ISSN: 1989-6581

www.aegaweb.com/arquivos_entomoloxicos

García et al. (2026)

ARQUIVOS ENTOMOLÓXICOS, **35**: 47-84

Description of a new desert-ant belonging to the *Cataglyphis cursor* group (Hymenoptera: Formicidae) from the Iberian Peninsula

Fede García [1], Amonio David Cuesta-Segura [2], Xavier Espadaler [3], Roger Vila [4] & Mattia Menchetti [5]

[1] Independent researcher. c/ Blesa, 45. E-08004 Barcelona, Spain. e-mail: chousas2@gmail.com

[2] Independent researcher. c/ Río Oca, 19. E-09240 Briviesca (Burgos, Spain). e-mail: dcuesta.bugman@gmail.com
ORCID 0000-0001-8868-4934

[3] CREAF, Universitat Autònoma de Barcelona. E-08193 Cerdanyola del Vallès (Barcelona, Spain). e-mail: xavierespadaler@gmail.com
ORCID 0000-0002-7681-5957

[4] Institut de Biologia Evolutiva (CSIC-Univ. Pompeu Fabra). Passeig Marítim de la Barceloneta, 37. E-08003 Barcelona (Spain).
e-mail: roger.vila@csic.es

[5] Center for Integrative Biodiversity Discovery, Museum für Naturkunde. Invalidenstr. 43. Berlin 10115 (Germany).
e-mail: mattiamen@gmail.com
ORCID 0000-0002-0707-7495

Abstract: The species of the *Cataglyphis cursor* group in Western Europe are reviewed, with particular attention paid to material from the Iberian Peninsula. *Cataglyphis cursor* (Fonscolombe, 1846) is found east of the Rhône River. *Cataglyphis piliscapa* (Forel, 1901) is relegated to the area from northeastern Spain (Catalonia) to the Rhône River. The remaining Iberian material studied (largely originating from central Spain) belongs to a new endemic species, *Cataglyphis mater* sp. nov. García, Cuesta-Segura, Espadaler, Vila & Menchetti, which differs morphologically, genetically, ethologically, and geographically from the former. Morphometric analyses that include the removal of allometric variance, a principal components analysis, linear discriminant analysis and Ward cluster analysis, DNA barcoding and the morphology of the genitalia have been used in order to establish the status of the central Iberian populations as new species. Diagnosis of the new species, with respect to *C. cursor* and *C. piliscapa*, includes an almost hairless cephalic underside and a larger head in workers, as well as very characteristic external genitalia in males. This new species is especially abundant on the northern plateau of Spain, appearing sporadically in other areas of the peninsula, showing an allopatric distribution with respect to the other species in the *C. cursor* group. In total, it has been collected in 125 localities across fourteen provinces, at an elevational range of 610 to 1922 m a.s.l . It was extensively found in sympatry with *Cataglyphis iberica* (Emery, 1906), another species with similar ecological requirements but belonging to the *C. albicans* group. With *C. mater* sp. nov., 11 *Cataglyphis* Foerster, 1850 species are known to occur in the Iberian Peninsula, being all but one (*C. piliscapa*), Iberian endemic.
Key words: Hymenoptera, Formicidae, *Cataglyphis*, biodiversity, biometry, cryptic species, DNA barcoding, new species, taxonomy, Iberian Peninsula.

Resumen: Descripción de una nueva "hormiga del desierto" perteneciente al grupo de *Cataglyphis cursor* (Hymenoptera: Formicidae) de la Península Ibérica. Se revisan las especies del grupo de *Cataglyphis cursor* en Europa occidental, prestando especial atención al material procedente de la Península Ibérica. *Cataglyphis cursor* (Fonscolombe, 1846) se encuentra al este del río Ródano. *Cataglyphis piliscapa* (Forel, 1901) se limita a la zona que abarca desde el noreste de España (Cataluña) hasta el río Ródano. El resto del material ibérico estudiado (procedente en su mayor parte del centro de España) pertenece a una nueva especie endémica, *Cataglyphis mater* sp. nov. García, Cuesta-Segura, Espadaler, Vila & Menchetti, que difiere morfológica, genética, etológica y geográficamente de la anterior. Se han utilizado análisis morfométricos que incluyen la eliminación de la varianza alométrica, un análisis de componentes principales, un análisis discriminante lineal y un análisis de agrupamiento de Ward, así como el código de barras de ADN y la morfología de la genitalia, con el fin de establecer el estatus de las poblaciones del centro de la Península Ibérica como nueva especie. El diagnóstico de la nueva especie, con respecto a *C. cursor* y *C. piliscapa*, incluye una cara inferior cefálica

casi desprovista de pelos y una cabeza más grande en las obreras, así como una genitalia externa muy característica en los machos. Esta nueva especie es especialmente abundante en la meseta norte de España, apareciendo esporádicamente en otras zonas de la península, lo que muestra una distribución alopátrica con respecto a las demás especies del grupo de *C. cursor*. En total, se ha recogido en 125 localidades repartidas por catorce provincias, en un rango altitudinal de entre 610 y 1922 m s.n.m. Se ha encontrado ampliamente en simpatría con *Cataglyphis iberica* (Emery, 1906), otra especie con requisitos ecológicos similares pero perteneciente al grupo de *C. albicans*. Con *C. mater* sp. nov., se conocen 11 especies de *Cataglyphis* Foerster, 1850 presentes en la Península Ibérica, siendo todas ellas, salvo una (*C. piliscapa*), endémicas de la Península Ibérica.

Palabras clave: Hymenoptera, Formicidae, *Cataglyphis*, biodiversidad, biometría, especie críptica, código de barras de ADN, nueva especie, taxonomía, Península Ibérica.

Recibido: *22 de julio de 2026* ***Publicado on-line:*** *3 de agosto de 2026*
Aceptado: *26 de julio de 2026* urn:lsid:zoobank.org:pub:FB9FEDA8-A3F8-4140-82A8-DEF43B5204AF

Introduction

The ant genus *Cataglyphis* Foerster, 1850, known as "desert ants" includes 105 species worldwide (Bolton, 2026), distributed in deserts and other xerophilous habitats across the southern Palaearctic, with the maximum diversity in North Africa and the Middle East, where the genus evolved (Kalarikkal *et al.*, 2024; Lecocq de Pletincx *et al.*, 2024).

Colonies nest in soil and the *Cataglyphis* workers forage alone at high temperatures, when other ants remain inside their nests (Boulay *et al.*, 2017). They feed mainly upon arthropod corpses that the workers retrieve alone and also flower nectaries (Retana *et al.*, 1986).

The genus has been divided into several species groups based on morphology (Agosti, 1990) and later supported molecularly (Knaden *et al.*, 2012; Menchetti *et al.*, 2026). Four of the species groups are present in Iberia, with 10 species up to now (Gómez & Espadaler, 2007; Amor & Ortega, 2014). Taxonomy of the genus involved quite similar species leading for many years to a certain degree of taxonomic confusion that needed several revisions (e.g. Tinaut & Plaza, 1989; Tinaut, 1990a, 1990b).

The focus of this paper is the *Cataglyphis cursor* group, consisting of species with workers of small size, dark coloured, with 3rd and 4th maxillary palp segments shorter than 5th and 6th together, 3rd maxillary palp segment round in section, the head mainly dull, rarely shiny, and a squamiform petiole with the anterior and posterior surfaces meeting at an angle but only partially forming a crest (Agosti, 1990). The group consists of 18 taxa among species, subspecies and varieties, distributed from central Iberia to Mongolia, but absent from North Africa (Agosti, 1990; Chang & He, 2002; Khalili-Moghadam *et al.*, 2023; Salata *et al.*, 2025).

Currently, the *C. cursor* group accounts for three recognised species in Western Europe: *Cataglyphis piliscapa* (Forel, 1901) in southern France west of the Rhône and Iberia, *Cataglyphis cursor* (Fonscolombe, 1846) in southern France east of the Rhône (Hefetz & Lenoir, 1991; Antarea, 2025a, 2025b) and *Cataglyphis italica* (Emery, 1906) in southeastern Italy and Croatia (Centomare *et al.*, 2017; Menchetti *et al.*, 2026). *Cataglyphis piliscapa* and *C. italica* were described as subspecies or varieties of *C. cursor* and considered afterwards as junior synonyms for decades, not being until Agosti & Collingwood (1987) that both were fully recognised as species. Finally, it is worth mentioning *Cataglyphis tibialis* Bondroit, 1918, which was described from Banyuls-sur-Mer, and is considered a subjective junior synonym of *C. piliscapa* (e.g. Agosti, 1990), having a very scarce use in the literature.

Reproductively, the group includes species with dependent colony founding and others that, although capable of independent founding, apparently have a low dispersal capacity (Peeters & Aron, 2017). Lenoir *et al.* (1988a), observed colony foundation through budding in *C. piliscapa* and *C. cursor* (although referred only to *C. cursor* in the article, the locations of the study correspond to the distribution of the two species, see below). In these species, the gynes call for males close to the mother nest entrance, reentering after insemination and leaving it with a group of workers shortly

afterwards to establish a new colony in a nearby place. The gynes have a less developed mesosoma than independent *Cataglyphis* founders, lacking even the wing muscles (Lenoir *et al.*, 1988a).

The names published in Iberian literature for the *C. cursor* group match those used by contemporary French myrmecologists (see "Historical Remarks" below). However, for some 35 years Iberian myrmecologists have known, from morphology alone, that different populations of the so-called "*Cataglyphis cursor*" group in Iberia could be distinguished, especially if sexuals were available. Workers taken in isolation were always much more difficult, although not impossible, to ascribe to a corresponding sexual phenotype. It is, perhaps, this difficulty that somewhat retained myrmecologists from reaching the point of a formal description, the logical new step.

A major support for the maintenance along the years of the cryptic species hypothesis was the paper of Lenoir *et al.* (1988b) dealing with the distinct cuticular hydrocarbons of two colonies from "Sierras au nord de Madrid" when compared with colonies from southern France which had already received different names by classic authors (*C. cursor*, *C. piliscapa* and its current synonym *C. tibialis*). Lenoir *et al.* (1988b) detected clear hydrocarbon differences between *C. piliscapa* –from the west of Rhône river– and the two colonies from Madrid, which joined best with *C. cursor* –from the east of Rhône river–. Also, Nowbahari *et al.* (1990) found cuticular hydrocarbons in central Iberian populations to be distinct from the French samples. Moreover, Hefetz & Lenoir (1991) found a similar pattern while working with Dufour's gland contents. In all cases, intraspecific variability was thought to be the reason. Recently, Doums *et al.* (2023), showed that a central Iberian population of the *C. cursor* group was genetically differentiated from the rest of West European species of the group. Finally, in Menchetti *et al.* (2026), the sequences belonging to central Iberian samples, collected for the present work, were presented as *Cataglyphis* sp.

Based on the gathering of samples from a vast region of Iberia during the last three decades, we here present the analysis and formal description of *Cataglyphis mater* sp. nov., supported by biometry and classical morphology, geography, ethology, jointly with molecular analysis. A key for the worker caste of the *C. cursor* group in West Europe is provided.

Material and methods

Collection

Targeted field work campaigns were carried out between 2017 and 2023 to detect the species in new locations, obtain specimens of all castes and collect biological information. The road network was travelled looking for ideal habitats for the species, such as agricultural roads and open areas with little vegetation and bare soil, spacing the sampling locations between 10-20 km.

The specimens obtained in the recent campaigns (2017-2026) were obtained in three ways during field work: a) found individually moving along the ground; b) detecting nests and collecting specimens that left and entered it or, if the workers were not active, breaking the nest superficially, between 10 and 50 workers were captured; and c) completely excavating the nest to capture sexuals and obtain additional information. Additionally, the larvae and pupae of alates were kept alive along with workers from the same nest in order to obtain a greater number of adults for morphological analyses.

Preservation

The specimens were usually stored in vials with ethanol (70% or 96%), but those destined for molecular analysis were immersed in absolute ethanol and later stored at -20°C. For the biometric study the specimens were dry mounted, being glued at the medium and hind coxae on pinned cardboard triangles.

Morphology

Biometric data were obtained through a stereomicroscope with an ocular micrometer, using the maximum magnification possible for every measurement, up to 90x.

Even though the nomenclature follows mostly Seifert (2018), it has to be taken into account that some of the measurements have been adapted to the *Cataglyphis* specific circumstances:

CL: head length in frontal view, from the anterior border of the clypeus to the occipital border. The emargination of the clypeus is taken into account, reducing the total length.
CW: head width in frontal view, across the eyes.
FR: width of the frontal ridges, measured at the line across the caudal border of the antennal sockets.
PoOc: postocular distance in frontal view, from the caudal border of the eyes to the occipital border. An asymmetry is frequently found so both sides are averaged.
SL: length of scapus in dorsal view, excluding the condyle to the distalmost point, and measuring the maximum distance, not the chord.
ML: mesosoma length in lateral view, from the anteriormost point of pronotum before the neck to the dorsal propodeal lobe, close to the petiole articulation.
MW: maximum mesosoma width in dorsal view, corresponding to the pronotum.
HT: hind tibia length, from the caudal most point to the inner border of the arch present just before the articulation with the femur.
PeL: minimum petiole length in lateral view, across the petiolar spiracle. The rounded shape of the petiole in all axes makes the measurement difficult because small orientation deviations make changes in the value, so the minimum is the most indicative.
PeH: maximum petiole height in lateral view, from the petiolar spiracle to the dorsal profile.
PeW: maximum width of the petiole in dorsal view.
nOcc: unilateral number of setae protruding from the occipital border in frontal view, beginning the count in the posterior eye border. The counts of both sides are averaged.
nGu: unilateral number of setae protruding from the underside of the head in lateral view. The long and curved setae fringing the mouth apparatus are excluded.
nGe: unilateral number of setae protruding from the genae in front face view.
nPe: unilateral number of setae protruding from the dorsal margin of the petiole in frontal or caudal view. The counts of both sides are averaged.
nPn: unilateral number of setae protruding from the dorsum of the pronotum. The best view is dorsocaudal, since in lateral view many setae may remain hidden. The counts of both sides are averaged.
nMn: unilateral number of setae protruding from the dorsum of the mesonotum. The best view is dorsocaudal, since in lateral view many setae may remain hidden. The counts of both sides are averaged.
nPr: unilateral number of setae protruding from the dorsum and sides of the propodeum. The best view is dorsofrontal, since in lateral view many setae may remain hidden. The counts of both sides are averaged.
nHT: unilateral number of setae protruding from the extensor profile of the hind tibiae. The counts of both sides are averaged.
nSc: unilateral number of setae protruding from the frontal profile of the scapes. In dorsal view, with all the scape at the same focus level. The counts of both sides are averaged.
nScutum: unilateral number of setae protruding from the dorsum of the scutum in gynes and males. The best view is dorsocaudal, since in lateral view many setae can remain hidden. The counts of both sides are averaged.
nScutellum: unilateral number of setae protruding from the dorsum of the scutellum in gynes and males. The best view is dorsocaudal, since in lateral view many setae can remain hidden. The counts of both sides are averaged.
CS: index for the cephalic size. Mean of CL and CW.
EYE: index for eye size. Mean of longer and shorter diameter of the eyes.

We assessed the morphological distinctness of *Cataglyphis mater* sp. nov. relative to its two closest relatives in the *C. cursor* group, *C. piliscapa* and *C. cursor*, using a nest-based morphometric approach that follows the exploratory data-analysis framework developed for morphology-based ant taxonomy by Seifert *et al*. (2014). The dataset consisted of 97 nest sample means, comprising 49 nests of *C. mater* sp. nov., 35 of *C. piliscapa* and 13 of *C. cursor*. Each nest was described by 19 characters, of which nine were counts of standing setae on defined body regions (nOcc, nGu, nGe, nPe, nPn, nMn, nPr, nHT, nSc) and ten were body-shape indices. All linear measurements were recorded in micrometres.

Because *Cataglyphis* workers are polymorphic (see below), Seifert's (2008) procedure for the removal of allometric variance was applied to the biometrical indexes. The removal of allometric variance was computed at a CS of 1.5 mm, a value close to the mean of the investigated species. Each shape index was regressed linearly against cephalic size in a single regression fitted across the three species combined. However, the method was not applied to the chaetotaxy counts because they showed low correlation indexes (r^2 between 0.004-0.0211). The functions, with the values in mm, are:

$CW/CL_{1.5mm} = [(CW/CL)/(0.0697*CS+0.807)]*0.912$
$FR/CS_{1.5mm} = [(FR/CS)/(0.0132*CS+0.1857)]*0.206$
$PoOc/CL_{1.5mm} = [(PoOc/CL)/(0.0232*CS+0.1509)]*0.186$
$EYE/CS_{1.5mm} = [(EYE/CS)/(-0.0494*CS+0.3316)]*0.258$
$SL/CS_{1.5mm} = [(SL/CS)/(-0.2698*CS+1.5414)]*1.137$
$CS/ML_{1.5mm} = [(CS/ML)/(0.0987*CS+0.4678)]*0.616$
$MW/ML_{1.5mm} = [(MW/ML)/(0.0575*CS+0.3445)]*0.431$
$HT/CS_{1.5mm} = [(HT/CS)/(-0.2297*CS+1.8324)]*1.488$
$PeL/PeH_{1.5mm} = [(PeL/PeH)/(-0.2213*CS+1.2916)]*0.960$
$PeW/CS_{1.5mm} = [(PeW/CS)/(-0.0378*CS+0.228)]*0.171$

All characters were standardised to zero mean and unit variance before multivariate analysis. We then applied three complementary methods. We first ran a principal component analysis, an unsupervised ordination that shows whether the species fall into separate regions of morphospace without being told the group memberships in advance. We next used linear discriminant analysis to test the separation formally, assessing its reliability by leave-one-out cross-validation, in which each nest was classified by a function trained on the other 96 nests so that no sample influenced its own assignment. This discriminant analysis was run both across all three species and for the single most demanding comparison, that between *C. mater* sp. nov. and its morphologically and geographically closest congener *C. piliscapa*. Finally, we carried out a hierarchical cluster analysis using Ward's method on Euclidean distances, providing an independent and equally unsupervised check on the groupings.

Bibliographic data and computer programs

Bibliographic records for Iberia were searched through Google Scholar and the data base of antmaps.org (Janicki *et al*., 2016). For the French distribution of *C. piliscapa* and *C. cursor*, we used the data from antarea.fr (Antarea, 2025a, 2025b).

The distribution maps were generated through the QGIS system software (QGIS, 2026) using both bibliographic and personally collected data (see examined material).

The morphometric analyses were performed in R version 4.5, with principal component analysis computed by prcomp, discriminant analysis by the lda function of the MASS package with leave-one-out cross-validation (Venables & Ripley, 2002), and clustering by hclust using the "ward.D2" agglomeration method. Figures were plotted with ggplot2 (Wickham, 2016) and ggdendro.

Acronyms

Museo Nacional de Ciencias Naturales, Madrid (MNCN), Museu de Ciències Naturals, Barcelona (MCNB), Senckenberg Museum für Naturkunde, Görlitz (SMFN), Fede García personal collection (FGPC), Amonio David Cuesta-Segura personal collection (ADC-SPC), Mattia Menchetti personal collection (MMPC), Xavier Espadaler personal collection (XEPC).

Studied material and repositories

More than ten thousand specimens morphologically assignable to the *C. cursor* group have been included in this study. They were collected in France and Spain (Fig. 1), at 179 sites in 152 localities, including the type locality for *C. piliscapa* (Nîmes) and two close places (10 km) to the type locality of *C. cursor* (Aix-en-Provence).

The complete list of non-type material for all the species and full data of each locality is found in Appendix I. The specimens not deposited in the Museums listed below are in the author's collections, dry-mounted or stored in ethanol.

- ***Cataglyphis mater* García, Cuesta-Segura, Espadaler, Vila & Menchetti sp. nov.**

  Visually inspected: Several hundred workers from 125 localities (147 sites). 15 gynes from 13 localities. 114 males from 15 localities (Appendix I).
  Biometry: 179 workers belonging to 49 nests from 31 localities. 13 gynes belonging to 9 nests from 6 localities. 30 males belonging to 8 nests from 8 localities (Appendix II, Supplementary data).
  Sequenced: 9 workers from 9 localities (Appendix III). Samples from the same nests, but one, were also biometrically studied.

  The type material is listed below in the description.

  Non-type material:

  MCNB: **Spain**: Castilla y León: **Palencia**: • Tariego de Cerrato, 5 workers; **Segovia**: • Navalmanzano, [**Type nest**] 3 males; **Soria**: • San Esteban de Gormaz, 1 gyne; **Zamora**: • San Cristóbal de Entreviñas, 4 workers.

