On the nomenclatural and taxonomic status of the spider taxa in James Barbut's ‘Genera Insectorum of Linnaeus’ (Araneae)

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On the nomenclatural and taxonomic status of the spider taxa in James Barbut's 'Genera Insectorum of Linnaeus' (Araneae)

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Abstract. The spider taxa included by James Barbut in his work 'The genera insectorum of Linnæus exemplified in various specimens of English insects drawn from nature' from 1781 are discussed alongside some other early works of spider literature. Barbut discusses and depicts three previously described species, *Araneus diadematus* Clerck, 1757, *Tegenaria domestica* (Clerck, 1757) and *Xysticus cristatus* (Clerck, 1757). Four taxa are newly described by Barbut (1781) but are unavailable nomina per Article 11.4 of the International Code of Zoological Nomenclature. The taxonomic acts of Bonnet, who failed to notice that Barbut's work was invalid for the purposes of zoological nomenclature, are discussed. Two nomina, *Aranea subterranea* Barbut in Meyer, 1794 and *Aranea hortensis* Barbut in Meyer, 1794 – both made available through the translation work by Meyer – are evaluated. *Aranea subterranea* Barbut in Meyer, 1794 is proposed as a **nomen dubium**. *Aranea hortensis* Barbut in Meyer, 1794 is proposed as a junior synonym of *Araneus diadematus* Clerck, 1757 **syn. nov.** and is thus an objective senior homonym of *Araneus hortensis* (Blackwall, 1859). The replacement name *Araneus blackwalli* **nom. nov.** is proposed for the latter taxon. Additionally, *Aranea livido-rufa* Panzer, 1804 is removed from synonymy with *Metellina segmentata* (Clerck, 1757) and is declared a **nomen dubium**.

Keywords: Britain, ICZN, nomen dubium, nomen novum, nomenclature, systematics, taxonomy

Zusammenfassung. Zum nomenklatorischen und taxonomischen Status der Spinnentaxa in James Barbuts ‚Genera Insectorum of Linnaeus' (Araneae). Die im Buch von James Barbut, ‚The genera insectorum of Linnæus exemplified in various specimens of English insects drawn from nature' aus dem Jahr 1781 enthaltenen Spinnentaxa, werden zusammen mit einigen anderen frühen Werken der Spinnenliteratur diskutiert. Barbut diskutierte und zeigte drei bereits beschriebene Arten, *Araneus diadematus* Clerck, 1757, *Tegenaria domestica* (Clerck, 1757) und *Xysticus cristatus* (Clerck, 1757). Vier Taxa wurden von Barbut neu beschrieben, sind jedoch gemäß Artikel 11.4 des International Code of Zoological Nomenclature nicht verfügbar. Die taxonomischen Aktionen von Bonnet, der übersah, dass Barbuts Werk im Sinne der zoologischen Nomenklatur ungültig war, werden diskutiert. Zwei Artnamen, *Aranea subterranea* Barbut in Meyer, 1794 und *Aranea hortensis* Barbut in Meyer, 1794 – beide sind durch die Übersetzung von Meyer verfügbar – werden bewertet. *Aranea subterranea* Barbut in Meyer, 1794 wird als **nomen dubium** vorgeschlagen. *Aranea hortensis* Barbut in Meyer, 1794 wird als jüngeres Synonym für *A. diadematus* Clerck, 1757 **syn. nov**. vorgeschlagen und ist somit ein objektives älteres Homonym von *Araneus hortensis* (Blackwall, 1859). Der Ersatzname *Araneus blackwalli* **nom. nov.** wird für letzteres Taxon vorgeschlagen. Zusätzlich wird *Aranea livido-rufa* Panzer, 1804, aus der Synonymie mit *Metellina segmentata* (Clerck, 1757) herausgenommen und zum **nomen dubium** erklärt.

