Arthropoda Selecta 17 (1–2): 105–110

Barylestis Simon, 1910 — first record in Asia with comments on its zoogeography (Araneae: Sparassidae: Heteropodinae)

Barylestis Simon, 1910 — первая находка в Азии и замечания по его зоогеографии (Araneae: Sparassidae: Heteropodinae)

Peter Jäger
П. Ягер

Arachnology, Research Institute Senckenberg, Senckenberganlage 25, 60325 Frankfurt am Main, Germany.
E-mail: peter.jaeger@senckenberg.de

KEY WORDS: new species, Myanmar, Thailand, disjunct distribution.
КЛЮЧЕВЫЕ СЛОВА: новый вид, Бирма, Таиланд, дизъюнктивное распространение.

ABSTRACT. *Barylestis saaristoi* sp.n. is described from two females from NW Thailand (Mae Hong Son Prov.; holotype) and from Myanmar (Karen/Kayin State; paratype). Female copulatory organs of *B. insularis* Simon, 1910 are illustrated for the first time, a diagnosis for the species is proposed. An extended diagnosis for the genus *Barylestis* is provided and relationships and zoogeographical aspects are discussed.

РЕЗЮМЕ. Описан новый вид *Barylestis saaristoi* sp.n. по двум самкам из СЗ Таиланда (провинция Mae Hong Son; голотип) и Бирмы (штат Karen/Kayin; паратип). Впервые приведены рисунки для самки *B. insularis* Simon, 1910 и предложен новый диагноз вида. Дан расширенный диагноз рода *Barylestis,* обсуждены его родственные связи и распространение.

Introduction

Barylestis Simon, 1910 was recognised as a purely African genus by Jäger [2002], after synonymising *Torania* Simon, 1886 with *Heteropoda* Latreille, 1804 [Jäger, 2001] and transferring African representatives formerly attributed to *Torania* to *Barylestis*. Presently nine *Barylestis* species are known from tropical Africa [Platnick, 2008]. The type species of the genus, *B. blaisei* (Simon, 1903), remains unrecognisable, as the type material could not be located (Leguin, pers. comm.). *Barylestis nigripectus* Simon, 1910 might be a junior synonym of *B. scutatus* (Pocock, 1903).

When examining material of the spider family Sparassidae in the Museo Civico di Storia Naturale in Genova, Italy, one single female from Myanmar was found, which was identified by the author as belonging to *Barylestis*. As at that time — 1996 — it was not known that representatives of this genus might occur in Asia, it was doubted that the locality data on the original label was correct and it was assumed that the label was probably mismatched. Therefore, the specimen was stored together with other *Barylestis* specimens, waiting for the time to be included in a revision. Recently, Dr Damir Kovac, curator for Coleoptera in the Research Institute Senckenberg, collected a second female from Northwest Thailand (Mae Hong Son Province), which confirmed the presence of this species in Asia. The search for the male in Thailand by D. Kovac in 2006 was not successful. Therefore, the two females are described in this paper as new species and comments on phylogenetic relationships of species and the zoogeography of the genus are provided.

Material and methods

All specimens are kept in 70% denatured ethanol and examined, drawn and measured with a Leica MZ 16 stereomicroscope equipped with a Leica camera lucida attachment. Internal duct systems of females were treated with 96% lactic acid. All measurements are in millimetres. Measurements of appendages are listed in the following order: total length [femur, patella, tibia, metatarsus, tarsus]. Variation of spination is given in round brackets within formula (=assymetrical variation) and behind formula in square brackets (=paratype). Parentheses within leg formula point to same leg lengths. Colouration is exclusively described from preserved material. Photos are made from preserved specimens in ethanol. Photos by P. Jäger. Size classes follow Jäger [2001: 14].

Abbreviations: ALE — anterior lateral eyes, AME — anterior median eyes, AW — anterior width of prosoma, OL — opisthosoma length, OS — opisthosoma, OW — opisthosoma width, PJ — subsequent number of Sparassidae, examined by Peter Jäger, PL — length of dorsal shield of prosoma, PLE — posterior lateral eyes, PME — posterior median eyes, PP — palpus, PW — width of dorsal shield of prosoma, RTA — retrolateral tibal apophysis.

