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Remarks on Icius and Pseudicius (Araneae, Salticidae) mainly from Central Asia

[With 74 Text-figures]

Abstract. Uniting the genera Icius Simon, 1876 and Pseudicius Simon, 1885 is proposed and the name Pseudicius put into synonymy of the former. Type species and more characteristic species described in both genera are analysed. New species described: I. afghanicus sp. n. (Afghanistan), I. nepalicus sp. n. (Nepal), I. spasskyi sp. n. (Tadzik and Turkmenian SSR). Description of the unknown male of I. frigidus (O. P.-Cambridge, 1885) from Kashmir is added. Redescriptions and remarks are given on I. flavipes Caporiacco, 1935 (Karakorum), I. courtaldui (Brustowe, 1935) (Central Asia), I. kuleczynskii (Nosek, 1905) (Asia Minor), I. pseudicioides Caporiacco, 1935 (Karakorum), I. spiniger (O. P.-Cambridge, 1872) and I. picaceus (Simon, 1868).

The concepts of the genera Icius Simon, 1876 and Pseudicius Simon, 1885 are similar, and in practical application various authors described related species in either of them. Icius contains 20 Old World nominal species, Pseudicius 27; there are also apparently not related New World species: 9 referred to Icius and 6 to Pseudicius. Pending the full generic revision, some provisional setting in order of these species appears advisable, especially because of numerous new forms awaiting description and classification.

The present paper is based on specimens borrowed from or studied in the following collections. Brno — Moravské Museum — Afghanistan collection lent by Prof. F. Miller; Budapest — Természettudományi Múzeum — collections of L. Papp from Afghanistan and G. Topal from India; Florence — Museo Zoologico, Università, specimens from L. di Caporiacco collection lent by Mrs. S. Mascherini; Leningrad — Zoological Institute, Academy of Sciences of the USSR — collection of E. M. Andreeva; Oxford — Hope Department of Entomology, University — collection of O. P.-Cambridge; Paris — Muséum National
d'Historic Naturelle — collection of M. Hubert from Nepal; Vienna — Naturhistorisches Museum — Reimoser collection; Warsaw — Institute of Zoology, Polish Academy of Sciences. The authors wish to express their thanks to above mentioned institutions, persons and other members of the above institutions. This work was partly supported by Polish Academy of Sciences Research Project MR. II. 6.

Genus Icius Simon, 1876

Comparison of the type species — Icius nobilis (C. L. Koch, 1846)[ = Icius hamatus (C. L. Koch, 1846)] with the type species of Pseudictus — P. encarpatus (Walckenaer, 1802) yields superficial differences in general appearance and palpal organ (Figs. 1—2, 13), but simultaneously similarites in internal structure of epigyne (Figs. 5, 13).

Both species are, however, connected by a series of intermediate forms and can be considered now as extremes of certain lines within the same genus. It appears that most primitive forms occur in warm areas of Central Asia.

The comprehensive definition of the genus cannot be formulated as a final yet. It should be based simultaneously on palpal organ, internal structure of epigyne and external appearance. However, particular characters within each of these set of characters seem to change independently along different lines; from full set of characters, individual species may display only a few. Tibial apophysis is, for instance, usually biramous, rami being short but sometimes long, however either of rami may be reduced partially or totally and another may be overlooked. Embolus is characteristically undulating, but only in some species, bulbous may be swollen or oval and narrow. Epigyne may have single shallow depression, two shallow depression or very distinct opening — one or two. There are usually sclerotized pockets, posteriorly and laterally, often barely visible, but sometimes they may be moved forward and very striking. Spermathecae are usually simple, copulatory canal simple, accessory gland openings distinctly developed but of moderate size. In some species, however, the canals are developed into very long, coiled or twisted structures and accessory glands openings changed into long and thick-walled tubes. That variation of structures is shown on enclosed drawings, additional variation shall be also presented in a paper now in preparation (Anreeva, Prószynski, in preparation) dealing, with series of 9 species from Bhutan and Nepal.

