What, if anything, is Lycosa accentuata Latreille, 1817? – Review of a nomenclatural conundrum (Araneae: Lycosidae)

zoosystema

2022 • 44 • 8

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art. 44 (8) — Published on 12 April 2022
www.zoosystema.com

PUBLICATIONS SCIENTIFIQUES

MUSÉUM NAL HIST NATURELLE

Couverture / *Cover* :

Alopecosa barbipes (Sundevall, 1833) in the dunes of North Holland, The Netherlands, in August 2014. Photo: Rainer Breitling.

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Diffusion – Publications scientifiques Muséum national d'Histoire naturelle
CP 41 – 57 rue Cuvier F-75231 Paris cedex 05 (France)
Tél. : 33 (0)1 40 79 48 05 / Fax : 33 (0)1 40 79 38 40
diff.pub@mnhn.fr / https://sciencepress.mnhn.fr

ISSN (imprimé / *print*) : 1280-9551/ ISSN (électronique / *electronic*) : 1638-9387

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Submitted on 17 May 2021 | Accepted on 13 December 2021 | Published on 12 April 2022

urn:lsid:zoobank.org:pub:2263FADE-4B85-40B7-903D-2871C98453A1

Breitling R. & Bauer T. 2022. — What, if anything, is *Lycosa accentuata* Latreille, 1817? – Review of a nomenclatural conundrum (Araneae: Lycosidae). *Zoosystema* 44 (8): 197-207. https://doi.org/10.5252/zoosystema2022v44a8. http://zoosystema.com/44/8

ABSTRACT
The European wolf spider name *Lycosa accentuata* Latreille, 1817, has had a long and convoluted nomenclatural history. The interpretation of the name has baffled arachnologists for more than two centuries. Here we describe the historical development of the evolving interpretations and show that the name is certainly not a senior synonym of *Alopecosa barbipes* (Sundevall, 1833) or *A. farinosa* (Herman, 1879). To stabilise the nomenclature, we select a neotype for *Lycosa accentuata* consistent with the original description; consequently the name is confirmed as a junior subjective synonym of *Araneus trabalis* Clerck, 1757, valid name *Alopecosa trabalis* (Clerck, 1757). This action helps to finally stabilise the nomenclature of an important species pair of great interest for evolutionary and conservation biology.

KEY WORDS
Alopecosa,
Alopecosa farinosa,
Alopecosa barbipes,
Araneae,
Lycosidae,
sibling species,
new synonymy.

RÉSUMÉ
De l'identité de Lycosa accentuata *Latreille, 1817 – Une énigme nomenclaturale revisitée (Araneae: Lycosidae).*
Le nom de l'araignée-loup européenne *Lycosa accentuata* Latreille, 1817, a eu une histoire nomenclaturale longue et alambiquée. L'interprétation de ce nom a dérouté les arachnologues pendant plus de deux siècles. Nous décrivons ici le développement historique des interprétations successives et montrons que le nom n'est certainement pas un synonyme senior d'*Alopecosa barbipes* (Sundevall, 1833) ou *A. farinosa* (Herman, 1879). Pour stabiliser la nomenclature, nous sélectionnons un néotype de *Lycosa accentuata* conforme à la description originale ; par conséquent, le nom est confirmé comme synonyme subjectif junior d'*Araneus trabalis* Clerck, 1757, nom valide *Alopecosa trabalis* (Clerck, 1757). Cette action permet de stabiliser enfin la nomenclature d'un couple d'espèces important et de grand intérêt pour la biologie de l'évolution et de la conservation.

MOTS CLÉS
Alopecosa,
Alopecosa farinosa,
Alopecosa barbipes,
Araneae,
Lycosidae,
espèces jumelles,
synonymie nouvelle.

INTRODUCTION

In the 200 years since the description of the wolf spider *Lycosa accentuata* by Latreille (1817: 294), this name has occupied the mind of many of the most eminent arachnologists, who have suggested a diverse range of possible identities for the species referred to by Latreille. For a long time, the name was applied to a widespread Palaearctic species usually placed in the genus *Alopecosa* Simon, 1885 (and previously often in *Lycosa* Latreille, 1804 or *Tarentula* Sundevall, 1833). This species, *Alopecosa accentuata,* was also known under the names *Lycosa* (or *Tarentula*) *andrenivora* Walckenaer, 1805 and *Alopecosa* (or *Lycosa* or *Tarentula*) *barbipes* (Sundevall, 1833). In 1987, Dahlem *et al.* (1987) conclusively demonstrated that *Alopecosa accentuata*, as used at that time, referred actually to a pair of two sibling species, separated most convincingly by differences in mating behaviour. This ethotaxonomic conclusion was confirmed by Cordes (1994) and Cordes & von Helversen (1990), who conducted an extensive integrated taxonomic study, adding morphological and zoogeographic arguments to the analysis: roughly speaking, one of the sibling species is mostly found in the Atlantic climate of Western Europe, the other in the more Continental climate of Eastern and Central Europe and the Eastern Palaearctic. The separation was further confirmed by Vink & Mitchell (2002) using molecular data. Most recently, Canard & Cruveillier (2019) re-examined the case, illustrated the diagnostic differences between the two sibling species, and fully confirmed the taxonomic and zoogeographic conclusions of the earlier authors. The taxonomic situation is, thus, well understood and uncontroversial. What is hotly debated is, however, the correct name to apply to the two sibling species. Dahlem *et al.* (1987) had used *Alopecosa accentuata* for the Eastern/Continental sibling, and *A. barbipes* for the Western/Atlantic sibling. All subsequent authors who were aware of the existence of the two sibling species followed this decision and, for almost 30 years, consistently used *A. accentuata* as the valid name of the sister species of *Alopecosa barbipes*, until Breitling *et al.* (2016) pointed out that the type locality of *A. accentuata* is Paris, where the Eastern/Continental sibling species does not occur. The oldest available name for the Continental species was determined to be *Alopecosa farinosa* (Herman, 1879). Again, this was widely accepted and confirmed by Canard & Cruveillier (2019). The name for the Western/Atlantic sibling remained unchanged: *Alopecosa barbipes* (Sundevall, 1833) a name that unambiguously refers to the diagnostic brush of long black hairs on the front legs of the male of the species, and *Alopecosa accentuata* was considered an unidentifiable *nomen dubium*.