Collections: MCSN — Museo Civico di Storia naturale, Genova, Italy, SMF — Senckenberg Museum Frankfurt, Germany (http://sesam.senckenberg.de/).

Taxonomy

Sparassidae Bertkau, 1872

Heteropodinae Thorell, 1873

Barylestis Simon, 1910

EXTENDED DIAGNOSIS. Representatives are distinguished by the following combination of characters from other Heteropodinae (cf. Jäger, 2002: 36): Cheliceral furrow in one species from Asia without denticles, in African species with denticles. *Males*. Embolus filiform, coiled around the tegulum (0.75–1.75 coils); conductor membranous, arising from tegulum in 1-o'clock-position, with tip of embolus situated close to conductor. RTA bipartite, ventral part extending distinctly retrolateral (in ventral view). *Females*. – Internal duct system with distinct lateral windings; posterior part of internal duct system ("spermathecae") situated close to the median line, mostly touching each other; lateral lobes of epigynum in most species with sublobal pockets (may be prominent or reduced, sclerotised or membranous). At least in three species the typical spination pattern of MT IV ("3036") is changed (=reduced) in comparison to other Heteropodinae into "3024". Teeth of female palpal claw in contrast to other Heteropodinae shorter, not distinctly bent [cf. Jäger 2004, but cf. *B. occidentalis* fig. 27 herein].

NOTE. Although cheliceral denticles are missing in the new species from Asia, which are considered diagnostic for Heteropodinae in combination with other characters (Jäger, 1998, 2002), it is considered belonging to this subfamily, as all other characters are congruent with other Heteropodinae and as it appears closely related to *Barylestis* spp. known from Africa according to its copulatory organs. Absence of denticles is interpreted as secondary loss within this Asian lineage.

Barylestis saaristoi **sp.n.**
Figs 1–14, 18.

TYPE MATERIAL. Holotype ♀, Thailand, Mae Hong Son Province, Soppong, Damir Kovac leg. July 2005 (SMF 58342). Paratype: ♀, Birma, Karen/Kayin State, Careni Asciuii Ghecu (MCSN).

ETYMOLOGY. In honour of Dr Michael Saaristo for his contributions to arachnological knowledge in taxonomy and systematics; name in genitive case.

DIAGNOSIS. Large Heteropodinae. V-shaped epigynal pit (Figs 1, 4); sublobal pockets distinct, covering half diameter of lateral coils of internal duct system (Fig. 2); tips of lateral coils pointing mediad; first part of copulatory ducts slender, running parallel (Figs 2, 5).

DESCRIPTION. Female [measurements of holotype first, those of paratype in brackets]: PL 9.6 [11.0], PW 10.4 [12.1], AW 5.9 [7.2], OL 9.1 [13.2], OW 8.4 [12.3]. Eye diameters: AME 0.69 [0.79], ALE 0.73 [0.80], PME 0.46 [0.52], PLE 0.71 [0.83]; eye interdistances: AME–AME 0.31 [0.35], AME–ALE 0.30 [0.37], PME–PME 0.81 [1.02], PME–PLE 1.05 [1.41], AME–PME 0.66 [0.75], ALE–PLE 0.82[0.97], clypeus AME 0.68 [0.91], clypeus ALE 0.71 [0.80].

Spination of palp and legs: Pedipalpus 131, 101(2), 2121, 1013(2) [131, 101, 2121, 1013]; Femur I–III 333, IV 331 [I–II 333, III 333(2), IV 331]; Patella I–III 101, IV 000; Tibia I–II 2226, III 2126, IV 2014 [I–II 2226, III 2116, IV 2014]; Metatarsus I 1014, II 1014(3), III 2014, IV 3024 [I–II 1014, III 2014, IV 3024].