  MNCN: **Spain**: Castilla y León: **Ávila**: • El Barraco "Puerto de la Paramera", 3 workers (MNCN_Ent 375534); **Burgos**: • Vadocondes, 4 workers (MNCN_Ent 375535); **León**: • Golpejar de la Sobarriba (Valdefresno), 2 workers and 1 gyne (MNCN_Ent 375532); • Villamandos, 5 workers (MNCN_Ent 375538); **Palencia**: • Santoyo, 3 workers (MNCN_Ent 375539); • Tariego de Cerrato, 3 males (MNCN_Ent 375537); **Segovia**: • Bercimuel, 3 workers (MNCN_Ent 375533); • Madrona, 5 males (MNCN_Ent 375531); • Navalmanzano, [**Type nest**] 3 males (MNCN_Ent 375529) and 3 gynes (MNCN_Ent 375530); **Soria**: • San Esteban de Gormaz, 2 gynes (MNCN_Ent 375540); **Valladolid**: • Castrillo-Tejeriego, 5 workers (MNCN_Ent 375536).

- ***Cataglyphis piliscapa* (Forel, 1901)**

  Visually inspected: Several nest series from 23 localities (26 sites). 3 gynes from 2 localities. 12 males from 4 localities (Appendix I).
  Biometry: 153 workers belonging to 35 nests from 11 localities. 3 males belonging to the same nest from one locality (Appendix II, Supplementary data).
  Sequenced: 19 workers from 8 localities (Appendix III).

  MCNB: **France**: • Frontignan, 5 workers; • Nîmes, 3 workers; • Narbonne, 5 workers. **Spain**: • Castell de Quermançó, 3 workers.

- ***Cataglyphis cursor* (Fonscolombe, 1846)**

  Visually inspected: 20 workers from 5 localities (6 sites). 1 gyne from one locality. 5 males from one locality (Appendix I).
  Biometry: 48 workers belonging to 13 nests from 5 localities (Appendix II, Supplementary data).
  Sequenced: 11 workers from 6 localities (Appendix III).

  MCNB: **France**: • Bédoin, 4 workers.

- ***Cataglyphis italica* (Emery, 1906)**

  Biometry: 3 workers from 1 nest (Appendix II).
  Sequenced: 3 workers from 3 localities (Appendix III).

Genetic analyses

We analysed a mitochondrial cytochrome c oxidase subunit I (COI) dataset (the standard 658 bp barcode fragment) for the West European *Cataglyphis cursor* group, comprising 53 terminal sequences. No sequences were newly generated for this study. Most of the sequences (49) were taken from the published barcode library of Menchetti *et al.* (2026). The remaining four were retrieved from GenBank: *Cataglyphis velox* Santschi, 1929 (AB010932) and *Cataglyphis rosenhaueri* Santschi, 1925 (AB010933) from Sanllorente *et al.* (2018), *Cataglyphis floricola* Tinaut, 1993 (KJ538578) from Jowers *et al.* (2014), and *Formica cunicularia* Latreille, 1798 (MT606318) from Schär *et al.* (2020), the last used as outgroup. Specimens of most samples sourced from Menchetti *et al.* (2026) were also measured for the morphometric analyses presented here; their voucher codes and BOLD accession numbers are listed in the supplementary material (Appendix III).

Only sequences longer than 650 unambiguous nucleotides were retained. The final alignment contained 53 COI sequences and 658 nucleotide sites, of which 398 (60.5%) were invariable and 198 were parsimony-informative. The best-fitting substitution model was selected under the Bayesian information criterion with ModelFinder (Kalyaanamoorthy *et al.*, 2017), which favoured TIM2+F+I+G4. The maximum-likelihood tree was inferred with IQ-TREE 2.0.3 (Minh *et al.*, 2020), and nodal support was assessed with 10,000 ultrafast bootstrap replicates (Hoang *et al.*, 2018) together with the SH-aLRT test. The tree was rooted with *F. cunicularia*. Uncorrected p-distances and Kimura two-parameter (K2P) distances were computed to summarise divergence within and among species, and the tree was visualised with ggtree (Yu *et al.*, 2017) and graphically edited with Affinity.

Results

Key for workers belonging to the *Cataglyphis cursor* group species from W Europe:

Biometric and chaetotaxy data concern nest means of 3 workers, because these values show less overlap than the individual ones.

Cataglyphis piliscapa and *C. italica* are very similar biometrically, and at present time the available sample of *C. italica* doesn't allow a precise differentiation. For example, the lower PoOc in *C. italica* noted by Emery (1906) seems a promising discriminating index, but shows overlap with the values in *C. piliscapa*. The characters in the key were noted by Santschi (1929) and Agosti & Collingwood (1987) and show accordance with the few workers of *C. italica* inspected (n=3).

1 Profuse pilosity on mesosoma, nMn 4.366 ± 1.105 (2,667; 6). Southern France, east of the Rhône (Fig. 2a)…… ***C. cursor***

\- Pilosity on mesosoma sparser, nMn < 2 (Fig. 2b). Other locations…… **2**

2 Gular area almost hairless, nGu 0.955 ± 0.650 (0; 2.667); head bigger, CS/ML1.5mm 0.620 - 0.660 (Fig. 3a). Central Iberia…… ***C. mater* sp. nov.**

\- Gular area hairy, nGu 5.361 ± 1.328 (2.700; 7.833) (Fig. 3b); head smaller, CS/ML1.5mm 0.584 - 0.605…… **3**

3 Head longer, CW/CL1.5mm 0.899 (0.876; 0.936). Tibiae usually brownish. Scape usually with erect hairs. Southern France west of the Rhône, northeastern Spain…… ***C. piliscapa***

\- Head wider, CW/CL1.5mm 0.959. Tibiae usually yellowish. Scape without erect hairs. Southeastern Italy…… ***C. italica***

Morphology

Cataglyphis mater sp. nov., *C. piliscapa* and *C. cursor* were clearly distinct in morphospace (Fig. 4). In the principal component analysis, the first two components together accounted for 67.6% of the total

variance (50.8% and 16.8%, respectively), and the three species occupied separate, non-overlapping regions of the ordination, with *C. mater* sp. nov. set well apart from both *C. piliscapa* and *C. cursor* (Fig. 4a). The same separation was evident in individual size-corrected characters. The CS/ML index, in particular, was markedly higher in *C. mater* sp. nov. (mean 0.639, SD 0.008) than in either *C. piliscapa* (0.596, SD 0.005) or *C. cursor* (0.594, SD 0.006), with virtually no overlap between *C. mater* sp. nov. and the other two species (Fig. 4b) (Tab. I).

Linear discriminant analysis confirmed this separation. Under leave-one-out cross-validation, every one of the 97 nests was assigned to its correct species, a classification success of 100%, including all 49 nests of *C. mater* sp. nov. When the analysis was restricted to the two most similar species, *C. mater* sp. nov. and *C. piliscapa*, all 84 nests were again classified correctly. Several characters besides CS/ML contributed to the distinctness of the new species. *Cataglyphis mater* sp. nov. was almost devoid of gular and propodeal setae, with means of 0.96 and 0.21 respectively, whereas *C. piliscapa* had 5.25 and 1.29 and *C. cursor* had 10.21 and 12.22 (Tab. I). It also showed a lower relative postocular distance (PoOc/CL mean 0.176, versus 0.195 in *C. piliscapa* and 0.199 in *C. cursor*) and a shorter relative hind tibia (HT/CS mean 1.433, versus 1.540 and 1.526) (Tab. I).

The Ward cluster analysis gave the same picture from an unsupervised standpoint (Fig. 4c). It recovered three clusters that matched the three species almost perfectly, with 96 of the 97 nests (99%) grouping in agreement with their a priori identifications. *Cataglyphis mater* sp. nov. formed a single, coherent cluster that separated first from the remaining two species, which then divided into *C. piliscapa* and *C. cursor*. The one exception was a single southern French nest of *C. piliscapa* (Frontignan1113) that grouped among the *C. mater* sp. nov. samples. This same nest was nonetheless classified correctly as *C. piliscapa* by the cross-validated discriminant analysis, so it represents one borderline sample rather than any real morphological overlap between the two species.

The genitalia morphology in males from central Iberia is also notoriously distinct with respect to the other species (see Male and Discussion sections below).

Genetics

In the mitochondrial COI tree, the nine individuals of *Cataglyphis mater* sp. nov., sampled from nine localities across its central Iberian range, formed a well supported clade (SH-aLRT 98.7, ultrafast bootstrap 100; Fig. 5). This clade was clearly distinct from all other West European members of the *C. cursor* group, and it was not recovered as their sister lineage. Intraspecific divergence within *C. mater* sp. nov. (mean K2P 3.9%, range 1.2 to 5.6%) was comparable to that found within the other cursor-group species analysed (*C. cursor* 2.5%, *C. italica* 3.6%, *C. piliscapa* 4.6%) (Tab. II). By contrast, *C. mater* sp. nov. was strongly divergent from every other species. The minimum pairwise K2P distance between this and any other West European *cursor*-group species was 10.2%, with means of 12.2% to *C. piliscapa*, 12.3% to *C. cursor* and 12.1% to *C. italica* (Tab. II). This is roughly twice the divergence separating *C. piliscapa*, *C. cursor* and *C. italica* from one another (6.2 to 7.3%), and distances to the remaining *Cataglyphis* congeners were equal or larger (10.3 to 18.5%) (Tab. II). Across the West European *C. cursor* group, within-species and between-species distances did not overlap: no species varied internally by more than 8.0%, yet every sequence of *C. mater* sp. nov. lay at least 10.2% from any other species, producing a clear barcode gap.

Two further features of the tree deserve comment. First, *Cataglyphis italica* was recovered as monophyletic (SH-aLRT 91.7, ultrafast bootstrap 90), but *C. piliscapa* was not, because the three *C. italica* sequences were nested within it. This arrangement depends on a weakly supported node (SH-aLRT 69.9, ultrafast bootstrap 69) and most likely reflects the small number of *C. italica* sequences used for the analysis. In the more densely sampled COI barcode dataset of Menchetti *et al.* (2026), which includes many more *C. italica* terminals, both species are recovered as monophyletic, so we regard this result as an artefact of limited sampling rather than evidence of a genuine relationship. Because *C. mater* sp. nov. is strongly supported and clearly distinct irrespective of how these two species are arranged, this poorly resolved detail does not affect our conclusions.

Second, the Greek material of the *cursor* group identified as *Cataglyphis hellenica* (Forel, 1886) did not form a single clade. Two specimens, one of them provisionally identified as *C.* cf. *hellenica*, grouped together and were recovered as sister to *C. mater* sp. nov., whereas the third specimen, identified as *C. hellenica*, fell elsewhere in the tree, sister to the group formed by *C. piliscapa*, *C. cursor* and *C. italica*. Both patterns rest on a single mitochondrial marker and should be interpreted with caution. They may reflect incomplete lineage sorting, mitochondrial introgression or unresolved identifications. Such mito-nuclear discordance is not unexpected in *Cataglyphis*, a genus in which divergent genetic lineages frequently coexist within populations through social hybridogenesis and related lineage systems, so that mitochondrial lineages do not always correspond to morphological species (Kuhn *et al.*, 2019). Resolving these cases would require nuclear data, and they lie outside the scope of the present study, which concerns the status of *C. mater* sp. nov.

Ethology

When the nests are disturbed, blowing with an insect vacuum at the entrance or scratching the surface of the nest, *C. mater* sp. nov. comes out to defend itself energetically with a wave of several workers. During the collection of samples from the other species of the *cursor* group, we were able to observe that *C. piliscapa* takes refuge, while *C. cursor* comes out to defend itself, just like *C. mater* sp. nov. does.

Geography

Cataglyphis mater sp. nov. shows a clearly allopatric distribution with respect to the closer species of the group (Fig. 1). The gap between the known distributions of the species in Iberia is not considered to be an artifact (see Discussion).

The molecular, morphological, ethological and geographical data evidences are therefore consistent, supporting the recognition of the central Iberian populations as a distinct species. The combined use of morphometry and molecular data has become standard practice in recent ant taxonomic revisions as evidence of species distinctness (e.g., Csösz *et al.*, 2025). Therefore, we proceed to describe the central Iberian populations of the *C. cursor* group as a new species.

Description of *Cataglyphis mater* sp. nov. García, Cuesta-Segura, Espadaler, Vila & Menchetti

Holotype: SPAIN, 1 worker labelled "España: Castilla y León: Segovia: Navalmanzano, 15-VI-2019, 831 m, 41,2154 N, 4,2793 W (GPS-658), Amonio David Cuesta-Segura leg." // "MNCN_Ent 375524" // Red label "Holotipo *Cataglyphis mater* García, Cuesta-Segura, Espadaler, Vila & Menchetti 2026" (MNCN).

Paratypes: All carrying a red label with "Paratipo *Cataglyphis mater* García, Cuesta-Segura, Espadaler, Vila & Menchetti 2026", all specimens from the same locality and nest as the holotype. Dry mounted: 3 workers in MCNB (MZB 2023-1046 – 1048), 4 workers in MNCN (MNCN_Ent 375525 – 375528), 2 workers in SMFN, 164 workers in ADC-SPC, 5 workers in FGPC, and 3 workers in XEPC. In absolute ethanol: 6 workers in MMPC.

Etymology: We use *mater*, a feminine Latin substantive meaning "mother" used as a noun in apposition. This species is dedicated to the mothers of all people dedicated to science, for their support, even though in many cases they do not understand very well what their children work on. In a special way, to the mothers of the authors and especially to María Nieves Segura Diez, who passed away during the course of this investigation (June 2023), for her unconditional support. Mater was the affectionate nickname for Nieves since ADC-S began using scientific names in his degree in biology.

Worker

General habitus and size resembling those of the other *C. cursor* group species from Western Europe (Tab. I) (Fig. 6), defined in Agosti (1990).

Head, mesosoma, coxae, petiole and gaster black or dark brown, clearer in the rear of pronotum suture and rear of gaster tergites. With greenish sheens depending on the light in live specimens. Appendices brown, with the distal femora, antennae, tibiae and tarsi clearer. General appearance is moderately shiny, with an imbricate microsculpture making it duller at big magnifications. On the front, microsculpture is more longitudinal.

Chaetotaxy relatively sparse, with some long hairs on the occipital border of the head, the profile of the mesosoma and gaster (Tab. I). Pubescence sparse over the whole body, appearing more dense on the lower parts of propodeum, mesonotum and coxae.

Head slightly longer than wide, with a quadrate appearance (Fig. 7). Occipital margin straight or slightly concave. Genae profile slightly convex. Mandibles with five teeth, being the apical more prominent and being the others smaller towards the rear. Clypeus without marked sculpture, sometimes with a small central carina, anterior border often slightly notched. Maxillary palps with 3rd and 4th segments shorter than 5th and 6th together, 3rd maxillary palp segment round in section (Fig. 8). Three ocelli present. Eyes well developed, situated in the posterior half of the head and protruding a bit from the cephalic border.

Pronotum and mesonotum slightly convex in lateral view (Fig. 9). Mesonotum and mesopleuron fused. Propodeal spiracle elongated. Metapleural gland opening surrounded by short hairs. Petiole is high in lateral view, with parallel borders in the lower part (Fig. 9). Dorsally to the spiracle, the anterior border is inclined and slightly curved towards the rear.

Pilosity on legs is restricted to some setae in the flexor sides of femora, distal tibiae and tarsi.

Gaster shiny, with a few marked transversal microsculpture. Pubescence sparse. Acidopore surrounded by long and curved hairs.

Following the classification by Wilson (1953), *C. mater* sp. nov. is an allometric polymorphic species, with a high difference in worker size and allometric relations inside the same colony, but without discrete castes (Fig. 10). Nor can discrete castes be observed in the distribution by size frequencies, as they do appear in societies with such a system (Espadaler *et al.*, 1990) (Fig. 11).

Gyne

Overall appearance as the worker, but for the bigger size and the structure of the mesosoma sclerites (Fig. 12).

Head mostly as in the worker caste, but with some biometrical differences, being more elongated and with shorter scapes (Tab. I). Ocelli wider than in workers (Fig. 12a).

Scutum narrower than pronotum in dorsal view (Fig. 12c). In lateral view, not very prominent (Fig. 12b). Scutellum of trapezoidal shape (Fig. 12c). Wings present and well developed, although their size is relatively smaller, as usually found in the genus. Venation comparable to those in other *Cataglyphis* species or even other Formicine genera. Discoidal cell variable in size and sometimes lacking.

Petiole structure is similar to the worker in lateral view (Fig. 12b), but wider in dorsal view (Fig. 12c). Gaster appearance as in workers.

Chaetotaxy similar to the worker in the head, petiole, gaster and appendixes (Tab. I). On the mesosoma, long hairs are present on the posterior fringe of pronotum, scutum, scutellum and back of the propodeum. Propodeum covered by long, whitish pubescence.

Male

Colour pattern as in female castes, with hind tibiae usually darker. Duller, with more marked polygonal microsculpture on head, mesosoma, petiole and gaster. Chaeta sparse on the whole body, except for the gaster sternites.

Head longer than wide, triangular in shape with the clypeal width distinctly smaller than the maximum width (Fig. 13a). Mandible elongated, with the masticatory border undulated, bearing only an apical tooth. Antenna 13-segmented. Scape long and robust, wider and straighter than in females. Flagellum shorter than the other funicular segments, which are elongated. Eyes well developed and prominent. Ocelli slightly prominent. In most specimens, the clypeus lacks a central carina and the anterior clypeal border is convex, sometimes being slightly notched. Palpi structure as in female castes.

Scutum more developed than in gynes, wider and higher (Figs. 13b & c). Scutellum triangular, with a wide base. In lateral view, dorsal profile of scutum and scutellum rounded (Fig. 13b). Wings as in gynes. Legs long, with arolia of small size in the tarsi. Claws long and slightly curved. Non pectinated spurs are present in the middle and posterior tibiae. There are almost no erect setae on legs, but for some bristles in the distal parts of the flexor side of tibiae and the whole longitude of tarsi.

Petiole high and squamiform, with rounded profiles (Fig. 13b). In anterior or posterior views, slightly wider above the spiracle. Dorsal profile gently notched.

Gaster high and stout. Gaster tergites mostly bare, with some specimens showing some erect hairs on the last segment. Sternites with many long sinuous hairs. Genitalia big and prominent, directed downwards (Fig. 14 a & c).

Species diagnosis

A confusion of *C. mater* sp. nov. with species belonging to other *Cataglyphis* groups species may hardly occur after inspection under the stereomicroscope, taking into account the differences in the shape of the petiole and the maxillary palps (Agosti, 1990).

At plain sight in the field, however, *Cataglyphis iberica* (Emery, 1906), belonging to the *albicans* group (Agosti, 1990), could be confused with *C. mater* sp. nov. due to wide sympatry (Fig. 1) and the small dark workers of both species. However, *C. iberica* workers use to assume a posture in which they raise their gaster and usually have a dense silver-like pubescence on the lateral mesosoma that is visible at naked eye. Gynes of *C. iberica* have a higher petiole than the workers, resembling somewhat that of *C. mater* sp. nov. However, *C. iberica* gynes are bigger (CS 2,050-2,375 microns, n=8) compared with *C. mater* sp. nov. (Tab. I) and the mesosoma bears a more prominent scutum. Males of *C. iberica* are far more hairy, specially on scutum, propodeum and underside of the head.

Cataglyphis floricola Tinaut, 1993 and *Cataglyphis tartessica* Amor & Ortega, 2014 are more coincidental with *C. mater* sp. nov. in general behaviour in the field and petiole structure, but their restricted distributions in southernmost Iberia and the bicolor pattern in *C. tartessica* makes a confusion improbable in most of the known geographical range (Amor & Ortega, 2014).

Within the Western European *C. cursor* group members, the overall habitus and biometry of the different species is highly similar in all castes (Tab. I). However, *C. cursor* is the more deviant species due to the increased chaetotaxy (Tab. I). Therefore, the following diagnoses are referred to *C. piliscapa*, the morphologically and geographically closest species to *C. mater* sp. nov.

-Workers: *Cataglyphis mater* sp. nov. and *C. piliscapa* are highly similar in biometrical values, with the exception of the relative size of the head (CS/ML) which is higher in *C. mater* sp. nov. independently of the size even when the removal of allometric variance is not applied (Fig. 4b). The almost hairless gular area of *C. mater* sp. nov. is the more visible character allowing the discrimination with *C. piliscapa* if nest means are considered (Tab. I).

-Gynes: even though the overall appearance is highly similar in both species, relative to *C. mater* sp. nov., *C. piliscapa* gynes have an increased chaetotaxy (nGu 15 ± 8.438 [6, 25]; nOcc 14.5 ± 6.285 [5, 22] (n=6), compare with Tab. I), even more prominent than in workers. In any case, given the colony reproduction through fission in this group, it is unlikely to find isolated gynes.

-Males: the genitalia of *C. mater* sp. nov. is very distinct when compared with males of *C. piliscapa* or *C. cursor*. The two latter species share a similar structure. Compared with *C. piliscapa*, in *C. mater*

the squamula in caudal view lacks a medial elongation (Fig. 14c, compare with Fig. 14d). Stipe shorter, with tips rounded in lateral view (Fig. 14a, compare with Fig. 14b) and the rounded lobe in the base is wider in caudal view (Fig. 14c, compare with Fig. 14d). Sagitta shorter (Figs 14a & c compare with Figs. 14b & d).

