2001

DESCRIPTION OF *HAKKA*, A NEW GENUS OF JUMPING SPIDER (ARANEAE, SALTICIDAE) FROM HAWAII AND EAST ASIA

James W. Berry
Butler University, jwberry@butler.edu

Jerzy Prószyński

DESCRIPTION OF *HAKKA*, A NEW GENUS OF JUMPING SPIDER (ARANEAE, SALTICIDAE) FROM HAWAII AND EAST ASIA

Author(s): James W. Berry and Jerzy Prószyński
Source: Journal of Arachnology, 29(2):201-204.
Published By: American Arachnological Society
URL: http://www.bioone.org/doi/full/10.1636/0161-8202%282001%29029%5B0201%3ADOHANG%5D2.0.CO%3B2

2001. The Journal of Arachnology 29:201–204

DESCRIPTION OF *HAKKA*, A NEW GENUS OF JUMPING SPIDER (ARANEAE, SALTICIDAE) FROM HAWAII AND EAST ASIA

James W. Berry: Department of Biological Sciences, Butler University, Indianapolis, Indiana 46208 USA

Jerzy Prószyński: Muzeum i Instytut Zoologii PAN, ul. Wilcza 64 00-679 Warszawa, Poland

ABSTRACT. We describe a new genus for a jumping spider that was originally placed in the large genus *Menemerus* Simon 1868, from which the new genus is clearly different. They were later reclassified as *Icius*, then as *Pseudicius*, and still later as *Salticus*. These initial classifications were repeated by a number of authors. The distinctive features of the male, and somewhat ambiguous features of the female, do not fit any known genus; and this species is here assigned to the new genus ***Hakka***.

Keywords: *Hakka*, *Salticus*, *Menemerus*, Hawaii, Salticidae

Like many other elements of the Hawaiian Islands, the jumping spiders of the islands are poorly known. Much of the known fauna consists of genera whose origin can be traced from either Asia or North America. This paper discusses a species found in Hawaii that was previously known under several different generic names—from a few specimens only—from China, Korea and Japan. One specimen was recorded in Hawaii in 1923, and we have recently collected two more. It is not known whether they are incidental recent arrivals (although the three specimens were collected over a period of 74 years) or have populations established there.

Hakka new genus

Discussion.—Assigning these salticid spiders to a genus has always created a problem. Although they have never been described as a separate genus, they were originally placed in the large genus *Menemerus* Simon 1868 (Doenitz & Strand in Bösenberg & Strand 1906), from which they are clearly different. Prószyński (1976) reclassified them first to *Icius* Simon 1876, subsequently correcting himself and re-interpreting them as *Pseudicius* (Prószyński 1987). Wesolowska (1981) interpreted the structure of the epigynum as resembling the genus *Salticus* Latreille 1804 and described the female as *Salticus koreanus* Wesolowska. These initial classifications were later repeated by a number of authors. The fact is that the distinctive features of the male, and somewhat ambiguous features of the female, do not fit any known genus; and this species deserves delimitation to its own genus. There are no direct biological observations confirming the matching of males and females of this species; however, persistent interpretation of that matching by a number of authors deserves following until proven otherwise.

Diagnosis.—*Hakka* is a unidentate salticid with two prolateral cheliceral teeth, without patellar spines, and without lateral spines on metatarsi I and II. These same characters occur in the genera with which it has been confused—*Icius*, *Menemerus*, *Pseudicius*, and *Salticus*, but they do separate *Hakka* from many other salticid genera. The absence of stridulatory spines from the carapace and microspines from femur I, and presence of 5–6 ventral spines on tibia I clearly separate *Hakka* from *Pseudicius*. The latter has the stridulatory spines and, on tibia I, normally 0–3 spines that are usually much reduced in length and often thickened basally. *Pseudicius* differs also by having a long, flat, relatively narrow carapace, and large robust first legs with tibia I more-or-less swollen, and with unusually long trichobothria, usually bent at a distinct angle. From *Salticus*, *Hakka* is distinguished by the absence of elongate male chelicerae,