Barbut (1781) published 'The genera insectorum of Linnæus exemplified in various specimens of English insects drawn from nature', a lavishly illustrated volume, with text in both English and French (the former aligned to the left of the pages and the latter to the right), which illustrated focal British invertebrates (with exceptions, such as that of a foreign scorpion) under their classifications by Linnaeus (1758) in his tenth edition of 'Systema Naturae'. As well argued by Damkaer (2002) it is clear Barbut was an entirely ardent supporter of Linnaeus. In the context of spiders, Barbut (1781: 338-349) mentions a total of seven taxa in the text, three of which relate to known Linnean species and four of which must be regarded as original. An eighth spider, not mentioned in the text, is curiously depicted in the accompanying plate. Unfortunately, as Barbut (1781) mentions many trinomials and quadrinomials in his work, the publication is not available for the purposes of zoological nomenclature, following Article 11.4 of the Code (ICZN 2012), which states: "The author must have consistently applied the Principle of Binominal Nomenclature [Art. 5.1] in the work in which the name or nomenclatural act was published; …". However, a later translation of some of Barbut's descriptive text on spiders into German by Meyer (1794) made two nomina available, namely *Aranea subterranea* Barbut in Meyer, 1794 and *Aranea hortensis* Barbut in Meyer, 1794.

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In this work, the seven unavailable nomina and eight figures in Barbut (1781) are discussed, and the two available nomina proposed in Meyer (1794) addressed. Discussion on other historical spider taxa is also presented, alongside comments about the erroneous treatment of Barbut nomina by Bonnet (1955).

Discussion

Barbut's book from 1781

Barbut (1781: 340) describes specimens of *Aranea diadema* Linnaeus, 1758 (= *Araneus diadematus* Clerck, 1757) and *Aranea domestica* Linnaeus, 1758 (= *Tegenaria domestica* (Clerck, 1757)) which can be clearly identified from the text and also on the single plate in the work (Fig. 1b, g). Barbut (1781: 346) describes, later in the same work, a specimen of *Aranea viatica* Linnaeus, 1758, which is a junior synonym of *Xysticus cristatus* (Clerck, 1757) (see World Spider Catalog 2021). The textual description does likely correspond to *X. cristatus* as does one of the figures of the plate (Fig. 1h). Thus, these three species do not require comprehensive comments. However, the other four taxa mentioned in Barbut (1781) are original descriptions of taxa and whilst they are unavailable for the purposes of binomial nomenclature, are discussed below.

One invalid name used by Barbut (1781) is "*Aranea vacuefactas domos incolens*" [= spider that inhabits empty houses] for which the following description is given: "This spider has its thorax of a pale livid colour, its legs are of the same colour, and very long and slender, almost like those of the phalangium [= *Phalangium opilio* Linnaeus, 1758]; the third