Distribution and ecology

At present, *C. mater* sp. nov. has a wide distribution in the northern Iberian plateau (autonomous community of Castilla y León) and a few records scattered across southern Spain (Fig. 1). The known altitude range is of 1312 m, inhabiting between 610 m a.s.l. in Haro (La Rioja) and 1922 m a.s.l. in Puerto de Peña Negra (Ávila).

The new species occupies preferentially open sunny habitats with some degree of bare soil exposed (Fig. 15). Even when the nests are found somewhat hidden among the grass vegetation or in forested areas, such as pine forests or holm oak forests, there are large suitable foraging areas nearby. It is also found in anthropized habitats such as agricultural fields, unpaved parking lots or urban parks.

Notes on natural history

In its main distribution area, *C. mater* sp. nov. has a similar habitat preference of that of *C. iberica*. At 23 sites (20 localities) (Fig. 1) the two species were found sympatrically, sometimes with nests a couple of metres apart. When they feel threatened in the nest by our presence, both species stay at the entrance and stop coming out to forage, although, after a while, *C. mater* sp. nov. comes out again. When the nests are disturbed, *C. iberica* retreats and hides, while *C. mater* sp. nov. has a more aggressive behaviour, as explained before in Ethology. This behaviour also occurs in the resting period, and it was very important to extend the sampling sessions, sometimes even at night, since when the *Cataglyphis* were resting and the nests openings were located, blowing at the entrance was enough to discriminate the *C. mater* sp. nov. nests without having to excavate them.

The activity levels of the new species depend more on the temperature than on the time of day. In warm weather, many workers were actively moving about, but if the temperature was extremely high, only a few workers were active, primarily seeking shade. In Golpejar de la Sobarriba (León), on several nights with temperatures about 25°C, the nest entrances showed significant excavation activity. In that same location, a nest was excavated at 9:20 a.m. (Tab. III), and during the excavation, workers were seen returning with prey. However, on colder days in many other locations, no activity was observed until much later, when temperatures rose. For example, in Pozoantiguo (Zamora), at 12:40 p.m. with a temperature of 20°C, the nests were still closed. Similarly, nest closure was variable in the afternoon. On the same sampling day in Villada (Palencia), the nests were not active at 6:39 p.m., but then in Sahagún (León), the workers were active at 6:56 p.m., and in another area of the same locality, there was no activity at 7:15 p.m. On one occasion, in Palacios de Goda (Ávila), with a temperature of 30°C, active workers were found at 9:15 p.m.

The typical nest of *C. mater* sp. nov. (Fig. 16) has a single oval-shaped entrance surrounded by a small, low-lying crater made of excavated substrate extracted by workers. There is a single main gallery, which initially runs parallel to the ground surface for about 2-15 cm and then sinks down into a depth of 20-45 cm, almost always perpendicularly, until it ends in one or two main chambers (Fig. 16a). There are always one or more surface chambers where there are usually larvae, pupae and fresh remains of prey, but they can also be old chambers filled with remains of prey and molts. In the middle part of the main gallery there may be one or more small chambers, which are absent if the nest is small. This structure is similar in all types of excavated soil and is only modified in those under medium or large stones, which can vary the route of the main gallery.

The 22 excavated nests (Tab. III) showed a colony size that varied between 40 and 700 workers (San Martín de Rubiales II and Vadocondes I), with an average number of 335 workers. They can potentially exceed 1000 individuals (Nava de Roa III) given the number of larvae and pupae.

The emergence of sexuals occurs between June and early July and their mating and dispersal occurs on the ground (Tab. III) (Appendix I). In Vadocondes (Burgos) on 12-VII-2020, after a hailstorm and with good temperature, about ten males were observed running nimbly along the path. When attempts were made to capture them, they made short flights, similar to the behaviour of *Cicindela* L., 1758 beetles (Coleoptera: Carabidae). One nest was excavated that day (Vadocondes I, Tab. III, Fig. 16) contained 27 males and produced many more in captivity from the collected immatures. In another sampling in San Esteban de Gormaz (Soria), carried out on 28-VI-2021, between 5:30 and 7:10 p.m., with a temperature of about 24°C, 13 males and two winged queens were collected. The specimens appeared running sporadically, especially when the sky clouded over.

The observed diet of *C. mater* sp. nov. is quite similar to that of *C. piliscapa* (Retana *et al.*, 1986), combining both scavenging (Fig. 6b & d) with visits to nectaries. During the excavation of the nests, some surface chambers were found to be used as kitchen middens, filled with remains made up of a great diversity of arthropod species belonging to many groups, so we can deduce that *C. mater* sp. nov. is a generalist scavenger species. Remarkable findings in those chambers were a complete specimen of *Copium* Thunberg, 1822 (Hemiptera: Tingidae) in a nest in Montejo de la Vega de la Serrezuela (Segovia) and *Aphaenogaster* males with which the first morning foragers returned to the nest in Golpejar de la Sobarriba (León), some of them alive. In Belver de los Montes (Zamora) *C. mater* sp. nov. was found sipping on the nectaries of fennel (*Foeniculum vulgare* Mill.), in the same way that a year earlier *C. piliscapa* was found in Narbonne and Nîmes (France).

Observations of interspecific interactions with other ant species have been scarce during the activity period, perhaps due to the low number of active species observed during the hours of maximum insolation. It was not even seen interacting with *C. iberica*, which is active during the same periods. However, the observation made in Venialbo (Zamora) at the beginning of the morning is very remarkable, where a foraging trail of *Messor capitatus* (Latreille, 1798) passed by the entrance of one nest of *C. mater* sp. nov. where they would occasionally go to explore and then continue. At the entrance of the nest, the *Cataglyphis* were active but without coming out, only blocking the entrance in a peculiar way. By sucking hard with the insect aspirator at the mouth of the nest, 11 workers and two large heads of *Messor* were collected. From this we deduced that the workers of *C. mater* sp. nov. possibly had *Messor* heads exposed to the outside to stop the *M. capitatus* that tried to explore the entrance, thus preventing them from entering the nest. An observation involving a kleptobiotic relationship was made in Vadocondes (Burgos) where workers of the thief ants *Solenopsis* sp. were found in one of the surface chambers of a *C. mater* sp. nov. nest.

Historical remarks of the *C. cursor* group in Iberia

Previous records of the *Cataglyphis cursor* group in the Iberian Peninsula south from Ebro river must be assigned to *Cataglyphis mater* sp. nov. It has previously been reported from diverse localities under different names, following the taxonomic changes discussed in the Introduction.

Myrmecocystus cursor (Fonscolombe, 1846) was cited from Gibraltar (Saunders, 1890), Huévar (Sevilla) and Hornachuelos (Córdoba) (Medina, 1891), Puerto Real (Cádiz) (Medina, 1903), and Calamocha (Teruel) (Dusmet, 1906). Furthermore, in this latest work Dusmet comments on the coexistence of *Myrmecocystus* n.sp., a species yet to be described by Emery based on a male from Calamocha.

Cataglyphis cursor v. *tibialis* Bondroit, 1918 was recorded from Sierra de Guadarrama (Santschi, 1925), and from Salamanca (Santschi, 1932). Collingwood & Yarrow (1969) cited *Cataglyphis* (*Monocambus*) *cursor* from Alhama de Murcia (Murcia), Almuradiel (Ciudad Real) and Puerto del Escudo (Santander).

As *Cataglyphis cursor* was used in the catalogue by Ceballos (1956) and subsequently detected in Basardilla (Segovia) [assigned locality based on the coordinates provided] (Acosta Salmerón *et al.*, 1983), and from Sierra de Guadarrama, Martínez Ibáñez (1984) found eight workers from three nests under stones and two additional isolated workers, at 1450 m, 10-IX-1981, in open pine forest from Peguerinos (Segovia) [assigned locality based on the map provided]. *Cataglyphis cursor* is also reported

from Mohago pine forest, near Olmedo (Valladolid) (Gómez, 2013) and from Ardón (León) in the list of species collected during the Iberian Congress of Myrmecology, Taxomara 2018 (AIM, 2018). Finally, the specimens from Salobralejo (Ávila) and Castrillo de la Guareña (Zamora) studied by Doums *et al.* (2023) must be attributed to *Cataglyphis mater* sp. nov.

The records from northeastern Catalonia belong to *C. piliscapa*. These populations have been recorded both as *C. cursor* (Cuní, 1880, 1897; Ceballos, 1956; Alsina *et al.*, 1988; Cerdá & Retana, 1988; Cros *et al.*, 1997; Retana & Cerdá, 2000) and *C. piliscapa* (Gómez *et al.*, 2003a, 2003b).

Conservation status

Given the current distribution area and habitats occupied by *C. mater* sp. nov., which include anthropized and even urban areas, the species does not appear to be currently threatened. Nevertheless, the excessive use of biocides could endanger local populations confined to agricultural or urban environments (Wan *et al.*, 2025).

Discussion

The review of the species of the *Cataglyphis cursor* group in Western Europe showed that a new species endemic from central Iberia, *Cataglyphis mater* sp. nov., can be differentiated morphologically, genetically, ethologically, and geographically from the others, especially from the geographically closest *C. piliscapa*.

We don't consider the distributional gap of hundreds of kilometres between *C. mater* sp. nov. and *C. piliscapa* to be caused by a lack of sampling, since Catalonia and Aragón have been sampled extensively and no species of the *C. cursor* group have been found there (FG and ADC-S, obs. pers.), while *C. iberica*, a sympatric species of the new one in central Iberia, has been repeatedly found in the area (see the distribution map of *C. iberica* in García, 2022).

Cataglyphis mater sp. nov. occupies open, sunny habitats with bare soil similar to other species in the genus (Boulay *et al.*, 2017). The structure and depth of its nests (Fig. 16a) are therefore similar to the nests of *C. piliscapa* and *C. cursor* (Cagniant, 1976a) and also to other more distant species in the genus (Ruano & Tinaut, 1993). The colony size in *C. mater* sp. nov. (Tab. III) is thus similar to the 75-1800 workers found in *C. piliscapa* by Retana *et al.* (1986), Cagniant (1976b) and Lenoir *et al.* (1988a). Regarding behaviour, the active nest defense exhibited by the new species ethologically links it to *C. cursor*, as indicated by cuticular hydrocarbons (e.g. Lenoir *et al.*, 1988b) or genetics (Fig. 5).

The nuptial flight season (June and early July) is similar to that observed in *C. piliscapa* and *C. cursor* (Lenoir *et al.*, 1988a) and their mating and dispersal occurs on the ground, as happens in some species of the genus (Cerdá & Retana, 1991). The mesosoma structure of gynes and the low numbers of that caste found in excavated nests comparatively to males (Tab. III) suggest that the species probably reproduces through dependent colony founding, as *C. piliscapa* does (Peeters & Aron, 2017). The extra gynes observed in some excavated nests (Tab. III) are supposed to leave the nest shortly after insemination with a group of workers to found a colony (Lenoir *et al.*, 1988a).

Regarding interspecific interactions, the use of *Messor* heads by *C. mater* sp. nov. workers to prevent other live *Messor* from entering the nest is remarkable. Some field observations in *Formica* L., 1758 suggest that in certain ant species corpses can be used to limit the activity of neighbouring colonies of competing species (Maák *et al.*, 2024). Use of corpses as chemical masks is known in the parasitic subgenus *Chthonolasius* Ruzsky, 1912 during introduction into the host nest (Seifert, 2018). Myrmecophagous *Zodarion* Walckenaer, 1826 spiders (Araneae: Zodariidae) also use ant corpses to mask their presence when ants approach them (Pekár & Křál, 2002). The kleptobiotic relationship of *Solenopsis* sp. with *C. mater* sp. nov. is a behaviour that is frequently observed in the thief ants (Wheeler, 1901).

The abundant presence of *C. mater* sp. nov. in central Iberia contrasts somewhat with the low number of localities cited in the literature (Fig. 1). All older records that fall outside the distribution

confirmed by current samples should be treated with caution and verified. Thus, the most southern ancient records in Cádiz, Gibraltar and Sevilla (Saunders, 1890; Medina, 1891, 1903) can be considered dubious, given the lack of recent findings, even when several local researchers have been working on different ecological or taxonomical aspects of the genus for decades (e.g. Alberto Tinaut, Francisca Ruano, Xim Cerdá, Fernando Amor). In any case, no specimens of the *cursor* group are actually preserved in Medina's collection (Martínez-Ibáñez & Espadaler, 1986). We can consider a possible confusion of ancient authors with the *Cataglyphis* of the *emmae* group inhabiting the area (Amor & Ortega, 2014), who present a petiolar morphology similar to the *C. cursor* group (Agosti, 1990). On the other hand, the record from Puerto del Escudo is also dubious, since it is far from known localities for *C. mater* sp. nov. and recent samplings of the area (ADC-S & R. Argüeso) found just *C. iberica*, being a confusion with the *Proformica* Ruzsky, 1902 species present there possible. Something similar happened during the sampling in Alhama de Murcia (ADC-S & Ch. Catarineu), where we initially thought we had found the species but it turned out to be *Proformica*.

It is worth mentioning certain morphological and molecular differences among southern and northern populations of *C. piliscapa*. The meridional populations from Catalonia and Pyrénées-Orientales show shorter and more appressed hairs on appendices than northern ones, matching the description of *C. tibialis* with type locality in Banyuls-sur-Mer, which is currently considered a junior subjective synonym of *C. piliscapa* (Casevitz-Weulersse & Galkowski, 2009). However, a certain degree of morphological and molecular geographical diversity could be expected given the limited dispersal of the group. Given the scope of this work and the samples available, we don't evaluate here the possibility of elevating again *C. tibialis* to species status.

The identification of cryptic ant species has mostly taken place for Eurosiberian genera and, in particular, for species groups such as *Myrmica* Latreille, 1804 (Seifert, 2005), *Lasius* Fabricius, 1804 (Seifert, 2020) or *Tetramorium* of the *caespitum* group (Wagner *et al.*, 2017), through revisions frequently focusing on the central European fauna. However, the present work, the case of the *Tapinoma nigerrimum* complex (Seifert *et al.*, 2017) or the recent description of *Messor erwini* Orou *et al.*, 2023 show that crypsis is also expected to occur in the Mediterranean myrmecofauna (Orou *et al.*, 2023). For instance, inside Iberian *Cataglyphis*, members of the *albicans* group show genetic divergences linked to geographical distributions (Villalta *et al.*, 2018) still pending of taxonomic or morphological investigation. The recognition of *C. mater* sp. nov. is consistent with the growing appreciation that cryptic diversity remains widespread even among Mediterranean ant groups long considered taxonomically straightforward, and that integrative approaches are likely to reveal further undescribed taxa (Oberski *et al.*, 2025).

Supplementary material: Raw morphometric data for individual workers, nest means and individual sexuals of *C. mater* sp. nov., *C. piliscapa* and *C. cursor*. Available here.

Acknowledgments

We thank Rubén Argüeso Vázquez, Chema Catarineu Guillén, Victor Moreno González, Raquel Mosull del Campo and Marian Sánchez Gutiérrez for their companionship on the field some days. To Octavio Pérez Fuertes and Sergio Ibarra Mellado for some samples of *C. mater* and Rubén Argüeso Vázquez and Pedro Almendros González for some samples of *C. piliscapa*. Our thanks to Miriam Serrano Roca and Mario García París for checking the Latin name. The fuel for the trips made in the province of Palencia in 2024 was financed by the Iberian Association of Myrmecology through the aid for the project "*Myrmecofauna of the province of Palencia*" granted to ADC-S. Mattia Menchetti was supported by the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 101206623. The captures made in Castilla and León were carried out under the mandatory capture permits. To the editors and to the reviewers Enrico Schifani and Kiko Gómez, who substantially improved the manuscript.

Bibliography

Acosta Salmerón, F.J., Martínez Ibáñez, M.D. & Morales, M. 1983. Contribución al conocimiento de la mirmecofauna del encinar peninsular (1). (Hym. Formicidae). *Boletín de la Asociación española de Entomología*, **6**: 379-391.

Agosti, D. 1990. Review and reclassification of *Cataglyphis* (Hymenoptera, Formicidae). *Journal of Natural History*, **24**: 1457-1505.

Agosti, D. & Collingwood, C.A. 1987. A provisional list of the Balkan ants (Hym. Formicidae) with a key to the worker caste. II. Key to the worker caste, including the European species without the Iberian. *Mitteilungen der Schweizerischen Entomologischen Gesellschaft*, **60**: 261-293.

AIM, Asociación Ibérica de Mirmecología. 2018. Listado de especies de hormigas encontradas durante el «Taxomara de León 2018». *Iberomyrmex*, **10**: 51-53.

Alsina, A., Cerdá, X., Retana, J. & Bosch, J. 1988. Foraging ecology of the aphid-tending ant *Camponotus cruentatus* in a savanna-like grassland. *Miscel.lània Zoològica*, **12**: 195-204.

Amor, F. & Ortega, P. 2014. *Cataglyphis tartessica* sp. n., a new ant species (Hymenoptera: Formicidae) in south-western Spain. *Myrmecological News*, **19**: 125-132.

Antarea. 2025a. *Cataglyphis cursor* (Fonscolombe, 1846) FORMICINAE. https://antarea.fr/fourmi/?repartition/repertition-especes.html?espece=188 [Consulted 22/IV/2025].

Antarea. 2025b. *Cataglyphis piliscapa* (Forel, 1901) FORMICINAE. https://antarea.fr/fourmi/?repartition/repertition-especes.html?espece=187 [Consulted 22/IV/2025].

Bolton, B. 2026. Antcat, *Cataglyphis*. https://www.antcat.org/catalog/429342 [Consulted 24/VII/2026].

Boulay, R., Aaron, S., Cerdá, X., Doums, C., Graham, P., Hefetz, A. & Monnin, T. 2017. Social Life in Arid Environments: The Case Study of *Cataglyphis* Ants. *The Annual Review of Entomology*, **62**: 305-321.

Cagniant, H. 1976a. Distribution, écologie et nid de la fourmi *Cataglyphis cursor* Fonscolombe Hyménoptères Formicidae. *Vie et Milieu*, **26**(2C): 265-276.

Cagniant, H. 1976b. Cycle biologique de la fourmi *Cataglyphis cursor*. *Vie et Milieu*, **26**(2C): 277-281.

Casevitz-Weulersse, J. & Galkowski, C. 2009. Liste actualisée des fourmis de France (Hymenoptera, Formicidae). *Bulletin de la Société Entomologique de France*, **114**: 475-510.

Ceballos, G. 1956. *Catálogo de los Himenópteros de España*. Instituto Español de Entomología, Madrid. 554 pp.

Centomare, M., Senczuk, G. & Fanfani, A. 2017. *Phylogeographic pattern in* Cataglyphis italica *(Emery, 1906) (Hymenoptera: Formicidae): role of the plio-pleistocene marine transgression in the Mediterranean basin*. 7° Congresso della Società Italiana di Biologia Evoluzionistica, Rome. https://doi.org/10.13140/RG.2.2.30163.07204

Cerdá, X. & Retana, J. 1988. Descripción de la comunidad de hormigas de un prado sabanoide en Canet de Mar (Barcelona). *Ecología*, **2**: 333-341.

Cerdá, X. & Retana, J. 1991. Sobre la fundación de la sociedad en la hormiga *Cataglyphis iberica* (Emery, 1906) (Hymenoptera, Formicidae). *Orsis*, **6**: 127-139.

Chang, Y.D. & He, D.H. 2002. Three new species of the genus *Cataglyphis* Foerster from northwest China (Hymenoptera: Formicidae: Formicinae). *Zoological Research*, **23**: 61-64.

Collingwood, C.A. & Yarrow, I.H.H. 1969. A survey of Iberian Formicidae (Hymenoptera). *EOS. Revista Española de Entomología*, **44**: 53-101.

Cros, S., Cerdá, X. & Retana, J. 1997. Spatial and temporal variations in the activity patterns of Mediterranean ant communities. *Ecoscience*, **4**(3): 269-278.

Csősz, S., Taheri, A., Schifani, E., Reyes-López, J.L., Alicata, A., Báthori, F. & Prebus, M.M. 2025. Taxonomic revision of the Mediterranean *Temnothorax rottenbergii* species group via integrated morphological and molecular approaches. *Insect Systematics and Diversity*, **9**(6): ixaf045.

Cuní, M. 1880. Excursión entomológica y botánica a San Miguel del Fay, Arbucias y cumbres del Montseny. *Anales de la Sociedad española de Historia Natural*, **9**: 205-242.

Cuní, M. 1897. Fauna entomológica de la villa de Calella. *Anales de la Sociedad española de Historia Natural*, **26**: 281-339.

