specimen as a new species. Perhaps it was to these that Simon referred to in his work of 1937.

*Description*

*Sizes:* males 5,1 - 5,4.

**Male**

The dark prosoma has its margin outlined by white hairs; there are also some dorsal areas with white squamose hairs: at the anterior margin, between the median and posterior eyes, behind the posterior eyes and in the middle area of the posterior portion.

The chelicerae (Figg. 17,67-68) have enormously developed laminar crests whose basal portion has a semi-circular shape.

The femour of the pedipalp is dark basally and light distally. The patella is lightly coloured while the tibia and tarsus are definitely darker. The tibial apophysis (Figg. 5, 62-66) is wide at the base with a curved, sharp and rather robust apex. The thickening at the tibia base has a process not very evident. The distal partion of the bulb (Figg. 5,63) is longer than the embolum and has an evident angular apical prominence. The embolum is short and moderately curved.

The first pair of legs is dark with a dorsal lighter area from the apical region of the patella to the tarsus. The other legs are uniformly light in colour.

The opistosoma has two considerable thin, white, latero-dorsal bands that extend from the spinnerets to the anterior margin

where they meet. These enclose a darker area marked by a constant pattern (Fig. 47) despite the variation in the shades of colour.

*Principal differential characters*

From all species: the cheliceral laminar crest enormously developed.

From *hamatus*: much smaller embolum and apical prominence; thickening at the tibial apophysis base with a poorly developed process.

From *congener*: distal portion of the bulb less tapered; more evident apical prominence; tibial process with a different shape (in *congener* there is no strongly curved apex); thickening at the tibial apophysis base with a process barely visible appreciable in profile (in *congener* not appreciable).

From *subinermis*: apical prominence of the bulb much more evident and embolum proportionally longer; tibial apophysis remarkably more robust and different in shape (in *subinermis* the distal portion is very narrow).

From *crassipes*: much shorter embolum; apical prominence much more angular (in *crassipes* it is rounded); thickening at the tibial apophysis base with a process barely visible (in *crassipes* it is prolonged and forms a spine).

From *simoni* n. sp.: much smaller embolum and more accentuated apical prominence; tibial apophysis with a different shape (in *Icius simoni* n. sp. it is short with a very short and not curved apical tip). The middle margin of the tarsal alveolus without a deep indentation.

***Icius simoni* n. sp.**

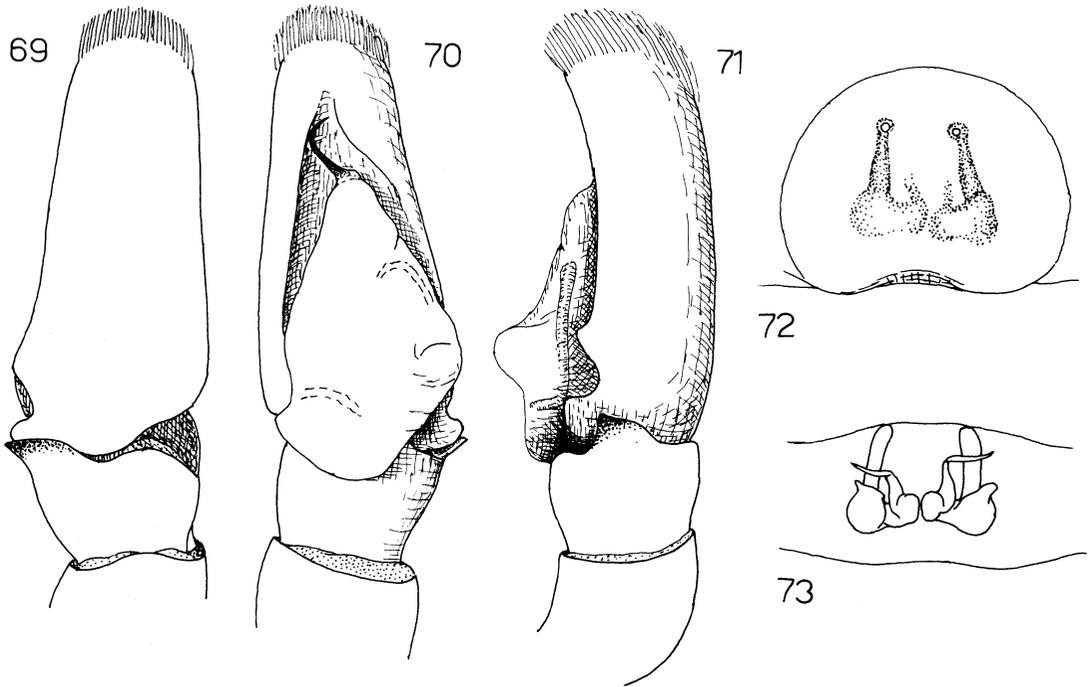
*Icius guyoni*: Prószyński, 1987, Table 23