Unfortunately, Canard & Cruveillier (2019) did not accept this final conclusion: according to them, *Alopecosa accentuata* (Latreille, 1817) is a valid and senior synonym of *Alopecosa barbipes* (Sundevall, 1833) and thus the correct name for the Western/Atlantic sibling of *A. farinosa*. This reverses several decades of established nomenclature and thus has the potential to create a serious amount of nomenclatorial confusion. The aim of this contribution is to resolve this confusion and enable a stable and consistent nomenclature in the future.

Alopecosa barbipes and *A. farinosa* are a rare example of a parapatric sibling species pair among Palaearctic wolf spiders (other examples are *Alopecosa mariae/striatipes* and *Pardosa proxima/tenuipes*; Buchar & Thaler 2004; Isaia *et al.* 2018), and the implications of this for our understanding speciation mechanisms especially in lycosids could be very interesting. Also, the subtle differences in habitat preferences (Cordes & von Helversen 1990) make this pair of thermophilic species a fascinating candidate for understanding the impact of climate change on spider distributions. This would also help conservation efforts for these species, which in parts of their range are considered vulnerable (e.g. *A. barbipes* in Germany; Blick *et al.* 2016). Any work in this direction relies on a clear and unambiguous description of the distribution patterns of the species involved, and this in turn will depend on a stable and widely accepted consensus on the nomenclature of the species pair. It is, therefore, worthwhile to have a closer look at the history of *Lycosa accentuata* and its interpretation throughout the last two centuries, with the intention to decide whether the name is indeed available as a valid name for one of the species involved.

Abbreviations

Morphology

ALE	anterior lateral eyes;
AME	anterior median eyes;
PLE	posterior lateral eyes;
PME	posterior median eyes.

Institutions

ICZN	International Code of Zoological Nomenclature;
MNHN	Muséum national d'Histoire naturelle, Paris.

THE HISTORY OF THE NAME *LYCOSA ACCENTUATA* LATREILLE, 1817, AND ITS SUBSEQUENT COMBINATIONS

Lycosa accentuata Latreille, 1817: 295 [written 2 9 in the original, due to a typesetting error] was described on the basis of a single subadult specimen (*teste* Walckenaer 1826: 20) from the surroundings of Paris ("environs de Paris"), which at the time included parts of Paris as now understood, such as the *Jardin des Plantes* and all zones outside the "Boulevards".

Table 1 and Figure 1 provide a summary of the various historical stages of the interpretation of the name since the original description. In the earliest days, Latreille and Walckenaer applied the name to a large forest-dwelling species closely similar to *Trochosa ruricola* (De Geer, 1778) or *Alopecosa trabalis* (Clerck, 1757). They both did not see any similarity or affinity to *Lycosa andrenivora* Walckenaer, 1805, a species that many later authors considered an obvious synonym of *Alopecosa barbipes* and/or *A. farinosa*. The confusion in this case probably originated already with Walckenaer himself; when he established the name *L. andrenivora* in 1805, he did so with reference to earlier descriptions and illustrations by Clerck (1757) and Albin (1736): "Clerck, p. 94, spec. 6,

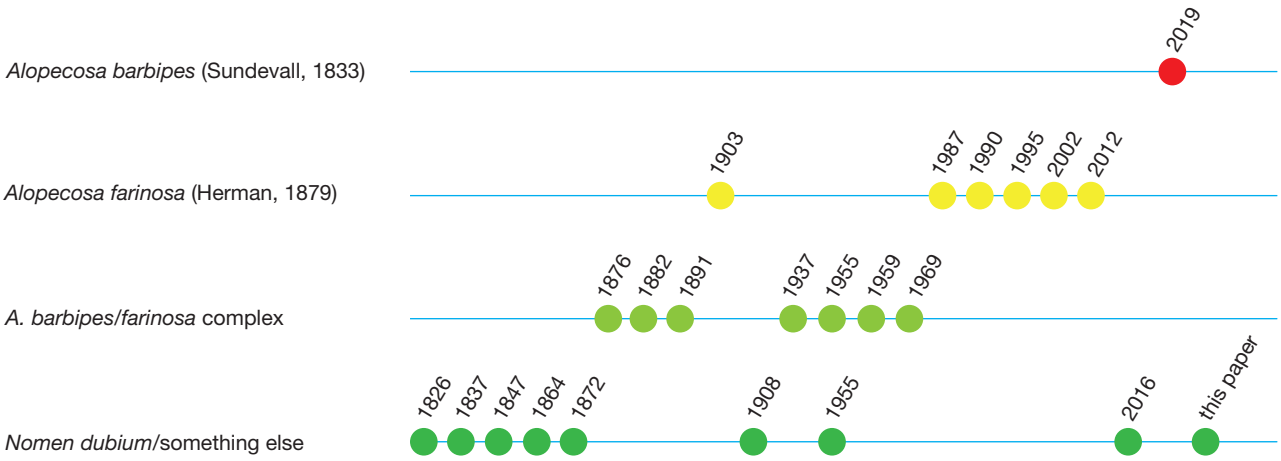

Fig. 1. — Schematic timeline of the different interpretations of Latreille's *Lycosa accentuata* Latreille, 1817. The names on the right are the most closely matching currently valid taxa, and the years refer to the major taxonomic publications detailed and discussed in Table 1. It is clear that the recent inversion of preceding usage, as proposed by Canard & Cruveillier (2019), contradicts all previous interpretations of the name. This figure should be read in conjunction with the detailed information in Table 1.

ar. pulverulentus mas., pl. 4, tab. 6, fig. 1. Albin, pl. 17, fig. 85. *Ibid*, pl. 1, fig. 4". But he didn't provide his own description of the new species. This, incidentally, led Bonnet (1955: 223) to consider *L. andrenivora* Walckenaer, 1805, a *nomen nudum* that only became available when a full description was published in 1826. However, this interpretation by Bonnet was not correct: Walckenaer's 1805 description "by indication" is perfectly sufficient for availability according to the rules of the ICZN Article 12.2. The name *L. andrenivora* as originally created in 1805 is now considered a junior synonym of *A. pulverulenta* Clerck, 1757, its name-bearing types being the specimens illustrated by Albin (1736) and Clerck (1757), according to ICZN Article 74.4.