Doums, C., Chifflet-Belle, P., Lenormand, T., Boulay, R. & Villalta, I. 2023. A putatively new ant species from the *Cataglyphis cursor* group displays low levels of polyandry with standard sexual reproduction. *Insectes Sociaux*, **70**: 439-450. https://doi.org/10.1007/s00040-023-00936-1

Dusmet, J.M. 1906. Himenópteros de las Sierras de Albarracín, Calamocha y Calatayud. *Boletín de la Sociedad Aragonesa de Ciencias Naturales*, **5**: 100-111.

Emery, C. 1906. Rassegna critica delle specie paleartiche del genere *Myrmecocystus*. *Memorie della Reale Accademia delle Scienze dell'Istituto di Bologna*, **3**: 173-187.

Espadaler, X., Retana, J. & Cerdá, X. 1990. The caste system of *Camponotus foreli* Emery (Hymenoptera: Formicidae). *Sociobiology*, **17**(2): 299-312.

García, F. 2022. *Cataglyphis iberica* (Emery, 1906) (Hymenoptera, Formicidae): novas citas para Galicia (NO Iberia). *Arquivos Entomolóxicos*, **25**: 257-260.

Gómez, C. 2013. Ant species of the Tierra de Pinares (Castilla y León, España) and potential recolonization sources for logged sites. *Iberomyrmex*, **5**: 11-14.

Gómez, K. & Espadaler, X. 2007. hormigas.org. Género *Cataglyphis* Foerster, 1850. https://hormigas.mirmiberica.org/xGeneros/Cataglyphis.htm [Consulted 25/V/2025].

Gómez, C., Casellas, D., Oliveras, J. & Bas, J.M. 2003a. Structure of ground-foraging ant assemblages in relation to land-use change in the northwestern Mediterranean region. *Biodiversity and Conservation*, **12**: 2135-2146.

Gómez, C., Pons, P. & Bas, J.M. 2003b. Effects of the argentine ant *Linepithema humile* on seed dispersal and seedling emergence of *Rhamnus alaternus*. *Ecography*, **26**(4): 532-538.

Hefetz, A. & Lenoir, A. 1991. Dufour's gland composition in the desert ant *Cataglyphis*: species specificity and population differences. *Zeitschrift für Naturforschung*, **47**(3): 285-289.

Hoang, D.T., Chernomor, O., Von Haeseler, A., Minh, B.Q., & Vinh, L.S. 2018. UFBoot2: improving the ultrafast bootstrap approximation. *Molecular biology and evolution*, **35**(2): 518-522.

Janicki, J., Narula, N., Ziegler, M., Guénard, B. & Economo, E.P. 2016. Visualizing and interacting with large-volume biodiversity data using client-server web-mapping applications: the design and implementation of AntMaps.org. *Ecological Informatics*, **32**: 185-193. https://doi.org/ 10.1016/j.ecoinf.2016.02.006

Jowers, M.J., Amor, F., Ortega, P., Lenoir, A., Boulay, R.R., Cerdá, X. & Galarza, J.A. 2014. Recent speciation and secondary contact in endemic ants. *Molecular Ecology*, **23**(10): 2529-2542.

Kalarikkal, R.K., Park, H., Georgiadis, C., Guénard, B., Economo, E.P. & Kim, Y. 2024. Current and Future Distribution of the *Cataglyphis nodus* (Brullé, 1833) in the Middle East and North Africa. *Diversity*, **16**: 563. https://doi.org/10.3390/d16090563

Kalyaanamoorthy, S., Minh, B.Q., Wong, T.K., Von Haeseler, A. & Jermiin, L.S. 2017. ModelFinder: fast model selection for accurate phylogenetic estimates. *Nature methods*, **14**(6): 587-589.

Khalili-Moghadam, A., Salata, S. & Borowiec, L. 2023. Two new species of ants of the genus *Cataglyphis* Foerster, 1850 (Hymenoptera: Formicidae) from Iran. *Zoology in the Middle East*, **69**(3): 270-281.
Knaden, M., Tinaut, A., Stoekl, J., Cerdá, X. & Wehner, R. 2012. Molecular phylogeny of the desert ant genus *Cataglyphis* (Hymenoptera: Formicidae). *Myrmecological News*, **16**: 123-132.

Kuhn, A., Darras, H., Paknia, O. & Aron, S. 2020. Repeated evolution of queen parthenogenesis and social hybridogenesis in *Cataglyphis* desert ants. *Molecular ecology*, **29**(3): 549-564.

Lecocq de Pletincx, N., Cerdá, X., Kiran, K., Karaman, C., Taheri, A. & Aron, S. 2024. Ecological diversification preceded geographical expansion during the evolutionary radiation of *Cataglyphis* desert ants. *iScience*, **27**: 109852. https://doi.org/10.1016/j.isci.2024.109852

Lenoir. A., Quérard, L., Pondicq, N. & Berton F. 1988a. Reproduction and dispersal in the ant *Cataglyphis cursor* (Hymenoptera, Formicidae). *Psyche*, **95**: 21-44.

Lenoir, A., Clément, J.L. & Nowbahari, M. 1988b. Les hydrocarbures cuticulaires de *Cataglyphis cursor* (Hymenoptera, Formicidae): variations géographiques et rôle dans la reconnaissance coloniale. *Actes des Colloques Insectes Sociaux*, **4**: 71-78.

Maák, I., Markó, B., Trigos-Peral, G., Erős, K., Babik, H., Ślipiński, P. & Czechowski, W. 2024. Playing with the Dead: The Corpses of Dominant Territorials Inhibit the Activity of Subordinate Ants (Hymenoptera: Formicidae). *Polish Journal of Ecology*, **72**(1-2): 35-44. https://doi.org/ 10.3161/15052249PJE2024.72.1.003

Martínez Ibáñez, M.D., 1984. *Las hormigas (Hym., Formicidae) de la Sierra de Guadarrama*. PhD Thesis. Universidad Complutense de Madrid. 528 pp.

Martínez Ibáñez, M.D. & Espadaler, X. 1986. Revisión de las hormigas ibéricas de la colección M. Medina y nuevos datos de distribución. *Actas VIII Jornadas de la Asociación española de Entomología*: 1022-1034.

Medina, M. 1891. Catálogo provisional de las hormigas de Andalucía. *Actas de la Sociedad española de Historia Natural*, **20**: 95-104.

Medina, M. 1903. Datos para el conocimiento de la fauna himenopterológica de España. *Boletín de la Real Sociedad Española de Historia Natural*, **3**: 320-321.

Menchetti, M., Schifani, E., García, F., Schär, S., Sbrega, E., Balević, N., Blaimer, B.B., Borowiec, L., Cioppa, D., Corbella, C., Dincă, V., Gentile, V., Giotis, I., Gómez, K., Gómez Durán, J.M., Kalaentzis, K., Lapeva-Gjonova, A., Mori, E., Talavera, G., Tinaut, A., Ruano, F., Salata, S., Sequeira, E., Serracanta, M., Suchan, T., Hebert, P.D.N., Dapporto, L. & Vila, R. 2026. DNA barcode reference library for European ants: a roadmap for phylogeography and species discovery. *Molecular Ecology Resources*, **26**: e70135. https://doi.org/10.1111/1755-0998.70135

Minh, B.Q., Schmidt, H.A., Chernomor, O., Schrempf, D., Woodhams, M.D., Von Haeseler, A. & Lanfear, R. 2020. IQ-TREE 2: new models and efficient methods for phylogenetic inference in the genomic era. *Molecular biology and evolution*, **37**(5): 1530-1534.

Nowbahari, E., Lenoir, A., Clement, J.L., Lange, C., Bagneres, A.G. & Joulie, C. 1990. Individual, geographical and experimental variation of cuticular hydrocarbons of the ant *Cataglyphis cursor* (Hymenoptera: Formicidae): Their use in nest and subspecies recognition. *Biochemical Systematics and Ecology*, **18**(1): 63-73.

Oberski, J.T., Griebenow, Z.H., Adams, R.M.M., Andersen, A., Andrade-Silva, J., Barden, P., Borowiec, M., Brady, S., Casadei-Ferreira, A., Csősz, S., Martins Dias, A., Dias, R.K.S., Feitosa, R.M., Fernandez, F., Fisher, B.L., General, D.E.M., Gómez, K., Hammel, J.U., Hawkes, P.G., Janda, M., Khalife, A., Ladino, N., Lieberman, Z.E., Lucky, A., Menchetti, M., Pires do Prado, L., Prebus, M.M., Probst, R.S., Punnath, A., Richter, A., Salata, S., Sánchez-Restrepo, A.F., Schifani, E., Schultz, T.R., Silva, R.R., Sosa-Calvo, J., Tocora, M.C., Ulysséa, M.A., van de Kamp, T., Wang, W.Y., Williams, J.L., Procopio Camacho, G. & Boudinot, B.E. 2025. Ant systematics: Past, present, and future. *Insect Systematics and Diversity*, **9**(4): 11. https://doi.org/10.1093/isd/ixaf025

Orou, N., Csősz, S., Arnan, X., Pol, R.G., Arthofer, W., Schlick-Steiner, B.C. & Steiner, F.M. 2023. *Messor erwini* sp. n., a hitherto cryptic harvester ant in the Iberian Peninsula. *Zoologischer Anzeiger*, **307**: 36–53.

Peeters, C. & Aron, S. 2017. Evolutionary reduction of female dispersal in *Cataglyphis* desert ants. *Biological Journal of the Linnean Society*, **122**: 58-70.

Pekár, S. & Křál, J. 2002. Mimicry complex in two central European zodariid spiders (Araneae: Zodariidae): how *Zodarion* deceives ants. *Biological Journal of the Linnean Society*, **75**(4): 517-532.

QGIS Development Team. 2026. *QGIS Geographic Information System. Open Source Geospatial Foundation Project. Version 4.0*. https://qgis.org

Retana, J. & Cerdá, X. 2000. Patterns of diversity and composition of Mediterranean ground ant communities tracking spatial and temporal variability in the thermal environment. *Oecologia*, **123**: 436-444.

Retana, J., Cerdá, X., Alsina, A. & Bosch, J. 1986. Importancia del alimento sólido y del alimento líquido en el régimen trófico de la hormiga *Cataglyphis cursor* (Formicidae). *Sessió Conjunta d'Entomologia ICHN-SCL*, **4**: 139-146.

Ruano, F. & Tinaut. A. 1993. Estructura del nido de *Cataglyphis floricola* Tinaut, 1993. Estudio comparado con los hormigueros de *C. iberica* (Emery, 1906) y *C. rosenhaueri* (Emery, 1906) (Hymenoptera: Formicidae). *Boletín de la Asociación española de Entomología*, **17**(2): 179-189.

Salata, S., Yazdanian, M., Jafari, F., Afshari, A. & Borowiec, L. 2025. *Cataglyphis golestanica* sp. nov., a new species of ant (Hymenoptera: Formicidae) from Iran. *Revue suisse de Zoologie*, **132**(1): 25-31.

Sanllorente, O., Lorite, P., Ruano, F., Palomeque, T. & Tinaut, A. 2018. Phylogenetic relationships between the slave-making ants *Rossomyrmex* and their *Proformica* hosts in relation to other genera of the ant tribe Formicini (Hymenoptera: Formicidae). *Journal of Zoological Systematics and Evolutionary Research*, **56**(1): 48-60.

Santschi, F. 1925. Fourmis d'Espagne et autres espèces paléarctiques (Hymenopt.). *EOS. Revista Española de Entomología*, **1**: 339-360.

Santschi, F. 1929. Étude sur les *Cataglyphis*. *Revue suisse de Zoologie*, **36**: 25-70.

Santschi, F. 1932. Liste de fourmis d'Espagne recueilliés par Mr. J. M. Dusmet. *Boletín de la Sociedad Entomológica de España*, **15**: 69-74.

Saunders, E. 1890. Aculeate Hymenoptera collected by J.J. Walker, Esq., R.N., F.L.S., at Gibraltar and in North Africa. (Part I - Heterogyna). *The Entomologist's Monthly Magazine*, **26**: 201-205.

Schär, S., Menchetti, M., Schifani, E., Hinojosa, J.C., Platania, L., Dapporto, L. & Vila, R. 2020. Integrative biodiversity inventory of ants from a Sicilian archipelago reveals high diversity on young volcanic islands (Hymenoptera: Formicidae). *Organisms Diversity & Evolution*, **20**(3): 405-416.

Seifert, B. 2005. Rank elevation in two European ant species: *Myrmica lobulicornis* Nylander, 1857, stat. n. and *Myrmica spinosior* Santschi, 1931, stat. n. (Hymenoptera: Formicidae). *Myrmecologische nachrichten*, **7**: 1-7.

Seifert, B. 2008. Removal of allometric variance improves species separation in multi-character discriminant functions when species are strongly allometric and exposes diagnostic characters. *Myrmecological News*, **11**: 91-105.

Seifert, B. 2018. *The Ants of Central and North Europa*. Lutra Verlags. Tauer. 408 pp.

Seifert, B. 2020. A taxonomic revision of the Palaearctic members of the subgenus *Lasius* s.str. (Hymenoptera, Formicidae). *Soil Organisms*, **92**(1): 15-86. https://doi.org/10.25674/so92iss1pp15

Seifert, B., Ritz, M. & Csősz, S. 2014. Application of exploratory data analyses opens a new perspective in morphology-based alpha-taxonomy of eusocial organisms. *Myrmecological News*, **19**: 1-15.

Seifert, B., d'Eustacchio, D., Kaufmann, B., Centorame, M., Lorite, P. & Modica, M.V. 2017. Four species within the supercolonial ants of the *Tapinoma nigerrimum* complex revealed by integrative taxonomy (Hymenoptera: Formicidae). *Myrmecological News*, **24**: 123-144.

Tinaut, A. 1990a. Taxonomic situation of the genus *Cataglyphis* Forster, 1850 in the Iberian Peninsula II. New position for *C. viatica* (Fabricius, 1787) and redescription of *C. velox* Santschi, 1929 stat. n. (Hymenoptera, Formicidae). *EOS. Revista Española de Entomología,* **66**: 49-59.

Tinaut, A. 1990b. Situación taxonómica del género *Cataglyphis* Förster, 1850 en la Península Ibérica. III. El grupo de *C. velox* Santschi, 1929 y descripción de *Cataglyphis humeya* sp. n. (Hymenoptera, Formicidae). *EOS. Revista Española de Entomología,* **66**: 215-227.

Tinaut, A. & Plaza, J.L. 1989. Situación taxonómica del género *Cataglyphis* Förster, 1850 en la Península Ibérica. I. Las especies del subgénero *Cataglyphis* Förster (Hym. Formicidae). *EOS. Revista Española de Entomología*, **65**(1): 189-199.

Venables, W.N. & Ripley, B.D. 2002. *Modern Applied Statistics with S*. 4thed. Springer. New York. 495 p.

Villalta, I., Amor, F., Galarza, J.A., Dupont, S., Ortega, P., Hefetz, A., Dahbi, A., Cerdá, X. & Boulay, R. 2018. Origin and distribution of desert ants across the Gibraltar Straits. *Molecular Phylogenetics and Evolution*, **118**: 122-134.

Wagner, H.C., Arthofer, W., Seifert, B., Muster, C., Steiner, F.M. & Schlick-Steiner, B.C. 2017. Light at the end of the tunnel: Integrative taxonomy delimits cryptic species in the *Tetramorium caespitum* complex. *Myrmecological News*, **25**: 95-129.

Wan, N.F., Fu, L., Dainese, M. & Kiær, L.P. 2025. Pesticides have negative effects on non-target organisms. *Nature Communications,* **16**: 1360. https://doi.org/10.1038/s41467-025-56732-x

Wheeler, W. M. 1901. The compound and mixed nests of American ants. Part ii. The known cases of social symbiosis among American ants. *The American Naturalist*, **35**: 513-539.

Wickham, H. 2016. *ggplot2: Elegant Graphics for Data Analysis*. Springer-Verlag, New York. 260 pp.

Wilson, E.O. 1953. The origin and evolution of polymorphism in ants. *The Quarterly Review of Biology*, **28**(2): 136-156.

Yu, G., Smith, D.K., Zhu, H., Guan, Y. & Lam, T.T.Y. 2017. ggtree: an R package for visualization and annotation of phylogenetic trees with their covariates and other associated data. *Methods in ecology and evolution*, **8**(1): 28-36.

Table I.- Biometrical indexes and chaetotaxy counts for *Cataglyphis cursor*, *C. piliscapa* and *C. mater* sp. nov. Raw data for individuals. RAV1.5mm for nest means biometrical indexes and raw for chaetotaxy counts. CS in microns.

Species	***C. cursor***	
Caste	Workers	
n=	48	13
Data	raw. individuals	RAV1.5. nests
CS	1456.9 ± 137.6 (1056; 1691)	-
CW/CL	0.910 ± 0.017 (0.875; 0.947)	0.912 ± 0.009 (0.899; 0.930)
FR/CS	0.207 ± 0.008 (0.191; 0.223)	0.208 ± 0.003 (0.203; 0.213)
PoOc/CL	0.197 ± 0.011 (0.164; 0.220)	0.199 ± 0.006 (0.188; 0.207)
EYE/CS	0.256 ± 0.009 (0.236; 0.281)	0.255 ± 0.005 (0.246; 0.262)
SL/CS	1.194 ± 0.044 (1.100; 1.312)	1.179 ± 0.016 (1.157; 1.202)
CS/ML	0.589 ± 0.016 (0.553; 0.616)	0.594 ± 0.006 (0.586; 0.602)
MW/ML	0.416 ± 0.011 (0.393; 0.436)	0.419 ± 0.004 (0.413; 0.427)
HT/CS	1.539 ± 0.045 (1.467; 1.638)	1.526 ± 0.026 (1.486; 1.577)
PeL/PeH	0.952 ± 0.101 (0.574; 1.088)	0.962 ± 0.057 (0.879; 1.057)
PeW/CS	0.269 ± 0.013 (0.233; 0.288)	0.267 ± 0.010 (0.241; 0.279)
nOcc	11.927 ± 2.397 (5; 17.5)	12.001 ± 1.485 (8.333; 13.667)
nGu	10.073 ± 2.955 (4; 17)	10.209 ± 2.585 (6.167; 15.667)
nGe	5.156 ± 1.947 (0; 8.5)	5.037 ± 1.343 (1.833; 7.3)
nPe	4.479 ± 1.329 (2; 8)	4.545 ± 0.772 (3; 5.667)
nPn	4.635 ± 1.879 (0; 7.5)	4.656 ± 1.538 (1; 6.667)
nMn	4.354 ± 1.604 (0; 8)	4.366 ± (1.104 (2.667; 6)
nPr	12.167 ± 3.262 (5.5; 19)	12.219 ± 2.402 (6.833; 15.3)
nHT	0.479 ± 0.857 (0; 3.5)	0.519 ± 0.706 (0; 2)
nSc	5.573 ± 2.858 (0; 10)	5.542 ± 2.001 (0; 7.333)
nScutum	-	-
nScutellum	-	-

Species	***C. piliscapa***	
Caste	Workers	
n=	153	35
Data	raw. individuals	RAV1.5. nests
CS	1463.6 ± 165.1 (1045; 1825)	-
CW/CL	0.896 ± 0.024 (0.834; 0.975)	0.899 ± 0.014 (0.876; 0.936)
FR/CS	0.207 ± 0.010 (0.182; 0.251)	0.208 ± 0.007 (0.195; 0.227)
PoOc/CL	0.193 ± 0.009 (0.162; 0.216)	0.195 ± 0.007 (0.183; 0.208)
EYE/CS	0.256 ± 0.010 (0.234; 0.286)	0.255 ± 0.004 (0.246; 0.266)
SL/CS	1.163 ± 0.055 (1.014; 1.295)	1.158 ± 0.032 (1.106; 1.219)
CS/ML	0.593 ± 0.017 (0.543; 0.637)	0.596 ± 0.005 (0.584; 0.605)
MW/ML	0.420 ± 0.013 (0377; 0.451)	0.422 ± 0.006 (0.403; 0.431)
HT/CS	1.546 ± 0.054 (1.414; 1.679)	1.540 ± 0.031 (1.489; 1.596)
PeL/PeH	0.989 ± 0.104 (0.791; 1.333)	0.986 ± 0.069 (0.876; 1.225)
PeW/CS	0.295 ± 0.019 (0.214; 0.363)	0.293 ± 0.016 (0.260; 0.328)
nOcc	4.029 ± 2.701 (0; 13.5)	4.667 ± 2.671 (1.2; 11.833)
nGu	5.181 ± 1.832 (0.5; 10.5)	5.361 ± 1.327 (2.700; 7.833)
nGe	1.369 ± 2.024 (0; 9.5)	1.844 ± 1.892 (0; 5.9)
nPe	0.915 ± 1.131 (0; 5)	1.180 ± 1.121 (0; 4)
nPn	0.291 ± 0.439 (0; 2)	0.333 ± 0.296 (0; 1)
nMn	0.353 ± 0.458 (0; 2)	0.443 ± 0.342 (0; 1.667)
nPr	1.186 ± 1.039 (0; 5.5)	1.356 ± 0.826 (0.375; 3.833)
nHT	0 ± 0 (0; 0)	0 ± 0 (0; 0)
nSc	3.307 ± 4.432 (0; 20.5)	4.253 ± 4.512 (0.100; 15.833)
nScutum	-	-
nScutellum	-	-

Table I (cont.).- Biometrical indexes and chaetotaxy counts for *Cataglyphis cursor*, *C. piliscapa* and *C. mater* sp. nov. Raw data for individuals. RAV1.5mm for nest means biometrical indexes and raw for chaetotaxy counts. CS in microns.

