Taxonomy and phylogeny of the *Tegenaria-Malthonica*-complex (Araneae, Agelenidae), using morphological and molecular data

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Angelo Bolzern
aus Kriens LU

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Abstract

Agelenidae (Araneae) constitutes a spider family currently comprising 42 genera and 514 described species (Platnick, 2010). In Europe *Tegenaria* and *Malthonica* are the most species rich genera of the family. The latest version of “World Spider Catalogue” (version 10.5) lists 32 *Malthonica* and 55 *Tegenaria* species (plus 1 subspecies). Based upon available specimens from museum collections and field excursions, the taxonomy of the *Tegenaria/Malthonica*-complex is investigated applying morphological and molecular methods. Parsimony and Bayesian analyses, performed individually or with combined data, of three gene sections (CO1, NADH subunit 1, 28S) and 88 morphological characters showed that the genera *Malthonica* and *Tegenaria*, in their present compositions, are poly- or paraphyletic. The constituent taxa of the *Tegenaria/Malthonica*-complex are form four monophyletic clades. The four clades are recovered in all analyses and are well supported by posterior probability, jackknife or bremer support. The relationships between the four clades are not resolved and remain unknown. Based upon these phylogenetic results a merging of all four clades to one monophyletic group is not possible because then other well established groups (e. g. *Histopona* or genera of Textricini or Agelenini) would have to be included too. The four clades are attributed, therefore, generic: *Tegenaria*, *Malthonica*, *Aterigena* n. gen. and *Eratigena* n. gen. While the generic concept definition for *Malthonica* by Barrientos & Cardoso (2007) is supported by the present analyses, *Tegenaria* has to be redefined and the new genera *Aterigena* n. gen. and *Eratigena* n. gen. are added here. In addition, eleven species (one in *Aterigena* n. gen., two in *Eratigena* and eight in *Tegenaria*) and the males of three species are newly described and 17 new synonyms are proposed here. The new generic concepts necessitate numerous new or revised combinations (rev. stat. or n. comb.). Due to the lack of specimens or diagnostic descriptions, four species remain unplaced and one taxon is regarded as “nomen dubium”.

Additional information is given and taxonomic changes are proposed for some extra European *Malthonica* and *Tegenaria* species. For most of the included European taxa, supplementary information or redescriptions with figures are provided. In addition, dichotomous keys for the European agelenid genera and for all *Aterigena* n. gen., most European *Eratigena* n. gen. and *Tegenaria* species are provided.
1. Introduction

The United Nations proclaimed 2010 the International Year of Biodiversity (http://www.cbd.int/2010/welcome, http://www.countdown2010.net/year-biodiversity). This declaration is intended to raise the awareness for biological diversity and for showing the fundamental importance of its conservation for the welfare of our planet among the general public.

A necessary prerequisite to understand and protect biodiversity is to know its components. The exploration, description and recognition of the evolutionary relationships of the biological diversity are the main tasks of the research field of systematics. Since Linnaeus’ Systema Naturae and Darwin’s publication on the theory of evolution biological systematics has developed a variety of methods to investigate the global species diversity and reconstruct the phylogeny of living and extinct organisms. While these methods have changed a lot during the last century, the basic functional unit used throughout biology remained and will remain the same, the species. The species in biology is accepted as a “real” unit existing in nature by some authors and seen as “concept” by others still constitutes a controversially discussed topic (De Queiroz, 2007; Wheeler, 2007; Wheeler & Meier, 2000). This theoretical discussion about the most appropriate species concept does not affect the present work directly but it is important to be aware of it, since in this thesis the delimitation of species plays an important role.

The aim of the taxonomist is to define taxa and reconstruct their phylogenetic relationships based on the study of characters (e. g. morphology, genes, behaviour), which groups the involved species in monophyletic groups, reflecting their evolutionary history. The resulting phylogenetic hypotheses (trees) are then converted into a classification and the constituent taxa are named following the rules of e. g. the zoological nomenclature.

The aim of the present thesis is to investigate the systematics of a fascinating group of organism, the spider genus *Tegenaria* Latreille and its relatives (Araneae: Agelenidae). Spiders, as predators, play an important role in most terrestrial ecosystems, e. g. in pest control or as food recourse for other animals during winter time. In the perspective of humans, this taxon is very useful because these arthropods serve as very good biological indicators (e. g. Cardoso, et al., 2004; Marc, et al., 1999) and they produce venom. Spider venoms of different species are currently screened for potential substances for future insecticides or drugs (e. g. De Lima, et al., 2010; Redaeli, et al., 2010). The initial reason for choosing the European *Tegenaria/Malthonica*-complex as the group of interest was that one of the European species, *Tegenaria agrestis* (Walckenaer, 1802), was introduced to North America and there reached publicity because it had been blamed to cause necrotic wounds after biting humans (Akre & Myhre, 1991; Baird & Stoltz, 2002; Vetter, et al., 2003). The medical relevance of this species makes it desirable to have a good knowledge of its relatives because these may be problematic as well. Among arachnologists this group is well known for its many taxonomical problems. For these the scope of the present thesis had to be slightly modified during the work process. Guseinov et al. (2005) published a taxonomic work on ageelenid spiders form Azerbaijan. They transferred more than 20 *Tegenaria* species to the genus *Malthonica*. This transfer was based on a character on the secondary male genitalia. Some authors doubted this rearrangement because the phylogenetic value of the involved character is questionable. Due to this situation I was forced to include more taxa in my analyses, e. g. all *Malthonica* species. Thus, the original aim to revise the genus *Tegenaria* and infer the phylogeny within this group based on morphological and
molecular characters had to be completed with a thorough investigation of the generic
level relationship of the taxa in focus.
The use of different methods and character systems (e. g. morphology, gene sequences)
improve the outcome of phylogenetic analyses (e. g. Arnedo, et al., 2009; Lee &
Camens, 2009). For this reason morphological as well as molecular data were analysed.
In order to get usable samples for the molecular analyses, three field trips to southern
Europe were conducted. The field trips yielded a lot of material and additional species.
Another source of material comes from several private or museum collections. With this
material it was possible to describe several new species, redescribe known species and
described the hitherto unknown sex in some species. These descriptions with
illustrations represent an important part of work in this study and are the prerequisite for
any other study on these taxa.
In the introduction of chapter two, an extensive historical review of the genus Tegenaria
and the family Agelenidae is provided. The goal of this chapter is to define and
diagnose the European species of the Tegenaria and Malthonica and to formulate a
hypothesis of their phylogenetic relationships. This chapter represents the most recent
state of knowledge of the group in focus, including the genus Aterigena Bolzern et al.
(see chapter three). As consequence of this newly proposed phylogeny, numerous
nomenclatural changes have to be proposed. These changes are presented, at least for
the European species, in a detailed revision of the species. In addition, dichotomous key
for the identification of the European agelenid genera and the species of the genera
Tegenaria and Eratigena n. gen. are provided.
Chapter three focuses on a new genus of Agelenidae, Aterigena n. gen., recruited from
species of the two genera Tegenaria and Malthonica. The manuscript (accepted for
publication in The Journal of Arachnology) comprises a phylogenetic hypothesis based
on an analysis of mitochondrial CO1 gene sequences and the description of
synapomorphic characters (morphological and molecular ones). A revision with
drawings and photographs of relevant structures of the four included species plus the
description of a new species are provided. In addition, a dichotomous identification key
for the Aterigena n. gen. species and a map is provided, implying an interesting pattern
distribution with one widely dispersed species and several endemics.
Even though most European species of the Tegenaria/Malthonica-complex are medium
to large sized spiders, several new species of this group could be discovered during the
present study. Chapters four and five are dedicated to the description of these. It is
important that alpha-taxonomy, the description of new species, is appropriately done by
modern standards. These descriptions were done before the final results of the whole
thesis (chapter two) were available. Therefore, the two species from Portugal,
Tegenaria barrientosi Bolzern, Crespo & Cardoso, 2009 and Tegenaria incognita
Bolzern, Crespo & Cardoso, 2009 were placed in the existing classification at that time
and have now to be transferred to the newly described genus Eratigena n. gen. (see
chapter two). The species described form the French Alps, Tegenaria mercanturensis
Bolzern & Hervé, 2010 could be correctly placed in Tegenaria.
Chapter six includes the first published paper of this thesis, concerning alpha-taxonomy.
It presents the taxonomical results gained of the examination of specimens collected
during two field excursions to Sardinia.
Phylogeny and taxonomy of European funnel-web spiders of the *Tegenaria-Malthonica* complex (Araneae: Agelenidae) based upon morphological and molecular data

ANGELO BOLZERN¹ ², DANIEL BURCKHARDT¹ & AMBROS HÄNGGI¹

¹Naturhistorisches Museum Basel, Augustinergasse 2, CH-4001 Basel, Switzerland. Contact E-mail: angelo.bolzern@stud.unibas.ch

²Department of Environmental Sciences, Section of Conservation Biology, University of Basel, St. Johanns-Vorstadt 10, CH-4056 Basel, Switzerland.