The testimony of Walckenaer (1826) is particularly relevant in establishing later authors, in contrast, relied on the same evidence that we have available now, i.e., the printed descriptions. After the death of Latreille in 1833, the interpretation of the name rapidly became more opaque and confusing, with a large number of possible identifications being suggested in quick succession.

Only in 1876 did Simon propose an identification that was accepted by a large number of arachnologists for the next 100 years: on the basis of Walckenaer's description, he applied Latreille's name to the collective species that contained both the two species now known as *A. barbipes* and *A. farinosa*. This interpretation of Simon's decision is confirmed by the extensive list of synonyms he provides. But even during this phase of consolidation, several well-known authors disagreed with this proposal, as seen in Table 1. In 1987, Dahlem *et al.* showed that the collective species of Simon consisted of two reproductively isolated sibling species. Following a tradition established already by Thorell (1872), they applied the name *Alopecosa barbipes* (Sundevall, 1833) to the Western/Atlantic sibling, which is characterised by its eponymous black brush of hairs on the underside of tibia I. Consequently, they referred to the Eastern/Continental sibling, which lacks this tibial brush, as *Alopecosa accentuata*. This nomenclature was accepted by all subsequent authors, whenever they distinguished the two sibling species, until Breitling *et al.* (2016) remarked that *L. accentuata* had been described from Paris, where the Eastern sibling species does not occur, and the latter thus required a different name. This observation was confirmed in a detailed study of the French distribution of the two species by Canard & Cruveillier (2019), who also confirmed that the oldest available name for the Eastern sibling is *Alopecosa farinosa* (Herman, 1879). However, Breitling *et al.* (2016) had found it impossible to identify *A. accentuata* with confidence, as a result of the vague historical literature and the unavailability of type material. Notwithstanding these concerns, Canard & Cruveillier (2019) perceived a long tradition of French authors applying the name to what is currently known as *A. barbipes* and used this to justify a renewed synonymy of *A. accentuata* and *A. barbipes*. In consequence, they were thus all but inverting the nomenclature of the previous thirty years, as can be seen in Figure 1, with potentially very undesirable consequences for nomenclatural stability and the interpretability of faunistic records and biological literature on this species pair.

IS IT POSSIBLE TO IDENTIFY *LYCOSA ACCENTUATA* LATREILLE, 1817 WITHOUT SURVIVING TYPE MATERIAL?

The proposal by Canard & Cruveillier (2019) is obviously very disruptive, as it contradicts all previous interpretations of the name and inverts the nomenclature applied in a wide range of international literature from 1987 to 2016. If they had been able to support their argument by examination of type material of *L. accentuata*, this could theoretically still have

TABLE 1. — Milestones in the historical interpretation of *Lycosa accentuata* Latreille, 1817.