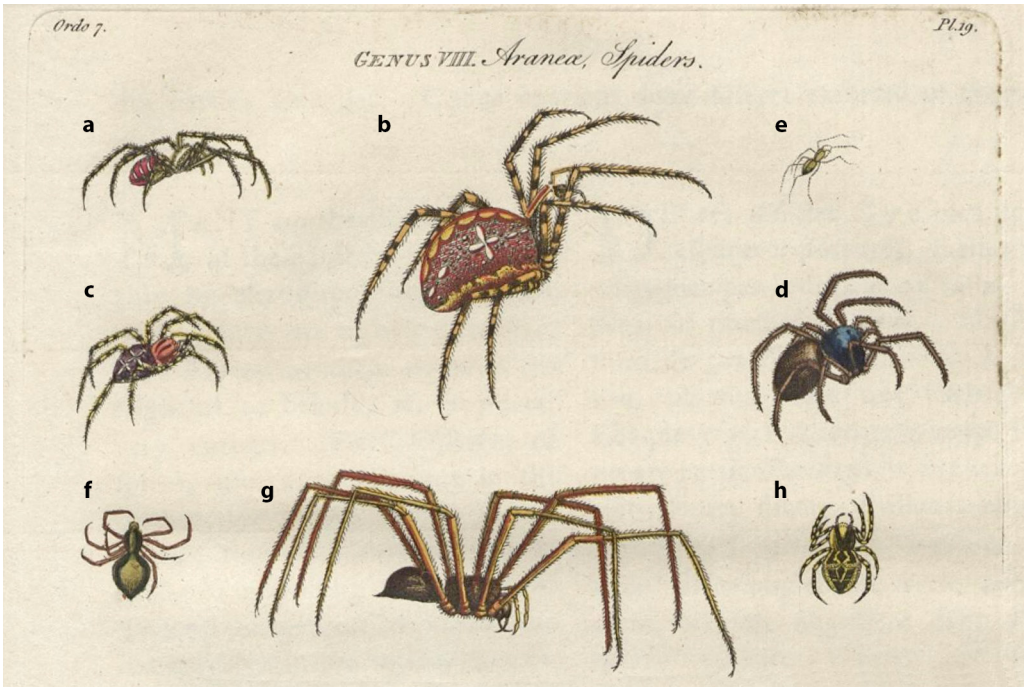

Fig. 1. Photograph of half of an original plate of Barbut (1781: pl. 19) which depicted spiders (the other half of the plate, not included here, depicts an exotic scorpion). **a.** "*Aranea livida rufa*" (unavailable nomen); **b.** *Aranea diadema* Linnaeus, 1758 (= *Araneus diadematus* Clerck, 1757); **c.** *Aranea hortensis* Barbut, 1781 (unavailable nomen); **d.** *Aranea subterranea* Barbut, 1781 (unavailable nomen); **e.** "*Aranea vacuefactas domo incolens*" (unavailable nomen); **f.** unknown spider (not mentioned in Barbut's text); **g.** *Aranea domestica* Linnaeus, 1758 (= *Tegenaria domestica* (Clerck, 1757)); **h.** *Aranea viatica* Linnaeus, 1758 (= *Xysticus cristatus* (Clerck, 1757)).

pair being the shortest. The abdomen is oval, rather oblong, and of a leaden colour. This spider is found in uninhabited parts of houses, where it spins loose irregular webs." (Barbut 1781: 343). The French given name is printed as "L'araignée solitaire". This can be translated into English as the "solitary spider" and modern workers apply this French name for taxa in the Agelenidae C. L. Koch, 1837 (e.g. Horel et al. 1979, Bernard 2002). However, the description of this spider is clearly that of a pholcid spider and not of an agelenid, even though Fig. 1e does not allow to attach it to a specific family. Based on the textual description of Barbut (1781: 343) which mentions the pale colouration and long and slender legs and opisthosoma, in conjunction with the presence of this species within uninhabited rooms of houses it is very likely the textual description of Barbut (1781) refers to *Pholcus phalangioides* (Fuesslin, 1775).

The description immediately following that of "*Aranea vacuefactas domos incolens*" is of *Aranea subterranea* Barbut, 1781 which Barbut (1781: 343-344, see Fig. 1d) describes as: "The cellar spider is armed with strong pincers. They sometimes gripe, but their bite is not dangerous in this country. Their skill consists in digging a hole in the sand, which they line with silk, to prevent its falling in. The insect in ambush, seizes the moment when he spies his prey, even at the instance of one or two feet, and darts upon it with rapidity. Cobwebs are an excellent application for cuts, being an astringent vulnerary, a property it owes to the oil and volatile alkali contained in it. The story of the enmity between the spider and the toad, is a mere fable; place a spider on top of a toad, and they will not offer to fight." The French given name is printed as "L'araignée des caves" which corresponds with the English translation "cellar spider". Bonnet (1958: 3999) considered *A. subterranea* to be a junior synonym of *Segestria florentina* (Rossi, 1790) but gives little justification for this synonymy. The common name alone, whilst having been applied to some specimens which can confidently considered *S. florentina*, is not enough on its own to justify the synonymy of these two taxa. Whilst some features of the textual description could be argued to resemble *S. florentina*, others are clearly unlike that species such as the silk-lined burrow in the sand. This type of retreat is seen in another British spider with large chelicerae, the mygalomorph *Atypus affinis* (Eichwald, 1830) (e.g. Bee et al. 2017) which could be a plausible option for this taxon if the description was solely based on text. The specific epithet "*subterranea*" has been used for another taxon within this genus (see below). However, strictly within the context of Barbut (1781) none of the drawings in the plate match either of the above species and there are certain aspects of the description which do not match completely with the known ecology of either species. Indeed, it could also be that Barbut's description of its ecological habits is altogether erroneous. In any case, *A. subterranea* Barbut, 1781 is invalid but a later translation of his work by Meyer (1794) does make another nomen, *Aranea subterranea* Barbut in Meyer, 1794, available (see below).