Species	***C. mater***	
Caste	Workers	
n=	179	49
Data	raw. individuals	RAV1.5. nests
CS	1480.5 ± 176 (1010; 1850)	-
CW/CL	0.921 ± 0.017 (0.879; 0.978)	0.921 ± 0.011 (0.893; 0.949)
FR/CS	0.203 ± 0.009 (0.179; 0.229)	0.204 ± 0.007 (0.186; 0.217)
PoOc/CL	0.175 ± 0.010 (0.147; 0.213)	0.176 ± 0.007 (0.163; 0.195)
EYE/CS	0.262 ± 0.011 (0.235; 0.293)	0.262 ± 0.004 (0.251; 0.272)
SL/CS	1.114 ± 0.057 (0.986; 1.257)	1.111 ± 0.025 (1.053; 1.178)
CS/ML	0.637 ± 0.020 (0.586; 0.682)	0.639 ± 0.008 (0.620; 0.660)
MW/ML	0.441 ± 0.015 (0.365; 0.481)	0.442 ± 0.009 (0.413; 0.463)
HT/CS	1.436 ± 0.056 (1.289; 1.596)	1.433 ± 0.032 (1.337; 1.499)
PeL/PeH	0.947 ± 0.103 (0.713; 1.247)	0.948 ± 0.073 (0.799; 1.089)
PeW/CS	0.277 ± 0.016 (0.215; 0.324)	0.278 ± 0.019 (0.239; 0.330)
nOcc	1.449 ± 0.802 (0; 5)	1.537 ± 0.626 (0.500; 3.750)
nGu	0.893 ± 0.856 (0; 5)	0.955 ± 0.650 (0; 2.667)
nGe	0 ± 0 (0; 0)	0 ± 0 (0; 0)
nPe	0.051 ± 0.200 (0; 1.5)	0.061 ± 0.148 (0; 0.750)
nPn	0.584 ± 0.454 (0; 2)	0.577 ± 0.294 (0; 1.250)
nMn	0.768 ± 0.604 (0; 5)	0.827 ± 0.399 (0.100; 2)
nPr	0.176 ± 0.408 (0; 3)	0.208 ± 0.335 (0; 1.5)
nHT	0.008 ± 0.083 (0; 1)	0.009 ± 0.049 (0; 0.333)
nSc	0.191 ± 0.391 (0; 2)	0.210 ± 0.308 (0; 1.5)
nScutum	-	-
nScutellum	-	-

Species	***C. mater***	
Caste	Gynes	Males
n=	13	30
Data	raw. individuals	raw. individuals
CS	1673.8 ± 108.1 (1469; 1938)	1477.1 ± 96.1 (1278; 1651)
CW/CL	0.983 ± 0.016 (0.947; 1)	1.072 ± 0.020 (1.032; 1.113)
FR/CS	0.208 ± 0.014 (0.181; 0.233)	0.195 ± 0.010 (0.174; 0.220)
PoOc/CL	0.193 ± 0.009 (0.177; 0.212)	0.241 ± 0.041 (0.197; 0.333)
EYE/CS	0.256 ± 0.009 (0.242; 0.278)	0.307 ± 0.009 (0.293; 0.326)
SL/CS	0.922 ± 0.039 (0.873; 1.019)	1.144 ± 0.044 (1.061; 1.261)
CS/ML	0.596 ± 0.021 (0.564; 0.646)	0.543 ± 0.024 (0.506; 0.612)
MW/ML	0.470 ± 0.015 (0.454; 0.501)	0.613 ± 0.048 (0.519; 0.705)
HT/CS	1.158 ± 0.041 (1.109; 1.266)	1.609 ± 0.079 (1.450; 1.771)
PeL/PeH	0.765 ± 0.111 (0.583; 0.940)	0.646 ± 0.072 (0.532; 0.818)
PeW/CS	0.406 ± 0.389 (0.353; 0.473)	0.532 ± 0.035 (0.467; 0.609)
nOcc	1.846 ± 1.088 (0; 4)	0.1 ± 0.242 (0; 1)
nGu	0.923 ± 0.787 (0; 2.5)	0 ± 0 (0; 0)
nGe	0 ± 0 (0; 0)	0 ± 0 (0; 0)
nPe	2 ± 1.633 (0.5; 5.5)	0 ± 0 (0; 0)
nPn	2.654 ± 0.875 (1.5; 4)	0.017 ± 0.093 (0; 0.5)
nMn	-	-
nPr	5.308 ± 3.568 (1; 13)	0.328 ± 0.428 (0; 1.5)
nHT	-	-
nSc	-	-
nScutum	4.231 ± 1.536 (1.5; 7)	1.638 ± 1.401 (0; 5)
nScutellum	2.423 ± 1.038 (1; 5)	2.638 ± 0.812 (1; 4)

Table II.- Mean Kimura two-parameter (K2P) distances (%) among species of the *Cataglyphis* cursor group and selected congeners. Diagonal values (in bold) are mean intraspecific distances; off-diagonal values are mean interspecific distances between species. Dashes on the diagonal indicate species represented by a single sequence (*C. iberica*, *C. nodus*), for which no intraspecific distance could be computed.

	C. mater	***C. italica***	***C. piliscapa***	***C. cursor***	***C. hellenica***	***C. iberica***	***C. nodus***
C. mater	**3.93**	12.08	12.24	12.32	10.28	12.93	14.08
C. italica		**3.57**	6.16	6.65	9.45	11.27	13.3
C. piliscapa			**4.63**	7.33	10.14	12.76	13.85
C. cursor				**2.52**	9.35	12.3	13.54
C. hellenica					**8.83**	12.1	13.13
C. iberica						-	6.89
C. nodus							-

Table III.- Complete excavated nests of *Cataglyphis mater* sp. nov. There are indicated the number of workers (W), gynes (G), males (M), workers larvae (Wl), workers pupae (Wp), sexuate larvae (Sl), sexuate pupae (Sp) and emerged males from these original pupae (EM). Nest chamber depth (in cm): surface chambers always present; IC = intermediate chambers; MC = main chamber(s); "-" = no data recorded; ¿? = doubtful nest ending. Provinces: Burgos (BU), León (LE), Segovia (SG), Soria (SO).

Prov.	**Locality**	**Date**	**W**	**G**	**M**	**Wl**	**Wp**	**Sl**	**Sp**	**EM**	**IC**	**MC**
BU	Nava de Roa I	18-VI-2019	84	1		45	21				-	-
	Nava de Roa II	18-VI-2019	273	1		-	-				-	-
	Nava de Roa III	26-VI-2021	510	1		300	300				-	47
	Nava de Roa IV	26-VI-2021	502	1		150	350				-	41
	San Martín de Rubiales I	26-VI-2021	103	1		7	31				0	18
	San Martín de Rubiales II	26-VI-2021	41	1		7	11				-	16
	San Martín de Rubiales III	26-VI-2021	377		10	98	48		26	-	-	19
	Vadocondes I	12-VII-2020	700	1	27	29	105	64	37	89	14.5/17.5/25.5	45/45
	Vadocondes II	16-VII-2020	312	1		6	-				-	22
	Vadocondes III	5-VI-2021	471			-	-	25	36	-	8.5/9.5	¿?
	Vadocondes IV	28-VI-2021	278	1		168	314				7/9.5 /11/13/16/ 17/18/21/23	26.5
	Vadocondes V	28-VI-2021	76	1		49	106				15/21/22	24.5
	Villaescusa de Roa	18-VI-2019	586	1		-	-				-	-
LE	Golpejar de la Sobarriba	31-VII-2020	320	1		-	-				-	33/33
SG	Cantalejo	20-VI-2021	500	1	33	21		7	79	28	(five intermediate chambers)	44
	Montejo de la Vega de la Serrezuela I	19-VII-2020	54	1		-	13				-	17
	Montejo de la Vega de la Serrezuela II	19-VII-2020	326	1		120	94				-	17
	Moral de Hornuez	19-VII-2020	450	1		-	45				-	-
	Navalmanzano [**Type nest**]	15-VI-2019	188	5	48	-	-				-	25
SO	Miño de San Esteban	5-VI-2021	595	1		-	42				18	19.5
	San Esteban de Gormáz I	5-VI-2021	223	2		-	74				22	29
	San Esteban de Gormáz II	28-VI-2021	411	1		83	207				8/12.5/17	20

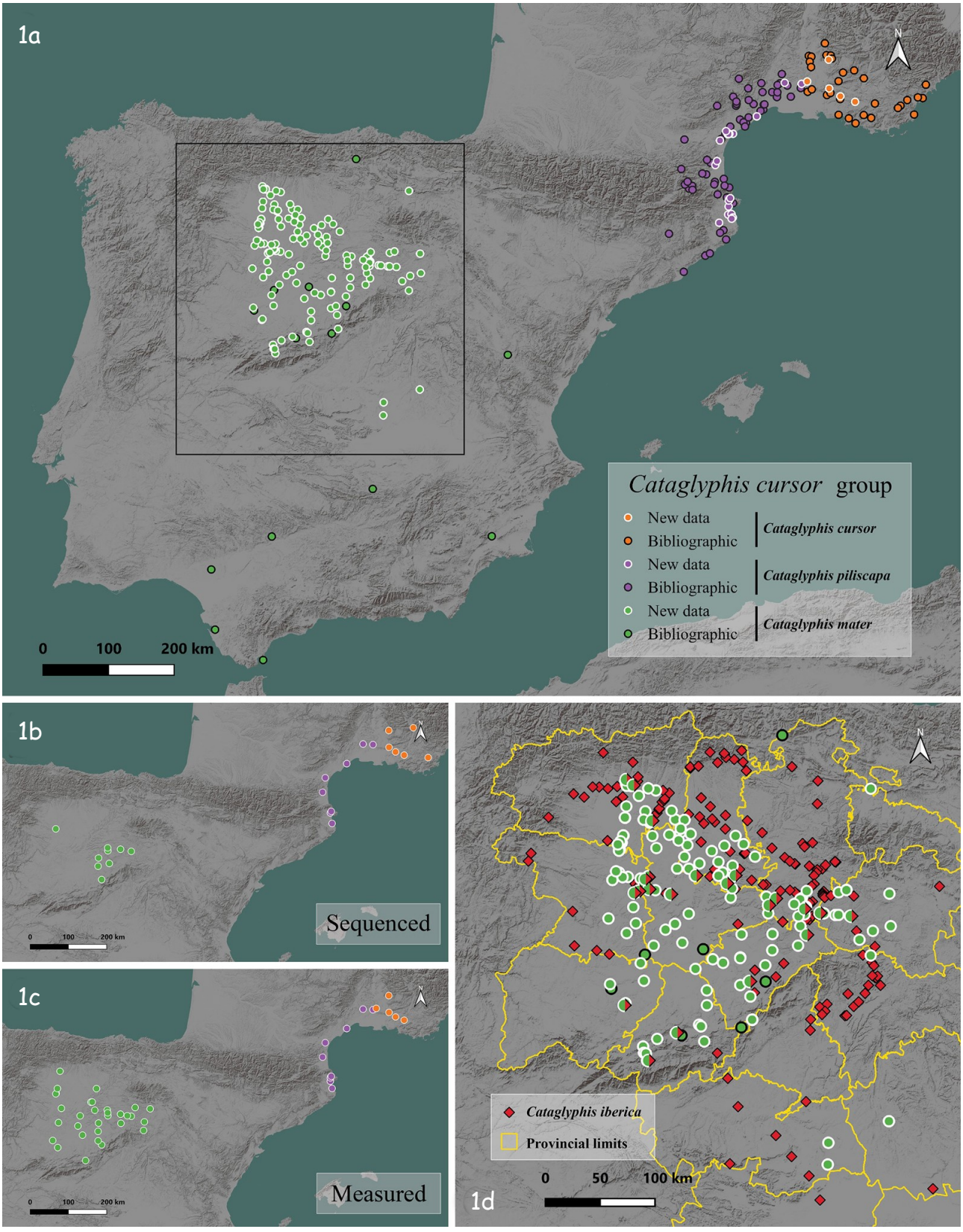


Fig. 1.- Maps of distribution for the *Cataglyphis cursor* group in the study area. **1a.-** New data and bibliographic records (main text). **1b.-** Specimen localities used for DNA analyses (Appendix III). **1c.-** Specimen localities used for biometry (Appendix II). **1d.-** Main distribution area of *Cataglyphis mater* sp. nov. where *C. iberica* (own unpublished data) is also found, with which it coexists in some sampled locations.

Fig. 2.- Mesosoma of workers in lateral view. **2a.-** *Cataglyphis cursor*. **2b.-** *Cataglyphis piliscapa*. Scale: 1 mm.

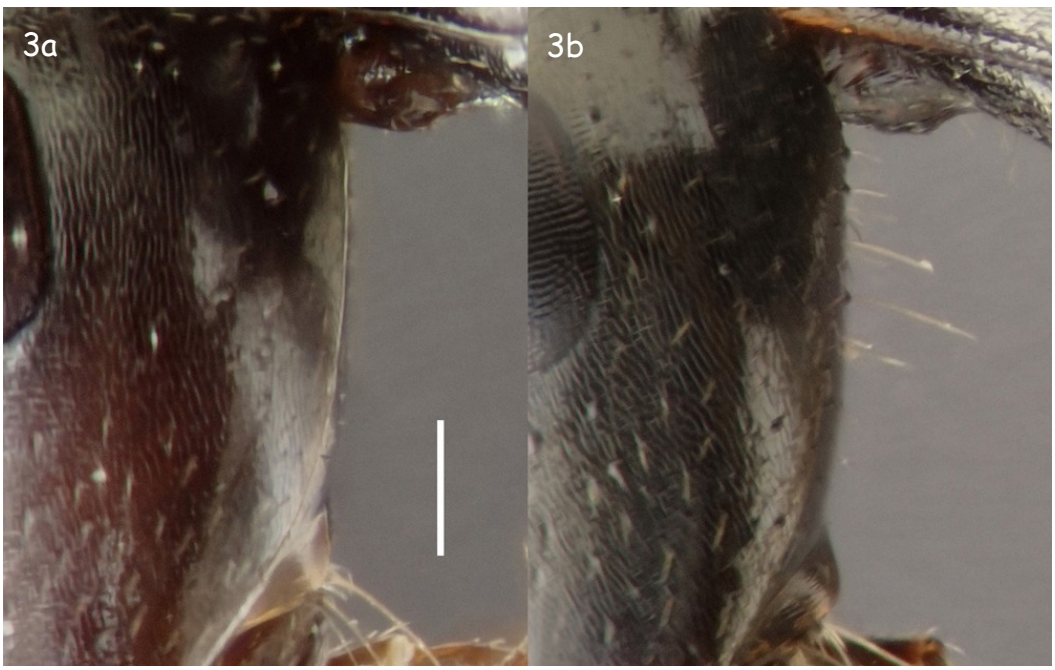


Fig. 3.- Cephalic underside of workers in lateral view. **3a.-** *Cataglyphis mater* sp. nov. **3b.-** *Cataglyphis piliscapa*. Scale: 0.1 mm.

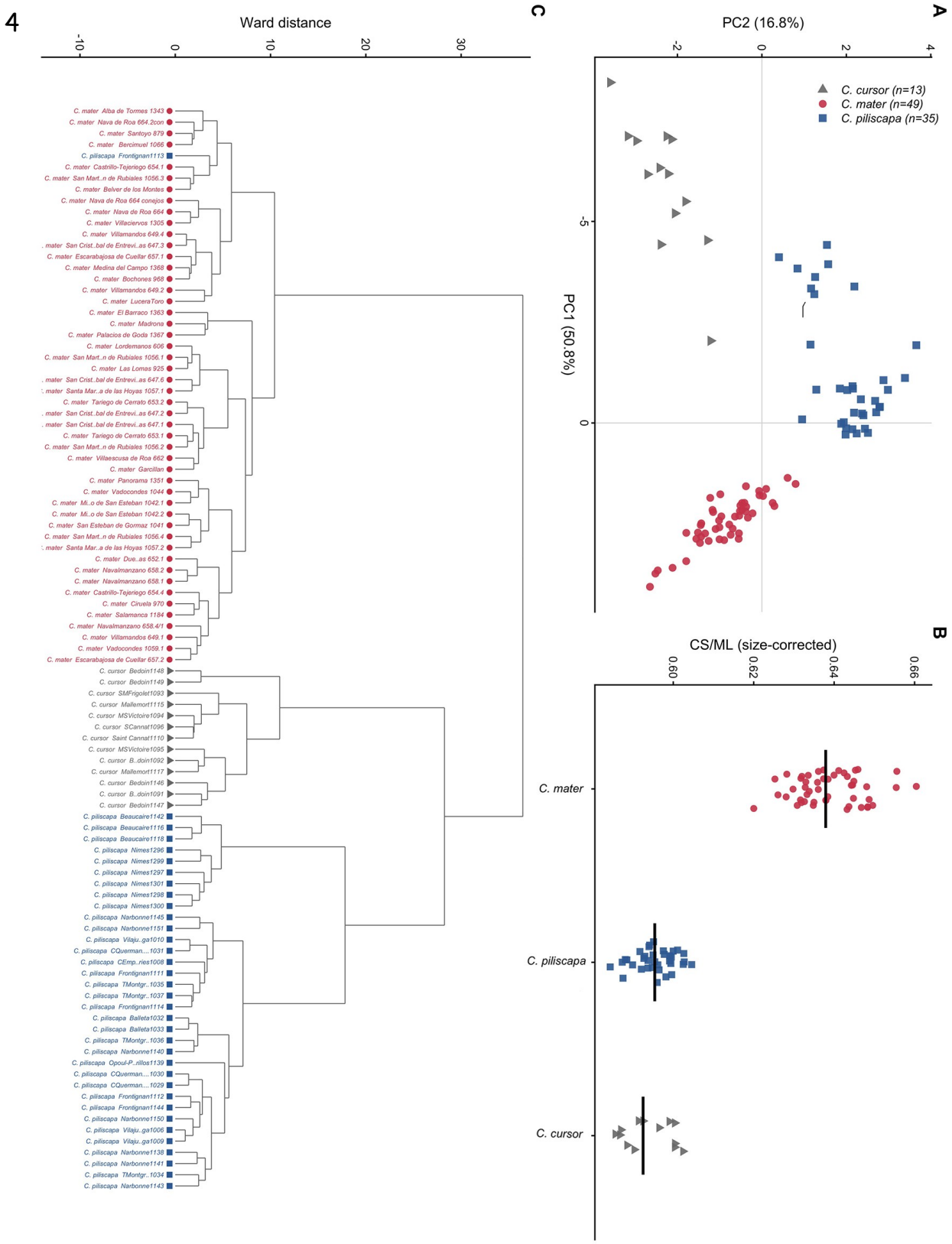


Fig. 4.- Morphometric distinctness of *Cataglyphis mater* sp. nov. from its closest relatives in the *C. cursor* group, based on 97 nest sample means scored for 19 size-corrected characters (allometric variance removed, reference cephalic size CS = 1.5 mm). **A.-** Principal component analysis; the first two components explain 50.8% and 16.8% of the total variance, and the three species occupy separate regions of the plane. **B.-** Size-corrected CS/ML index by species, with horizontal bars showing medians. **C.-** Unsupervised hierarchical clustering (Ward's method on Euclidean distances), in which each terminal is a single nest, coloured by species and labelled with its species and sample code.