Replace everywhere £ by female and $ by male symbols

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Abstract

In the “World Spider Catalogue” (version 10.5) 32 Malthonica species, 55 Tegenaria species (plus 1 subspecies) and five Pseudotegenaria species are listed for European countries. Three species (two Malthonica, one Tegenaria) were previously placed in another genus, Aterigena (see Bolzern et al., 2010). In the same work, Bolzern et al. replaced four of the five Pseudotegenaria species back to Tegenaria. Based on an adequate sample of species and specimens, phylogenetic analyses were performed using morphological and molecular methods. 88 morphological characters were chosen, including character complexes like spination patterns, spinnerets and genital structures. From the available specimens, three gene sections (CO1, NADH subunit 1, 28S) were amplified. Morphological and molecular analyses were performed individually and in combination applying maximum parsimony and Bayesian tree search methods. All resulting trees showed that the genera Malthonica and Tegenaria, at their present compositions are poly- or paraphyletic. Consequently, in order to achieve a monophyletic grouping, we do propose a rearrangement of the involved taxa into four genera: Malthonica, Tegenaria, Aterigena and Eratigena n. gen. Based on the proposed phylogeny, detailed genus definitions are provided for Tegenaria and Eratigena n. gen. Subsequently, all involved species had to be revised. During this process, 16 new synonyms could be detected, 14 species are transferred back to their original designation, 20 taxa are replaced (n. comb.), four species could not be placed (inc. sed.) and one taxon has to be regarded as “nomen dubium”. Additionally, seven species are newly described.

Information and proposed taxonomical changes, according to the here presented phylogenetic hypothesis, concerning Malthonica and Tegenaria species known from other geographical regions (North American endemics are excluded) are listed. Within these species, two new synonyms are proposed, seven species are transferred back to their original designation, four taxa are replaced (n. comb.), six species remain unplaced and one species, previously regarded as “nomen nudum” could be reactivated due to the finding of type material. For most of the included taxa, supplementary information or redescriptions with figures are provided. In addition, dichotomous keys for the European Agelenid genera and for most European Tegenaria and Eratigena n. gen. species are provided.

1. Introduction

Araneomorph funnel-web spiders (Agelenidae) are remarkable for several reasons. Probably due to their impressive size and general appearance, they are well-known to the general public. The European House Spiders (e. g. Tegenaria atrica C. L. Koch, 1843, T. duellica Simon, 1875 and T. domestica (Clerck, 1757)) with their impressively long legs are perfect candidates for causing arachnophobia in susceptible persons. The notorious hobo spider (T. agrestis (Walckenaer, 1802)) in North America, where it has been introduced, is being blamed for biting humans and causing necrotic wounds (Akre & Myhre, 1991; Baird & Stoltz, 2002; Binford, 2001; Vest, 1987; Vetter et al., 2003; Vetter & Swanson, 2004). It may be a species of medical relevance.

Some agaelenid spiders are used as laboratory animals in research. They are convenient for their size and are easy to keep in captivity. One important research topic concerns venoms, both in a medical and chemical point of view, e. g. the potential use in insecticides (Benli & Yigit, 2008; Binford, 2001; Foradori, Keil, Wells, Diem, & Tillinghast, 2001; Johnson et al., 1998; Schroeder et al., 2008; Yamaji et al., 2007; Yigit, Bayram, Danisman, & Sancak, 2007). Other research areas concern the evolution of specific behaviour patterns (Ibarra, 1985; Pouri...
Despite this wide interest the taxonomic and phylogenetic relationships within the Agelenidae are still poorly understood (e.g. see Zhang, Zhu, & Song, 2006).

C.L. Koch (1837) established the family “Agelenides”, comprising the genera *Philoica* and *Tegenaria* (now regarded as synonyms), *Asagena* (now in Theridiidae), *Arachne* (synonym of *Tegenaria* and *Agelena*), *Lachesis* (*Lachesana*, now in Zodariidae), *Nyssus* (*Supunna*, now in Corinnidae), *Textrix*, *Agelena*, *Hersilia* (now in Herselidae) and *Argyroneta* (now in Cybaeidae). Around the same time, Blackwall published the discovery of the calamistrum (Blackwall, 1833: 473–474, tab. 31, figs. 2–3) and the cribellum (Blackwall, 1841b: 223–224). These detections led him to describe a new, cribellate family Ciniflonidae (today considered as a synonym of Amaurobiidae) including the genera *Ciniflo* (synonym of *Amaurobius*), *Ergatis* (synonym of *Dictyna*). In the same publication, Blackwall established the genus *Coelotes*, with *Coelotes saxatilis* as type species (synonym of *Coelotes atropos*; prior to that, Blackwall affiliated this species with *Clubiona* and *Drassus*) and placed it into the family Agelenidae C.L. Koch.

C. L. Koch (1850) revised the family and established three subfamilies: 1. “Eigentliche Trichterspinnen” (*Tegenaria*, *Agelena*, *Textrix*, *Hahnia* and *Hersilia*), 2. “Wanderspinnen” (*Philoica* (= *Tegenaria*), *Anyphaena* (currently regarded as own family, not closely related with Agelenidae)), and 3. “Wasserspinnen” (*Argyroneta* (currently regarded as own family)). L. Koch (1868) accepted the family Ciniflonidae Blackwall and the placement of *Coelotine* in Agelenidae by Blackwall, and described a new species in *Coelotes* (spelled as *Caelotes*) which is now regarded as a member of *Tegenaria* (*Coelotes bucculentus*, synonym of *Tegenaria bucculenta*). Based on two characters observed for two species, 1) the lack of two segmented posterior spinnerets and 2) the lack of calamistrum and cribellum, L. Koch (1868) established the genus *Cybaeus*, though without assigning it to a family.

In his work on European spiders, Thorell (1869) stated, that his family “Agalenoidae” (=Agelenoidae) comprises “tolerably heterogeneous elements” (Thorell, 1869: 119) and grouped its members into three subfamilies: the Amaurobiinae, the “Agaleninae” (=Ageleninae) and the Argyronetinae. In reference to C.L. Koch’s (1850) subfamily “Wanderspinnen” he states that it seems to be an “unnatural section” and transferred the consistent genera to the “Agelenoidae” (*Philoica*) and “Drassoidae” (*Anyphaena*), respectively. Even though Thorell (1869: 118) considered the shape of the cephalothorax taxonomically more informative than the calamistrum and cribellum, he left *Coelotes* in the "Agelenoidae", despite the fact that it resembles in this character Amaurobius. Thorell (1869: 129–131) discussed the confusing nomenclatural and taxonomical history of *Tegenaria*. Simon (1897–1903) gave a very extensive description of the Agelenidae and included four subfamilies: Nicodaminae (Australian taxon which was doubtfully included in the family by Simon; now family Nicodamidae), Cybaeinae (now family Cybaeidae), “Hahniæ” (now family Hahniidae) and Ageleninae. He divided the Ageleninae into the Agelenae and Cryphoeceae. In the former he included *Textrix*, *Agelena*, *Malthonica*, *Hadites*, *Coras*, *Tegenaria* and *Coelotes*. Lehtinen (1967) narrowed the concept of the Agelenidae in transferring many genera to other families. His Agelenidae comprises only the genera of Simon’s Agelenae and some taxa described after Simon’s revision including several by himself. He divided the family Agelenidae into two subfamilies, the Ageleninae and Coelotinae. Lehtinen’s “radical classification” was criticised by many subsequent authors. Roth & Brame (1972: 2–3) rejected Lehtinen’s changes due to the “…extreme difficulty experienced in using his grouping of
genera, the inadequacy of his tables for separating genera and higher categories, and general lack of acceptance of his proposals by arachnologists” (Roth & Brame, 1972: 3). Based on the similarity in genital structures, Wunderlich (1986) regarded the ecribellate Coelotinae as a junior synonym of Amaurobininae and placed it in the Agelenidae s. l. This concept is adopted in the catalogue of Platnick (2010) by listing all Coelotinae genera under Amaurobiidae.

Currently the Agelenidae comprises 42 genera and 514 described species (Platnick, 2010), excluding Coelotinae. In the world spider catalog, this ecribellate subfamily is listed under the cribellate family Amaurobiidae. Recent studies suggest that this classification is highly artificial (Bi, Zhou, & Song, 2005; Bolzern, Hänggi, & Burckhardt, accepted; Spagna & Gillespie, 2008). In addition to the “Coelotinae problem”, there is an ongoing discussion about the definition of Agelenidae and whether the Australian genera are closely related with Agelenidae or not (Griswold, Coddington, Platnick, & Forster, 1999; Griswold, Ramírez, Coddington, & Platnick, 2005; Jocqué & Dippenaar-Schoeman, 2006; Spagna & Gillespie, 2008; Jeremy Miller, pers. comm. 2009). During the last years many taxonomical papers with descriptions of new genera and species of Agelenidae (including Coelotinae) were published from Asia (Chami-Kranon, Likhittrakarn, & Dankittipakul, 2007; Dankittipakul & Wang, 2008; Dankittipakul & Zhang, 2008; Guseinov, Marusik, & Koponen, 2005; Nishihaka & Ono, 2004; Ovtchinnikov & Inayatullah, 2005; Tanikawa, 2005; Wang & Jäger, 2008; Wang & Jäger, 2007; Wang, Xu, & Li, 2008; Xu, Li, & Wang, 2005, 2008; Xu & Li, 2007; Zhang, Li, & Xu, 2008; Zhang & Zhu, 2010; Zhang, Zhu, & Song, 2006, 2007; Zhang, Zhu, Sun, & Song, 2006; Zhang, Zhu, & Wang, 2005), Europe (Barrientos & Cardoso, 2007; Bolzern, Crespo, & Cardoso, 2009; Bolzern, Hänggi, & Burckhardt, 2008; Bolzern et al., accepted; Bolzern & Hervé, 2010; Delsheye, 2008b; Gasparo, 2007; Kolvbyuk, 2006; Kolvbyuk & Ponomarev, 2008) and North America (Ayyoub, Riechert, & Small, 2005; Stocks, 2009).