1 The type species and its senior synonym are quoted apparently correctly by Bonnet 1955—1956: 2281—2282, erroneously by Roewer 1954 who has mistaken the homonyms "nobilis" of C. L. Koch 1846 and of Simon 1871, the latter being synonym of L. subinermis Simon, 1937. That caused further confusion in systematics, including misclassification of Japanese Telamonia and Jotus into Icius, now transferred into the genus Phintella (Strand in Boessenberg et Strand, 1906) (Prószynski 1976 and in print).
Remarks on Icius and Pseudicius

Icius cinctus group

The group consists now of three species, two of which are new. The differences are small and best visible in the internal structure of epigyne, particularly in relative size of spermathecae. There are also distinct differences in external outlook of epigyne. The palpal organs differ in proportions and fine details of shape of some parts. The external appearance seems to be variable and depends largely on the state of preservation of specimens. As all our studied specimens are more or less changed, we cannot be sure of importance of some of observed differences. Generally, identification of these species may present difficulties and further studies on new specimens are needed.

There may be some more species, Mr. A. B. Nenilin (Tashkent) has called attention (private communication) to Marpissa ludhianensis Tikader, 1974: 205–206, ff. 1–3, apparently belonging to this group.

Icius cinctus (O. P.-Cambridge, 1885), comb. n.

Menemerus cinctus O. P.-Cambridge, 1885: 99;
Menemerus incertus O. P.-Cambridge, 1885: 100;


Body relatively long. Cephalothorax moderately long, low, flat and broad, like other species of Pseudicius and Icius. Brown with darker eye field, covered with inconspicuous adpressed whitish setae, sides paler brown or yellowish. Characteristic row of small round protuberances with stouter and short setae along and beneath the eyes laterally and white line of setae along dark ventral edge of carapace. Abdomen with three brownish grey transverse belts separated by two slightly narrower whitish yellow belts, anterior margin also white. There is also indistinct median longitudinal brown streak crossing these belts; it is practically invisible in darker coloured specimens but become more prominent when another parts of colour pattern gradually fade. Owing to fading there is a variety of colouration. Legs light yellow except anterior ones, brownish and stouter. Tibia I with four reduced short spines in distal half forming almost single line. Details of palpal organ are shown on Figs, 20, 23, 27; in practice they do not permit separation of the two species described below, but are very characteristic for the group of species. Epigyne is very characteristic for the group of species both in external and internal structure, which is rather special.
It is recognisable and differs from next species by slightly longer oval shape, devoid of median transversal depression, by position of copulatory openings whose rims do form transversal bar of the median dividing lamella (Fig. 36). The particularly striking difference is the relative size of spermathecae (Figs. 39, 41).

It appears that all studied specimens came from mountain valleys or localities near 800 m. while the next species was collected in lowland localities.

**Icius spasskyi sp. n.**


Material: 1 ♀ — holotype, 1 ♀ — paratype, 1 juv. — USSR, Tadjikistan, Tigrovaya Balka, staraya pristan, tugai (riverine forest), 1–3. IV. 1967, leg. ANDREEVA; 1♂ — allotype — USSR, Tadjikistan, Tigrovaya Balka, tugai, 6. VII. 1968, leg. ANDREEVA; 1♂ — paratype, same locality, from forest litter, 23. VII. 1968, leg. DOMRATCHEVA. All specimens coll. ANDREEVA — Zoological Institute, Leningrad; 1♂ — paratype — Turkmenian SSR, Murghab area, cotton field, V–VIII. 1971, leg. KAMALOV, coll. PRÓSZYŃSKI.

Species generally similar to the previous one, differing mainly in epigyne and its internal structure (Figs. 35, 38, 42) and to some extent in colour pattern of abdomen. The epigyne is broader, transversally depressed in the middle, with the copulatory openings separated from the median lamella. The spermathecae are particularly small. Palpal organs differ in fine details of shape and proportions (Figs. 22, 25, 26) but these are not sufficiently distinct to allow separation of specimens.