the presence of ventral spines on tibiae I and II, the elongate bulb of the male palp overlapping the tibia proximally, and the medium-long sinuous embolus (Figs. 3, 4). The epigynum is less sclerotized than in *Salticus*; and the epigynal ducts run forward from the copulatory openings, then turn back to the spermathecae (Figs. 6, 7). The typical *Salticus* color pattern of white lines of scale-like hairs is absent. *Icius* differs by having a proportionately longer, somewhat oblong carapace (shorter and more ovate in *Hakka*) and abdomen, the palpal bulb narrowing anteriorly, and a distinct color pattern, consisting in part of scale-like hairs. *Menemerus*, the genus in which *H. himeshimensis* was originally placed, has a flatter, broader cephalothorax and abdomen. Also, the male palp of *Menemerus* has the tibia and patella short and broad, often as broad as the cymbium, and a broad crescentic femur; the RTA is large, the embolar base wide and separated by a groove from the rest of the bulb: the embolus is accompanied by a membranous conductor-like portion. Epigynal openings lead directly into a bursa connected by a very short thick-walled duct to a second chamber. But in *Hakka* there is no membranous part in the male palp, and the bulb and epigynal ducts, as described above, differ strikingly.

Distribution.—Previously known from China, Japan, North Korea, and now, Hawaii.

Etymology.—Named for a group of Chinese people, members of which were brought to Hawaii as laborers on sugar cane plantations in the middle of 19th century (described in the book ''Hawaii'' by James Michener). For nomenclatorial purpose the name is considered to be female.

Type species.—*Menemerus himeshimensis* (Doenitz & Strand, in Bösenberg & Strand 1906).

Hakka himeshimensis (Doenitz & Strand) (in Bösenberg & Strand 1906) new combination
Figs. 1–7

Note: The type specimens, housed in Stuttgart, were destroyed during World War II.

Menemerus himeshimensis Doenitz & Strand, in Bösenberg & Strand 1906: 395–396, table 8, fig. 116; table 14, fig. 309.

Menemerus himeshimensis: Yaginuma 1970: 67; 1986a: 234, fig. 130.2.

Icius himeshimensis: Prószyński 1976: map 105.

Salticus koreanus Wesolowska 1981: 78, figs. 102–105 (Female holotype from North Korea: Nampho, prov. Phyongan-namdo, deposited at Muzeum i Instytut Zoologii, PAN, Warsaw, Poland, examined).

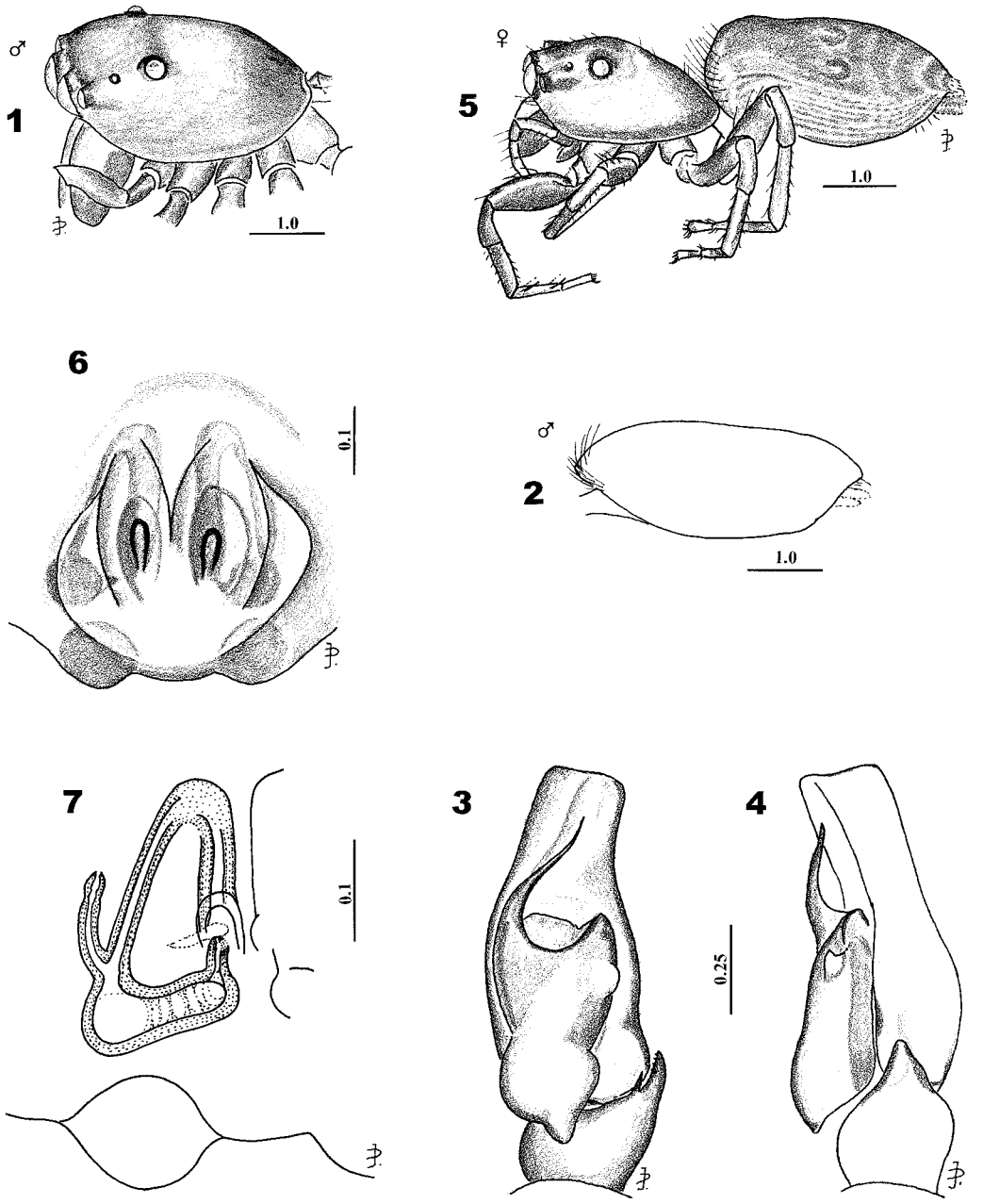
Icius himeshimensis: Bohdanowicz & Prószyński 1987: 66, 67, figs. 65, 66.