The confused history and the unstable concept of Agelenidae s. l. with over 900 valid species make the taxonomical revision of the family an urgent task given its popularity as laboratory animals. The aim of the present work is to contribute to this goal by revising a spider group, predominantly distributed in Europe: the Tegenaria-Malthonica-complex. These taxa are members of Lehtinen’s subfamily Ageleninae. Ageleninae includes, as defined by Lehtinen (1967), four tribes: Agelenopsini (Nearctic and Neotropical), Agelenini (Holarctic and Afrotropical), Textricini and Tegenariini (mainly Palaearctic). According to Lehtinen (1967) the tribe Tegenariini comprises following nominal genera: Hadites Keyserling, 1862, Histopona Thorell, 1869, Malthonica Simon, 1898, Pseudotegenaria Caporiacco, 1934, and Tegenaria Latreille, 1804. Most species have been associated with Tegenaria and Malthonica. Bolzern et al. (accepted) have shown that the tribes as conceived by Lehtinen are only partly monophyletic and that the current generic affiliation of several species is doubtful. This is especially true for Tegenaria (Guseinov et al., 2005; Levy, 1996) and Malthonica (Barrientos & Cardoso, 2007; Bolzern et al., accepted). This problematic situation has been partly investigated by Bolzern et al. (accepted), who described a new genus, Aterigena, comprising species previously assigned to both genera.

Here all known European species of the Tegenaria-Malthonica complex are revised and their phylogenetic relationships are analysed. As the combination of morphological and molecular data improves the reliability of the resulting phylogenies (e. g. Arnedo, Hormiga, & Scharff, 2009; Giribet, Edgecombe, & Wheeler, 2001) we use both approaches. Based on the performed analyses, new phylogenetic hypotheses are presented. For Tegenaria and Eratigena n. gen. definitions, dichotomous keys to species and (re)descriptions of many constituent species including seven new ones are provided.
2. Material and methods

Specimens were examined or are cited from following institutions: American Museum of Natural History, New York, United States (AMNH, N. Platnick), Göteborgs Naturhistoriska Museum, Sweden (T. Nordander), Hungarian Natural History Museum, Budapest, Hungary (HNHM, L. László), Muséum d'histoire naturelle de la Ville de Genève, Switzerland (MHNG, P. Schwendinger), Muséum National d'Histoire naturelle, Paris, FR (MNHN, Ch. Rollard), Museo Civico di Storia Naturale di Verona, Italy (MCSN, including the Brignoli collection, L. Latella), Museo Civico di Scienze Naturali "E. Caffi", Bergamo, Italy (MSNB, P. Pantini), Museum and Institute of Zoology, Polish Academy of Sciences, Warsaw, Poland (MIZ, D. Mierzwa), Naturhistorisches Museum Basel, Switzerland (NMB), Naturhistorisches Museum der Burgergemeinde Bern, Switzerland (NHMB, Ch. Kropf), Naturhistorisches Museum Wien, Austria (NHMW, Ch. Hörweg), Royal Belgian Institute of Natural Sciences, Belgium (RBINS, contact through Johan van Keer), Senckenberg Forschungsinstitut und Naturmuseum, Frankfurt am Main, Germany (SMF, including the Wunderlich collection (JW), P. Jäger), Swedish Museum of Natural History, Stockholm, Sweden (SMNH, G. Lindberg), The Manchester Museum, Manchester, Great Britain (D. Logunov), Universitat de Barcelona, Departament de Biologia Animal, Facultat de Biologia, Spain (UB, C. Ribera) and the Zoological Museum, Natural History Museum of Denmark. Copenhagen, Denmark (ZMUC, N. Scharrif). Additionally, many specimens from private collections were provided for examination by following persons: I. Alberti (Germany), J. Altmann (Germany), M. A. Arnedo (Spain), J. A. Barrientos (Spain), E. Bauchhenss (Germany), A. Bayram (Turkey), G. Bergthaler (Austria), T. Blick (Germany), J.-L. Boevé (Belgium), P. Cardoso (Portugal), L. Crespo (Portugal), E. de Mas (Spain), P. Dettwiler (Switzerland), H. Eikamp (Germany), C. Gack (Germany), M. M. Gaver (United States), M. Geiser (Switzerland), P. Graf (Switzerland), K.-H. Harms (Germany), Ch. Hervé (France), S. Huber (Germany), J & K. van Keer (Belgium), W. Kirchner (Germany), U. Kluge (Germany), M. Lemke (Germany), C. Lötscher (Switzerland), P. Michalik (Germany), R. Mühlethaler (Switzerland), S. Öberg (Sweden), P. Paquin (United States), S. Bolzern-Ramseyer (Switzerland), M. Reimke (Germany), T. Russell-Smith (Great Britain), A. Schönhofer (Germany), A. Stäubli (Switzerland), M. Trüssel (Switzerland), N. Txasko (Spain), Z. Zhang (China), S. Zschokke (Switzerland). All specimens are preserved in 70–75 % ethanol.

Three field excursions to Italy and Crete were conducted by the first author for collecting specimens for DNA extraction. Additional material suitable for molecular work was provided by many colleagues mentioned above and listed in the acknowledgments. Several specimens were collected as juveniles and raised to maturity in the laboratory at the NHMB. The specimens from which DNA was successfully extracted are listed in Appendix 1.

Morphological methods

For the morphological examinations and for the preparation of the drawings a Leica stereomicroscope MZ12 (up to 110 x magnification) and MZ Apo with drawing tube were used. The pencil drawings were scanned and digitally reworked/executed/processed with the help of a graphics tablet and Adobe Illustrator. Most measurements were taken from digital pictures made with a Leica DFC320 camera and calculated with the program ImageJ 1.38x (http://rsb.info.nih.gov/ij/). In order to get sharp pictures several photographs with different focal levels were taken followed by a stacking procedure using the program CombineZM (http://hadleyweb.pwp.blueyonder.co.uk/CZM/News.htm).

For clearing the vulva, the removed epigyne was placed into clove oil for several minutes. The descriptions of the bulb are given from a ventral view. The spines on the male palp are not illustrated as they are considered of minor taxonomic significance. Leg measurements were taken from the dorsal side. All measurements are given in millimetres. Measurements of
palps and legs are given as (femur, patella, tibia, (metatarsus), tarsus/cymbium). Patterns of leg spination are given for the palps (femur dorsal–prolateral–retrolateral, patella dorsal–prolateral–retrolateral, tibia dorsal–prolateral–retrolateral) and for each leg segment (leg I dorsal–prolateral–retrolateral–ventral, leg II ...). A “p” in the spination formula indicates "paired spines" (two spines at approximately the same longitudinal position). The colour description is based on ethanol preserved specimens.

Specimens used for SEM (Scanning Electron Microscopy) were immersed in 2-ethoxy ethanol for 48–72 hours and then placed into ethyl acetate for two–four hours. After several minutes air drying, the samples were mounted on Cambridge SEM stubs followed by sputter coating with 20 nm gold (BAL-TEX MED 020). Pictures were generated using the Scanning Electron Microscope (XL30 ESEM, Philips) at an accelerating voltage of 5 kV.

The morphological terminology follows Jocqué & Dippenaar-Schoeman (2006) and Bolzern et al. (2008). The following abbreviations are used:

AER anterior eye row
ALE anterior lateral eyes
AME anterior median eyes
ALS anterior lateral spinnerets
bulbL distance of the cymbium base to the most distal tip of the male bulb
CB cymbium breadth
CBD combined duct (vulva without recognisable RC)
CD copulatory duct
CL carapace length
CLY1 clypeus height under AME
CLY2 clypeus height under ALE
CO copulatory opening at female epigyne
CW carapace width
FD fertilisation duct
MA median apophysis
OL opisthosoma length
OW opisthosoma width
PMS posterior median spinnerets
PER posterior eye row
PLA posterior lateral eyes
PME posterior median eyes
PLS posterior lateral spinnerets
RC receptaculum
RTA retrolateral tibial apophysis (used here as the sum of all structures in retrolateral position of the tibia of the male pedipalp)
STL sternum length
STW sternum width

The programme DELTA was used for preparing the morphological data matrix for the phylogenetic analyses (Appendix 5) (Dallwitz, 1980; Dallwitz, Paine, & Zurcher, 2000). Redescriptions, drawings and photographs are provided only for species lacking good descriptions or illustration in the literature.

Molecular methods
For the DNA extraction, 1 leg was removed from a freshly sampled and alcohol fixed (pure absolute ethanol) specimen. The ethanol was removed by placing the legs into a vacuum centrifuge for 30 min by 40 °C. Then the legs were processed according to the protocol for the
purification of total DNA from animal tissues (Spin-Column Protocol) of the “DNeasy Blood & Tissue Kit” (Qiagen). The DNA concentration of the resulting solution was measured by using a NanoDrop equipment. The amplification of three loci was undertaken by using following primer pairs: C1-J-1718 and C1-N-2191 (Simon et al., 1994) for the mitochondrial Cytochrome Oxidase 1 gene (CO1, 471-bp), TL-1-N-12718 (Hedin, 1997; numbered following Simon et al., 1994) and M510 (Murphy et al., 2006) for the mitochondrial NADH Dehydrogenase subunit 1 (NADH1, 591-bp) and 28S “O” and 28 “C” (Hedin & Maddison, 2001) for the nuclear-encoded large subunit of the rDNA-repeat (28S, 848-bp). For the PCR illustra PuReTaq Ready-To-Go PCR Beads (GE Healthcare) were used. The following thermocycling conditions were applied: initial denaturation step of 93 °C for 3 min, followed by 35 cycles of 95°C for 30 sec, an annealing temperature of 55 °C (for CO1 and 28S) or 48 °C (for NADH1) for 30 sec, and an extension temperature of 72 °C for 45 sec. This was then followed by an additional extension of 72 °C for 7 min. To eliminate incorporated dNTP and primers, the PCR products were treated with ExoSAP-IT® (GE-Healthcare). Then, the fragments were sequenced in both directions using ABI PRISM® BigDye™ Terminator Cycle Sequencing Ready Reaction Kit (Applied Biosystems). Sequences were then analysed using an ABI Prism 3100 Genetic Analyzer and edited with the software Sequence Navigator (Applied Biosystems).