Leg formula: 21(34) [2134]. Measurements of palp and legs: Pedipalpus 12.2 (3.8, 2.0, 2.4, -, 4.0), leg I 33.0 (9.2, 4.6, 8.6, 8.0, 2.6), leg II 37.6 (10.7, 4.8, 10.3, 8.8, 3.0), leg III 29.5 (9.1, 3.6, 7.6, 6.9, 2.3), leg IV 29.5 (9.1, 3.2, 7.6, 7.0, 2.6) [Pedipalpus 14.3 (4.1, 2.5, 3.2, -, 4.5); leg I 37.6 (10.6, 5.1, 9.7, 9.0, 3.2), leg II 42.4 (12.0, 5.3, 11.6, 10.0, 3.5), leg III 34.9 (10.6, 4.4, 9.2, 8.0, 2.7), leg IV 33.8 (10.3, 3.8, 8.7, 8.1, 2.9)]. Chelicerae with 3 [3(2)] anterior and 4 [4] posterior teeth. Cheliceral furrow without denticles. Palpal claw with 7 [6] teeth.

Copulatory organ as in diagnosis. Epigynal field roughly triangular with anterior bands separated and divided into 2–3 patches. Small pits present in the posterior part of epigynum close to the median line. Lateral coils appearing as circular patches through the cuticle in a ventral view (Figs 1, 4). Copulatory opening situated at the anterior end of the "V", first part of internal duct system separated by three times of its width, running parallel posteriorly, turning abruptly at 180°, leading to characteristic lateral coils. The latter running distinctly more than 200° before turning, again, at 180°, repeating the coil in the opposite direction before ending in median part (functional spermathecae?) and fertilisation ducts. Glandular structure pointing anteriorad (Figs 2–3, 5–6).

Colour: Cuticle dark reddish-brown, but covered with long and dense bright hairs, giving a very hairy appearance (Figs 13–14). Eye region a bit darker than rest of dorsal shield of prosoma. Hairs at prosoma and legs white to cream, distal lateral scopulae reddish golden brown. Pedipalpi less hirsute than legs. Dorsal opisthosoma with three broad transversal bands: the anterior cream, the median white, the posterior reddish cream and distinctly separated from the median by a sharp line with a median anteriorad indentation. Heart patch a bit darker than surroundings, four lateral dark patches in anterior half (Fig. 13). Ventral prosoma, i.e. sternum, labium, gnathocoxae, and coxae dark reddish brown to black. Distal parts of labium and gnathocoxae as well as posterior part of coxae IV brighter reddish brown, similar to ventral opisthosoma anterior to epigastric fold and spinnerets. Rest of ventral opisthosoma cream to brown with two dark paramedian lines, forming almost a circle, consisting of muscle sigillae (Fig. 14).

Male unknown.