The specimens studied have abdomens faded in various degree which permits only assumptions that the original pattern of abdominal spots consists of darker transversal belts separated by lighter one. In females the darker belts seem to be broader than in *I. cinctus* and consist of small darker dots which give them a mottled appearance, partly hidden under long setae (Fig. 32). Males have also a median streak, more prominent on faded specimens, but usually thinner than on Fig. 29. Juvenile colouration, resembles adult male of *I. afghanicus*.

Cephalothorax paler brown than in previous species, legs resemble the legs I in studied ♀♀, paler.

The species needs further studies on fresh specimens and possibly biological studies on alive specimens.

**Icius afghanicus sp. n.**

Figs. 1–4. *Icius hamatus* — type species of the genus *Icius*: 1 — external appearance; 2–3 — palpal organ, note biramous apophysis; 4 — palpal tibia with prominent dorsal ramus of apophysis, note presence of large scales.
Figs. 5–7. Internal structure of epigyne in *I. hamatus* (5) and palpal organ in *I. subinermis* (6–7), note uniramous apophysis.
Figs. 8–11. *Icius subinermis*: external appearance (8); chelicera in posterior and anterior views (9–10) and epigyne (11).
Figs. 12–14. Type species of the genus *Pseudicius* — *I. encarpatus*: 12 — palpal organ, dorso-lateral position, note minute tooth ventrally on apophysis, possibly vestige of ventral ramus; 13 — internal structure of epigyne; 14 — cheliceral dentition.
*Ictius vulpes*

Figs. 17–19. Palpal organ (17,18), note single apophysis (entirely reduced vestige of the ventral ramus?); 19 – tibial apophysis, dorsal view.
Figs. 20–22. Palpal organ in *I. cinctus* (20), *I. afghanicus* sp. n. (21) and *I. spasskyi* sp. n. (22).
Figs. 23–25. Palpal tibia, dorsal view, in Icius cinctus (23), I. afghanicus sp. n. (24) and I. spasskyi sp. n. (25).
Figs. 26–34. Palpal organs (lateral view) and abdominal patterns in *Icius spasskyi* sp. n. (26, 29, 32), *I. cinctus* (27, 30, 33) and *I. afghanicus* sp. n. (28, 31, 34) (29–31 — males, 32–34 — females).
Figs. 35–37. Epigyne in *Icius spasskyi* sp. n. (35), *I. cinctus* (36) and *I. afghanicus* sp. n. (37).
Figs. 38–40. Internal structure of epigyne in *Icicus spasskyi* sp. n. (38), *I. cinclus* (39) and
*I. afghanicus* sp. n. (40).
Figs. 41–42. Striking differences in size and shape of spermathecae in *I. cinctus* (41) and *I. spasskyi* sp. n. (42).
Figs. 43–45. *Icius flavipes*: epigyne in ventral (43) and lateroventral (44) views as well as its internal structure (45).
Figs. 46–48. *Ictius spiniger*: epigyne (46) and palpal organ (47–48).
Figs. 49–51. *Ictius nepalicus* sp. n.: palpal organ and tibial apophysis in lateral and dorsal views.
Figs. 52–56. *Iesus Kulczyński*: palpal organ in lectotype (52–54) and epigyne in two paralectotypes (55–56).
Figs. 57–62. Comparison of palpal organ and tibial apophysis on *I. courtauldi* from Przewalski collection (57–58) and from Tadzikistan (59–60) and enlarged tibial apophysis of *I. pieaceus* from Bulgaria – ventral (61) and lateral (62) views.
Figs. 63–65. *Icius pseudicioides* with its elongated and coiled ventral ramus of apophysis and reduced dorsal ramus (63–64), palpal tibia, dorsal view (65).