Alignments. The complementary sequences (5’ and 3’ directions) of each specimen were aligned using the web based ClustalW 2 (Larkin et al., 2007; Thompson, Higgins, & Gibson, 1994) for testing the sequence quality. If parts of these complementary strands could not be aligned due to reading mistakes during sequencing and the remaining strand was not obviously well readable, the corresponding sequences were discarded. Each good sequence was checked for contamination by passing a Blast search.

The alignments of the mitochondrial gene sections were done manually, using the translated sequences into amino acids as a guide, checking for any inappropriately placed stop codon and the triplet positions. All sequences were then cut to a length of 471-bp (CO1) or 591-bp (NADH1). Within these two alignments no indels occur.

In favour of repeatability and objectivity we used a fixed automatic alignment for the 28S sequences instead of manually edited alignments or alignments based on secondary structures (as proposed by different authors; e. g. see Arnedo et al., 2009; Spagna & Gillespie, 2008). Therefore we computed 14 alignments, using ClustalX 2.0.1.1 (Larkin et al., 2007; Thompson, Gibson, Plewniak, Jeanmougin, & Higgins, 1997), with varying the global-alignment gap opening and gap extension parameters over a range from 1 to 16/7 (1/1, 2/1, 2/2, 4/1, 4/2, 4/4, 7/1, 7/2, 7/4, 7/7, 16/1, 16/2, 16/4, 16/7) by holding the parameter for “DNA transition weight” at 0.5 and the pairwise alignment parameters at standard. For all resulting alignments we recorded the included gaps as separate presence/absence characters by using the software FastGap V. 1.2 (Borchsenius, 2009) following the method proposed by Simmons & Ochoterena (2000). This procedure allows including gaps as potential important characters in phylogenetic tree searches but treating them as single indel events. Thereby the effect of increased weight of overlapping multiple non-homologous gaps is minimized (Pons & Vogler, 2006). For objectively choosing the best alignment, we performed a “incongruence length different” (ILD) test as described by Farris et al. (1994). From a character matrix X and Y the incongruence length difference $D_{xy}$ is given by the length of the most parsimonious tree of the combined matrices ($L_{xy}$) minus the sum of the most parsimonious trees calculated for each matrix separately ($L_x+L_y$). The higher the value $D_{xy}$ the more conflicting are characters in the matrices and the alignment that minimises this value has to be chosen. One matrix is represented by a 28S alignment and the other by the combined CO1 and NADH1 alignments, which were trivial to align (triplet codes). The results of this test showed that the lowest value of incongruence length differences was achieved by the alignment 7/2. Therefore, this alignment has been chosen for all subsequent analyses.
Different alignments and matrices were combined using WINCLADA v. 1.00.08 (Nixon, 2002).

Phylogenetic methods
We used two phylogenetic methods: 1. Bayesian analyses, which uses likelihood models in a Markov Chain Monte Carlo algorithm (MCMC) using the program MrBayes v. 3.1.2 (Huelsenbeck & Ronquist, 2001; Ronquist & Huelsenbeck, 2003; Yang & Rannala, 1997) and 2. Maximum Parsimony analyses using the program TNT (Goloboff, Farris, & Nixon, 2008). For the selection of best-fit models of nucleotide substitution for the present alignments the software jModelTest 0.1.1 (Psoda, 2008; Guindon & Gascuel, 2003) was used. Since the underlying sequences of the two mitochondrial gene sections are coding for proteins, the analyses was performed with respect to the codon-position, allowing MrBayes to use different substitution models with independent rates for each partition (one partition for each codon position and loci). The statistically chosen models under the Akaike information criterion with correction for small samples (AICc) were: K80+G (1st CO1, nst=2, rates=gamma, statefreqpr=fixed(equal)), JC+I (2nd CO1, nst=1, rates=propinv, statefreqpr=fixed(equal)), HKY+G (3rd CO1, 1st and 3rd NADH1, nst=2, rates=gamma), TrNef+G (2nd NADH1, nst=6 rates=gamma, statefreqpr=fixed(equal)) and GTR+G+I (28S, nst=6, rates=invgamma). The present/absence matrix of the gap coding of the 28S is specified with the model JC (nst=1 coding=variable rates=gamma). For all Bayesian analyses, the outgroup was defined after the analyses by rooting the resulting trees at the Amaurobius branch/clade. Two parallel and independent analyses, each with four chains (three heated, one cold MCMC chains) were run for 1–10 million generations (depending on when the average standard deviation of split frequencies dropped below 0.01 and retained there), sampling trees every 1000 generations. For all analyses the heating temperature was left at the default value 2.0, except for the separate 28S and NADH1 analyses. In these cases, no branch swapping between chains 1, 3, 4 and 2, 4 took place. Thus, the temperature was reduced to 1.5. At the end of the analysis, 10–15% of the collected trees were discarded as “burnin”. Of the remaining trees, a consensus tree was calculated applying the 50% majority rule.

Parsimony analyses were performed using the program TNT (Goloboff, Farris et al., 2008) applying the full heuristic traditional tree search with TBR. For all analyses including the 28S alignment, the gaps were read as missing data. For all parsimony analyses, rooting of the trees was defined before running the analyses by defining Amaurobius ferox or the Amaurobius clade as outgroup. A variety of parameters of random additions of taxa (sequences) and holding trees per iteration were applied do search the whole tree space (100/1000, 300/300, 1000/100, 10000/2, 100000/1) and to check, if the same trees were found. The best compromise, which yielded most hits on all most parsimonious trees was then chosen for further analyses (1000/100). Branch support was estimated applying the jackknife resampling method (1000 replicates) with default removal probability of characters let at standard value (0.36). Bremer branch support (Bremer, 1994) was calculated for the morphological and the all combined data set applying the procedure proposed by Goloboff (2008): the optimal trees were used as a starting point for searches, saving successively larger sets (holding 3000 trees as starting point, increasing by 3000 for each step up to 60000 trees) of more suboptimal trees (sub 1–20) by using the trees saved in RAM and stop when maximum trees is hit (selecting “trees from RAM” and “stop when maxtrees hit”). With the 60000 optimal and suboptimal trees stored in memory, the program checks minimum score differences to lose each group by using the “bsupport” command.

Since the weighting of characters is a highly controversial topic (Goloboff, Carpenter, Arias, & Esquivel, 2008; Kjer, Swigonova, LaPolla, & Broughton, 2007; Ojanguren-Affilastro & Ramirez, 2009), we analysed the data under weighting regimes against homoplasy, using implied weighting (Goloboff, 1993) by varying the strength of the weighting function with
different values of the constant of concavity K (0=equal weight, 1, 3, 4, 5, 6, 10, 15, 20, 50) and calculated the corresponding jacknife supports. All Bayesian analyses were carried out on the freely available Bioportal (www.bioportal.uio.no). Trees were drawn in FigTree v1.2.2 (Freeware from Andrew Rambaut, Institute of Evolutionary Biology, University of Edinburgh; available at: http://tree.bio.ed.ac.uk/software/figtree/) and edited in Adobe Illustrator.

Taxa selection
This study concentrates on European taxa all of which are included. Additional material comes from Asia and North America (Appendix 4).

3. Results

3.1. Phylogeny

3.1.1. Morphological character assessment

Short definitions of the family Agelenidae are e. g. provided by Bennett & Ubick (2005) and Jocqué & Dippenaar-Schoenman (2006). The 8 eyes arranged in two transverse rows are used in the literature to define genera (char. 10–15). The eye size patterns separate some taxa, e. g. Textricini species have PME smaller than all other eyes (char. 10). We use relative size values, since adaptations to cave-dwelling can be found in agelenids. The curvature of eye rows, a character commonly used in identification keys (e. g. Nentwig, Hänggi, Kropf, & Blick, 2003; Roberts, 1995), is used in both, frontal and top view and for each eye row individually (char. 12–15). The curvature of the eye rows is a potential synapomorphy linking Textricini + Agelenini within the remainder of European Agelenidae. The two segmented PLS are a diagnostic character for agelenids (e. g. Fig. 11 D). Simon (1937) and subsequent authors used the colouration of the segments (Tegenaria sensu stricto species have almost always a pale distal segment, char. 49) and the relative length of the distal segment (probably homoplastic, char. 50) as grouping characters. In addition to this character Lehtinen (1967) introduced the paired colulus of the spinnerets as one of the three characters diagnosing the Agelenidae (Figs. 1 C, G, 11 D; the other diagnostic characters proposed by Lehtinen are the lengthened PLS and three tarsal claws). This is problematic, since a large group of species, e. g. the Tegenaria/Malthonica-complex, does not have this character state (char. 47). The paired colulus is characteristic for European species of the tribes Agelenini and Textricini and for several species of Hitopona but not for Tegenaria sensu lato or Aterigena, which have a trapezoidal colulus with the distal margin medially notched or “w” shaped (Fig. 11 D, char. 48). In Malthonica (e. g. the type species, M. lusithanica) the colulus is strongly reduced. As shown by Griswold et al. (2005) for different spider families or by Murphy (2007) for Gnaphosidae, spinnerets with the corresponding spigots are potentially informative phylogenetic characters. Therefore, we define three characters concerning the number of prominent spigots distally on PMS (char. 51), the number and arrangement of minor ampullate and cylindrical gland spigots on PMS (char. 52) and the number and arrangement of cylindrical gland spigots on the distal segment of PLS (char. 53) (Figs. 1 B, D, F, 2 A, C, F, E). We do not include the spigots on the ALS, since they always have (in all groups examined) two major ampullate gland spigots (or one major ampullate gland spigot and one nubbin, a probably broken off spigot (e. g. see Griswold et al., 2005)) and a variable number of pyriform gland spigots in combination with several tartipores (Fig. 1 E, H, 2 B). The last character concerning the posterior appendages of spiders is a character newly
detected in this study: in several species of the genera Agelena, Agelescape, Allagelena and Hololena a special kind of spikes could be detected at the anal tubus (Fig. 3 A, absent in all other examined species, char. 54).