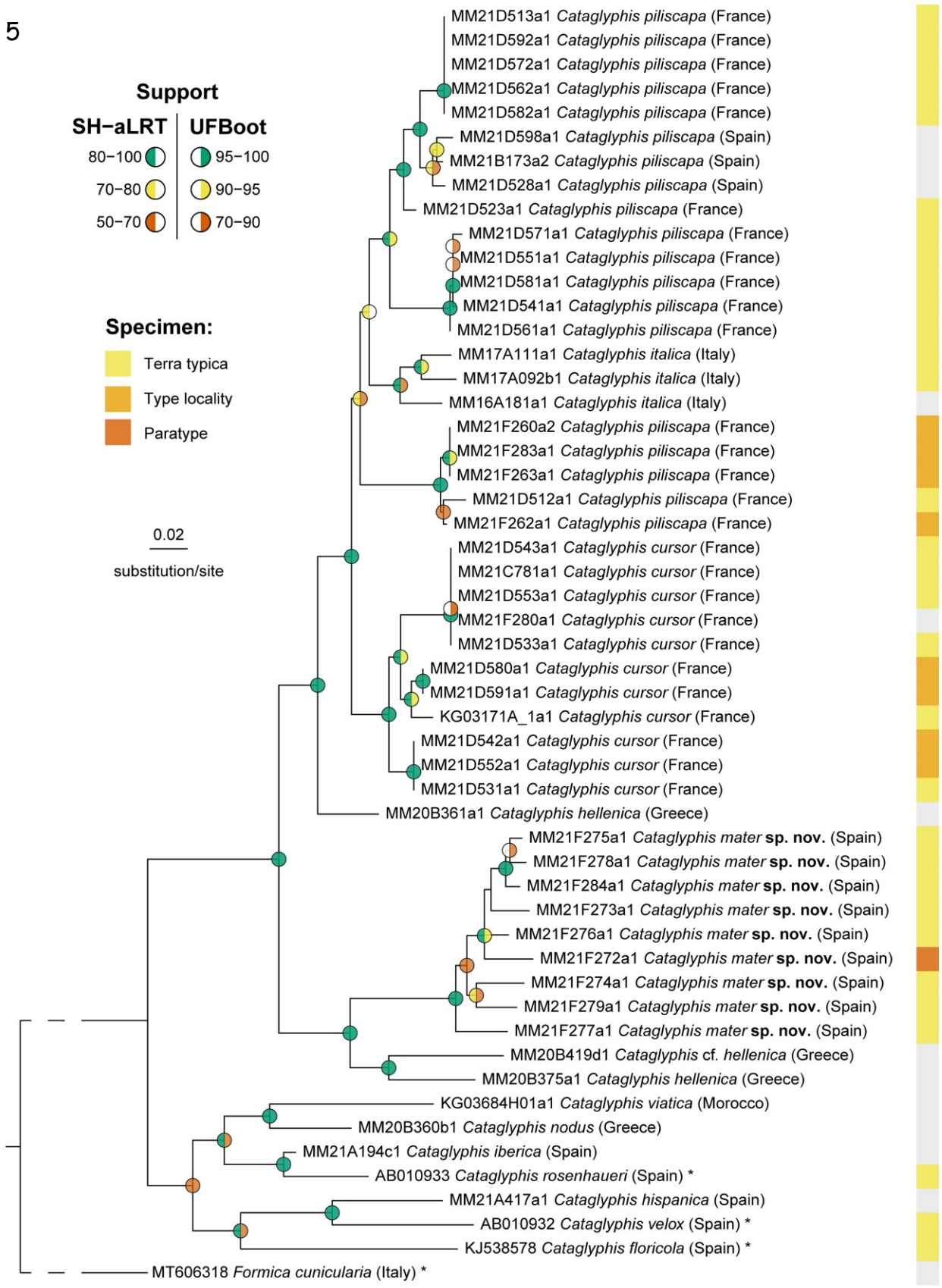


Fig. 5.- Maximum-likelihood COI tree of the West European *Cataglyphis cursor* group, rooted with *Formica cunicularia*. Node values indicate SH-aLRT / ultrafast bootstrap support. Asterisks mark GenBank-retrieved sequences; all the rest are from the DNA barcode library of Menchetti *et al.* (2026), with voucher codes and BOLD accessions in Appendix III.

Fig. 6.- *Cataglyphis mater* sp. nov. **6a.-** Paratype worker, habitus in lateral view, scale: 1 mm. **6b-d.-** Living workers.

Fig. 7.- Paratype worker of *Cataglyphis mater* sp. nov. Head in frontal view. Scale: 1 mm.

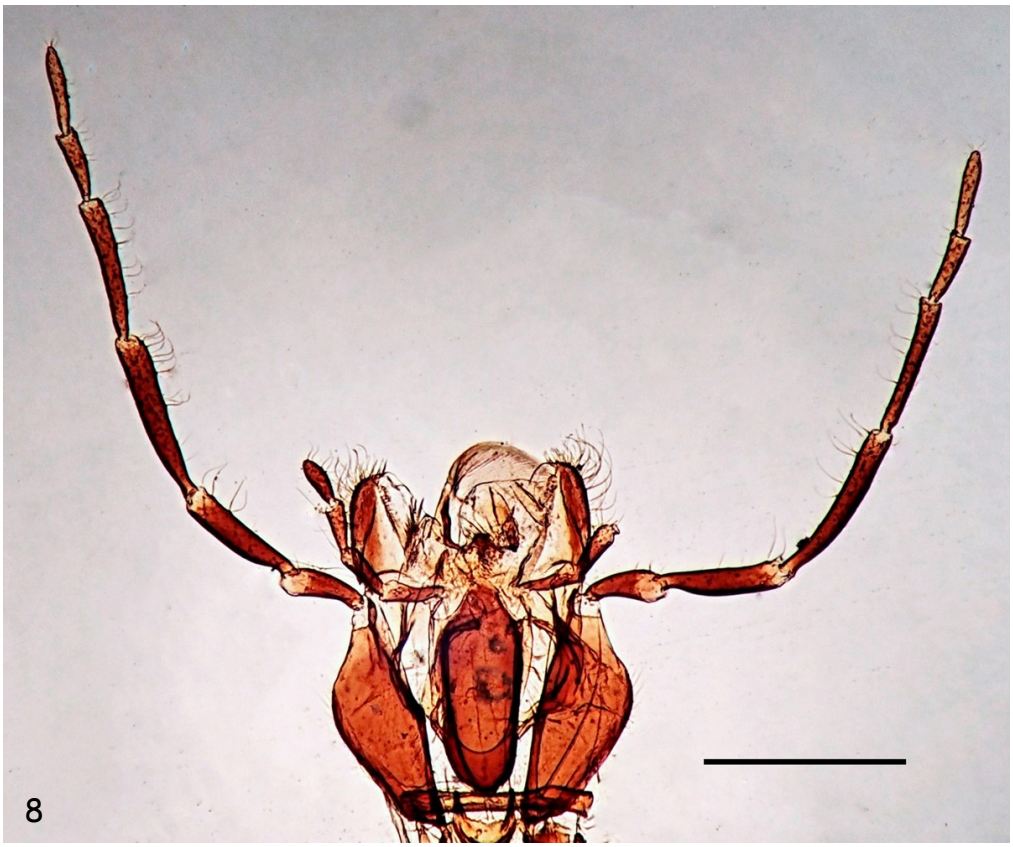


Fig. 8.- Microscopic preparation of the mouth system of *Cataglyphis mater* sp. nov., showing the palps. Note the short two distal segments. Scale: 0.1 mm.

Fig. 9.- Paratype worker of *Cataglyphis mater* sp. nov. Cephalic underside, mesosoma and petiole in lateral view. Scale: 1 mm.

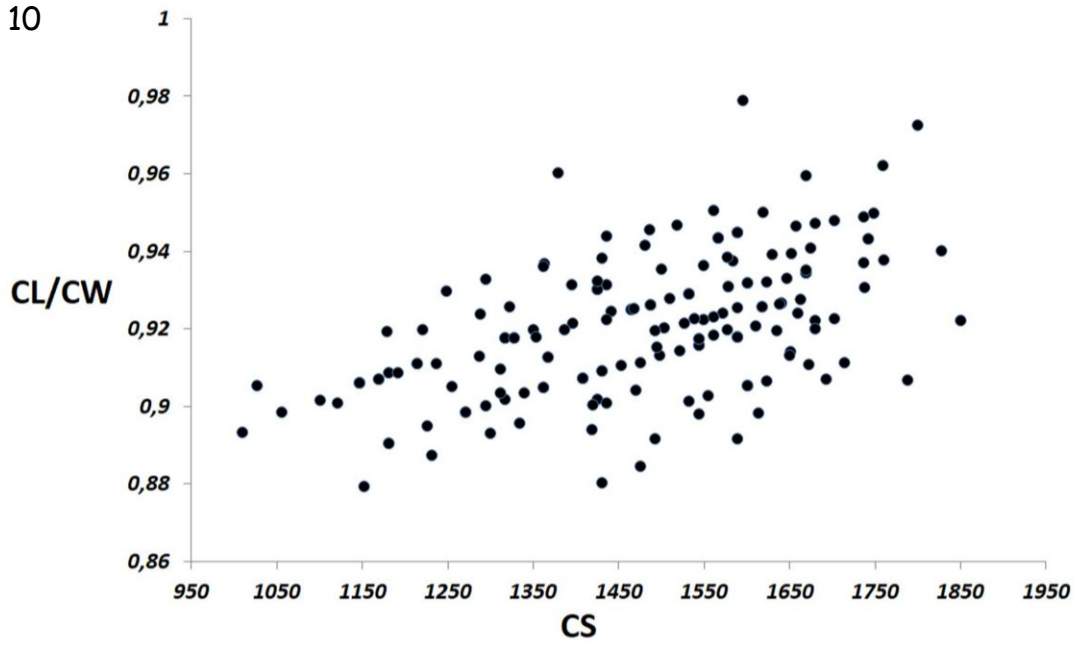
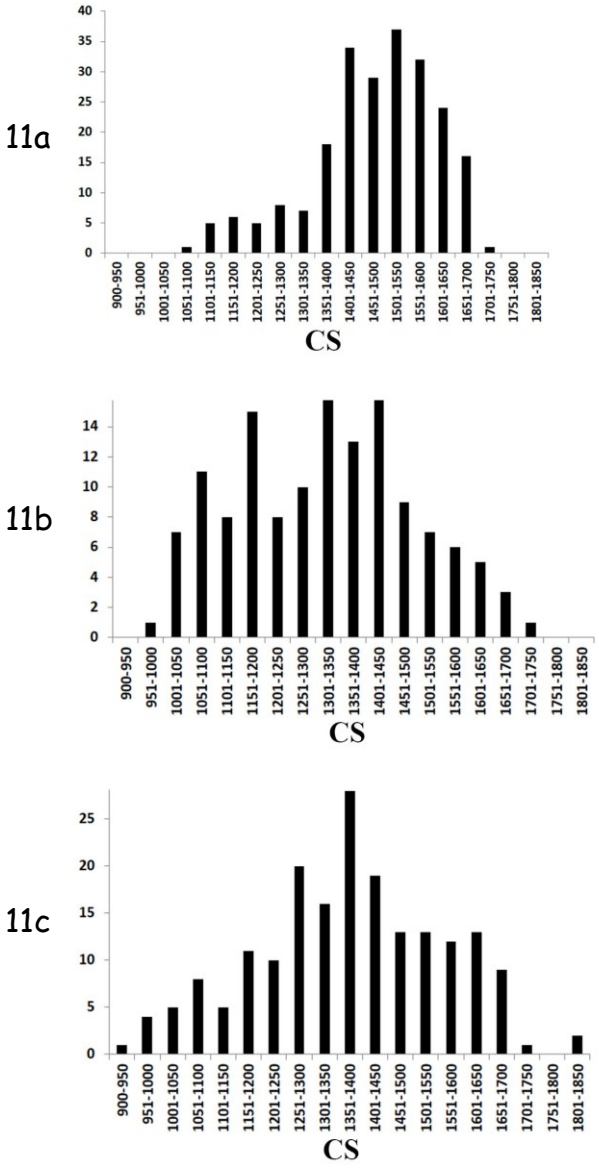


Fig. 10.- Scatter plot for CL/CW values vs CS in microns for *Cataglyphis mater* sp. nov. (n=179), that usually shows differences among castes, if present, beyond the allometry.

Fig. 11.- Number of workers per size class in three excavated nests. Only about a half of the worker population was measured at random.
11a-. San Esteban de Gormaz (n=214);
11b.- Vadocondes (n=137);
11c.- Nava de Roa (n=190).



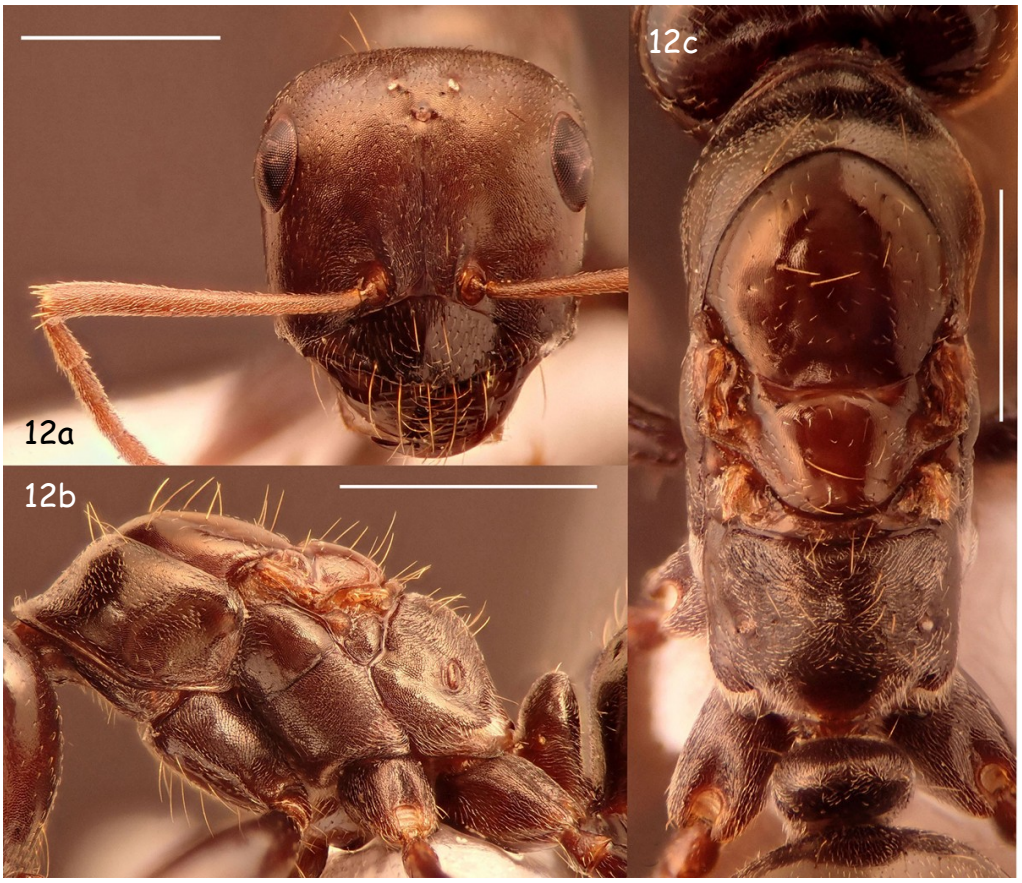


Fig. 12.- Gyne of *Cataglyphis mater* sp. nov. **12a.-** Head in frontal view. **12b.-** Mesosoma and petiole in lateral view. **12c.-** Mesosoma and petiole in dorsal view. Scales: 1 mm.

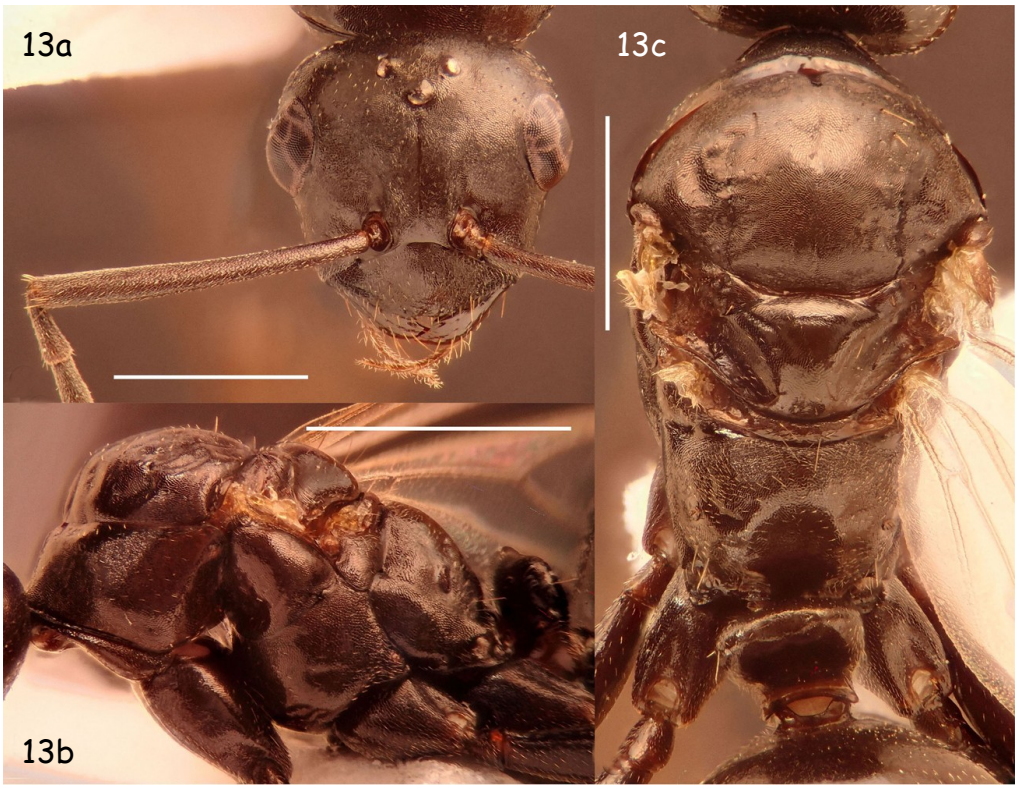


Fig. 13.- Male of *Cataglyphis mater* sp. nov. **13a.-** Head in frontal view. **13b.-** Mesosoma and petiole in lateral view. **13c.-** Mesosoma and petiole in dorsal view. Scale: 1 mm.

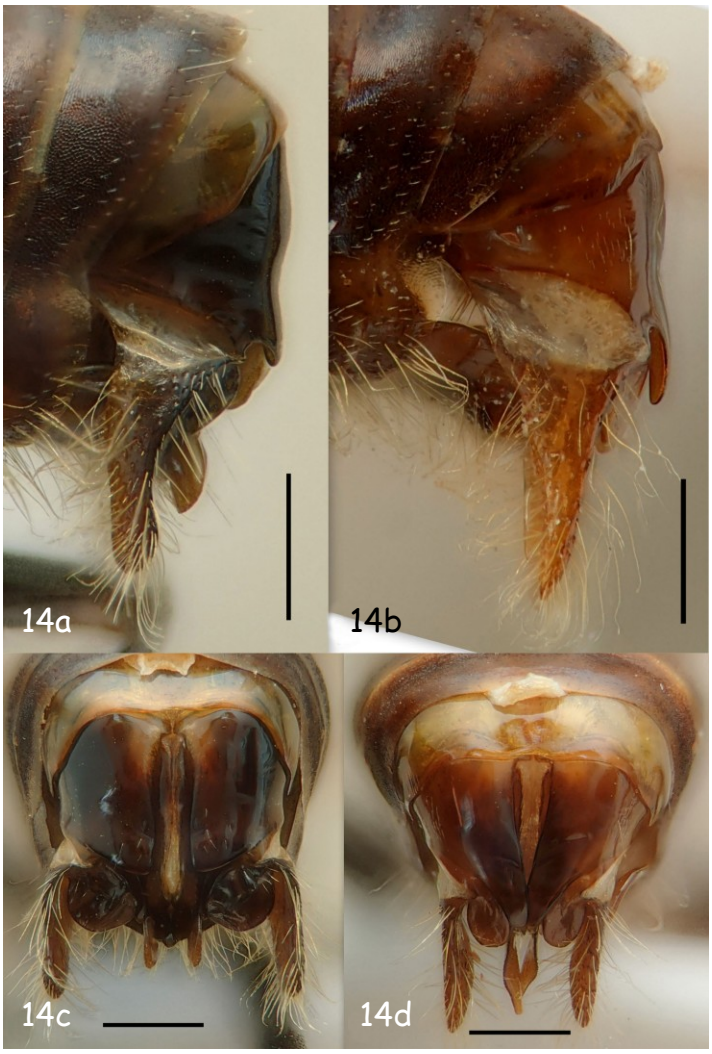


Fig. 14.- Genitalia of males of *Cataglyphis cursor* group. **14a** & **14c.-** *Cataglyphis mater* sp. nov. **14b** & **14d.-** *Cataglyphis piliscapa*. a & b.- Lateral view. c & d.- Caudal view. Scales: 0.5 mm.

Fig. 15.- Four habitat types where *Cataglyphis mater* sp. nov. was found. **15a.-** Open pinewood in Castrillo-Tejeriego (Valladolid). **15b.-** Sparsely shrubby area in Nava de Roa (Burgos). **15c.-** Path between farmlands in Lordemanos (León). **15d.-** Unpaved urban parking in Palencia city (Palencia).