Figs. 66–68. *Icius pseudicioides*: epigyne and its internal structure (66–67), 68 — separate spermatheca in different position.
Description of female

Characterised by external appearance of epigyne (Fig. 31) with posterior location of openings, smooth median lamella (septum), spermathecae much longer than in two remaining species (Fig. 40).

Cephalothorax paler than in other species — yellowish fawn or yellow with whitish adpressed setae, eye field darker. Abdomen mottled brownish grey with darker spots forming irregular lines; there are three characteristic dark spots in front of spinnerets (Fig. 34) consisting of dense dark brown setae, visible even on macerated specimens. They provide a good recognition mark of the species. There is a pair of similar but weaker pair of spots in front of these and a pair of indistinct paler spots in anterior one-third of abdomen. Ventrally abdomen pale yellow. Clypeus covered with dense and long white setae. Legs pale yellow, the anterior longer, stronger and darker.

Description of male

Palpal organ resembling two other species (Figs. 21, 24, 28) but differs by thinner apophysis rami, the whole apophysis turned more ventrally. The bulbus swelling smaller than in other species and the arching of embolus more gentle. Cephalothorax dark brown with black ventral margin of carapace. Abdomen brownish grey crossed with three pairs of thin white lines — two anterior slightly diagonally, the third transversal; that colouration resembles juvenile specimens found among other species of this group.

Icius flavipes group

Epigyne rather complicated with sclerotised pockets shifted into anterior position, and complex copulatory canals; palpal organ with rounded bulbus and embolus encircling it.

Icius flavipes Caporiacco, 1935


Description of female

General appearance resembling other Icius species. Cephalothorax moderately long, low, dorsally brownish, laterally gradually paler — yellow just above thin black marginal line. Eye field dark brown with anterior and lateral margins black; there is a line of characteristic darker round protuberances with stouter setae along and beneath eyes lateral. Cephalothorax covered with thin and short whitish setae. Abdomen moderately long, at present macerated and shrunken. Legs brownish fawn, anterior longer and more robust. Frontal aspect:
clypeus narrow, covered by dense white setae, eyes I surrounded with white setae contrasting with dark eye field (in that aspect are visible sparsely scatters white setae). Chelicerae light yellowish fawn; pedipalps thin light yellow with long white setae. Epigyne shown on Fig. 43, its internal structure in Figs. 44–45.

*Icius spiniger* (O. P-Cambridge, 1872), **comb. n.**

*Calticus spiniger* O. P-CAMBRIDGE 1872: 339;
*Attus spiniger*: O. P.-CAMBRIDGE 1876: 610;
*Pseudicus spiniger*: Simon 1906: 1173.


Epigyne of this species (Fig. 46) resembles *I. flavipes*, so there are reasons to expect that unknown yet ♀ of *I. flavipes* may be also to some degree comparable with ♀ of *I. spiniger* (Figs. 47–48). Specimens identified as *P. spiniger* and *P. rufithorax* in the REIMOSER collection are practically identical; it is unfortunately not known whether SIMON has seen and identified the latter specimen. The latter specimen has also a characteristic line of rounded protuberances beneath eyes lateral.

*Icius nepalicus* **sp. n.**


The general resemblance of this species to male of *I. spiniger* simultaneously with presence of some typical characters in palpal organ (biramous apophysis) absent in the latter give reason to describe this species here for comparison, *I. nepalicus* is very similar and closely related to *I. koreanus* (WESOŁOWSKA, 1981) male of which is described by BOHDANOWICZ and PRÓSZYNISKI (in preparation). It differs from that species by shorter embolus arising from different place on bulbous and by tibial apophysis bifurcating more distally and looking therefore somewhat shorter.