Pseudicius himeshimensis: Prószyński 1987: 51 (transfer from *Menemerus, Icius*).

Icius himeshimensis: Chikuni 1989: 151, fig. 22.

Pseudicius himeshimensis: Peng, Xie & Xiao 1993: 191, 192, figs. 667, 670.

Description.—*Male:* Measurements (n = 1): total length 6.98, length of eye field 1.32, height of cephalothorax 1.42, width of eye field at eyes I 1.80, width of eye field at eyes III 1.80, width of cephalothorax at eyes III 2.28, maximum width of cephalothorax 2.64, length of flat surface of cephalothorax 0.96, length of abdomen 3.72. Body and legs uniformly dark brown, without any contrasting pattern. Cephalothorax relatively broad (broadest posteriorly) and low; eye field rectangular, indistinctly shorter than broad, posterior sloping part of cephalothorax short. Covered with sparse, inconspicuous adpressed lighter setae; longer setae, now reddish, stand up diagonally beneath lateral eyes. There is no row of tubercles with spines beneath the lateral eyes. Eyes I large, the diameter of median eyes almost twice the size of the lateral eyes. Eyes I surrounded by colorless, slightly reddish setae; setae above eyes longer; clypeus very narrow with inconspicuous sparse short setae, with a sparse row of brown setae overhanging cheliceral bases. Chelicerae brown and robust; posterior margin with single conical tooth. Abdomen a flattened oval, as broad as cephalothorax and indistinctly longer, densely covered by lighter thin adpressed setae. Leg formula: I-IV-III-II; but legs of approximately equal length (leg I longest by about 20%); long and thin, their segments of similar width, with femora somewhat wider, but tibia I not broader than neighboring segment and not shortened (in which it differs from *Pseudicius*). Spines inconspicuous, shorter than sparse upright, reddish setae on the same surfaces; anterior tibia with only ventral spines, on anterolateral edge two short spines located in the anterior one third of seg-



Figures 1–7.—***Hakka himeshimensis*** new genus. 1. Male, dorso-lateral view of cephalothorax; 2. Male abdomen, laterally; 3. Palpal organ, ventrally; 4. Palpal organ, laterally; 5. Female, general appearance; 6. Epigynum; 7. Internal structure of epigynum.

ment, on posterolateral edge two short spines, normally spaced. Palpal organ with bulbus broad anteriorly and with anterior margin curved posteriorly (in which it resembles some *Pseudicius* of the *cinctus* group); embolus characteristic, elongate conical with wavy outline.