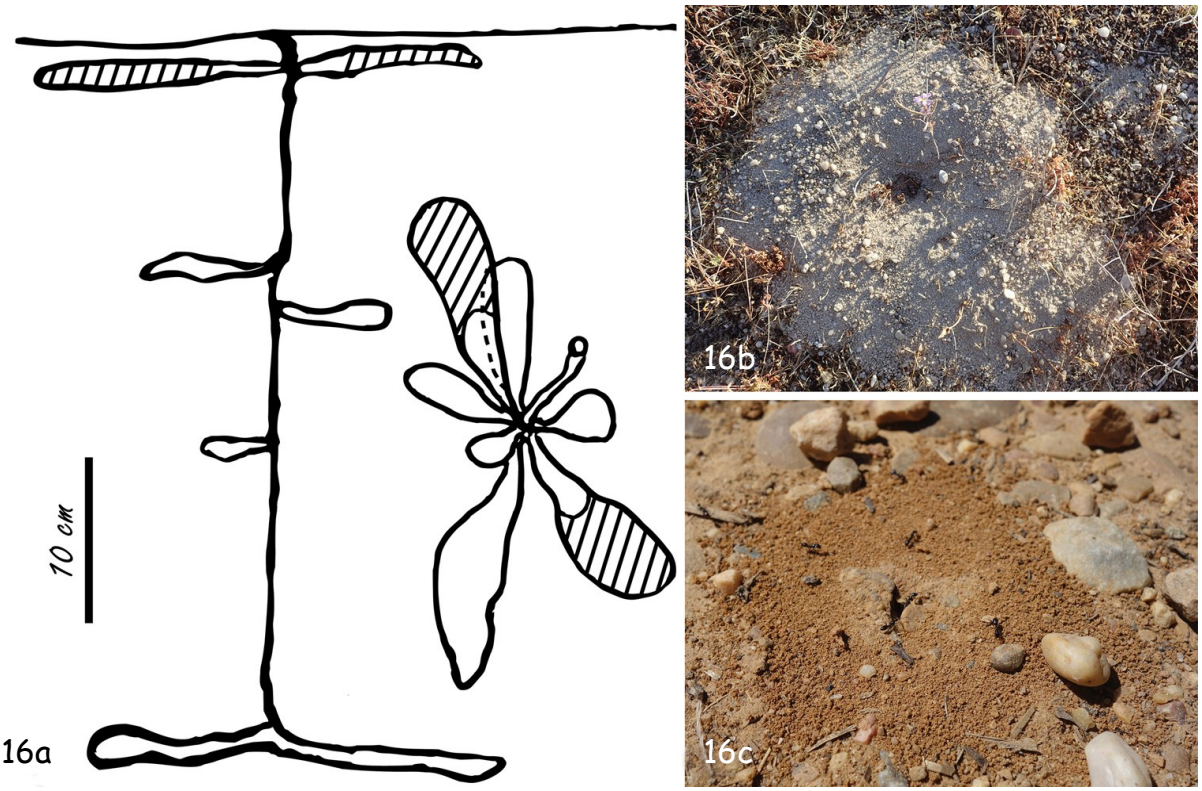


Fig. 16.- Nests of *Cataglyphis mater* sp. nov. **16a.-** Diagrams of an excavated nest from Vadocondes (Burgos) in lateral view (left) and top view (right). The scratched chambers contained garbage. The nest population was 728 adults and 134 immatures (Vadocondes I, Table III). **16b & 16c.-** Small crater of excavated material around a nest entrance.

Appendix I.- List of localities and non-type material studied.

The studied material is listed as: Country, region, province or department, locality (and municipality if different), coordinates, date, altitude above sea level, nests samples (n) (accounting for a variable number of specimens: workers (w), gines (g) and males (ma)), isolated workers (iw), isolated gynes (ig), isolated males (ima).

Cataglyphis mater García, Cuesta-Segura, Espadaler, Vila & Menchetti sp. nov.

SPAIN: **Castilla y León: Ávila**: • Adanero, 40.9454N 4.6356W, 894 m, 31-VII-2023, 1n, ADC-S *leg.*; • Ávila, 40.6620N 4.7126W, 1083 m, 31-VII-2023, 1n, ADC-S *leg.*; 40.6489N 4.6911W, 1084 m, 22-VI-2024, 5iw, ADC-S *leg.*; • Casas del Puerto "Puerto de Villatoro", 40.5378N 5.1608W, 1391 m, 22-VI-2024, 2iw, ADC-S *leg.*; • El Barraco "Puerto de la Paramera", 40.5255N 4.6534W, 1415 m, 31-VII-2023, 16iw, ADC-S *leg.*; • La Herguijuela (San Juan de Gredos), 40.4158N 5.2789W, 1800, 23-VII-1979, 2w, 1g, 2 ma, XE *leg.*; • La Torre, 40.5930N 4.9623W, 1143 m, 22-VI-2024, 2iw, with *C. iberica* in the area, ADC-S *leg.*; • Navacepeda de Tormes (San Juan de Gredos), 40.3572N 5.2651W, 1335 m, 22-VI-2024, 4 iw, with *C. iberica* in the area, ADC-S *leg.*; • Palacios de Goda, 41.1206N 4.7635W, 808 m, 31-VII-2023, 1n, ADC-S *leg.*; • Piedrahíta, 40.4724N 5.3108W, 1063 m, 22-VI-2024, 1n (1ma), ADC-S *leg.*; • Santiago del Collado "Puerto de Peña Negra", 40.4218N 5.3006W, 1922 m, 22-VI-2024, 1n, 6 iw, ADC-S *leg.*; • Vega de Santa María, 40.8235N 4.6322W, 929 m, 31-VII-2023, 1n, ADC-S *leg.* **Burgos**: • Aranda de Duero "Skate park", 41.6642N 3.6958W, 803 m, 8-VI-2021, 2n, ADC-S *leg.*; • Baños de Valdearados, 41.7727N 3.5597W, 869 m, 26-VI-2021, 1n, ADC-S *leg.*; • Nava de Roa, 41.5865N 3.9787W, 840 m, 18-VI-2019, 9 iw, 2n excavated (Table 11), ADC-S *leg.*; 26-VI-2021, 2n excavated (Table 11), ADC-S *leg.*; • Roa, 41.7092N 3.9134W, 782 m, 26-VI-2021, ADC-S *leg.*, 1n,1ima, with *C. iberica* in the area, ADC-S *leg.*; • San Martín de Rubiales, 41.6553N 3.9841W, 877 m, 18-VI-2019, 6iw, with *C. iberica* in the area, ADC-S *leg.*; 26-VI-2021, 1n and 3n excavated

(Table 11), ADC-S *leg.;* • Santa Cruz de la Salceda, 41.5808N 3.5810W, 942 m, 16-VII-2020, 1n, ADC-S *leg.;* • Sinovas (Aranda de Duero), 41.7149N 3.6107W, 862 m, 41.7058N 3.6282W, 873 m, 41.7039N 3.6306W, 860 m, 19-V-2019, 5 iw at each site, ADC-S *leg.;* • Vadocondes, 41.6442N 3.5653W, 810 m, 12-VII-2020, 1n and 1n excavated (Table 11), 3 ima, ADC-S *leg.;* 41.6306N 3.5750W, 978 m, 16-VII-2020, 3n, one of them with *Solenopsis* sp. in a chamber, ADC-S *leg.;* 5-VI-2021, 1n excavated (Table 11), ADC-S *leg.;* 41.6250 N 3.5815W, 862 m, 16-VII-2020, 7iw, 1n and 1n excavated (Table 11), with *C. iberica* in the area, ADC-S *leg.;* 5-VI-2021, 1n excavated (Table 11), ADC-S leg.; 28-VI-2021, 2n excavated (Table 11), ADC-S *leg.;* • Villaescusa de Roa, 41.7227N 4.0015W, 846 m, 18-VI-2019, 6iw and 1n excavated (Table 11), ADC-S *leg.;* 26-VI-2021, 1n, ADC-S leg.; **León**: • Algadefe, 42.2013N 5.5904W, 745 m, 9-VI-2019, 12iw, 1n, 2 ima, ADC-S & M. Sánchez *leg.;* • Ardón, 42.4409N 5.5679W, 785 m, 12-VII-2018, 1n, ADC-S & F. Amor *leg.;* • Castrovega de Valmadrigal (Valverde-Enrique), 42.3229N 5.2874W, 813m, 28-VIII-1973, 2w, XE *leg.;* • Codornillos (Calzada del Coto), 42.4150N 5.0640W, 835 m, 28-VII-2020, 1n, ADC-S *leg.;* • Golpejar de la Sobarriba (Valdefresno), 42.6095N 5.5234W, 939 m, 27-VII-2020, 15n, with *C. iberica* in the área, ADC-S *leg.;* 31-VII-2020, 1n excavated (Table 11), ADC-S *leg.;* • Grajalejo de las Matas (Villamoratiel de las Matas), 42.4052N 5.3554W, 837 m, 28-VII-2020, 2n, 1 ma, 10 iw, ADC-S *leg.;* • León, 42.6135N 5.5680W, 846 m, 19-V-24, 1n, M. Sánchez *leg.;* 42.6100N 5.5699W, 843 m, 2-VI-24, 1n, ADC-S *leg.;* • Lordemanos (Cimanes de la Vega), 42.0835N 5.6243W, 724 m, 4-V-2019, 2n, ADC-S *leg.;* • Matadeón de los Oteros, 42.3360N 5.3718W, 872 m, 2009, pitfall trap, 2w, O. Pérez *leg.;* • Mellanzos (Gradefes), 42.5940N 5.3295W, 905m, 16-VI-1991, 3g, XE *leg.;* • Navatejera, 42.6241N 5.5775W, 910 m, 6-X-2023, 1n, ADC-S *leg.;* 42.6504N 5.5874W, 949 m, 3-VI-2024, 1n, with *C. iberica* in the area, ADC-S *leg.;* 42.6298N 5.5764W, 895 m, 15-IX-24, 1n, ADC-S *leg.;* • Quintana de Rueda (Valdepolo), 42.5783N 5.2438W, 873 m, 29-VII-2020, 5iw, ADC-S *leg.;* • Sahagún, 42.3440N 5.0231W, 814 m, 28-VII-2020, 1n, ADC-S *leg.;* • Valverde-Enrique, 42.3126N 5.3017W, 817 m, 28-VII-2020, 3n, with *C. iberica* in the area, ADC-S *leg.;* • Villacé (Villamañán), 42.3466N 5.5786W, 805 m, 25-VII-2018, 7iw, ADC-S & V. Moreno *leg.;* • Villamandos, 42.2000N 5.5903W, 742 m, 9-VI-2019, 4n, 1ima, ADC-S & M. Sánchez *leg.;* • Villamañán, 42.3488N 5.5798W, 798 m, 4-V-2019, 1n, ADC-S *leg.;* • Villaquejida, 42.1427N 5.6059W, 730 m, 4-V-2019, 13iw, ADC-S *leg.;* 42.1527N 5.6197W, 797 m, 14-VI-2022, 3n, ADC-S *leg.;* • Villasabariego "Yacimiento de Lancia", 42.5301N 5.4323W, 856 m, 5-V-2019, 8iw, ADC-S *leg.;* • Villavente (Valdefresno), 42.6178N 5.5229W, 911 m, 12-V-2019, 23iw, ADC-S *leg.;* **Palencia**: • Alba de Cerrato, 41.7871N 4.3789W, 882 m, 27-IV-2024,1iw, ADC-S & FG *leg.;* • Belmonte de Campos, 41.9416N 4.9877W, 749 m, 30-VIII-2024,1n, ADC-S & M. Sánchez *leg.;* • Boadilla de Rioseco, 42.1727N 4.9788W, 779 m, 1-IX-2024, 1n, ADC-S & M. Sánchez *leg.;* • Cevico de la Torre, 41.8357N 4.4483W, 869 m, 11-X-2023, 6iw, with *C. iberica* in the area, ADC-S *leg.;* • Cisneros, 42.2284N 4.8479W, 790 m, 1-IX-2024, 1n, ADC-S & M. Sánchez *leg.;* • Dueñas, 41.8887N 4.5313W, 710 m, 4-V-2017, 4iw, ADC-S *leg.;* 21-VI-2017, 11iw, ADC-S *leg.;* 41.8997N 4.5194W, 717 m, 15-VI-2019, 1n, ADC-S *leg.;* • Frechilla, 42.1359N 4.8809W, 781 m, 1-IX-2024, 1n, ADC-S & M. Sánchez *leg.;* • Moratinos, 42.3429N 4.9181W, 842 m, 2009, pitfall trap, 5w, O. Pérez *leg.;* • Palencia, 42.0028N 4.5340W, 738 m, 14-IX-2023, 1n, ADC-S *leg.;* • Pedraza de Campos, 41.9872N 4.7441W, 746 m, 30-VIII-2024, 2n, ADC-S & M. Sánchez *leg.;* • Reinoso de Cerrato, 41.9737N 4.3778W, 794 m, 10-VI-2024, 7iw, ADC-S *leg.;* • Santoyo, 42.2188N 4.3506W, 792 m, 20-VII-2020, 2n, ADC-S *leg.;* • Tariego de Cerrato, 41.9008N 4.4735W, 881 m, 8iw, ADC-S & V. Moreno *leg.;* 41.9026N 4.4770W, 777 m, 15-VI-2019, 1n (with 13ma), ADC-S *leg.;* • Valdespina (Amusco), 42.1385N 4.4645W, 793 m, 10-VI-2024, 12iw, ADC-S *leg.;* • Valle de Cerrato, 41.8917N 4.3538W, 885 m, 12-VI-2024, 8iw, with *C. iberica* in the area, ADC-S *leg.;* • Valoria del Alcor (Ampudia), 41.8830N 4.7914W, 865 m, 7-VI-2024, 1n, with *C. iberica* in the area, ADC-S *leg.;* • Venta de Baños, 41.9162N 4.4946W, 721 m, 4-X-2022, 3iw, ADC-S *leg.;* 41.9162N 4.4855W, 700 m, 23-VI-2023, 1n, ADC-S *leg.;* • Villada, 42.2383N 4.9612W, 791 m, 28-VII-2020, 1n, ADC-S *leg.;* 42.2696N 4.9590W, 797 m, 1-IX-2024, 1n, ADC-S & M. Sánchez *leg.;* • Villahán, 42.0508N 4.1315W, 806 m, 19-VII-1979, 1ma, XE *leg.;* • Villalaco, 42.1525N 4.2603W, 759 m, 20-VII-2020, 1n, ADC-S leg.; • Villarramiel, 42.0394N 4.9103W, 766 m, 30-VIII-2024, 1n, ADC-S *leg.;* • Villaumbrales, 42.0907N 4.6100W, 764

m, 1-IX-2024, 1n, ADC-S & M. Sánchez *leg.;* • Villerías de Campos, 41.9417N 4.8583W, 759 m, 30-VIII-2024, 1n, ADC-S & M. Sánchez *leg.;* **Salamanca**: • Alba de Tormes, "Duques de Alba castle", 40.8241N 5.5137W, 828 m, 16-VII-2023, 22iw, ADC-S *leg.;* 40.8138N 5.5247W, 811 m, 16-VII-2023, 5iw, with *C. iberica* in the área, ADC-S *leg.;* • El Campo de Peñaranda, 41.0125N 5.3206W, 851 m, 16-VII-2023, 9iw, 1ima, ADC-S *leg.;* • Salamanca, 40.9767N 5.6870W, 843 m, 10-IV-2022, 3n, ADC-S *leg.;* **Segovia**: • Barbolla, 41.3230N 3.6496W, 949 m, 2-VII-2021, 1n, ADC-S *leg.;* • Bercimuel, 41.4108N 3.5673W, 990 m, 2-VII-2021, 2n (1ma), with *C. iberica* in the área, ADC-S *leg.;* • Cantalejo, 41.2830N 3.9308W, 938 m, 20-VI-2021, 1n excavated (Table 11), ADC-S *leg.;* • Escarabajosa de Cuéllar (Cuéllar) 41.4102N 4.2677W, 886 m, 15-VI-2019, 10iw, 1ima, 1 nest, ADC-S *leg.;* • Garcillán, 40.9933N 4.2737W, 906 m, 20-VI-2021, 2n, ADC-S *leg.;* • Gudillos (El Espinar) "Alto del León", 40.7107N 4.1404W, 1519 m, 9-VII-2024, 1n, ADC-S *leg.;* • Madrona, 40.9007N 4.1620W, 985 m, 20-VI-2021, 1n (with male pupae), ADC-S *leg.;* • Montejo de la Vega de la Serrezuela, 41.5641N 3.6467W, 909 m, 19-VII-2020, 2n excavated (Table 11), ADC-S *leg.;* 2-VII-2021, 8iw, ADC-S *leg.;* • Moral de Hornuez, 41.4840N 3.6252W, 1132 m, 19-VII-2020, 1n excavated (Table 11), ADC-S leg.; 2-VII-2021, 1n, ADC-S *leg.;* • Nava de la Asunción, 41.1742N 4.4645W, 814 m, 22-III-2024, 1n, ADC-S *leg.;* • Navalmanzano, 41.2154N 4.2793W, 829 m, 1-V-2018, 1n, ADC-S *leg.;* 15-VI-2019, 1iw, 2n and 1n excavated [Type nest] (Table 11), ADC-S *leg.;* • Roda de Eresma, 41.0237N 4.1851W, 922 m, 20-VI-2021, 1n, with *C. iberica* in the área, ADC-S *leg.;* • Tejares (Fuentesoto), 41.4167N 3.9308W, 944 m, 20-VI-2021, 1n, ADC-S *leg.;* • Turégano, 41.1589N 4.0051W, 958 m, 20-VI-2021, 1n, ADC-S *leg.;* • Villagonzalo de Coca, 41.2023N 4.5774W, 803 m, 26-VIII-2024, 1iw, S. Ibarra *leg.;* **Soria**: • Ciruela (Berlanga de Duero), 41.4460N 2.8333W, 930 m, 25-VIII-2020, 16iw, ADC-S *leg.;* • El Burgo de Osma, 41.5687N 3.0862W, 904 m, 25-VIII-2020, 1n, ADC-S *leg.;* 5-VI-2021, 4n, with *C. iberica* in the area, ADC-S *leg.;* • Guijosa (Espeja de San Marcelino), 41.7639N 3.2077W, 998 m, 11-VII-2020, 3iw, ADC-S *leg.;* • Langa de Duero, 41.5927N 3.4120W, 874 m, 17-VII-2020, 23iw, with *C. iberica* in the area, ADC-S *leg.;* • Matute de Almazán (Matamala de Almazán), 41.4835N, 2.6378W, 921 m, 5-VII-2024, 1n (2ma), S. Ibarra *leg.;* • Miño de San Esteban, 41.5898N 3.3721W, 856 m, 17-VII-2020, 1n, ADC-S *leg.;* 41.5892N 3.3693W, 852 m, 5-VI-2021, 1n excavated (Table 11), ADC-S *leg.;* • San Esteban de Gormaz, 41.5769N 3.2435W, 853 m, 17-VII-2020, 1n, ADC-S *leg.;* 5-VI-2021, 1n and 1n excavated (Table 11), ADC-S *leg.;* 28-VI-2021, 13ima, 2ig, 1n excavated (Table 11), ADC-S *leg.;* 41.5773N 3.2095W, 872 m, 28-VI-2021, 14iw, ADC-S *leg.;* • Santa María de las Hoyas, 41.7833N 3.1223W, 1122 m, 11-VII-2020, 2n, ADC-S *leg.;* 5-VI-2021, 2n, ADC-S leg.; 28-VI-2021, 2n, ADC-S *leg.;* 41.7815N 3.1231W, 1146 m, 28-VI-2021, 2n (both with sexuate pupae), ADC-S *leg.;* • Sauquillo de Paredes (Retortillo de Soria), 41.3735N 2.9801W, 1226 m, 25-VIII-2020, 3iw, ADC-S *leg.;* • Villaciervitos (Villaciervos), 41.7518N 2.6505W, 1165 m, 29-IV-2023, 3iw, ADC-S *leg.;* **Valladolid**: • Alaejos, 41.3030N 5.2244W, 768 m, 16-VII-2023, 7iw, ADC-S *leg.;* • Becilla de Valderaduey, 42.1056N 5.2220W, 739 m, 28-VII-2020, 1n, ADC-S *leg.;* • Castrillo-Tejeriego, 41.7111N 4.3929W, 873 m, 15-VI-2019, 2n, 3g, 10ma, ADC-S *leg.;* • La Santa Espina (Castromonte), 41.7249N 5.0640W, 844 m, 29-V-2024, 10iw, with *C. iberica* in the area, ADC-S *leg.;* • Mayorga, 42.2042N 5.2695W, 767 m, 28-VII-2020, 2n (1 dead male in the kitchen midden), ADC-S *leg.;* • Medina del Campo, 41.3327N 4.9125W, 750 m, 31-VII-2023, 1n, ADC-S *leg.;* • Pollos, 41.4369N 5.0992W, 706 m, 16-VII-2023, 1n, 1ima, ADC-S & M. Sánchez *leg.;* • Santervás de Campos, 42.2172N 5.0840W, 764 m, 28-VII-2020, 7iw, ADC-S *leg.;* • Simancas, 41.5725N 4.8498W, 687 m, 16-VII-2023, 1n, 1ima, ADC-S *leg.;* • Tordesillas, 41.4861N 4.9976W, 672 m, 22-VII-1979, 1ma, XE *leg.;* • Urueña, 41.7590N 5.2213W, 713 m, 29-V-2024, 1n, ADC-S *leg.;* • Villanueva de los Caballeros, 41.7669N 5.3043W, 719 m, 29-V-2024, 1n, with *C. iberica* in the area, ADC-S *leg.;* 41.7873N 5.3307W, 732 m, 29-V-2024, 7iw, with *C. iberica* in the area, ADC-S *leg.;* **Zamora**: • Belver de los Montes, 41.7309N 5.4474W, 743 m, 4-IX-2022, 8iw and 12iw on the nectaries of fennel, with *C. iberica* in the área, ADC-S & FG *leg.;* 41.7382N 5.4453W, 759 m, 4-IX-2022, 13iw, ADC-S & FG *leg.;* 41.7438N 5.4144W, 721 m, 30-V-2024, 3iw, with *C. iberica* in the area, ADC-S *leg.;* • Cañizal, 41.1568N 5.3606W, 806 m, 16-VII-2023, 22iw, 1ima, ADC-S *leg.;* • La Tabla (Granja de Moreruela), 41.8333N 5.6968W, 723 m, 1-V-2025, 1n, ADC-S *leg.;* • Matilla de Arzón, 42.1262N 5.6491W, 765 m, 4-IX-2022, 8iw, ADC-S *leg.;* • Pozoantiguo,