Bulbus round, embolus arises at the “16 hour” position (in comparison to watch’s dial) and makes only half a turn around the bulbous (Fig. 49). That arrangement of embolus is comparable with *I. spiniger*, where however the tibial apophysis is single and diverges from bulbous (Figs. 47–48). In *I. nepalicus* the tibial apophysis is directed more anteriorwards, closer to cymbium’s wall, there is a small bifurcation in its distal part (Figs. 50–51). Legs I longer and robust, tibia I with single spine. Female unknown.
Remarks on *Icius* and *Pseudicius*

**Icius kuleczynskii** group

Tibial apophysis rami always developed, usually of moderate size and in some cases reduced. Epigyne simple and their internal parts also simple.

*Icius kuleczynskii* (NOSEK, 1905), **comb. n.**


Palpal organ shown on Figs. 53–54, with simple arch of embolus and tibial apophysis dorsal ramus broad and divided by a shallow groove into two (Fig. 54) — which gives appearance of a triramous apophysis (Fig. 53). Epigyne in a form of shallow oval depression with a very indistinct median ridge, spermathecae apparently simple (as far as they can be seen through the wall), sclerotized pockets developed but not very conspicuous (Figs. 55–56).

Although geographically distinct, this species gives good basis for comparison of evolutionary trends within the genus.

*Icius courtauldi* (BRISTOWE, 1935), **comb. n.**


Note: The species has also been collected from the Soviet Central Asia by Mr. A. B. NENILIN (Tashkent), who was the first to identify it as *Pseudicius courtauldi* (personal communication from Mr. NENILIN).

Palpal organs of specimens studied are shown of Figs. 57–60 and they are very similar to original drawings of BRISTOWE. The colouration is faded now, particularly in PRZEWALSKI’s specimen. However, distribution, of light spots roughly corresponds with that in BRISTOWE’s Fig. 24 in Tadjik specimen, which has also the same number of reduced spines on tibia I — two; in PRZEWALSKI’s specimen there is diagonal line of four rudimentary spines on tibia I. None of these specimens has median white streak on cephalothorax, but both have remnants of marginal one and intensely white setae on clypeus.

*Icius picaceus* (SIMON, 1968)

*Attus picaceus* SIMON, 1868: 572;

*Pseudicius picaceus*: SIMON 1876: 45 et auct. seq.

Palpal organ strikingly similar to *I. courtauldi* from which it differs in stronger development of tibial apophysis: ventral ramus long and slightly coiling at the top, which gives it ventrally a hook-like appearance, dorsal ramus expands into a broad plate (Figs. 61–62). Abdominal pattern contrasting, with brown median broad longitudinal stripe followed on each side by white stripe. There is pair of small spots of white scales on anterior half of dark stripe in one specimen, in the second the same spots are devoid of setae and limited to paler yellowish pigmentation. Cephalothorax with white streak of setae in the fovea area.

*Icius pseudicioides* CAPORIACCO, 1935


Description of male

Cephalothorax brown, covered with short, adpressed white setae. Abdomen with faded remanants of reddish brown and white spots arranged into series of whitish reversed "V" marks posteriorly, the first and third longer; there is an irregular mosaic of spots in remaining parts of abdomen, with anterior angles darker and median stripe anteriorly paler. Clypeus very narrow — limited to a brown edge. Eyes I surrounded by single line of whitish setae (with a few fawn laterally). Chelicerae and pedipalps brown.

Palpal organ rather special with embolus resembling somewhat *Phintella*-species. The shape of tibial apophysis could be possibly compared with that in *I. pieacerus* described above. The very long ventral ramus of apophysis is twisted twice into a loose coil, dorsal ramus however may be considered plate-like but reduced in size to a small bent edge (Figs. 63–65).

Description of female

Externally resembling male, differing by dense fur of thick white setae on clypeus and addition of a few reddish setae to the surrounding of eyes I; chelicerae yellowish brown with pedipalps yellow. Epigyne with characteristic deeply carved notch in its posterior margin (with a triangular flap) and two large openings in the middle (Fig. 66). Copulatory canals and spermatothecae thick-walled, short and simple (Fig. 67–68).

*Icius frigidus* (O. P.-CAMBRIDGE, 1885), comb. n.