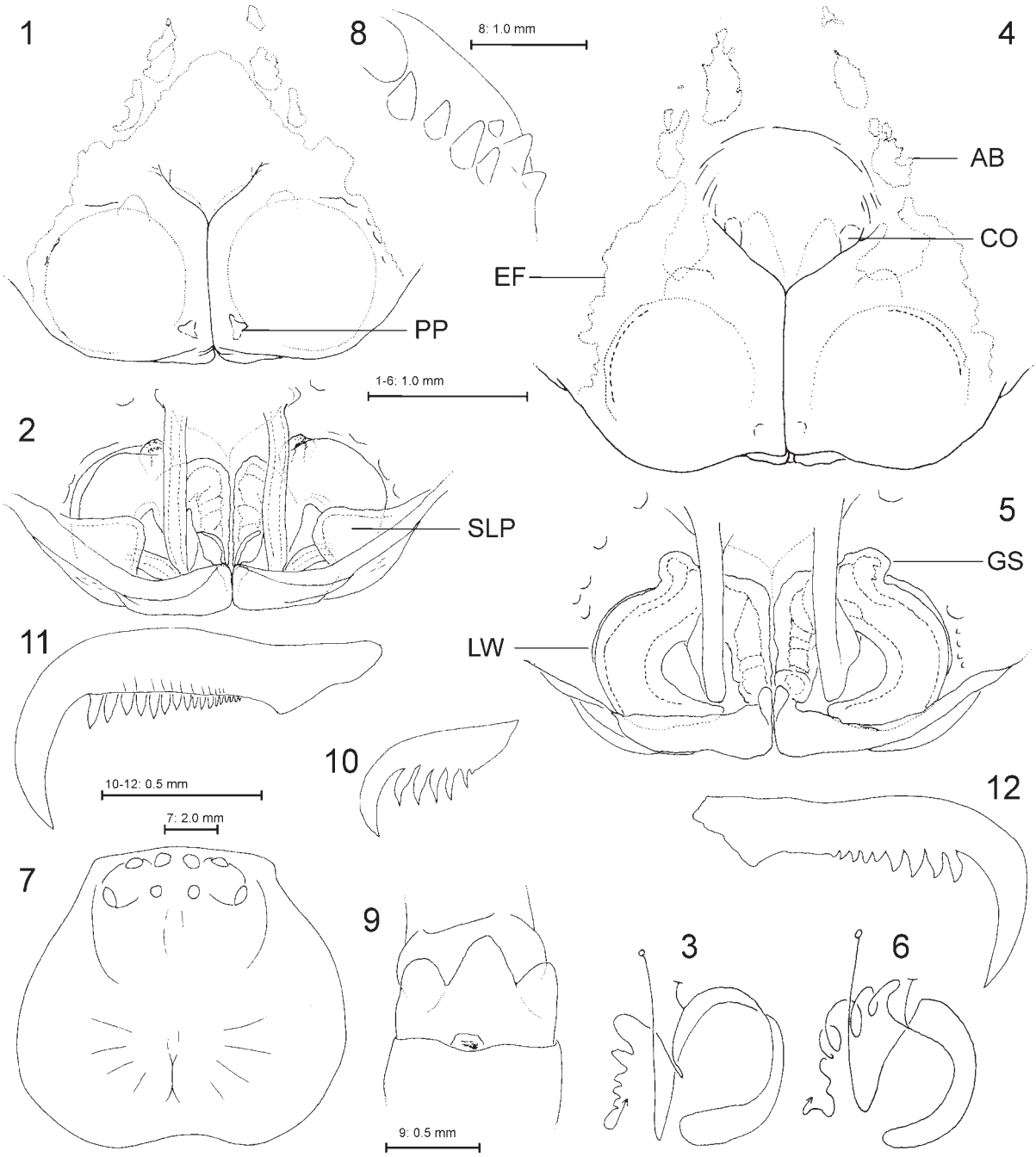
TAXONOMIC REMARKS. *Barylestis saaristoi* sp.n. belongs clearly to the genus *Barylestis*, although exhibiting some unique features: denticles in the cheliceral furrow are missing, which is unique for the whole subfamily Heteropodinae. Spines are reduced as in congenerics from Africa.

DISTRIBUTION. NW Thailand (Mae Hong Son Province; type locality), Myanmar (Karen/Kayin State).

Barylestis insularis Simon, 1910
Figs 15–18.

B. i. Simon, 1910: 340 (Description of ♀: holotype ♀, MNHN 1737: 24236, Fernando Poo [=Bioko], Basilé, PJ 2755; examined). — Jäger, 2002: 36.