Publication	Interpretation of *Lycosa accentuata* Latreille, 1817
The early days	
Latreille 1817: 294	new species, similar to *Trochosa ruricola* (De Geer, 1778) and *Alopecosa trabalis* (Clerck, 1757).
Walckenaer 1826: 20	large forest-dwelling species ("Long. 5 lig.", i.e. a total length of 5 Paris lines = 11.3 mm) similar to *T. ruricola* ("ressemble aux deux précédentes", i.e. resembling the two preceding species) *Lycosa agretyca* Walckenaer, 1805 and *Lycosa campestris* Walckenaer, 1826 (both synonyms of *T. ruricola*, according to Dahl [1908] and subsequent authors).
The phase of confusion	
Walckenaer 1837: 311	senior synonym of *Pardosa nigra* (C. L. Koch, 1834) and *Alopecosa schmidti* (Hahn, 1835), between 5 and 7 Paris lines, i.e., 11.3 to 15.8 mm, in size.
Koch 1847: 168	synonym of *Alopecosa fabrilis* (Clerck, 1757), based on Walckenaer's (1837) redescription of *L. accentuata.*
Simon 1864: 515	synonym of *Pirata piscatorius* (Clerck, 1757); that this unlikely proposal by the teenage Simon is not just a lapsus is confirmed on page 355, where the same species is referred to as "L[ycose] pêcheuse ou accentuée", i.e., the accentuated or fishing wolf spider.
Thorell 1872: 313	*nomen dubium*; potentially a synonym of *Alopecosa inquilina* (Clerck, 1757) or *A. fabrilis.*
The phase of consolidation	
Simon 1876: 255	senior synonym "with sufficient certainty" ("suffisamment certaine") of *Lycosa andrenivora* (*sensu* Walckenaer 1826, Blackwall 1861 and Thorell 1872)*, sabulosa* (Hahn, 1831) [currrently considered a synonym of *Alopecosa cursor* (Hahn, 1831), but possibly a synonym of *L. farinosa;* Canard & Cruveillier (2019)]*,* and *barbipes*. In particular the reference to Thorell's interpretation of *L. andrenivora*, but also the inclusion of the south-eastern record by Hahn, indicate that Simon thus applies the name to the collective species containing the present-day *Alopecosa barbipes* and *A. farinosa*, rather than only the Atlantic sister species*.* The synonymy is explicitly based on the redescription of *L. accentuata* by Walckenaer (1826), not the original description by Latreille. At the same time, Simon highlights the presence of an "alpine variety" in the South of France, differing from typical specimens in lacking the black fringe of hairs on the male anterior tibiae.
Becker 1882: 92	senior synonym of *Lycosa andrenivora* (*sensu* Walckenaer 1826)*, sabulosa,* and *barbipes*; ranging east to Hungary and Russia, confirming that Becker follows Simon in applying the name to the species complex including both *Alopecosa barbipes* and *A. farinosa.*
Chyzer & Kulczyński 1891: 70	senior synonym of *A. farinosa* (based on examination of the type material from Hungary), and of *A. barbipes*, *A. andrenivora*, and *A. sabulosa*.
Bösenberg 1903: 392	sister species of *Lycosa andrenivora* (*sensu* Walckenaer 1826, i.e. *A. barbipes* Sundevall, 1833); Bösenberg distinguishes the males of *Tarentula accentuata* from those of *T. andrenivora* by the fact that in the latter species the tibiae are twice as thick as the metatarsi ("Schienen des I. Fusspaares sind doppelt so stark als die Vortarsen"). His interpretation thus anticipates the interpretation of Dahlem *et al*. (1987) eight decades later.
Dahl 1908: 285 [459]	tentative synonym of *Alopecosa trabalis;* certainly not ("auf keinen Fall") a synonym of *A. barbipes;* Dahl uses the latter name for the species pair *A. barbipes*/*A. farinosa*, as is evident from his list of synonyms, as well as his material in the Zoological Museum Berlin Berlin re-examined by Cordes (1994).
Simon 1937: 1135	senior synonym of *Lycosa andrenivora* (*sensu* Walckenaer 1826)*, farinosa,* and *barbipes*, i.e. Simon follows Dahl (1908) and applies the name to the species pair including both *A. barbipes* and *A. farinosa* in the present sense. At the same time, he names the alpine "race locale" reported in 1876 as a new subspecies, *A. accentuata oreophila*, which, as Breitling *et al.* (2016) pointed out, is a junior synonym of *A. farinosa.*
Roewer 1955: 1551	*nomen dubium* ("nicht zu deuten!"); without additional argument, but probably following Dahl (1908).
Bonnet 1955: 233	senior synonym of *Lycosa andrenivora, sabulosa, barbipes* and *farinosa*; including a quite unusual explicit reference to Simon (1937) to support this synonymy. The list of synonyms and distribution confirm that Bonnet applies the name to both members of the *A. barbipes*/*farinosa* species pair.
Wiebes 1959: 12	senior synonym of *A. barbipes sensu* Dahl (1908).
Lugetti & Tongiorgi 1969: 13	senior synonym of *A. barbipes* (following Bonnet 1955, contra Roewer 1955); the cited distribution confirms that these authors continue to apply the name to the *A. barbipes*/*farinosa* species pair.
The phase of consistent misidentification	
Dahlem *et al.* 1987: 154, 162	used as valid name for the sister species of *A. barbipes*, lacking tibial brush ("zottige Patellen- und Tibien-Behaarung von Laufbein I, namengebend für *A. barbipes*, … fehlt").
Cordes & von Helversen 1990: 70	used as valid name for the sister species of *A. barbipes*; the details of this study are included in the unpublished PhD thesis of Cordes (1994), which unfortunately was overlooked by Canard & Cruveillier (2019).
Roberts 1995: 25	used as valid name for the sister species of *A. barbipes*; emphasising that *A. accentuata* is restricted to Southern Central Europe and lacks the tibial brush
Vink & Mitchell 2002: 242	used as valid name for the sister species of *A. barbipes*; confirming the morphological and ethological results using 12S DNA sequence data.

Table 1. — Continuation.

Publication	Interpretation of *Lycosa accentuata* Latreille, 1817
Cruveillier 2012: 165	used as valid name for the sister species of *A. barbipes*; this paper discusses the nomenclature of the species pair in great length, and quite correctly distinguishes the two sister species, identifying Simon's *A. accentuata* with the *A. barbipes* of Cordes & von Helversen (1990) and Roberts (1995), and considering Simon's *A. a. oreophila* as the true *A. accentuata* ("la vraie *A. accentuata*"). However, the work is curiously not cited by Canard & Cruveillier (2019).
Towards a resolution?	
Breitling *et al.* 2016: 68	*nomen dubium*; certainly not a senior synonym of *A. farinosa*, as this species does not occur at the type locality of *A. accentuata* (around Paris).
Canard & Cruveillier 2019: 2	senior synonym of *A. barbipes*, sister species of *A. farinosa,* inverting 30 years of consistent use.
this paper	subjective junior synonym of *Alopecosa trabalis* (Clerck, 1757).

been justifiable – and potentially even unavoidable. However, as no type material of *Lycosa accentuata* has survived (if it ever had been deposited in a collection at all), it would seem that any attempt to resolve the identity of the species needs to refer back to the description by Latreille (1817), potentially complemented with the additional information provided by Walckenaer (1826). Does this sole surviving evidence support the interpretation proposed by Canard & Cruveillier (2019)? Table 2 presents a line-by-line translation of the complete description given by Latreille. It clearly shows that this species has no resemblance to *A. barbipes*; in fact, all specific details provided are strongly contradicting the synonymy proposed by Simon (1876) and Canard & Cruveillier (2019). Of course, as was standard practice at this time, the description does not contain the details we would expect nowadays; in particular, it lacks any illustrations and any reference to the structure of the genitalia. Nevertheless, it would be necessary to accuse Latreille (and Walckenaer) of wilful obscurity and sloppiness if one were to apply this description to *A. barbipes*. This assessment is further corroborated by the fact that both Latreille (1817) and Walckenaer (1826) discuss *Lycosa andrenivora* (as described by Walckenaer 1817 and 1826, i.e., a universally accepted synonym of *A. barbipes*) in the same works as *L. accentuata*, apparently without detecting any relationship between the two species. Of course, these early authors had a tendency of oversplitting their species, but in all these cases they point out the similarity themselves. The distinct pattern of *Alopecosa barbipes* is quite striking and constant, especially in the females, and it seems impossible to suggest that two experienced arachnologists, who in Walckenaer's case according to internal evidence had seen multiple specimens of each species and performed detailed behavioural studies of one of them (Walckenaer 1817), would fail to observe the affinity.