*Material examined:*

Paris Museum: 5414 *Icius* n. sp. Bon Sauda Biskra Marnia 11 MM, 10 FF, 1 juv.

*Sizes:* males 3,7 - 5,5; females 4,1 - 6,6

Simon's label clearly indicated that he



**Fig. 69-73.** Male and female copulatory apparatuses of *Icius simoni* n.sp.: tibia tarsus and bulb seen dorsally (69), ventrally (70) and laterally (71); epigynum seen ventrally (72) without KOH treatment and dorsally after the treatment (73).

believed these specimen to belong to a new species. This is also our opinion and we dedicate it to Simon.

Regarding Prószyński's citation see the commentary to *Icius gyonii* Lucas.

### Description

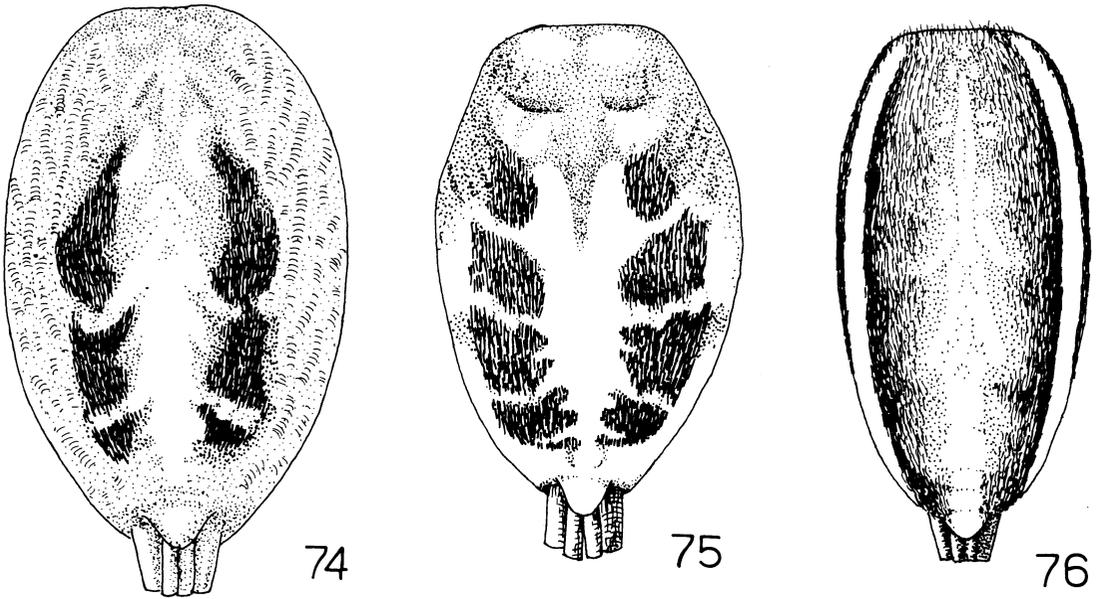
#### Male

Dorsally the prosoma is reddish while the periocular region of the lateral eye is black. The posterior area has two large light colored areas with shaded margins that are not equally visible in all the specimen. The lateral parts are light ventrally and dark dorsally. The margin is outlined by a darker line. White hairs are evident in the periocular region but are also present in the postocular region and laterally. Their original distribution is hard to establish since they went partially lost.