Another character important for Agelenidae is the row of dorsal trichobothria (Fig. 2 G) increasing in length towards tip on leg tarsi. The species of Textricini have less trichobothria than Tegenaria sensu lato. We include this character (char. 45) by dividing the counted tarsal trichobothria on tarsus I into two classes (less than 6 or 6 and more). Only some species bear such rows of trichobothria on the palpal tarsus and the cymbium. This character is regarded as, at least taxonomically, important and therefore is included here (char. 29, 35). In Agelena and Allagelena a field of trichobothria is present dorsally on male palp tibia, whereas specimens of other genera have only one or two rows of trichobothria at the corresponding position (char. 34). Another kind of hairs important for Agelenidae are the “feathery hairs” (Lehtinen, 1967) or “plumose hairs” (Roth, 1968; Roth & Brame, 1972) (Figs. 2 H, char. 20). Roth (1968) first thought that this character is a key character for Tegenaria. Lehtinen (1967) stated correctly, that these hairs are only present in his tribes Agelenopsini, Agelenini and Tegenariini but are absent in Textricini and Coelotinae (they are also present in two subfamilies of Amaurobiidae) (char. 20). A special kind of white hairs may be a potential apomorphic character for Textricini (char. 21).

A notched trochanter is a character also discussed in the literature (e. g. Barrientos & Cardoso, 2007; Bolzern et al., accepted; Lehtinen, 1967). We include it, as together with other characters, it defines Aterigena (Bolzern et al. (accepted). For Histopona it may be an apomorphic character (all trochanters notched, char. 25).

Lehtinen (1967) used extensively colouration patterns. This is problematic for several reasons. The colour patterns of the opisthosoma and other structures are very variable. Cave-dwellers tend to have reduced pigmentation. Spiders are generally fixed and conserved in ethanol which strongly affects colours. All these points are the case for the present work. Therefore we reduce the use of such characters to a minimum. We score the colouration pattern of the carapace margin, which is significantly discontinuous in many Tegenaria species (Figs. 18 J, 29 A, char. 16), the shape of the symmetric longitudinal darkened bands dorsally on carapace (char. 17), the sternal pattern (often used as good character for species identification, e. g. Dahl, 1931; Roth, 1968) (e. g. Fig. 18 K, char. 18) and pigmentation pattern of the legs (char. 19).

Several authors used cheliceral teeth (e. g. Fig. 12. H) as important character for taxa definition or description (e. g. Bolzern et al., accepted; Brignoli, 1971a; Levy, 1996; Simon, 1897–1903). The character 22 divides the analysed data in two classes: promargin with 3 (0) or more than 3 teeth (1). The number (char. 23) and shape (char. 24) of the teeth at the cheliceral retromargin provide potential apomorphies for Eratigena n. gen., Malthonica and Textricini.

In several spider groups, e. g. in Linyphiidae, leg spination pattern are used for identification (Bolzern et al., accepted; Roth & Brame, 1972) even though it can be very variable in some species (e. g. see Kovblyuk, 2004). This high variation is observable in some areas of the legs but not everywhere. The presence or absence of lateral spines on the patella is informative in Agelenidae (e. g. see Bolzern et al., accepted) and is a potential apomorphy defining Aterigena (char. 37). The spination patterns, especially on the female (char. 26–28) and male palp segments (char. 30–32), are phylogenetically informative. A special structure, possibly a synapomorphy grouping several Eratigena n. gen. species, is a short spine (probably a reduced spine) dorsodistally on the male tibia (Fig. 11 C, char. 33). Additional seven characters (36–41, 43) are defined concerning absence and presence of different spination patterns. Ventrodistally on metatarsi III & IV special groupings of spines are present in Aterigena and Textricini (char. 42). Ventral spines on tarsi III & IV are absent in Tegenaria, Eratigena n. gen. and Malthonica but present in all other examined taxa (char. 44).
Besides the spination patterns, the number of small denticles at the paired claw on tarsus I is variable and was scored (Fig. 3 B, char. 46) resulting as highly homoplastic character. The same is true for the denticles counted at the claw of the female palp tarsus (char. 7).

In order to detect potential information in the relative size of carapace, sternum, labium or legs, we include relative measurements of males (char. 1–4) and females (char. 5–6, 8–9). The most important characters for species diagnosis are the female epigyne and vulva as well as the secondary genitalia of males.

For males, we included 24 characters (e.g. Fig. 3 D, 55–78). The first concerns the presence (absence) of femoral apophysis (char. 55), a potential apomorphy of Maimuna, and patellar apophyses (char. 56), present in several Agelenini, Maimuna, Histopona and also in a Eratigena n. gen. (e.g. E. feminea) species. For the very important retrolateral tibial apophyses (RTA) we used tree characters (57–59). The hypothesis that this character is phylogenetic meaningful is supported by several important works about spider phylogeny (the so called "RTA-clade", see e.g. Blackledge et al., 2009; Charles E. Griswold et al., 2005; Spagna & Gillespie, 2008). A challenging problem is to address homologous branches of the RTA of different taxa. Several taxa have strongly modified (fused or reduced branches) RTA’s. For this reasons we just counted the branches (char. 57) as one character and judged the whole RTA for its complexity (char. 58). The most powerful character of this complex may be character 59, the presence (absence) of a special lateroventral ridge (Fig. 3 C), even though probably a homoplastic character. For all examined Histopona species, we could observe a small but distinct prolateral tibial apophysis (char. 60). A character shared by all Tegenarinii, Textriconi (and Coelotinae) is the filiform embolus (sometimes distally truncated, char. 61). As proposed by Levy (1996) or Guseinov et al. (2005) the position of the origin of the free apex of the embolus may be of phylogenetic importance (char. 62), in our analysis this is not supported. The same may be true for the shape of the embolus tip (Fig. 3 E, char. 63). A more important role plays the shape of the conductor (Fig. 3 D, char. 64–72). Even though this character-complex is variously expressed and modified in different taxa, the general shape (char. 64), the presence (absence) of a transversal ridge or an additional apophysis (char. 65–66), its connection to the tegulum (char. 67), the shape of the distal portion (char. 68), the lateral margin or the terminal end (char. 69–71) obviously provides important information. The second very important apophysis on the male palp is the median apophysis (Fig. 3 D, MA). Its shape, connection to the tegulum and the expressed distal sclerite do help grouping the involved taxa and are most probably phylogenetically important (char. 73–77). The last character used at the male palp is the conspicuousness and the shape of the basal portion of the tegulum (char. 78), a character potentially important for grouping of Tegenaria species.

For females we included ten genital morphological characters (Fig. 3 F, char. 79–88). Epignyes and vulvae differs between the included groups to a very high extend. Also in these structures, the detection of homologous characters is a major problem. For this reason, the ontology proposed by Sierwald (1989) for genital structures of Pisauridae could only be adopted partly. The presence of a distinct atrium (Fig. 10 C, char. 79) is an important character for Agelenini, but appears also in Eratigena n. gen.. The absence of a distinctly separated median plate could be observed in Agelena, Maimuna, and Eratigena n. gen. (char. 80). The characterisation of the posterior sclerite (e.g. Fig. 25 C, E) remains problematic and is implemented by only one character (char. 81). During the morphological examination of the listed material, it became clear that epigynal teeth had been used in literature for different structures (for a discussion of this character concerning Coelotinae see Wang & Jäger, 2010). “True” teeth (posteriorly of the GO, Fig. 10 C) seem to be a synapomorphy of some species of Eratigena n. gen., whereas “pseudo teeth” (only a pointed protuberance of the lateral margin limiting the median area, Figs. 3 F, 12 A, C) are a plesiomorphic character which could be observed in e.g. Aterigena, Malthonica, Eratigena n. gen. and Tegenaria. Very special
character is the presence of sclerotised pockets on the epigyne (char. 83), probably a synapomorphy for some Tegenaria species around T. parmenidis and (for another character state) for several Eratigena n. gen. species around E. arganoi. An important character is the “fused”, very special formed vulva (Fig. 12 B, D, F), probably a synapomorphy of many Eratigena n. gen. species (char. 84). Another kind of “fused” vulvae observed in Tegenaria, distinctly differs form the other structure. In many Tegenaria species, the vulva does not show any distinct structure which could be called receptaculum, they just have a continuous duct (Fig. 25 D, H), a synapomorphic character of those species (char. 84). For the examined Agelena and Allagelena species and several species of Eratigena n. gen., the presence appendages (blind ending ducts, this structure may be synonymous to “spermathecal head”, e.g. used by Sierwald (1989) and Bennet (2006)) at the CD could be observed (char. 87). The level of sclerotisation of the CD (char. 86), the relative lengths of the CD (char. 85) or the FD (char. 88) are included characters, which showed to be strongly homoplastic. The scores for all included species and characters are listed in Appendix 5.

