

On the taxonomic position of the East Asian species of the genus *Ummidia* THORELL, 1875 (Araneae: Ctenizidae)

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Abstract: Original webspiders like Mygalomorphae or Mesothelae may cause some taxonomical problems, because the morphological characters usually used among Araneomorphae may not allow a clear distinction of these species. This is the case even in female receptacula where differences may be slight or a great variability may exist in a single population. A critical review on the history of synonymization and a comparison of the biology of East Asian *Ummidia* species leads to a new classification: The two species known from Japan and from Taiwan are members of the genus *Conothele*. The way they construct their short, superficial burrow is entirely identical with the species of *Conothele*. Members of the genus *Ummidia* differ considerably in their behaviour: they dig burrows in the soil.

Key words: spiders, Mygalomorphae, *Conothele fragaria* new comb., *Conothele taiwanensis* new comb.

Introduction

In many studies on the Japanese spider fauna the ctenizid *Ummidia fragaria* (DÖNITZ, 1887) is mentioned (CHIKUNI 1989, KIM *et al.* 1995, YAGINUMA 1986, YOSHIKURA 1987). But does this species really belong to the genus where it is placed now? The original genus name *Pachylomerus* was changed into *Pachylomerides* by STRAND (1934) in cause of preoccupation (BONNET 1954-1959) and was synonymized with *Ummidia* by DENIS (1938). On this occasion the type material of *U. fragaria* may not have been checked.

Material and Methods

East Asian species of *Ummidia fragaria* (DÖNITZ, 1887) (type material) and *U. taiwanensis* TSO, HAUPT, ZHU, 2003 from Nantou county (Taiwan) were studied and compared to undescribed material from Thailand (Thanboke Khoranee Nat. Park) and material of *Conothele arboricola* from Neu-Pommern / New Britain, i.e. an island close to the East coast of New Guinea. For comparative purposes representatives of *Ummidia aedificatoria* (WESTWOOD, 1840) and *U. audouini* (LUCAS, 1835) were examined. *U. fragaria*, *U. aedificatoria*, *U. audouini*, *U. taiwanensis* and *Conothele arboricola* are deposited in the Zoological Museum of Humboldt University (Berlin). *U. taiwanensis* is also deposited in the National Museum of Natural Science (Taichung, Taiwan).

Results

Originally a new Japanese ctenizid species was described under the name of *Pachylomerus fragaria* DÖNITZ, 1887. This genus name still exists as the subfamily name 'Pachylomerinae (RAVEN, 1985)'. ROEWER (1954) states that all species of the genus *Pachylomerus* are found under the name *Pachylomerides* since STRAND (1934) changed the name in that way in cause of preoccupation. It has to

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be kept in mind, that this genus was synonymized with *Ummidia* by DENIS (1938) (BONNET 1954-1959), a fact which was not mentioned by Roewer. In the past, various characters were pointed out to distinguish the genera *Ummidia* and *Conothele*. RAVEN (1985, p. 145) lists that trochanters I and II should be distinctly notched in *Ummidia*, but not in *Conothele*. This character was used by recent authors to classify a new species from Taiwan (Tso *et al.* 2003).

When observing the living spiders, it is quite obvious that certain habits are entirely different: The representatives of the genus *Conothele* construct a rather durable and short superficial home. It is always parallel to the surface of the ground and its silken sheet is covered with items of the surrounding, i.e. bark, moss, soil and debris. Instead, representatives of the genus *Ummidia* dig a burrow inside the soil, which is generally vertical to the soil surface and is several centimeters long.

Discussion

It has been questioned whether the establishment of two genera '*Ummidia*' and '*Conothele*' is necessary at all, as characters used to distinguish the two genera proved to be variable (MAIN 1985). Besides, both genera also have some characters in common, i.e. the dorso-distal bristles on the third metatarsus are situated in a row. Moreover, they are allopatric, *Conothele* being confined to South East Asia, New Guinea and the islands East of New Guinea, as well as Australia, while *Ummidia* appears in the New World and in the Mediterranean region.

The biology of *Conothele* was described by MAIN (1957), its burrow also by POCOCK (1898) and CROME (1962). By no means representatives of *Conothele* are rare spiders. Otto Heinroth collected plenty of specimens between December 1900 and May 1901 in what was at that time Herbertshöh, Neu-Pommern (now Gazelle Peninsula, New Britain). MAIN (1985) states that "within Australia, *Conothele* is the most widespread genus of Ctenizidae..."

Observations on the burrow digging behaviour of *Ummidia* were published by MOGGRIDGE (1873), PICKARD-CAMBRIDGE (1908), BACELAR (1927, 1933), BUCHLI (1962) and COYLE (1981). In all cases members of the genus *Ummidia* are described to dig a burrow in the soil. At present, the behavioural difference in burrow construction between the genera *Ummidia* and *Conothele* seems to be the best means to distinguish both genera. Herewith, I propose the following taxonomic alterations: *Ummidia fragaria* (DÖNITZ, 1887) = *Conothele fragaria* (DÖNITZ, 1887) comb. n. and *U. taiwanensis* TSO, HAUPT, ZHU, 2003 = *Conothele taiwanensis* (TSO, HAUPT, ZHU, 2003) comb. n. Moreover, this also fits to the geographic distribution of the genus which extends from Japan through Taiwan, South East Asia and New Guinea to Australia.