The pedipalp has a dark trocanter but for the rest it is light. Tibial apophysis (Fig. 6,69-71) directed externally with a wide base and the apex not curved forward; thickening at its base without process. The medial margin of the tarsal alveolus has at the base a strong indenture (Fig. 12,71).

The embolus is long and strongly curved in the distal portion; The bulb's distal portion (Fig. 6,70) is as large as it is long with a small and angular apical prominence.

The first pair of legs has a characteristic colouration: the coxa is light; the patella is anteriorly and posteriorly dark; the femurs are light with a laterally dark apical area and a medial one with a dark longitudinal strip continuing with a dark band that extends on all the other joints. Also the external spot on the femur continues with a longitudinal dark strip extending on all the other joints. So, they appear light



**Figg. 74-76.** Male (76) and female (74-75) opistosoma colour pattern of *Icius simoni* n.sp. The female specimens have partially lost their hairs.

dorsally and ventrally, and dark medially and laterally.

The other legs are light in colour.

The opistosoma (Fig. 76) is marked dorsally by a middle light strip that fades anteriorly and by two lateral light strips that meet anteriorly.

#### Female

The prosoma is similar in colouration to that of the male but on the average is lighter in colour. The legs and pedipalps are uniformly light. The opistosoma has a dorsal characteristic chromatic pattern (Figg. 74-75): a light medial strip with dark bands on the sides, interrupted by three complete or incomplete light bands (in one specimen there are two bands and in another four).

The epigynum (Fig. 72) has indistinct margins and is noticeably sunken in the center; the posterior margin is slightly indented. The copulatory canals (Figg. 16, 72-73) are thin, more or less convergent anteriorly and enlarged at the opening.

#### Principal differential characters

From all species: very accentuated indentation of medial margin of tarsal alveolus. Chromatic pattern of first pair of legs of male. Little sclerotized epigynum (however, females of *Icius crassipes* and *Icius sp.nov.* are not known).

From *hamatus*: apical prominence of the bulb barely visible. Embolus with different curvature; tibial process with different shape and thickening at its base without process; copulatory canals shorter and thinner with endings converging.

From *congener*: distal portion of bulb proportionally larger at base; embolus much longer; tibial apophysis with different shape. Female: copulatory canals very shorter and thinner.

From *subinermis*: embolus much longer; tibial apophysis with different shape; posterior margin of the epigynum indented instead of jutting out; copulatory canals longer and thinner.

From *crassipes*: embolus curved more

distally; tibial apophysis with different shape; thickening at its base without process.

From *Icius insolitus*: embolus clearly longer; apical prominence of the bulb not accentuated; tibial apophysis with different shape.

#### Acknowledgements

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Part of our material was collected during faunal researches by Prof. Domenico Caruso, Prof. Italo Marcellino and Dr. Franca Di Franco. Also to them go our thanks.

#### SUMMARY

The euro-mediterranean species of *Icius* reported in the Bonnet's, Roewer's and Prószyński catalogues are revised.

Many of them are of uncertain validity: *Icius striatus* (Clerck, 1758), *I. afolius* Frang. 1925, *I. foliosus* Frang. 1920, *I. miniamus* Frang. 1910, *I. angustatus* (Lucas, 1846), *I. erraticus* (Lucas, 1846), *I. guyoni* (Lucas, 1846), *I. boryi* (Lucas, 1846). Their status is discussed and it is proposed to consider them *nomina nuda*.

*I. hamatus* (Koch, 1846), *I. congener* Simon 1871, *I. subinermis* Simon 1937, *I. crassipes* (Simon, 1868) are valid species and are redescribed. In addition, two new species, *I. insolitus* and *I. simoni*, are described.

The performed character analysis demonstrates that the following characters have good differential value:

- embolus and distal portion of the bulb, male tibial apophysis and the thickening at its base, female copulatory canals for all species;
- laminar crest of male chelicera for *I. insolitus* n. sp.;
- indenture of the tarsal profile (male pedipalp) for *I. simoni* n. sp.

Intra- and interspecific variations of the colouration patterns are shown by drawings. Their utilization in taxonomy, however, requires a more extensive study.

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