3.1.2. List of morphological character

Measurements males
1. carapace width / carapace length
   0: smaller or equal 0.75; 1: greater than 0.75
2. sternum length / sternum width
   0: smaller than 1.0; 1: between 1.0 and 1.2; 2: larger than 1.2
3. carapace length / tibia I length
   0: tibia I smaller or equal carapace; 1: tibia I longer than carapace
4. length of tibiae
   0: I or IV largest, III smallest; 1: I or IV largest, II smallest

Measurements and counts in females
5. labium shape
   0: wider than long; 1: as wide as long; 2: longer than wide
6. gnathocoxa width / gnathocoxa length
   0: smaller or equal 0.6; 1: greater than 0.6
7. number of small teeth at the palpal claw
   0: less than 5; 1: 5–8; 2: 9 or more
8. carapace length / tibia I length
   0: tibia I smaller or equal carapace; 1: tibia I equal carapace; 2: tibia I longer than carapace
9. length of tibiae
   0: I or IV largest, III smallest; 1: IV largest, II smallest

Eyes (male and female)
10. eyes size pattern
   0: lateral eyes bigger than equally sized median eyes; 1: AME smaller than PME, both smaller than lateral eyes; 2: AME bigger than PME, both smaller than lateral eyes; 3: all equal, except AME smaller; 4. PME smaller than others; 5. AME<PME<PLE<PME (PME biggest)
11. clypeus height (measured under AME, = CLY1)
   0: less than 1.5 x AME; 1: 1.5–2 x AME; 2: 2–3 x AME; 3: greater than 3 x AME
12. AER, dorsal view
   0: recurved; 1: moderately recurved; 2: straight; 3: moderately procurred
13. PER, dorsal view
   0: recurved; 1: moderately recurved; 2: moderately procurred; 3: procurred
14. AER, frontal view
   0: recurved; 1: straight or moderately procurved; 2: strongly procurved
15. PER, frontal view
   0: straight or moderately procurved; 1: procurved; 2: strongly procurved

Colouraction patterns (male and female)
16. pigmentation pattern of carapace margin
   0: continuous; 1: not continuous, with 3–5 crescent shaped spots (where the legs are attached)
17. symmetric longitudinal dark bands dorsally on carapace
   0: more or less continuous; 1: not continuous, serrated or reduced to 3 to 4 pronounced triangles
18. sternal pattern
   0: no pattern; 1: completely darkened; 2: darkened median region; 3: moderately paler median region; 4: pattern with pale median band and symmetric pale dots laterally
19. pigmentation of the legs
   0: no pattern; 1: some darkened dots expressed; 2: annulated; 3: only ventrally annulated; 4: only coxa and proximal part of femorae indistinctly pigmented; 5: patellae and distally of each leg segment darkened; 6: continuously darkened

Special hairs
20. plumose hairs
   0: present at carapace, legs and opisthosoma; 1: absent
21. special white hairs at carapace
   0: present; 1: absent

Chelicerae
22. number of cheliceral teeth at the promargin
   0: 3; 1: 4 or 5
23. number of cheliceral teeth at the retromargin
   0: less than 3; 1: 3–6; 2: 6 or more
24. shape of cheliceral teeth at the retromargin
   0: all equal, sometimes second proximal tooth somewhat slightly or most proximal slightly bigger; 1: most proximal tooth distinctly bigger; 2: more proximal, the teeth are getting very small; 3: one or two big, and more proximal smaller teeth, well separated from the bigger one(s); 4: chaotic pattern of big and small teeth

Trochanter
25. trochanter
   0: straight or slightly curved; 1: notched (III & IV, others straight); 2: all notched

Patterns of leg-spination, trichobothria and claws
26. female palp femur
   0: 1 or 2 dorsal spines; 1: 3 or more dorsal spines
27. prolateral spine at female palp patella
   0: absent; 1: present
28. prolateral spines at female palp tibia
   0: 1+1 pair; 1: 1 pair +1; 2: 2; 3: 2 pairs
29. trichobothria at female palp tarsus
   0: absent; 1: present
30. male palp femur
   0: 1 dorsal spine; 1: 2 dorsal spines; 3: 3 dorsal spines
31. dorsal and prolateral spines at male palp patella
   0: 1 dorsal spine; 1: 2 dorsal spines; 2 dorsal + 1 prolateral spines
32. prolateral spines at male palp tibial
<table>
<thead>
<tr>
<th>Feature</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>33. short dorsal spike at male palp tibia</td>
<td>0: absent; 1: present</td>
<td></td>
</tr>
<tr>
<td>34. trichobothria at male palp tibia (dorsal)</td>
<td>0: 2 rows of trichobothria present; 1: one or more &quot;fields&quot; of trichobothria</td>
<td></td>
</tr>
<tr>
<td>35. trichobothria at male cymbium</td>
<td>0: absent; 1: present (in one row dorsoretrolaterally)</td>
<td></td>
</tr>
<tr>
<td>36. dorsal spines at leg femorae</td>
<td>0: 1; 1: 1 or 2; 2: more than 2 (at least at two femora)</td>
<td></td>
</tr>
<tr>
<td>37. lateral spines at leg patellae</td>
<td>0: absent; 1: I–II with only prolateral spines, III–IV with pro- and retrolateral spines; 2: I–IV with pro- and retrolateral spines; 3: I–III with only prolateral spines, IV without lateral or only with retrolateral spines</td>
<td></td>
</tr>
<tr>
<td>38. lateral spines at tibia I</td>
<td>0: absent; 1: 1–3 prolateral spines, retrolateral spines possible</td>
<td></td>
</tr>
<tr>
<td>39. dorsal spines at tibiae III–IV</td>
<td>0: absent; 1: 1; 2: 2</td>
<td></td>
</tr>
<tr>
<td>40. dorsal spines at metatarsi</td>
<td>0: absent, sometimes III or IV with 1 spine; 1: I–II absent, III–IV with 1–2 spines; 2: I–II absent, III–IV more than 2 spines; 3: I absent, II–IV with 1 or more spines; 4: all with more than 2</td>
<td></td>
</tr>
<tr>
<td>41. lateral spines at metatarsus I</td>
<td>0: 0–1 prolateral spine, 1 retrolateral spine possible; 1: 2 or more prolateral spines, retrolateral spines possible</td>
<td></td>
</tr>
<tr>
<td>42. distal spines at metatarsi III–IV</td>
<td>0: no pattern or 1 pair + 1 spine (basic pattern); 1: 1 pair + 1 pair very close together; 2: 1 pair + 1 single or pair of much smaller spines</td>
<td></td>
</tr>
<tr>
<td>43. lateral spines at tarsi III–IV</td>
<td>0: 0–1 prolateral spine, 1–2 retrolateral spine or no spines; 1: several prolateral and 1 to several retrolateral spines</td>
<td></td>
</tr>
<tr>
<td>44. ventral spines at tarsus III–IV</td>
<td>0: present; 1: absent</td>
<td></td>
</tr>
<tr>
<td>45. number of dorsal trichobothria on tarsus I</td>
<td>0: less than 6; 1: 6 or more</td>
<td></td>
</tr>
<tr>
<td>46. number of small teeth at the paired claw of leg I</td>
<td>0: less than 10; 1: 10–12; 2: 13 or more</td>
<td></td>
</tr>
</tbody>
</table>

**Spinnerets**

47. shape of colulus                                                  | 0: strongly reduced; 1: somewhat reduced, two separated plates or only two hairy region present; 2: trapezoidal or rectangular plate |
| 48. shape of distal margin of trapezoidal or rectangular colulus      | 0: more or less straight; 1: with a notch in the middle, not concave; 2: a kind of "w"-shaped or concave. |
| 49. colouration of distal segment of PLS                             | 0: pale; 1: somewhat darkened |
| 50. length of distal segment of PLS in relation to the length of the basal segment | 0: shorter than basal; 1: as long as basal; 2: longer than basal |
| 51. pattern of special, prominent spigots distally on PMS (in females) | 0: 1 prominent spigot; 1: 1 prominent spigot anteriorly and 1 posteriorly; 2: 2–3 prominent spigots in a group; 3: more than 3 prominent spigots; 4: no special thing |
| 52. number of minor ampullate and cylindrical gland spigots distally on PMS, in | |
females
0: 2 (posteriorly, on both lateral sides); 1: 2 (one in the middle, 1 more posteriolaterally); 2: 3 (one in the middle, 2 more posteriolaterally); 3: 4–5 (one in the middle, 3–4 more posteriorly in a transversal row or semicircle); 4: 8 (one in the middle, one posteriorly, 3 and 3 laterally); 5: 4 (two in the middle, 2 more posteriolaterally); 6: 6 (two in the middle, 2 and 2 laterally); 7: 4–7 in a semicircle

53. number of cylindrical gland spigots on the distal segment of PLS
0: 1 (basal); 1: 2 (one basal, one medial); 2: more than 3 (1–2 basal, others in a row towards distal end)

54. analtubus with special long and dark spikes
0: present; 1: absent

Male genitalia
55. femoral apophysis
0: absent; 1: present

56. patellar apophysis
0: absent; 1: present

57. RTA, number of branches
0: absent; 1: 1 branch; 2: 2 branches; 3: 3 branches

58. RTA complexity
0: low (one peak, bulge or flat ridge); 1: medium; 2: high (more peaks, bent points, fused branches, ...)