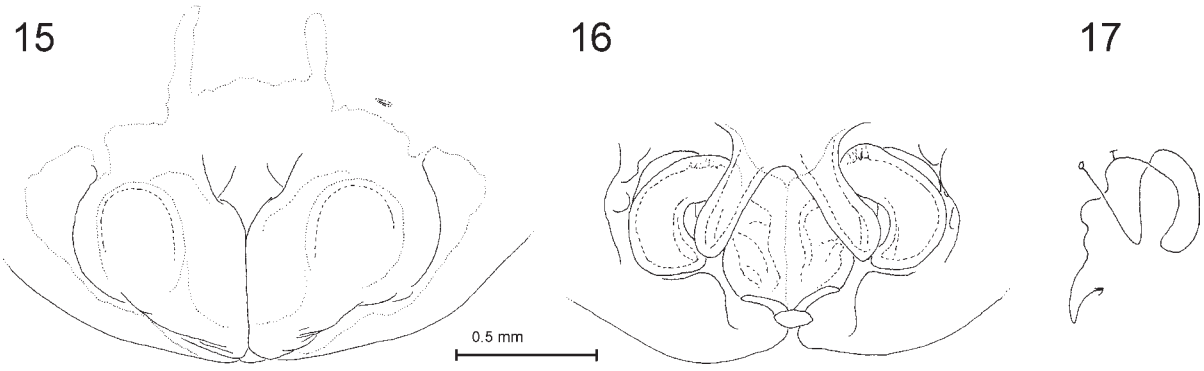
DIAGNOSIS. Medium sized Heteropodinae. According to female genitalia close to *Barylestis scutatus*. Differing mainly in the copulatory opening region having in the present species a shared atrium for both ducts, whereas in *B. scuta-*



Figs 1–12. *Barylestis saaristoi* sp.n., females (1–3 Holotype; 4–12 Paratype): 1, 4 — epigynum, ventral view; 2, 5, — internal duct system, dorsal view (5 sublobal pockets omitted); 3, 6 — schematic course of internal duct system, dorsal view; 7 — dorsal shield of prosoma, dorsal view; 8 — right chelicerae, ventral view; 9 — left leg I, trilobate membrane, dorsal view; 10 — claw of left pedipalpus, retrolateral view; 11–12 — claws of left leg I (11 retrolateral claw, retrolateral view; 12 — prolateral claw, prolateral view). Abbreviations: AB — anterior bands of epigynal field; CO — copulatory opening; EF — margin of epigynal field; GS — glandular structures of internal duct system; LW — lateral winding of internal duct system; PP — posterior pits of lateral lobes; SLP — sublobal pockets.

Рис. 1–12. *Barylestis saaristoi* sp.n., самки (1–3 голотип; 4–12 паратип): 1, 4 — эпигина, снизу; 2, 5 — вульва, сверху; 3, 6 — схематичный ход сперматеки, сверху; 7 — карапакс, сверху; 8 — правая хелицера, снизу; 9 — левая нога I, трёхчленная мембрана, сверху; 10 — коготок левой пальпы, ретролатерально; 11–12 — когтики ноги I (11 ретролатеральный коготок; 12 пролатеральный коготок). Сокращения: AB — передние anterior пятна пластинки эпигины; CO — копулятивные отверстия; EF — граница эпигинной пластинки; GS — железы; LW — боковой виток сперматеки; PP — задние ямки боковых пластинок; SLP — нижние карманы.

Figs 13–14. *Barylestis saaristoi* sp.n., holotype female in ethanol: 13 — dorsal view, 14 — ventral view.
Рис. 13–14. *Barylestis saaristoi* sp.n., голотип: 13 — сверху, 14 — снизу.



Figs 15–17. *Barylestis insularis* Simon 1910, holotype female: 15 — epigynum, ventral view; 16 — Internal duct system, dorsal view; 17 — schematic course of internal duct system, dorsal view.
Рис. 15–17. *Barylestis insularis* Simon 1910, голотип: 15 — эпигина, снизу; 16 — вульва, сверху; 17 — схематичный ход сперматеки, сверху.

tus copulatory ducts are separated. Otherwise very similar in other characters (shape of epigynal field, course of the internal duct system, size of sublobal pockets).

REDESCRIPTION. Female holotype: PL 5.5, PW 5.4, AW 3.1, OL 6.0, OW 4.3. Eye diameters: AME 0.35, ALE 0.45, PME 0.39, PLE 0.49; eye interdistances: AME–AME 0.32, AME–ALE 0.11, PME–PME 0.37, PME–PLE 0.63, AME–PME 0.45, ALE–PLE 0.50, clypeus AME 0.38, clypeus ALE 0.27.