Another point pertinent to the discussion of the name "*subterranea*" is the description of another spider which has garnered more attention from taxonomists. Roemer (1789) described *Aranea subterranea* Roemer, 1789 and the description (minus the habitat which was erroneously described as aquatic) and the plate both clearly indicate this as a mygalomorph spider. Latreille (1804) noted that the habitat information from Roemer (1789) was doubtful, hence Roemer instead naming the taxon *Aranea subterranea*. In the same work, Latreille (1804) considers new material he examined as conspecific with Roemer's taxon but is instead considered *A. affinis* by Bonnet (1955: 397). Some years later, Simon (1873) placed *A. subterranea* Roemer, 1789 in synonymy with *Atypus piceus* (Sulzer, 1776) where it has remained since (World Spider Catalog 2021). This synonymy was well supported and has been accepted by later workers (e.g. Gertsch 1936, Perkovsky et al. 2018).

Aranea hortensis Barbut, 1781 is briefly described by Barbut (1781: 344, Fig. 1c), and even then mostly for the properties of its web as opposed to the spider itself. Nonetheless,

its Latin etymology, the common name "garden spider", the French equivalent phrase "L'araignée des jardins" and the general description of its habitat and web clearly indicated that it corresponds to what is now known as *A. diadematus* Clerck, 1757. This synonymy was proposed by Bonnet (1955: 487) and has been accepted by following workers. However, given that the nomen proposed by Barbut is unavailable, this taxonomic act is nullified. This said, a later translation of his work by Meyer (1794) does make another nomen, *Aranea hortensis* Barbut in Meyer, 1794, available (see below).

Barbut (1781: 347-348, Fig. 1a) described "*Aranea livida rufa*" as follows: "Its colour is of a pale livid red; the fore part of the thorax is light colour'd, and the eyes are black; seemingly but six in number, because the two on each side are very close to each other and almost blended together. The legs, of the same colour as the thorax, have black rings. The abdomen, of a colour rather deeper, has a black leaf, scolloped on the edge and figured upon the middle of that part; but at the top of the leaf are several yellow spots, and across its middle it is transversely divided by a yellowish white section. The under part of the abdomen is black, with two yellow lunulæ: the horns turned inwards towards each other, and enfolding the anus; one on the right, the other on the left. This spider is met with in the woods, where it spins perpendicular webs.". Bonnet (1955: 2791) considered *A. livida rufa* a junior synonym of *Meta merianae* (Scopoli, 1763) (now *Metellina merianae*) but the textual description does not match that species. It does have some similarities to two other congeneric species, namely *Metellina mengei* (Blackwall, 1869) and *Metellina segmentata* (Clerck, 1757). The colouration alone cannot be used to confidently place *A. livida rufa* in either of these taxa, but does exclude its placement in synonymy with *M. merinae*. However, since the nomen itself is unavailable under Article 11.4 of the Code (ICZN 2012) it is, in any case, invalid. During the course of this work, this nonetheless presented issues relating to other species with similar nomina which do warrant comment.

Bonnet (1955: 389) considers "*Aranea livida* Lin." as being synonymous with two taxa, namely *Argyroneta aquatica* (Clerck, 1757) and *Clubiona pallidula* (Clerck, 1757). It is clear, especially after referring to the description of Linnaeus (1758) that "*A. livida*" was not a separate nomen but merely descriptive text for what he described as *Aranea aquatica* Linnaeus, 1758 (suppressed in favour of the seniority of *Aranea aquatica* Clerck, 1757 by ICZN Direction 104 (1959)). Indeed the descriptive term "Aranea livida-rufa" can be seen used in general descriptions of several divergent taxa (e.g. Olivier 1789: 201). Linnaeus did not explicitly describe any spider binomen as "Aranea livida" and thus Bonnet's synonymies of supposed taxa are instead just literature references to descriptive terms for spider taxa and did not represent valid nomina which required taxonomic treatment.