59. palp tibia with retrolateroventral ridge, sometimes fused with ventral branch of RTA
0: present; 1: absent

60. palp tibia with prolateroventral apophysis
0: present; 1: absent

61. embolus shape
0: filiform, getting thinner to the end or distally truncated; 1: more complex

62. position of embolus origin (free apex) at the left palp in ventral view
0: 6–8 o’clock; 1: 8–10 o’clock; 2: 10–12 o’clock; 3: 12–2 o’clock

63. shape of embolus tip
0: special formed; 1: inconspicuous

64. general shape of conductor
0: lamelliform; 1: lamelliform, complex (several lamellae); 2: massive, complex; 3: massive, with a large membranous part and often with a broad connection to the tegulum

65. transversal ridge on conductor
0: absent; 1: present, sclerotised; 2: present, lamelliform, membranous; 3: present, massive

66. additional tegular apophysis
0: absent; 1: lobe-like, flat and somewhat protruding; 2: big bulge between tegulum and conductor; 3: strongly sclerotised ridge forming a pocket-like structure; 4: strongly sclerotised structure originating at the basis of the free embolus, complex

67. connection of conductor to tegulum
0: membranous, not strongly sclerotised; 1: sclerotised and fixed

68. shape of distal portion of conductor
0: differently shaped, no real distal portion detectable; 1: broadly rounded, not elongated (distance from the connection to the tip smaller than the width of the distal portion); 2: not really elongated, as long as wide; 3: elongated (distance from the connection to the tip larger than the width of the distal portion)
69. lateral margin of conductor
   0: not folded; 1: folded only at the terminal half; 3: completely folded
70. terminal end of conductor, dorsal part
   0: absent; 1: pointed apophysis; 2: rounded plate; 3: rounded outgrowth, more
compact than a plate; 4: big rounded outgrowth; 5: more complex structure
71. terminal end of conductor, ventral part
   0: rounded, one short point or cone shaped; 1: one elongated and strong point; 2:
more complex (several peaks, plates, etc.)
72. conductor with special characters
   0: absent; 1: winded, spiral; 2: a peak between dorsal and ventral branch; 3: clearly
divided in two "conductors", the ventral branch functional; 4: conductor terminally
elongated to dorsal side of cymbium; 5: very complex
73. median apophysis
   0: present; 1: absent
74. position of origin of MA at the left palp in ventral view
   0: 1–3 o’clock; 1: 3–5 o’clock; 2: 5–7 o’clock; 3: 7–9 o’clock
75. MA protruding
   0: only somewhat protruding, connection wider than MA long; 1: protruding,
connection as wide as MA long; 2: protruding, connection narrower than MA long
76. connection of MA to the tegulum
   0: sclerotised (at least partly); 1: membranous
77. shape of distal sclerite of MA
   0: absent, only membranous; 1: platelike, forming a kind of pocket; 2: platelike,
forming a kind of spoon; 3: thornlike, finger shaped or pointed (also several points
possible); 4: more complex, with more than one ending; 5: very complex, strongly
sclerotised
78. basal portion of tegulum, in ventral view
   0: not visible; 1: visible, simple with a more or less continuous margin; 2: visible,
more complex, margin undulated

Female genitalia
79. atrium
   0: no or indistinct atrium expressed; 1: distinct cavity
80. lateral disruption, separating the epigynal plate from the median plate
   0: absent (no separated median plate does exist or median plate is strongly fused to
epigynal plate); 1: present (separated median plate does exist)
81. posterior sclerite
   0: absent; 1: present, expressed as a strongly sclerotised bar or big plate, almost
touching the anterior border, well separated from the epigynal plate; 2: present, big
bulge; 3: present, expressed as a strongly sclerotised plate, transversely and
protruding ventrad
82. epigynal teeth
   0: absent; 1: only "pseudotheeth" as posteriolateral elongation of lateral margin of
atrium present; 2: present, anteriorly of CO at anterior margin of atrium; 3: present,
posteriorly of the CO
83. sclerotised "pockets"
   0: absent; 1: median of the epigyne, open towards anterior; 2: median of the
epigyne, open towards posterior (by the posterior sclerite); 3: lateral, open towards
posteriomedial (posteriorly of the CO); 4: lateral, open towards lateral
84. shape of vulva
   0: combined duct; 1: 1 pair of receptacula; 2: 2 pairs of receptacula; 3: receptacula
irregularly sclerotised enclosing convoluted ducts
85. length of CD or combined duct
   0: short; 1: long
86. sclerotisation of CD or combined duct
   0: less sclerotised part (first part, starting at the CO) present; 1: all more or less
   equally sclerotised
87. appendages at CD
   0: absent; 1: small diverticula at CD present; 2: long band-like appendages at the
   CD present
88. length of fertilisation duct
   0: very small (only leave shaped appendages at receptacula expressed); 1: as long
   as or longer than receptaculum width

3.1.3. Morphological analyses

Parsimony analysis of the morphological dataset under equal weight resulted in 8 shortest
trees (Tab. 2, Fig. 4). As for the molecular analysis, all species from the
_Tegenaria/Malthonica_-complex are divided into four well supported monophyletic clades
(Tegenaria, Malthonica, Eratigena _n._ gen., Aterigena). Implied weighting with different
strength (Tab. 2, App. 2–3) did not have a remarkable impact. Jackknife values and Bremer
support suggests that _Tegenaria_ sensu stricto constitutes the most problematic clade
(jackknife value 71, Bremer support 5, App. 2, no apomorphy detectable). Generic
relationship between the included genera is not resolved. Within the taxa in focus, only very
few groups are good supported by both branch support values (Fig. 4, App. 1–3).

3.1.4. Molecular analyses

The most inclusive Bayesian analysis, including all three gene sections (CO1, NADH1 and
28S) resulted in a tree dividing the included _Tegenaria/Malthonica_ sensu lato species in three
highly (100 % posterior probability) supported monophyletic clades (Fig. 5, Tab. 1–2, App.
2–3). One clade, including _Tegenaria domestica_, comprises all _Tegenaria_ species, the second
corresponds to the genus, _Aterigena_ (Bolzern et al., accepted) and the newly proposed genus
_Eratigena_ _n._ gen. (corresponding to the “Tegenaria-Clade 2" in Bolzern et al. (accepted)).
Furthermore, the Bayesian tree suggests (Fig. 5) that _Malthonica_ (represented by _M. oceanica_
Barrientos & Cardoso, 2007) is the basal genus and sister to all other included agelenid
genera. From those taxa, _Tegenaria_, constitutes the sister group of _Aterigena, Histopona,
Textricini (Textrix, Lycosoides), Agelenopsini/Agelenini (Hololena, Agelena), and _Eratigena
_n._ gen._. The later genus is sister to the Textricini/Agelenopsini/Agelenini clade and together
they constitute a polytomic clade with _Aterigena_ and _Histopona_. Within the genus _Tegenaria_
three highly supported clades can be observed: _T. domestica_ and _T. ariadnae_ are closely
related; they form the basal sister clade of the other _Tegenaria_ species; _T. ferruginea_ and _T.
parietina_ are closely related. Within the genus _Eratigena_ _n._ gen._ also three well supported
clades are identifiable: _E. sicana_ and _E. vometroi_ are basal taxa of the clade; _E. agrestis_ and _E.
atrica_ are closely related; they form, together with _E. picta_ and _E. feminea_, a terminal clade
within this group.
The parsimony analyses resulted in 1 single tree (Tab. 2, tree not shown; jackknife support
>50 specified on the tree in Fig. 5). Using implied weighting k=5, jackknife values support
most mentioned clades specified above for the Bayesian analysis (Fig. 5), all three
_Tegenaria/Malthonica_ sensu lato clades with a value of 100 %. The most important exception
is that parsimony analysis did not resolve any generic relationship within Agelenidae, except
that _Malthonica_ constitutes a basal genus and that the Textricini/Agelenopsini/Agelenini clade
is monophyletic. Within the genus _Tegenaria_ the sister-relationship of _T. domestica/ariadnae_
and all other species collapse. Within *Eratigena* n. gen. the jackknife support suggest reduced stability of the mentioned clades (App. 3).