Female: Resembles male in appearance and size (Fig. 5); difference from male in leg formula (IV-III-II-I) is a secondary sex character,

found in many genera of Salticidae. Characterized by epigynum in a form of a concave plate, with slit-like copulatory openings in the middle, located inside indistinct oval depressions, separated by a thin, low ridge (Fig. 6). Internal structures of epigynum consist of a channel running anteriorly, then curving and running back, slightly diagonal and joining the transversely oriented narrow bag-shaped spermathecae, located in the posterior half of epigynum. There is a long chimney-like structure, presumed to be a scent gland pore (see Prószyński 1998, in press), located at the junction of channel and spermatheca. Walls of channels, spermatheca and scent gland sclerotized and of similar thickness. Interior walls of spermathecae with irregular, transverse ridges. Nutritive pores (see Prószyński 1998, in press) minute and indistinct, located near the top of conical distal part of spermatheca, near insertion of fertilization channel (Fig. 7). General plan and appearance of these structures superficially resemble those seen in various species of *Salticus*.

Distribution.—Japan, China and North Korea; this is the first record from Hawaii.

Material examined.—*Hakka himeshimensis* [''*Pseudicius*'' *himeshimemsis*], under stones, Necker Island, Hawaii, 1♂, 14 June 1923 (E.M. Bryan, Jr., AMNH). *Hakka himeshimensis* [labeled ''*Salticus koreanus* (Wesolowska 1981) s. *Pseudicius koreanus*''], on black lava beach, Anaehoomalu Bay, Hawaii County, Hawaii, 1♀, 15 February 1997 (J. & E. Berry). *Hakka himeshimensis* [''*Salticus*'' *koreanus* (Wesolowska 1981) s. ''*Pseudicius koreanus*'']*,* among beach rocks near Nailoa, Anaehoomalu beach, Hawaii County, Hawaii, 1♀, 17 February 1988 (J. & E. Berry). All specimens identified by J. Prószyński.

ACKNOWLEDGMENTS

We are grateful to Butler University for an academic grant to JWB, which permitted this work to be done. We are also grateful to the Indiana Academy of Science for support for travel. Dr. Joe Beatty was of immense help in writing the diagnosis of the genus.

LITERATURE CITED

Bohdanowicz, A. & J. Prószyński. 1987. Systematic studies on East Palaearctic Salticidae (Araneae), IV. Salticidae of Japan. Annales Zoologici, Warszawa 41(2):43–151, figs. 1–312.

Bösenberg, W. & E. Strand. 1906. Japanische Spinnen. Abhanglungen der Senckenbergischen Naturforschenden Gesellschaft 30:93–422, pl. III-XVI.

Chikuni, Y. 1989. Some interesting Japanese spiders of the families Amaurobiidae, Araneidae and Salticidae. Arachnological papers presented to Takeo Yaginuma, Osaka. Pp. 133–152, figs. 1–17.

Peng X., L. Xie & X. Xiao. 1993. Salticidae in China. Hunan Normal Univ. Press. 270 pp. 893 figs. [in Chinese, English summary].

Prószyński, J. 1976. Studium systematyczno-zoogeograficzne nad rodzina Salticidae (Aranei) Regionow Palearktycznego i Nearktycznego. Rozprawy Wyzszej Szkoly Pedagogicznej. Siedlce: Pp. 1–260, 450 figs., 218 maps.

Prószyński, J. 1987. Atlas rysunkow diagnostycznych mniej znanych Salticidae 2. Zeszyty Naukowe WSRP, Siedlce, 172 pp., illustr.

Prószyński, J. 1998. Description of new species of *Phlegra* (Salticidae, Araneae) from Israel. Israel Journal of Zoology 44:159–185.

Prószyński, J. In press. Salticidae of the Levant. Fauna Palaestina: Arachnida. The Israel Academy of Sciences and Humanities. Jerusalem.

Wesolowska, W. 1981. Salticidae (Aranei) from North Korea, China and Mongolia. Annales Zoologici (Warszawa) 36:45–83; 112 figs.

Yaginuma, T. 1970. The spider fauna of Japan (revised in 1970). Bulletin of the National Science Museum (Tokyo) 13:639–701.

Yaginuma, T. 1986. Spiders of Japan in Color. (new ed.). Hoikusha Publ. Co., Osaka. Pp. 1–350, figs. 1–135, Plate 65.

Manuscript received 5 April 2000, revised 30 January 2001.