*Phlegra iciodies* SIMON, 1889: 334, syn. n.

*Icius iciodies* SIMON, 1901: 623.

Remarks on *Icius* and *Pseudicius*


Description of male

Cephalothorax moderately: long, low, flat; dark brown with paler median line along the thorax where it ends before reaching the hind margin (but reaches it in another specimen) and splitted on eye field into three irregular pale lines. Lower part of lateral surfaces slightly paler; clypeus narrow, dark, without contrasting setae. Eyes I surrounded by indistinct setae, brownish with a few whitish dorsally. Abdomen elongate, oval, pointed posteriorly, with white sides, two broad dark brownish grey, lateral dorsal bands with irregular median borders; there are diagonal lines of tiny yellow dots running through these dark bands. There is a median pale yellowish streak (in one specimen reduced posteriorly to a series of 3 separate reversed “V” marks) splitted anteriorly by a grey lancet-shaped median mark (in one specimen branching posteriorly) (Fig. 71). Spinnerets greyish fawn. Legs yellow with anterior one robust, longer and darker brown, with prolateral surface of femur I dark brown. Tibia I particularly long with reduced, very short spines — two retrolaterally and threlaterally (two of prolateral are close each other in the distal one-fourth of tibia). Body covered with setae, not scales. Characteristic row of protuberances — warts with setae beneath eyes lateral absent. Length of cephalothorax — 1.71, length of abdomen 1.98 mm. Palpal organ shown on Figs. 72–74.

Description of female

Generally similar to male but much lighter. Cephalothorax yellowish with two brownish streaks from eyes I lateral up to hindmargin of thorax. Abdomen — general pattern like in male but dark areas light greyish and areas yellowish white and dots much larger. Legs yellowish white with anterior fawn yellow and only indistinctly larger than remaining. Number of spines on tibia I as in male but their size normal. Clypeus, palps and chelicerae light yellow. Clypeus covered with dense white setae. Epigyne of the Kashmir specimen (No. 405) is shown of Fig. 70, internal structure of epigyne (Afghan specimen) on Fig. 69.

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STRESZCZENIE

[Tytuł: Uwagi o rodzajach Icius i Pseudicius (Araneae, Salticidae), głównie z Azji Środkowej]

Rodzaje Icius Simon, 1876 i Pseudicius Simon, 1885, liczące łącznie 47 gatunków nominalnych na kontynentach Starego Świata, oparte są na blisko spokrewnionych gatunkach typowych. Spowodowało to chaos w klasyfikacji gatunków, opisywanych bądź w jednym, bądź drugim rodzaju. Pracy sugeruje konieczność połączenia obu rodzajów i uznania nazwy Pseudicius za synonim nazwy Icius; nadto podano przegląd różnorodności form w obrębie rodzaju Icius oraz redeskrybowano gatunki słabo poznane lub zapomniane. Jako nowe opisano: Icius afghanicus sp. n. z Afganistanu, I. nepalicus sp. n. z Nepalu i I. spasskyi sp. n. z Tadżykistanu i Turkmenii.

РЕЗЮМЕ

[Заглавие: Заметки о родах Icius и Pseudicius (Araneae, Salticidae) в основном из Средней Азии]

Роды Icius Simon, 1876 и Pseudicius Simon, 1885, охватывающие в сумме 47 номинальных видов, встречающихся на континентах Старого света, основаны на близкородственных типовых видах. Это привело к хаосу в классификации видов, описанных как в одном, так и во втором роде. В работе выдвинута мысль о необходимости соединения обоих родов и признания названия Pseudicius за синоним названия Icius. Приведен кроме того обзор разнообразия форм в пределах рода Icius и redeskripcję słabo znanym i zanętalenym rodzajami. Как новые описаны: Icius afghanicus sp. n. z Afganistanu, I. nepalicus sp. n. z Nepalu i I. spasskyi sp. n. z Tadżykistanu i Turkmenii.