LYCOSA ACCENTUATA AS A SYNONYM OF *ALOPECOSA TRABALIS*

Given the long and varied history of the name, without a consistent and universal pattern of prevailing use, stabilising the situation by designation of a neotype requires careful consideration. Stabilising the usage *sensu* Dahlem *et al.* (1987) by assigning a neotype specimen from the Eastern/Continental sibling species would violate the condition of ICZN Article 75.3.6 requiring "evidence that the neotype came as nearly as practicable from the original type locality" – an exception according to ICZN 75.6. ("Conservation of prevailing usage by a neotype") would require a request to the Commission and would have little prospect of success, given that there is no evidence of a universal prevailing use to be conserved. On the other hand, it would be impossible to validly select a neotype specimen from the Western/Atlantic sibling species, as this would violate the condition of ICZN Article 75.3.5 requiring "evidence that the neotype is consistent with what is known of the former name-bearing type from the original description". Again, a request for an exception by a ruling of the Commission under its plenary power could not be met favourably, as it would not preserve a universal prevailing use of the name.

The only remaining option is to select as neotype for Latreille's species a specimen of *Alopecosa trabalis* collected in the surroundings of Paris: such a choice would be consistent with the original description and the type locality of *Lycosa accentuata*. This is the option chosen here, and as a result the name *Lycosa accentuata* Latreille, 1817 is confirmed as a junior subjective synonym of *Araneus trabalis* Clerck, 1757, valid name *Alopecosa trabalis* (Clerck, 1757) (**n. syn.**). This results in the following synonymy for the latter name:

Alopecosa trabalis (Clerck, 1757)

Araneus trabalis Clerck, 1757: 97, pl. 4, tab. 9.

Aranea obscura Olivier, 1789: 218.

Aranea vorax Walckenaer, 1802: 238.

Aranea agilis Walckenaer, 1802: 238.

Lycosa accentuata Latreille, 1817: 294 (**n. syn.**).

TABLE 2. — Annotated translation of the original description of *Lycosa accentuata* Latreille, 1817.

J'ai trouvé, à la même époque, I found, during the same time [i.e., in early spring or the beginning of May],	The discovery of adult specimens at this time of year would be compatible with what we know of *Alopecosa barbipes* (Sundevall, 1833), but Walckenaer (1826) states that Latreille's specimen was juvenile (or subadult). For a subadult *A. barbipes*, a discovery in May would be rather late, and Walckenaer's observation (1826) of the species in late May and the beginning of June would be rather atypical for *A. barbipes*.
aux environs de Paris, in the surroundings of Paris,	Walckenaer (1826) specifies that he found the species exclusively in forests, in the Bois de Boulogne and the Forest of Carnelle; even if these areas were less densely wooded forests than today, they would be a quite untypical habitat for *A. barbipes*, but not for *A. trabalis* (Clerck, 1757). The 1846 painting *Forêt de Fontainebleau* by Jean-Baptiste Corot in the Museum of Fine Arts Boston is probably representative for the aspect of these forests in the early 19th century (https://de.wikipedia.org/wiki/Datei:Jean-Baptiste-Camille_Corot_-_Forest_of_Fontainebleau_-_Google_Art_Project.jpg). Extensive grazing by livestock produced open, deciduous forests, which have a striking similarity to the habitat descriptions of *A. trabalis* in classical field guides or taxonomic works such as Wiebes (1959), Roberts (1998) or Almquist (2005). In contrast, *A. barbipes* (*sub A. accentuata*) is described to occupy the same habitat as *A. fabrilis* (Clerck, 1757) in Wiebes (1959), a classic species of unforested, dry and sandy habitats.
une lycose qui a une grande affinité avec la précédente, a wolf spider with close affinity to the previous one [i.e. *Lycosa ruricola*],	The similarity to *Lycosa ruricola* De Geer, 1778 is confirmed by Walckenaer (1826), when he states that *L. accentuata* resembles his *L. campestris* Walckenaer, 1826, and *L. agretyca* Walckenaer, 1805. The latter is currently considered a synonym of *Trochosa ruricola*; the former was also used as such by Blackwall (1861), and this interpretation was convincingly supported by Dahl (1908). This statement mostly emphasises the general confusion in wolf spider taxonomy at this time.
mais un peu plus petite but a bit smaller [than 15-17 mm]	This is much too large for *A. barbipes*, which according to Canard & Cruveillier (2019) has a maximum length of 10 mm. Using the regression equations provided by Penell *et al.* (2018), the largest *A. barbipes* female would have an expected body mass of 101 mg, less than a third of what is expected for a 15 mm lycosid (313 mg). Thus, *A. barbipes* would not just be "a bit smaller". This argument is further aggravated when taking into account that Walckenaer (1826) considers Latreille's specimen a not yet fully-grown juvenile ("un individu jeune et non parvenu à toute sa grandeur"). In 1837, Walckenaer gives the size of *L. accentuata* as 5-7 Parisian lines, i.e. 11.3-15.8 mm, in contrast to 4-5 lines for *Lycosa andrenivora* Walckenaer, 1805 (i.e. *A. barbipes*). The large size would, however, be consistent with *A. trabalis*.
et que je caractérise ainsi : which I describe as follows:	
Palpes d'un brun jaunâtre obscur, plus foncés vers l'extrémité ; mandibules noirâtres ; yeux noirs ; Pedipalps dark yellowish-brown, darker towards the tip; chelicerae blackish; eyes black;	All these characters would match almost all wolf spiders. Importantly, they confirm that Latreille's specimen was not an adult male, which is relevant for the interpretation of the following characters.
tronc ayant ses bords et une bande longitudinale le long de la carène, d'un brun jaunâtre ou olivâtre obscur, the prosoma has its margins and a longitudinal stripe along its keel yellowish-brown or dark olive-brown,	In *A. barbipes*, the marginal bands are vague, often dissolved and interrupted, certainly not as prominent as the median band. The description of the median band as running "along the keel" of the prosoma implies a much narrower band than what is seen in *A. barbipes.* In contrast, in *A. trabalis* the prominent yellowish-brown longitudinal stripe and the yellow margins are very conspicuous.
et une bande noirâtre de chaque côté, entre celle du dos et les bords ; and has a blackish band on each side, between that of the back and the margins;	In *A. barbipes*, these bands are usually covered in grey hairs.
abdomen d'un brun jaunâtre foncé, opisthosoma dark yellowish-brown,	Given the careful use these early writers make of their colour terminology, this description would be unexpected for *A. barbipes*, which is rather greyish-brown. In *A. trabalis*, however, the opisthosoma is indeed often yellowish-brown.
avec la base supérieure plus claire ou un peu grisâtre ; the upper base lighter or a bit greyish;	Such a pattern is incompatible with *A. barbipes*, which has a dark cardiac mark and prominent pattern in this area, especially in females and juveniles.
près du milieu de cette base sont deux petites taches noires réunies en devant et en accent circonflexe ; close to the middle of this base are two small black spots that are joined in the front and in the form of a circumflex accent;	This description is impossible to reconcile with the characteristic complex and intense pattern of *A. barbipes*. On the same page, Latreille uses eight lines to describe the subtle opisthosomal pattern of *T. ruricola* in exquisite detail. It is thus inconceivable that he would have described the much more strikingly patterned *A. barbipes* so inadequately. *A. trabalis*, in contrast, indeed often lacks a distinct opisthosomal pattern, which can be completely absent or reduced to the dark anterior margin of the cardiac mark, which forms a circumflex shape.