Spination of palp and legs: Pedipalpus 131, 101, 2121, 1014; Femur I–III 323, IV 331; Patella I 001, II 001(0), III–IV 000; Tibia 2026; Metatarsus I 1014, II 1014(3), III 2014, IV 3024.

Leg formula: 2143. Measurements of palp and legs: Pedipalpus 7.5 (2.2, 1.2, 1.6, -, 2.5), leg I 20.2 (5.8, 2.6, 5.5, 4.7, 1.6), leg II 21.8 (6.5, 2.6, 5.9, 5.1, 1.7), leg III 17.3 (5.3, 2.1, 4.5, 3.9, 1.5), leg IV 17.8 (5.5, 2.0, 4.4, 4.3, 1.6). Chelicerae with 3 anterior and 4 posterior teeth. Cheliceral furrow with about 30 denticles. Palpal claw with 5(6) teeth.

Copulatory organ as in diagnosis. Epigynal field distinctly wider than long, anterior bands connected to field, short, epigynum with single slit sensory organ. Lateral windings appearing as circular to oval patches in ventral view. First part of copulatory ducts thick, strongly diverging. Lateral windings running only 180°, glandular structures indistinct.

Colour: Yellowish-brown, Dorsal shield with bright transverse band posteriorly. Sternum, basal part of coxae, labium and gnathocoxae dark reddish-brown. Femora with small spots, tibiae prolatero-proximally with small patch and with small spots. Dorsal opisthosoma with irregular pattern consisting of small spots, some of which are fused together. Ventral opisthosoma with broad dark median band.

Male unknown.

TAXONOMIC REMARKS. According to female copulatory organ (epigynal field wider than long, first part of copulatory ducts diverging, sublobal pockets moderately pronounced, i.e. barely reaching lateral windings) most similar to *B. scutatus* and *B. nigripectus* Simon, 1910 [cf. Jäger, 2002]. Males of *B. nigripectus* and *B. insularis* may help to resolve interrelationship and status of the three forms.

DISTRIBUTION. Known only from the type locality.

Discussion

The Asian *Barylestis* species belongs on one hand clearly to the genus, formerly known exclusively from Africa. On the other hand, *B. saaristoi* sp. n. exhibits a distinct difference, namely the missing cheliceral denticles, which are present in almost all other Heteropod-