Another problematic taxon, *Aranea livido-rufa* Panzer, 1804 (itself a valid nomen derived from an invalid, non-binomial nomen originally mentioned by Geoffroy (1764)) was considered synonymous with *M. segmentata* by Bonnet (1955: 2797), presumably based on Panzer's opinion that it was synonymous with the non-valid binomen "*Araneus subflavus*" of Lister (1678) and the fact it was described as "Die gelblichte Waldspinne" [= The yellowish forest spider] by Panzer (1804: 148). However, both Lister's original, non-valid, nomen, and also the first available and valid description of this nomen published later by Martini & Goeze, 1778 (= *Araneus subflavus* Martini & Goeze, 1778), are now attributed to the genus *Larinioides* Caporiacco, 1934 (see Breitling & Bauer 2015) and not to *M. segmentata*. Furthermore, the informal name of "yellowish forest spider" does not explicitly exclude other taxa as equal candidates for the identity of this taxon. As a consequence, the synonymy of *A. livido-rufa* Panzer, 1804 with *M. segmentata* by Bonnet (1955) may not be correct and for purposes of nomenclatural stability and taxonomic accuracy *Aranea livido-rufa* Panzer, 1804 is hereby removed from synonymy with *M. segmentata* and is declared a **nomen dubium**.

An eighth spider, not mentioned in the text of Barbut's work, is present on the plate in Barbut (1781) (see Fig. 1f). Since it is not mentioned in the text, and the overall habitus of the specimen cannot be assigned explicitly to one taxon, its presence cannot be comprehensively interpreted. However, its mysterious presence does warrant this brief comment. The drawing could possibly depict *Neottiura bimaculata* (Linnaeus, 1867) which is common across England (pers. obs.), although without context or accompanying text it is not possible to state this with certainty. Fortunately, as no nomen can be assigned to it, it is not of nomenclatural or taxonomic consequence.

Meyer's reprint and translation from 1794 of Barbut's book

Thirteen years after the publication of Barbut (1781), Meyer (1794) reprinted Barbut's descriptions of three select spider taxa, translated into German, with some brief discussion on some of the conclusions made by Barbut (1781). Meyer (1794) consistently applies binomial nomenclature in his work, satisfying Article 11.4 of the Code (ICZN 2012). The first taxon mentioned by Meyer (1794) is *Aranea domestica*, which (as already discussed above) relates to *T. domestica* and is not a novel taxon. However, Meyer's translated textual descriptions of *Aranea subterranea* and *Aranea hortensis* made these nomina available under the authorship Barbut in Meyer, 1794. Therefore, these two taxa can be taxonomically evaluated herein.

Aranea subterranea Barbut in Meyer, 1794 is essentially a reproduced description of Barbut's text and thus carries the same nomenclatural problems as the invalid nomen proposed by Barbut (1781). Therefore, given that the textual description is not exclusive to a single taxon, and the inability to undoubtedly assign *A. subterranea* Barbut in Meyer, 1794 to a single species, it is proposed this taxon be regarded as a **nomen dubium**.

Whilst the nomenclatural act of Bonnet (1955) referring to *A. hortensis* Barbut, 1781 is null (see above), the availability of *Aranea hortensis* Barbut in Meyer, 1794 allows this latter nomen to be addressed. Since it is a translation of Barbut's corresponding prior text and carries the same information, its placement can be interpreted with the argumentation of Bonnet (1955). Therefore, *A. hortensis* Barbut in Meyer, 1794 is hereby regarded as a junior synonym of *Araneus diadematus* Clerck, 1757 **syn. nov.** This taxonomic act highlights a secondary homonym within *Araneus* Clerck, 1757, namely due to the placement of *Araneus hortensis* (Blackwall, 1859) within this genus (see World Spider Catalog 2021). This latter taxon is poorly known (described textually from a single male from Madeira, without accompanying figures) and has not been located on the island since its original description by

Blackwall (1859) (Denis 1962, Wunderlich 1987, Cardoso et al. 2017). Nonetheless, it remains a valid taxon at the present time (World Spider Catalog 2021) and whilst a full analysis of *Araneus* taxonomy is well outside of the scope of this work, it is thus necessary to provide a replacement name to resolve the homonymy created by the above transfer of *Aranea hortensis* Barbut in Meyer, 1794 (= *Araneus hortensis*). Therefore, the replacement name *Araneus blackwalli* **nom. nov.** is hereby proposed for the preoccupied nomen *Araneus hortensis* (Blackwall, 1859). The novel species epithet is a patronym in honour of John Blackwall (1790–1881) who originally described this species under its previous (now homonymic) nomen.

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