Table 2. — Continuation.

entre elles est un faisceau de poils jaunâtres; between them there is a bunch of yellowish hairs;	This is another detail that certainly does not match *A. barbipes*.
les pattes sont d'un brun jaunâtre, avec les cuisses plus claires ou olivâtres, et marquées de quelques nuances brunes; the legs are yellowish brown, with lighter or olive-brown femora, and marked with a few shades of brown;	Typical *A. barbipes* have greyish legs, with distinct irregular annulations, especially in females and juveniles. In *A. trabalis*, the femora are indeed lighter and marked with irregular brown patches.
les tarses sont noirâtres. the tarsi are blackish.	In *A. barbipes*, the distal segments of the legs are usually not darkened.
*Je nomme cette espèce lycose accentuée (*lycosa accentuata*).* I name this species "accentuated wolf spider" (*Lycosa accentuata*).	
Elle se rapproche de l'aranea trabalis *de Clerck, pl. 4 tab 5.* It is close to Clerck's *Araneus trabalis* (plate 4, tab. 5 [sic; probably a lapsus for plate 4, tab.9, in Clerck 1757])	This reference explicitly confirms the close similarity to *Alopecosa trabalis* (Clerck, 1757); it also explains the allusions to *Trochosa* species as being similar, as the illustration by Clerck has regularly been misidentified as referring to a member of this genus (C. L. Koch [1847] uses the name for *T. robusta* and *T. ruricola;* Ohlert [1867] for *T. terricola* Thorell, 1856).

NEOTYPE DESIGNATION FOR *LYCOSA ACCENTUATA* LATREILLE, 1817

TYPE MATERIAL LOST. — *Locus typicus*: "environs de Paris"

NEOTYPE. — **France** • 1 ♀; Ermitage de Franchard, forêt de Fontainebleau, 48°24'28"N, 2°37'44"E; 27.V.2018; C. Jacquet leg.; MNHN-AR-AR16223.

TABLE 3. — Measurement of the legs of the female neotype of *Lycosa accentuata* Latreille, 1817 (MNHN-AR-AR16223). Abbreviation: **TL**, total length.

mm	Femur	Patella	Tibia	Metatarsus	Tarsus	TL
pedipalp	1.8	0.9	1.0	–	1.7	5.4
leg I	3.9	2.0	2.6	2.6	2.0	13.0
leg II	3.4	1.9	2.5	2.4	1.9	12.1
Leg III	2.7	1.7	2.2	2.8	1.8	11.3
Leg IV	4.4	1.9	3.6	4.5	2.5	16.9

DESCRIPTION OF FEMALE NEOTYPE (Fig. 2)

Prosoma brown, with a complete, wide and yellowish median stripe ending between the PME. Laterally with yellowish and slightly serrated stripes completely covering the margins of the prosoma. Chelicerae dark brown. Proximal part of maxillae brownish, distal part more yellowish brown. Labium brown, distal margin yellowish. Sternum light brown, with a longitudinal median stripe of yellow colour, broadened at the centre. Opisthosoma dorsal greyish brown, cardiac mark slightly darker and more greyish, with thin yellowish frame. Spinnerets dark brown, distinctly darker than ventral side. Coxae in ventral view light yellowish. Legs brownish. Prosoma length 5.4 mm, width 3.9 mm, Opisthosoma length 6.0 mm, anterior eye row 0.91 mm, median eye row 1.07 mm, posterior eye row 1.33 mm, diameter of AME 0.13 mm, PME 0.34 mm, ALE 0.12 mm, PLE 0.3 mm. Distance between PLE-PLE 0.99 mm, PME-PME 0.4 mm, ALE-ALE 0.64 mm, ALE-AME 0.12 mm, AME-AME 0.18 mm, ALE-PME 0.22 mm.

For measurements of legs, see Table 3.

REMARK

Geographical distribution, habitat, size, colouration and phenology of *Alopecosa trabalis* agree with the description of *Lycosa accentuata* provided by Latreille (1817). No other lycosid species is a similarly plausible match to the original description. The selected neotype thus meets the requirements of ICZN Article 75.3.5. The restricted locus typicus in the forêt de Fontainebleau is within the "environs de Paris", as confirmed by contemporary travel guides (e.g. Dulaure 1827; Anonymous 1855). Thus, the requirements of ICZN Article 75.3.6 are met as well. The neotype designation stabilises the interpretation of *Lycosa accentuata*, and in consequence the nomenclature of the sibling species pair *Alopecosa barbipes/A. farinosa.*

PRACTICAL CONSEQUENCES OF (MIS)APPLYING *LYCOSA ACCENTUATA* LATREILLE, 1817, TO THE ATLANTIC SIBLING SPECIES, INVERTING PREVIOUS ESTABLISHED USAGE