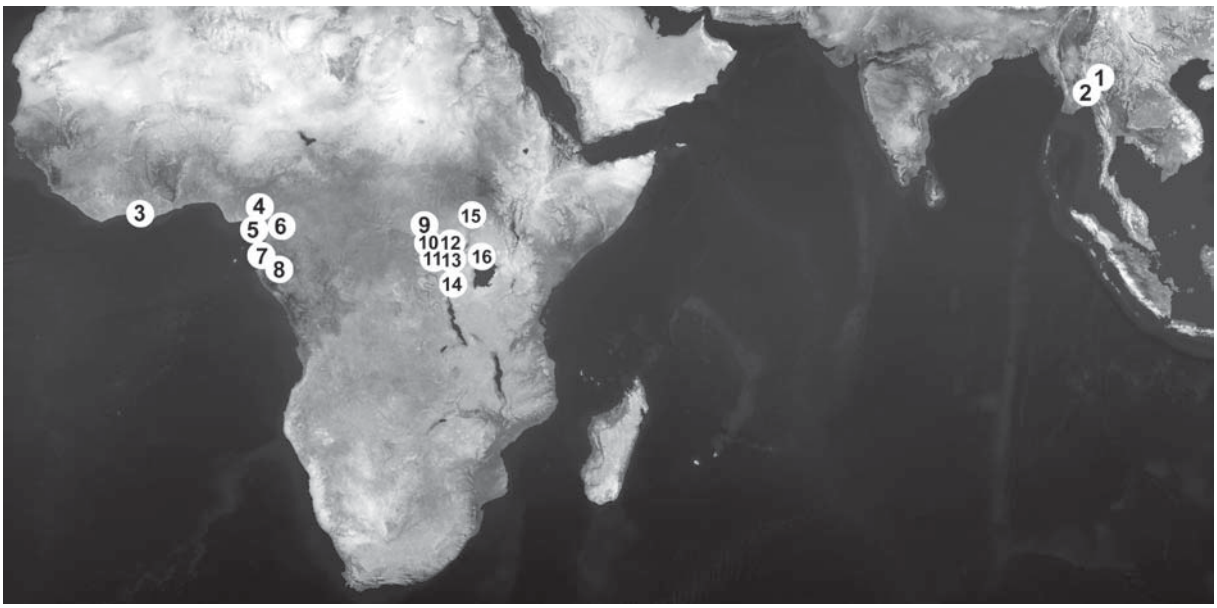


Fig. 18. Records of *Barylestis* spp.: 1 — Thailand, North Mae Hong Son Province, Soppong (*B. saaristoi* sp.n., type locality); 2 — Burma, Karen/Kayin State, Caren Mountains, Ghecu (*B. saaristoi* sp. n.); 3 — Ivory Coast, Assinie (*B. occidentalis*, type locality); 4 — Nigeria (British Cameroons), Efulen (*B. scutatus*, type locality); 5 — Bioko (Fernando Poo), Basilè (*B. insularis*, type locality); 6 — Cameroon (*B. scutatus*, *B. variatus*); 7 — Equatorial Guinea, River Uoro o Mbini (Benito River) (*B. variatus*, type locality), and Gabon, "Estuaire du Gabon" (*B. blaisei*, type locality), and Moyen-Ogooué, N'Kogo (*B. nigripectus*, type locality); 8 — Republic of the Congo, Brazzaville (*B. occidentalis*); 9 — Democratic Republic of the Congo, Poko (*B. montandoni*, type locality; *B. occidentalis*), and Akenge (*B. occidentalis*); 10 — Democratic Republic of the Congo, Medje (*B. fagei*, type locality; *B. occidentalis*); 11 — Democratic Republic of the Congo, Ituri River, Avakubi (*Barylestis peltatus*; type locality), and Mawambi (*Barylestis peltatus*); 12 — Democratic Republic of the Congo, Ituri River, Gamangui (*B. occidentalis*); 13 — Uganda, Bundibugyo, Semliki Forest (*B. montandoni*), and Ruwenzori (*Barylestis peltatus*); 14 — Ruanda (*B. fagei*); 15 — South Sudan, Imatong Mountains, Talanga forest (*B. occidentalis*); 16 — Uganda, Kampala (*B. occidentalis*).

Рис. 18. Распространение видов рода *Barylestis*: 1 — Тайланд, North Mae Hong Son Province, Soppong (*B. saaristoi* sp.n., типовой локалитет); 2 — Бирма, Karen/Kayin State, Caren Mountains, Ghecu (*B. saaristoi* sp.n.); 3 — Берег Слоновой Кости, Assinie (*B. occidentalis*, типовой локалитет); 4 — Нигерия (Британский Камерун), Efulen (*B. scutatus*, типовой локалитет); 5 — Экваториальная Гвинея, Биоко (Фернандо-По), Basilè (*B. insularis*, типовой локалитет); 6 — Камерун (*B. scutatus*, *B. variatus*); 7 — Экваториальная Гвинея, река Uoro o Mbini (=Benito) (*B. variatus*, типовой локалитет), устье Габона, "Estuaire du Gabon" (*B. blaisei*, типовой локалитет), провинция Moyen-Ogooуй, N'Kogo (*B. nigripectus*, типовой локалитет); 8 — Конго, Браззавиль (*B. occidentalis*); 9 — Конго, Poko (*B. montandoni*, типовой локалитет; *B. occidentalis*), Akenge (*B. occidentalis*); 10 — Конго, Medje (*B. fagei*, типовой локалитет; *B. occidentalis*); 11 — Конго, река Ituri, Avakubi (*Barylestis peltatus*; типовой локалитет), Mawambi (*Barylestis peltatus*); 12 — Конго, река Ituri, Gamangui (*B. occidentalis*); 13 — Уганда, Bundibugyo, Semliki Forest (*B. montandoni*), и Ruwenzori (*Barylestis peltatus*); 14 — Руанда (*B. fagei*); 15 — южный Судан, Imatong Mountains, Talanga forest (*B. occidentalis*); 16 — Уганда, Кампала (*B. occidentalis*).