Key for identification of the two genera

1. Posterior opisthosoma soft and normal, Tibia III dorsally excavate.....2
2. Burrow in the soil, Mediterranean region and America.....*Ummidia*
- Short superficial burrow, parallel to the surface, on trunks, etc. Paired claws of legs I-III with one short tooth. Indo-Pacific region.....*Conothele*

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References

- BACELAR A. 1927. Notes aracnológicas. *Pachylomerus aedificatorius*. - *Bulletin Societè portuguesa Science naturale*, **19** (9): 99-103.
- BACELAR A. 1933. Sur les moeurs des *Nemesia* et des *Pachylomerus*. - *Bulletin Societè portuguesa Science naturale*, **11** (27): 291-294.
- BONNET P. 1954-1959. Bibliographia Araneorum. Analyse méthodique de toute la littérature aranéologique jusqu'en 1939. Vol. 2. Toulouse, Douladoure, 5058 p.
- BUCHLI H. 1962. Note préliminaire sur l'accouplement des araignées mygalomorphes *Nemesia caementaria*, *Nemesia dubia*, et *Pachylomerus piceus* (Ctenizidae). - *Vie et Milieu*, **13**: 167-178.
- CHIKUNI Y. 1989. Pictorial Encyclopedia of Spiders in Japan. Tokyo, Kaisei-sha Publishing Co., 309 p.
- COYLE F. A. 1981. Notes on the behaviour of *Ummidia* trapdoor spiders (Araneae: Ctenizidae): burrow construction, prey capture, and functional morphology of the peculiar third tibia. - *Bulletin of the British Arachnological Society*, **5** (4): 159-165.
- CROME W. 1962. Die Wohnröhre von *Conothele arboricola* Pocock nebst Bemerkungen über die Lebensweise dieser Falltürspinne (Araneae: Ctenizidae). - *Zoologischer Anzeiger*, **168**: 450-459.
- DENIS J. 1938. Sur la synonymie de quelques Araignées. - *Bulletin de la Société d'Histoire Naturelle Toulouse*, **72**: 379-389.
- KIM J. P., J. NAMKUNG, M. C. LEE, J. S. YOO. 1995. The spider fauna of Kanazawa and Itsukaichi, Japan. - *Korean Arachnology*, **11**: 83-91.
- MAIN B. Y. 1957. Occurrence of the trapdoor spider *Conothele malayana* (Doleschall) in Australia (Mygalomorphae: Ctenizidae). - *Western Australian Naturalist*, **5** (7): 209-216.
- MAIN B. Y. 1985. Further studies on the systematics of Ctenizid trapdoor spiders: a review of the Australian genera (Araneae: Mygalomorphae: Ctenizidae). - *Australian Journal of Zoology*, Supplement, **108**: 1-84.
- MOGGRIDGE J. T. 1873. Fam. Theraphosides. - In: Harvesting ants and trapdoor spiders. Notes and observations on their habits and dwellings. London, L. Reeve & Co., 89-145.
- PICKARD-CAMBRIDGE O. 1908. On some new and little known Araneida. - *Proceedings of the zoological Society London*, **1907**: 817-829.
- POCOCK R. I. 1898. Scorpions, pedipalpi and spiders collected by Dr. Willey in New Britain, the Salomon Islands, Loyalty Islands etc. - In: WILLEY A.: Zoological results based on material from New Britain, New Guinea, Loyalty Islands and elsewhere, collected during the years 1895, 1896 and 1897, by Arthur Willey. Vol. I. Cambridge, University Press, 121 p.
- RAVEN R. J. 1985. The spider infraorder Mygalomorphae (Araneae): Cladistics and systematics. - *Bulletin of the American Museum of Natural History*, **182**: 1-180.
- ROEWER C. F. 1954. Katalog der Araneae von 1758 bis 1940. Vol. 2. Bruxelles, Institut royale des Sciences naturelles de Belgique, 1751 p.
- STRAND E. 1934. Miscellanea nomenclatorica zoologica et palaeontologica VI. - *Folia zoologica et hydrobiologica*, **6** (2): 271-277.
- TSO I.-M., J. HAUPT, M.-S. ZHU. 2003. The trapdoor spider family Ctenizidae (Arachnida: Araneae) from Taiwan. - *Raffles Bulletin of Zoology*, **51**: 25-33.
- YAGINUMA T. 1986. Spiders of Japan in Color, New Edition. Osaka, Hoikusha Publishing House Co., 305 p.
- YOSHIKURA M. 1987. The biology of spiders. Tokyo, Japan Scientific Societies Press, 148 p.

Върху таксономичния статус на източноазиатските видове от род *Ummidia* THORELL, 1875 (Araneae: Ctenizidae)

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(Резюме)

Статията разглежда някои съществуващи таксономични проблеми при мигаломорфните паяци от род *Ummidia*. След критичен преглед на историята на синонимизирането на източноазиатските видове от рода и особено след изследване на тяхната биология, авторът стига до извода, че видовете *Ummidia fragaria* и *Ummidia taiwanensis* всъщност принадлежат към род *Conothele* и предлага новите комбинации - *Conothele fragaria* comb. n. и *Conothele taiwanensis* comb. n. Основание за това му дава най-вече фактът, че и двата вида конструират къси, повърхностни дупки, което е характерно за представителите на този род.