While mere preferences based on the traditional use of names should not be used to justify violations of the code of nomenclature, which ultimately can only result in increased instability and confusion, it is important to take prevailing usage into account when making reasonable judgement calls in doubtful cases. In the present case, it is relevant to point out that *Alopecosa farinosa* and *A. barbipes* are frequently caught in pitfall traps and are an important part of epigeal spider communities inhabiting dry open habitats across their range; as a result they figure widely in ecological and faunistic studies. Following Dahlem *et al.* (1987) and Cordes & von Helversen (1990), and until the publication by Breitling *et al.* (2016), the names *A. accentuata* and *A. barbipes* were almost

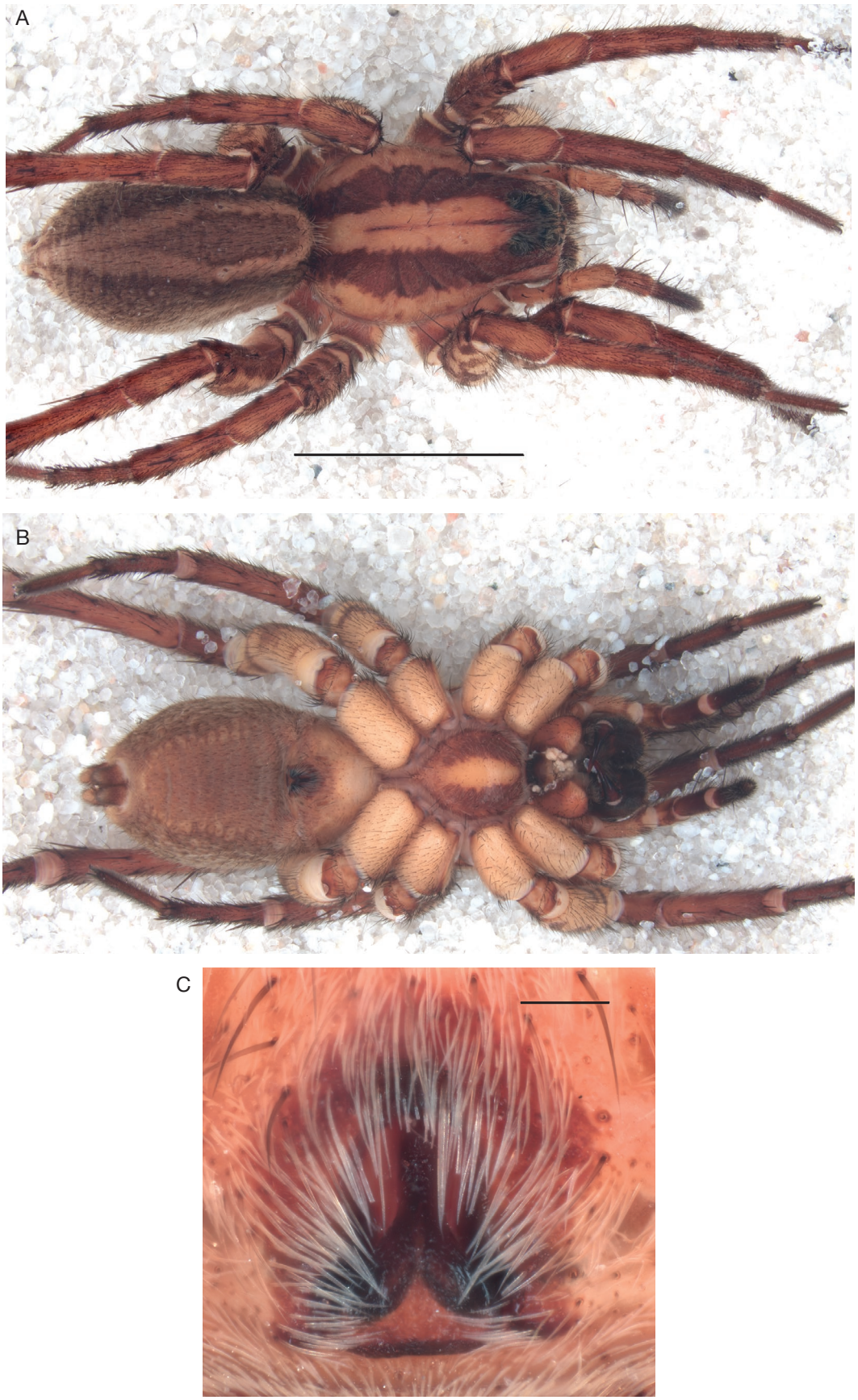

Fig. 2. — Neotype of *Lycosa accentuata* Latreille, 1817 (junior subjective synonym of *Araneus trabalis* Clerck, 1757) from forêt de Fontainebleau near Paris: **A**, dorsal view; **B**, ventral view; **C**, epigyne *in situ.* Scale bars: A, B, 5 mm; C, 0.2 mm.

uniformly applied to the Eastern/Continental and Western/Atlantic form of the sibling pair, respectively, throughout the ecological and faunistic literature (e.g. Entling *et al.* 2007; Schmitt 2008; Buchholz & Kreuels 2009; Buchar & Dolanský 2011; Cruveillier 2012). The same was the case for authoritative country checklists (e.g. Merrett & Millidge 1992; Alderweireldt & Maelfait 1993; van Helsdingen 1996; Le Peru 2007; Blick *et al.* 2016), all of which specifically refer to the recent splitting of the sibling species pair. Other checklists do also list both species (*A. accentuata* and *A. barbipes*), but the lack of a critical discussion leaves it open whether this is intentional, or a result of the historical ambiguity of usage (e.g. Blagoev 2002; Canard 2005; Cardoso & Morano 2010).

Moreover, various scientific articles on cryptic species and behavioural isolation in wolf spiders also use the nomenclature of Dahlem *et al.* (1987), e.g. Töpfer-Hofmann *et al.* (2000), Vink & Mitchell (2002), Framenau & Hebets (2007). This follows the standard practice in the arachnological literature of applying the nomenclature adopted in the World Spider Catalog, first edited by Norman Platnick and now hosted by the University of Bern, Switzerland. The availability of these online catalogues as an internationally accepted point of reference has contributed immensely to stabilizing spider nomenclature. The catalogue adopted the nomenclature of Dahlem *et al.* from 2001 onwards (version 2.0, the first version covering the Lycosidae), and additional stability was achieved as the most important modern identification guide for European spiders did the same (Roberts 1995, 1998), followed in due course by the current major resource for the identification of European spiders, the Spiders of Europe website (Nentwig *et al.* 2010 *et seq.*).