inae. This might be evidence for a deeper split between the African and Asian lineages. Presently, it cannot be stated whether the disjunct distribution pattern is a result of dispersal or vicariance. However, other Sparassidae are known to have a similar Asian-African disjunction. Eight species of the genus *Gnathopalystes* Rainbow, 1899 are presently known from Asia and Australia until Jäger & Kunz [2005] reported a single female of an undescribed species from Tanzania. It showed clear congruence in somatic characters but a slightly different bauplan in the female copulatory organ. The genus *Rhitymna* Simon, 1897, with 14 species, is known from Asia only, but representatives of the African genus *Remmius* Simon, 1897 exhibit similarities in their female copulatory organs and may be closely related to *Rhitymna* species [Jäger, 2003: 102]. The same is true for Heteropodinae from Asia and Sparassidae from Madagascar and East Africa showing a combination of characters which denotes a closer relationship between both groups [Jäger, 2004: 121, fig. 57].

ACKNOWLEDGEMENTS. Damir Kovac (SMF) provided the important specimen from Thailand, Giuliano Doria (MCSN), Leon Baert and Aurel Vande Walle (both Royal Belgian Institute of Natural Sciences, Bruxelles) loaned material and welcomed the author hospitable during his stays in Bruxelles (2007) and Genova (1996). Christine Rollard and Elise-Anne Leguin (both National Natural History Museum, Paris) gave information on *Barylestis blaisei* and loaned material from the Simon collection. One of my visits in the museum in Paris was supported by the EU (Access to Research Infrastructure action of the Improving Human Potential Programme: PARSYST). Two anonymous referees gave useful comments to improve the manuscript. Thanks to all persons and institutions for the generous help.

References

Jäger P. 1998. First results of a taxonomic revision of the SE Asian Sparassidae (Araneae) // Proceedings of the 17th European Colloquium of Arachnology, Edinburgh 1997. Edinburgh. P.53–59.

Jäger P. 2001. Diversität der Riesenkrabbenspinnen im Himalaya. Über eine Radiation zweier Gattungen in den Schneetropen. (Araneae: Sparassidae: Heteropodinae) // Courier Forschungsinstitut Senckenberg. Vol.232. P.1–136.

Jäger P. 2002. Heteropodinae: transfers and synonymies (Arachnida: Araneae: Sparassidae)// Acta Arachnol. Vol.51. No.1. P.33–61.

Jäger P. 2003. *Rhitymna* Simon 1897: an Asian, not an African spider genus. Generic limits and description of new species (Arachnida, Araneae, Sparassidae) // Senckenbergiana biologica. Vol.82 No.1/2. P.99–125.

Jäger P. 2004. A study of the character 'palpal claw' in the spider subfamily Heteropodinae (Araneae: Sparassidae) // European Arachnology 2003 (Proceedings of the 21st European Colloquium of Arachnology, St.-Petersburg, 4–9 August 2003). Arthropoda Selecta, Special Issue. P.107–125

Jäger P., Kunz D. 2005. An illustrated key to genera of African huntsman spiders (Arachnida, Araneae, Sparassidae) // Senckenbergiana biologica. Vol.85. No.2. P.163–213.

Platnick N.I. 2008. The world spider catalog, version 8.5. American Museum of Natural History, online at http://research.amnh.org/entomology/spiders/catalog/ (accessed 27.3.2008).

Simon E. 1910. Arachnides recueillis par L. Fea sur la côte occidentale d'Afrique. 2^{e} partie // Annali del Museo Civico di Storia Naturale di Genova. Vol.44. P.335–449.