41.6151N 5.4581W, 748 m, 4-IX-2022, 1n, ADC-S & FG *leg.;* • Quintanilla del Monte (Villalpando), 41.8537N 5.3431W, 704 m, 30-V-2024, 10iw, with *C. iberica* in the area, ADC-S *leg.;* 41.8637N 5.3142W, 717 m, 30-V-2024, 5iw, with *C. iberica* in the area, ADC-S *leg.;* • San Agustín del Pozo, 41.8959N 5.6256W, 709 m, 1-V-2025, 3n, ADC-S *leg.;* • Santa Colomba de las Carabias (San Cristobal de Entreviñas), 42.0754N 5.6339W, 734 m, 4-V-2019, 18iw, ADC-S *leg.;* 9-VI-2019, 5n (one with 13 males), 1ima, ADC-S & M. Sánchez *leg.;* • Tapioles, 41.8624N 5.5273W, 686 m, 31-III-2026, 1n, ADC-S *leg.;* • Toro, 41.4826N 5.4251W, 670 m, 4-IX-2022, 1n, ADC-S & FG *leg.;* • Venialbo, 41.3999N 5.5226W, 756 m, 4-IX-2022, 1n, ADC-S & FG *leg.;* • Villafáfila, 41.8591N 5.5851W, 690 m, 1-V-2025, 5iw, ADC-S *leg.;* • Villalpando, 41.7951N 5.3443W, 728 m, 29-V-2024, 1n, ADC-S *leg.;* • Villarín de Campos, 41.8332N 5.6963W, 723 m, 1-V-2025, 1n, ADC-S *leg.;* • Villaveza del Agua, 41.9052N 5.6593W, 720 m, 1-V-2025, 2n, ADC-S *leg.;* • Zamora, 41.5156N 5.7262W, 665 m, 17-VI-2023, 1n, ADC-S *leg.;* **Spain**: **Castilla-La Mancha: Cuenca**: • Montalbo, 39.8808N, 2.6658W, 878 m, 26-IV-2024, 5iw, S. Ibarra *leg.;* **Guadalajara**: • Bochones (Atienza), 41.2442N, 2.8574W, 1156 m, 29-VIII-2020, 2n, ADC-S *leg.;* **Toledo**: • Lillo, 39.7037N, 3.3117W, 681 m, 30-IV-2024, 5iw, 1ig, S. Ibarra *leg.;* • Quero "Laguna del Taray", 39.5245N 3.3172W, 655 m, 23-IV-1993, 1n, 1g, XE *leg.;* **Spain**: **Comunidad de La Rioja: La Rioja**: • Haro, 42.6154N 2.8533W, 610 m, 20-VI-2019, 7iw, ADC-S *leg.;* **Spain**: **Comunidad de Madrid: Madrid**: • Guadarrama "Alto del León", 40.7086N 4.1392W, 1501 m, 1n, XE *leg.;* 40.7119N 4.1385W, 1540 m, 9-VII-2024, 1n, ADC-S *leg.*

Cataglyphis piliscapa (Forel, 1901)

FRANCE: **Aude**: • Fleury, 43.2350N 3.1837E, 46 m, 2-VII-2022, 1n, R. Argüeso *leg.;* 43.2298N 3.1514E, 67 m, 4-VII-2022, 2n, R. Argüeso *leg.;* 43.2340N 3.1668E, 59 m, 7-VII-2022, 2n, R. Argüeso *leg.;* • Narbonne, 43.1526N 2.9970E, 13 m, 23-VIII-2021, 6n, 28w, 5s, FG & ADC-S *leg.;* • Narbonne, 43.1N 3.0E, 6w, 1g, 1m, XE *leg.;* **Pyrénées-Orientales**: Banyuls-sur-mer, 42.4N 3.12E, 9w, 2ma, XE *leg.*• Opoul-Périllos, 42.8745N 2.9140E, 186 m, 23-VIII-2021, 1n, FG & ADC-S *leg.;* • Salses-le-Château, 42.8218N 2.8787E, 51 m, 23-VIII-2021, 1n, FG & ADC-S *leg.;* **Hérault**: • Frontignan, 43.4432N 3.7198E, 41 m, 23-VIII-2021, 5n, FG & ADC-S *leg.*• Nissan-lez-Enserune, 43.2748N 3.1239E, 14 m, 2-VII-2022, 1n, R. Argüeso *leg.;* • Vendres, 43.2312N 3.2511E, 6 m, 1-VII-2022, 1n, R. Argüeso *leg.;* **Gard**: • Beaucaire, 43.8351N 4.6185E, 16 m, 24-VIII-2021, 3n, FG & ADC-S *leg.;* • Nîmes [type locality], 43.8701N 4.3006E, 158 m, 23-VIII-2021, 6n, FG & ADC-S *leg.*
SPAIN: **Catalonia: Barcelona:** • Canet de Mar, 41.5N 2.5E, 7-VII-1983, 3g, XE *leg.;* **Girona**: • Agullana, 42.3887N 2.8486E, 220 m, 8-XII-2023, 1n, FG *leg.;* • Bellcaire d'Empordà, 42.0701N 3.1099E, 46 m, 16-VI-2021, 2n, FG *leg.;* • Castelló d'Empúries, 42.2402N 3.0704E, 4 m, 4-IX-2020, 1n, FG *leg.;* • Celrà, 42.0272N 2.8754E, 63 m, 13-VI-2019, 1n 1g 6ima, P. Almendros *leg.;*• Empúries, 42.1354N 3.1125E, 6 m, 19-VII-2022, 1n, R. Argüeso *leg.;* • Girona, 41.9N 2.8E, 15-VI-1996, 2g, 2ma, XE *leg.;* • Palau Borrell (Viladamat), 42.1314N 3.0521E, 34 m, 15-VII-2022, 3n, R. Argüeso *leg.;* • Sant Climent Sescebes, 42.3N 2.9E, 5-VI-2000, 3ma, XE *leg.;* • Torroella de Montgrí, 42.0866N 3.1331E, 5 m, 17-VII-2022, 1n, R. Argüeso *leg.;* • Valleta (Llançà), 42.3527N 3.1114E, 60 m, 17-VI-2021, 2n, FG. *leg.;* • Vilajuïga, 42.3198N 3.0804E, 18 m, 12-VII-2020, 3n, FG *leg.;* Castell de Quermançó (Vilajuïga), 42.3403N 3.0918E, 110 m, 17-VI-2021, 3n, FG *leg.*

Cataglyphis cursor (Fonscolombe, 1846)

FRANCE: **Bouches-du-Rhône**: • Tarascon, Abbaye Saint-Michel de Frigolet, 43.8598N 4.7271E, 114 m, 24-VIII-2021, 1n, FG & ADC-S *leg.;* • Mallemort, 43.7365N 5.1287E, 110 m, 24-VIII-2021, 2n, FG & ADC-S *leg.;* • Saint-Cannat, 43.6142N 5.3240E, 245 m, 24-VIII-2021, 2n, FG & ADC-S *leg.;* • Saint-Antonin-sur-Bayon, 43.5189N 5.5893E, 439 m, 24-VIII-2021, 1n, FG & ADC-S *leg.;* **Vaucluse**: • Apt, 43.8N 5.3E, 12w, 1 g, 5ma, XE *leg.;* • Bédoin, 44.1289N 5.1740E, 339 m, 25-VIII-2021, 6n, FG & ADC-S *leg.*

Appendix II.- Biometrically inspected specimens.

Complete data for localities is found in Appendix I. Legend: nests (n), workers (w), gynes (g), males (ma).

Cataglyphis mater García, Cuesta-Segura, Espadaler, Vila & Menchetti sp. nov.

Spain: **Ávila**: • El Barraco "Puerto de la Paramera", 1n, 2w • Palacios de Goda, 1n, 2w; **Burgos**: • Nava de Roa, 3n, 13w, 2g; • San Martín de Rubiales, 4n, 12w, 2g, 3ma; • Vadocondes, 3 workers; • Villaescusa de Roa, 1n, 4w; **Guadalajara**: • Bochones, 1n, 3w; **León**: • Golpejar de la Sobarriba, 1n, 2w, 1g; • Lordemanos, 1n, 6w; • Villamandos, 3n, 15w; **Palencia**: • Dueñas, 1n, 5w; • Santoyo, 1n, 3w; • Tariego de Cerrato, 2n 10w, 3ma; **Salamanca**: • Alba de Tormes, 1n, 3w; • Salamanca, 1n, 3w; **Segovia**: • Bercimuel, 1n, 3w; • Madrona, 1n, 3w, 3ma; • Escarabajosa de Cuéllar, 2n, 10w; • Garcillán, 1n, 3w; • Navalmanzano, [Type locality], 3n, 15w, 5g, 9ma; **Soria**: • Ciruela, 1n, 3w; • Miño de San Esteban, 1n, 3w; • San Esteban de Gormaz, 2n, 6w, 1g; • Santa María de las Hoyas, 2n, 6w, 3ma; • Villaciervitos, 1n, 3w; **Valladolid**: • Castrillo-Tejeriego, 2n, 10w; • Medina del Campo, 1n, 2w; • Simancas, 1n, 2w, 1ma; **Zamora**: • Belver de los Montes, 1n, 2w; • Santa Colomba de las Carabias, 4n, 18w, 3ma; • Venialbo, 1 w.

Cataglyphis cursor (Fonscolombe, 1846)

France: Bouches-du-Rhône: • Tarascon, Abbaye Saint-Michel de Frigolet, 1n, 3w; • Mallemort, 2n, 8w; • Saint-Cannat, 2n, 10w; • Saint-Antonin-sur-Bayon, 1n, 6w; **Vaucluse**: • Bédoin, 6n, 21w.

Cataglyphis piliscapa (Forel, 1901)

France: **Aude:** • Narbonne, 6n, 28w; **Pyrénées-Orientales:** • Opoul-Périllos, 1n, 4w; **Hérault:** • Frontignan, 5n, 22w; **Gard:** • Beaucaire, 3n, 14w; • Nîmes [type locality], 6n, 18w.

Spain: **Girona**: • Bellcaire d'Empordà, 2n, 11w; • Castelló d'Empúries, 1n, 4w; • Valleta, 2n, 8w, 3 ma; • Vilajuïga, 3n, 18w; • Vilajuïga "Quermancó castle", 3n, 15w.

Cataglyphis italica (Emery, 1906)

Italy: Puglia: Riserva Naturale Le Cesine, 1n, 3w.

Appendix III.- Specimens used for DNA analyses.

COI sequences analysed in this study. For each sequence the table gives the voucher code, taxon, source (barcode library of Menchetti *et al.*, 2026, or retrieved from GenBank), BOLD accession number or GenBank accession, country, geographic coordinates, and reference. Some specimens from the Menchetti *et al.* (2026) barcode library were also measured for the morphometric analyses of this study.

Voucher_code	Species	Source	Accession	BOLD_BIN	Country	Locality	Latitude	Longitude	Reference
MM21F272a1	*C. mater*	Barcode library	ANTEU3702-22	BOLD:AET6629	Spain	Navalmanzano (type loc)	41,215	-4,263	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21F273a1	*C. mater*	Barcode library	ANTEU3703-22	BOLD:AET6631	Spain	Escarabajosa de Cuéllar	41,397	-4,249	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21F274a1	*C. mater*	Barcode library	ANTEU3704-22	BOLD:AET6634	Spain	San Cristóbal de Entreviñas	42,0855	-5,6421	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21F275a1	*C. mater*	Barcode library	ANTEU3705-22	BOLD:AES4673	Spain	Vadocondes	41,6293	-3,5732	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21F276a1	*C. mater*	Barcode library	ANTEU3706-22	BOLD:AES7920	Spain	Cantalejo	41,2603	-3,9254	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21F277a1	*C. mater*	Barcode library	ANTEU4723-26	BOLD:AHL2344	Spain	Madrona	40,8972	-4,1743	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21F278a1	*C. mater*	Barcode library	ANTEU3707-22	BOLD:AES4673	Spain	Nava de Roa	41,5693	-3,9731	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21F279a1	*C. mater*	Barcode library	ANTEU3708-22	BOLD:AET6630	Spain	San Martín de Rubiales	41,6478	-3,9944	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21F284a1	*C. mater*	Barcode library	ANTEU3713-22	BOLD:AES4673	Spain	San Esteban de Gormaz	41,5863	-3,3253	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM20B419d1	*C. cf. hellenica*	Barcode library	ANTEU1042-22	BOLD:AES3103	Greece	Pyrgos Ilias	37,6871	21,475	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
KJ538578	*C. floricola*	GenBank	KJ538578	—	Spain		37,1355	-6,756	Jowers *et al*. 2014
MM20B361a1	*C. hellenica*	Barcode library	ANTEU1011-22	BOLD:AES9338	Greece	Legrena, Attica	37,6706	23,999	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM20B375a1	*C. hellenica*	Barcode library	ANTEU1019-22	BOLD:AES8108	Greece	Melivoia, Larrisa	39,7508	22,792	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21A417a1	*C. hellenica*	Barcode library	ANTEU1297-22	BOLD:AES8110	Spain	Herrera del Duque	39,2533	-4,9385	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21A194c1	*C. iberica*	Barcode library	ANTEU1243-22	BOLD:AAW4046	Spain	Gurrea de Gállego	42,0115	-0,7764	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM20B360b1	*C. nodus*	Barcode library	ANTEU1010-22	BOLD:AET7233	Greece	Pyrgos Ilias	37,6871	21,475	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21B173a2	*C. piliscapa*	Barcode library	ANTEU1441-22	BOLD:AES5290	Spain	Vilajuïga	42,3295	3,0885	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D512a1	*C. piliscapa*	Barcode library	ANTEU3106-22	BOLD:AET6632	France	Beaucaire	43,8353	4,6185	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D513a1	*C. piliscapa*	Barcode library	ANTEU3107-22	BOLD:AET2783	France	Canton de Narbonne	43,1518	2,9963	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D523a1	*C. piliscapa*	Barcode library	ANTEU3115-22	BOLD:AES5291	France	Salses-le-Château	42,8219	2,8786	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D528a1	*C. piliscapa*	Barcode library	ANTEU3123-22	BOLD:AES5290	Spain	Balleta	42,3527	3,1114	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D541a1	*C. piliscapa*	Barcode library	ANTEU3137-22	BOLD:AEL5700	France	Frontignan	43,4442	3,7226	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D551a1	*C. piliscapa*	Barcode library	ANTEU3149-22	BOLD:AEL5700	France	Frontignan	43,4442	3,7226	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D561a1	*C. piliscapa*	Barcode library	ANTEU3168-22	BOLD:AEL5700	France	Frontignan	43,4442	3,7226	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D562a1	*C. piliscapa*	Barcode library	ANTEU3169-22	BOLD:AET2783	France	Canton de Narbonne	43,1518	2,9963	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D571a1	*C. piliscapa*	Barcode library	ANTEU3183-22	BOLD:AEL5700	France	Frontignan	43,4442	3,7226	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D572a1	*C. piliscapa*	Barcode library	ANTEU3184-22	BOLD:AET2783	France	Canton de Narbonne	43,1518	2,9963	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D581a1	*C. piliscapa*	Barcode library	ANTEU3192-22	BOLD:AEL5700	France	Frontignan	43,4442	3,7226	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D582a1	*C. piliscapa*	Barcode library	ANTEU3193-22	BOLD:AET2783	France	Canton de Narbonne	43,1518	2,9963	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D592a1	*C. piliscapa*	Barcode library	ANTEU3204-22	BOLD:AET2783	France	Canton de Narbonne	43,1518	2,9963	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D598a1	*C. piliscapa*	Barcode library	ANTEU3211-22	BOLD:AES5290	Spain	Bellcaire d'Empordà	42,0653	3,1142	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21F260a2	*C. piliscapa*	Barcode library	ANTEU3688-22	BOLD:AET6632	France	Garrigues, Nîmes	43,8696	4,3012	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21F262a1	*C. piliscapa*	Barcode library	ANTEU3690-22	BOLD:AET6632	France	Garrigues, Nîmes	43,8696	4,3012	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21F263a1	*C. piliscapa*	Barcode library	ANTEU3691-22	BOLD:AET6632	France	Garrigues, Nîmes	43,8696	4,3012	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21F283a1	*C. piliscapa*	Barcode library	ANTEU3712-22	BOLD:AET6632	France	Garrigues, Nîmes	43,8696	4,3012	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
AB010933	*C. rosenhaueri*	GenBank	AB010933	—	Spain	-123.335	38,0166	-3,9666	Sanllorente *et al.* 2018
AB010932	*C. velox*	GenBank	AB010932	—	Spain	37°9' N, 03°31' W	37,15	-3,5166	Sanllorente *et al.* 2018
KG03684H01a1	*C. viatica*	Barcode library	ANTEU4608-22	BOLD:AEK9963	Morocco	Tadla-Azilal	32,0144	-6,722	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
KG03171A_1a1	*C. cursor*	Barcode library	ANTEU4565-22	BOLD:ADU0837	France	Le Vieux Cannet	43,4013	6,3471	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21C781a1	*C. cursor*	Barcode library	ANTEU2574-22	BOLD:AET6633	France	Aubignosc	44,1327	5,9781	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D531a1	*C. cursor*	Barcode library	ANTEU4703-26	BOLD:ADK4040	France	Mallemort	43,7368	5,1289	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D533a1	*C. cursor*	Barcode library	ANTEU3127-22	BOLD:AET6633	France	Bédoin	44,1285	5,1737	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D542a1	*C. cursor*	Barcode library	ANTEU3138-22	BOLD:ADK4040	France	Saint-Cannat	43,614	5,3244	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D543a1	*C. cursor*	Barcode library	ANTEU3139-22	BOLD:AET6633	France	Bédoin	44,1285	5,1737	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D552a1	*C. cursor*	Barcode library	ANTEU3150-22	BOLD:ADK4040	France	Saint-Cannat	43,614	5,3244	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D553a1	*C. cursor*	Barcode library	ANTEU3151-22	BOLD:AET6633	France	Bédoin	44,1285	5,1737	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D580a1	*C. cursor*	Barcode library	ANTEU4705-26	BOLD:ADU0837	France	Saint-Antonin-sur-Bayon	43,5202	5,5901	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21D591a1	*C. cursor*	Barcode library	ANTEU4661-26	BOLD:ADU0837	France	Saint-Antonin-sur-Bayon	43,5202	5,5901	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM21F280a1	*C. cursor*	Barcode library	ANTEU3709-22	BOLD:AET6633	France	Bédoin	44,1285	5,1737	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM16A181a1	*C. italica*	Barcode library	ANTEU315-22	BOLD:AET0011	Italy	Maratea bassa, Potenza	39,9985	15,699	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM17A092b1	*C. italica*	Barcode library	ANTEU379-22	BOLD:AEU3545	Italy	Riserva Naturale Le Cesine	40,3505	18,334	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MM17A111a1	*C. italica*	Barcode library	ANTEU394-22	BOLD:AEU3546	Italy	Ostuni, Brindisi	40,802	17,535	Menchetti *et al*. 2026 (BOLD DS-ANTEU)
MT606318	*F. cunicularia*	GenBank	MT606318	—	Italy	Padova	45,3985	11,8805	Shar *et al*. 2020