Using Google Scholar, we were able to identify dozens of ecological or faunistic publications from a wide range of journals, as well as the grey literature, in which the name *A. barbipes* (or rarely *Tarentula barbipes*) has been unequivocally applied to the Atlantic sibling species after 1990. This includes citation classics such as Buchholz (2010) and Entling *et al.* (2007). We also found dozens of publications in which the name *A. accentuata* was used specifically for the Continental sibling after 1990. Not in all cases was it clear whether this use was accidental, or whether the authors were simply unaware of the existence of two sibling species. However, we did not find a single example of a publication using *A. accentuata exclusively* for the Atlantic species only, in explicit contrast to its continental sibling. This consistent use at an international level and across a diverse range of publications contradicts the assessment by Canard & Cruveillier (2019), who seem to imply that the name *A. accentuata* had been used consistently for the Atlantic sibling species, at least by French authors. This is not the case, and this view is contradicted not only by the French standard checklist (Le Peru 2007), but even by their own publications (e.g. Cruveillier 2012; Lafage *et al.* 2015).

The re-naming of *A. accentuata* as *A. farinosa* and the maintained usage of *A. barbipes*, as proposed by Breitling *et al.* (2016), have been widely accepted by the community (e.g. Just *et al.* 2018; Naumova *et al.* 2019). From the point of view of database curation and unambiguous information retrieval, this name change was much less problematic than would be the proposed transfer of the name *A. accentuata* from one sibling to the other. Especially checklists and faunistic databases are extremely susceptible to honest mistakes based on such a switch of names, and future confusion, e.g., by accidental attributions of historic records of *A. farinosa* listed under the name *accentuata* to the Atlantic species, would be inevitable and would create a major impediment in many areas for future scientific work on this fascinating pair of sibling species.

CONCLUDING REMARKS AND DISCUSSION

As we have shown, the problems created by the imprecise description of *Lycosa accentuata* could have been avoided if subsequent taxonomists had paid closer attention to the actual text of Latreille's work. This would have avoided the initial misapplication to the *A. farinosa/A. barbipes* sibling pair, at least for authors subsequent to Dahl's careful analysis (1908). It would also have prevented Dahlem *et al.* (1987) ill-advised decision to apply the name to the Eastern member of the sibling pair – the type locality in Paris and the description given by Latreille obviously preclude this identification. And, finally, it would have stopped Canard & Cruveillier (2019) from compounding the confusion by their misguided appeal to an inconsistent (and hardly existing) "consensus", in clear contradiction to the text of the original description.

It may be interesting to point out that the confusion surrounding this case might also have been avoided by a more widespread use of common names as a supplement to the scientific Linnaean nomenclature. In the list of common names for the spiders of Belgium (Jocqué 1992), *A. accentuata* in the broad sense (i.e., the collective of what is now known as *A. barbipes* and *A. farinosa*) was listed as "Gevlekte panterspin" (literally, "Spotted panther spider"). When the presence of two sibling species under this umbrella was realized, the common name for the collective species was discarded to avoid any ambiguity, and subsequent lists of common names for Benelux spiders referred to *A. accentuata* as "Pinksterpanterspin" ("Whitsun panther spider"), in contrast to its sibling *A. barbipes*, the "Paaspanterspin" ("Easter panther spider"), in reference to subtle differences in phenology (Roberts 1998; Bosmans & Vanuytven 2001). These common names remained stable when *A. accentuata* changed its name to *A. farinosa* in 2016 (Bosmans & Van Keer 2017). Such flexibility is of course not possible within the framework of Linnaean nomenclature, and for very good reasons, but at the level of common names it can make a useful contribution when trying to clarify the situation for the broader community of users of spider nomenclature, beyond the narrow base of practicing taxonomists.

Another general lesson to be learned from this case is the potential importance of the World Spider Catalog (WSC) as a guardian of nomenclatural stability in araneological research. The proposal of Canard & Cruveillier (2019) was implemented by the WSC as the accepted standard nomenclature after three weeks of internal discussion and without any reserva-

tions. Yet, it was clear immediately upon publication that the work by Canard & Cruveillier (2019) neglected elementary standards in taxonomy: not only did they not examine type material for the relevant species (which doesn't survive), they also ignored the unambiguous evidence of the original description and misread and distorted the previous literature, both modern and historical, in an attempt to support an idiosyncratic interpretation of a taxon name in a way that goes against the very concept of nomenclatural stability. It was also apparent right away that this proposal had the potential to create a major headache, e.g., for the managers of biological record databases and country checklists, conservationists working with distribution data and newcomers to the field of arachnology, who were just becoming acquainted with the European arachnofauna. Consequently, while the proposal by Canard & Cruveillier should certainly have been *documented* in the WSC, it should never have been *implemented* as the supposed "accepted" name for the species affected. Such a cautious and conservative approach would have been preferable by far, as it would have maintained the status quo while the evidence presented here was being prepared for publication, avoiding two years of confusion and instability. Given the widespread use of the WSC as the authoritative reference in matters of spider nomenclature, it finds itself in a position of responsibility towards the scientific community, and it would be desirable if in the future similar cases were handled with greater discretion by the editors of the WSC.

Acknowledgements
We thank Annemarie Ohler and one anonymous reviewer for their helpful comments on the manuscript and Alain Canard and Marcel Cruveillier for enlightening discussions on the nomenclature of this mysterious species. Theo Blick gave valuable remarks on an early version of the manuscript. Claire Jacquet kindly provided a specimen of *Alopecosa trabalis* from the forêt de Fontainebleau near Paris. Tobias Bauer was supported by a scholarship of the Friedrich-Ebert-Stiftung e.V.

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Submitted on 17 May 2021;
accepted on 13 December 2021;
published on 12 April 2022.