The Bayesian trees resulted from analyses of single genes or combined mitochondrial genes (COI, NADH1) do all show the same three well supported monophyletic *Tegenaria/Malthonica* sensu lato clades (Tab. 1, App. 2–3, Figs. 6–7). No partial analyses could resolve all clades detected by the most inclusive analysis, but, most probably due to different taxa composition, they could detect additional supported clades. The most obvious contradicting hypothesis is the placement of *Malthonica* (for 28S and NADH1 also the monophyletic *Malthonica* clade, including *M. lusitanica* and *M. oceanica*, with 100 % posterior probability) which clusters together with *Tegenaria* (in 28S, 98%, no jackknife support; in NADH1, 53 %, 58 % jackknife support) or with Agelenopsini/Agelenini, *Textricini* and *Eratigena* n. gen. (in combined mitochondrial analysis, 58 %, no jackknife support). The single analyses of the NADH1 sequences and the combined mitochondrial data could detect additional well supported (>90 % posterior probability) clades within the *Eratigena* n. gen. clade (*E. atrica+E. saeva; E. atrica+E. saeva+E. agrestis+E. feminea; E. sardoa+E. sicana+E. herculea*), and additional or contradicting clades in the *Tegenaria* clade (*T. eleonorae+T. parmenidis; T. rilaensis+T. campestris; T. silvestris+T. parvula+T. tridentina; T. parmenidis+T. circeoensis; contradicting placement of *T. domestica*). The single analysis of 28S sequences recovered four well supported clades (*T. hasperi+T. pagana; T. hasperi+T. pagana+T. silvestris+T. maronita+T. parvula+T. tridentina; T. campestris+T. ramblae; T. parmenidis+T. circeoensis+T. rilaensis*).

As for the most inclusive analyses, most well supported clades of the Bayesian analyses did also appear in the shortest trees (if more than one tree, in the strict consensus tree) computed during parsimony analyses (Tab. 2, App. 2–3, Figs. 6–7)

### 3.1.5. Combined analyses

The most inclusive Bayesian analysis with combined morphological and molecular data (Tab. 1) resulted in a tree with highly resolved clades for the genera (100 % posterior probability, Fig. 8). As it can be expected from the molecular data, the relationship between genera are much less supported and remain unresolved. Species relationships within the genera *Tegenaria* and *Eratigena* n. gen. are in correspondence with the combined DNA analysis with two exceptions: 1. *Eratigena picta* and *E. feminea* (71 % posterior probability, App. 3), 2. *Tegenaria ferruginea*, *T. parietina*, *T. campestris* and *T. tridentina* (99 % posterior probability, App. 3).

Parsimony analysis of all data combined (DNA and morphology) resulted in 1 most parsimonious tree (Tab. 1–2, partly shown in Fig. 8). The three clades in focus are, in correspondence with the Bayesian analysis, all very well supported (jackknife values 100, Bremer support 19 or >20). Genus relationship is not resolved and resulted in a polytomy. Within the genera *Tegenaria* and *Eratigena* n. gen., supported clades are very sensitive to different strength of implied weighting (App. 3).

### 3.2. Taxonomy

**Family: Agelenidae C. L. Koch, 1837**


Small to medium size araneomorph spiders; three tarsal claws; ecribellate; entelegyne; eight eyes; posterior spinnerets two-segmented, long and slender, with apical segment tapering
towards tip; tarsi with trichobothria increasing in length towards tip; colulus paired.” (Jocqué & Dippenaar-Schoeman, 2006: 60). In relation to European spiders only, agelenids are rather medium to large sized spiders.

All agelenids build a kind of sheet web with a special tube or funnel shaped retrait. Their webs are attached to various substrates (vegetation, rocks, caves, buildings).

3.2.1. Key to European agelenid genera

*Pseudotegenaria* Caporiacco, 1934 is excluded here because the remaining species of that genus, *P. parva* Caporiacco, 1934, is mentioned only for Libya and no specimen was available for examination.

1. Trochanter III and IV notched.................................................................................................................. 2
   - All trochanter straight or only slightly curved .................................................................................. 5
2. Dorsal and lateral spines present on patellae III and IV, 1-2 ventral spines present on tarsus IV .......................................................... *Aterigena* (5 spp.)
   - Only dorsal spines present on all patellae, tarsus IV ventrally lacking spine .................. 3
3. Colulus strongly reduced, only hairs present, patellar apophysis on male palps absent, median apophysis present.......................................................... 4
   - Colulus developed as median somewhat divided plate, patellar apophysis on male palps sometimes present, median apophysis absent ............................... *Histopona* (18 spp.)
4. Eyes fully developed, tarsi with less than 7 dorsal trichobothria, 1 or 2 bigger and several smaller teeth at the cheliceral retromargin............................ *Malthonica* (2 spp.)
   - Eyes very small or lacking, tarsi with 7 or more dorsal trichobothria, several equally big teeth at the cheliceral retromargin.......................................................... *Hadites* (1 sp.)
5. PER in dorsal view considerably recurved or procured, AER in frontal view ether considerably recurved or slightly recurved, patellae I and II with dorsal and prolateral spines, colulus clearly divided into two hairy plates.......................................................... 6
   - Both eye rows in frontal and dorsal view more or less straight (eyes may be reduced), patellae with dorsal spines only, colulus trapezoidal plate with the distal margin straight, “w”-shaped or with a notch.................................................................................. 12
6. Eye rows in dorsal view recurved, PME biggest, feathery hairs absent or conspicuously different to the hairs of *Tegenaria* sensu lato.............................................................................................. 7
   - Eye rows in dorsal view procured, PME never biggest, feathery hairs present............... 9
7. Conductor at the male palp with a conspicuous laterodorsal projection, femur of male palp with a flat but obvious prominence, no patellar apophysis, epigyne with large atrium .......................................................................................... *Maimuna* (7 spp.)
   - Conductor at the male palp without laterodorsal projection, femoral apophysis absent, patellar apophysis sometimes present, epigyne with posteriorly protruding pocket or slightly raised median portion .................................................................................. 8
8. Conductor simple, median apophysis absent, patellar apophysis absent, epigyne with posteriorly protruding pocket .......................................................... *Textrix* (7 spp.)
   - Conductor more complex, median apophysis present, patellarapophysis present, epigyne with slightly raised median portion........................................ *Lycosoides* (10 spp.)
9. Anal tube with very strong and special “spikes”, conductor differently shaped but never helical, Epigynal plate not completely longitudinally divided.................................................. 10
   - Special spikes absent at the anal tubes, helical conductor, epigynal plate with 2 clearly divided copulatory openings ......................................................... *Benoitia* (9 spp.)
10. Embolus either broad and short or spiral elongated with an attached membrane, conductor complex, anterior margin of epigynal atrium without scapus..............................}
- Embolus thin and filamentous, conductor simple, anterior margin of epigynal atrium with protruding scapus ..................................................Agelescape (7 spp.)
11 Patellar protuberance absent, two tibial apophysis, short and broad embolus, vulva with a innerly originating spermathecal head, spermathecal apophyses present ....Agelescape (7 spp.)
- Patellar protuberance with a long spine, one tibial apophysis, long spiral embolus with attached membrane, vulva with a laterally or medially originating spermathecal head, spermathecal apophyses present..................................................Allagelena (5 spp.)
12 6 or more teeth (some equally big ones, rest getting smaller more distally) at the cheliceral retromargin, RTA mostly with 2 branches, lateroventral ridge absent, conductor with a membranous or massive (not very strongly sclerotised) transversal ridge, terminal end not bifid (only in montigena) with ventral terminal ending expressed as elongated point or more complex (several points or spiral), median apophysis strongly (by sclerotization) attached to the tegulum (sometimes only membranous), distally with a simple pocket like sclerit, vulva irregularly sclerotised (enclosed convoluted duct) and/or with diverticula attached to the copulatory duct (exception: E. sicana with a kind of two ST) .................................................................Eratigena n. gen.
- 3 to 6 almost equally big teeth at the cheliceral retromargin, RTA mostly with three branches or strongly protruding bulge and lateroventral ridge, lamelliform conductor, sometimes with a sclerotised transversal ridge, terminal end often bifid with ventral ending simple, median apophysis strongly protruding with distal sclerite plate like or more complex, vulva only convoluted duct or with more or less regularly sclerotised, globular spermathecae..........................................................Tegenaria

3.2.2. Genus diagnosis and description: Eratigena n. gen.

Genus: Eratigena n. gen.

Type species: Tegenaria atrica C. L. Koch, 1843, present designation.

Etymology
Eratigena is an anagram of Tegenaria, gender feminine.

Diagnosis
Agelenid spiders bearing the combination of following characters: plumous hairs present (absent in Lycosoides, Maimuna and Textrix). AER and PER straight or only slightly pro- or recurved in dorsal view (both rows recurved in Lycosoides, Maimuna and Textrix; both rows procured in Agelescape, Allagelena and Benoitia) and moderately procured in frontal view (AER strongly procured in Agelescape, Allagelena, Benoitia and Malthonica; AER recurved in Lycosoides, Maimuna and Textrix). Cheliceral retromargin with 6 and more teeth (less than 3 teeth in C. Lycosoides, Maimuna and Textrix; 6 or less teeth in Tegenaria) getting smaller in size from distal to proximal (all equal in Tegenaria). Trochanter straight or slightly curved (notched in Aterigena, Histopona and Malthonica). Patellae with dorsal but no lateral spines (as is in Histopona, Malthonica and Tegenaria; all other European genera with lateral patellar spines). Absence of ventral spines at all tarsi (as is in Malthonica and Tegenaria; all other European genera with ventral spines). Colulus expressed as rectangular or trapezoidal plate with the distal margin straight or “w”-shaped (in Tegenaria trapezoidal and notched medially; colulus strongly reduced in Hadites and Malthonica; two separated plates in all other European Agelenids). Females with 1 minor ampullate gland spigot, very prominent, and 2–4 cylindrical gland spigots distally on PMS (as in some species
of *Aterigena* and *Malthonica*, all other European genera with other pattern). Male palp: RTA with 1 or 2 branches, may also be reduced (more complex in most *Tegenaria*), palp tibia often with short dorsal spike (absent in all other European genera), filiform embolus, mostly with massive conductor (lamelliform in *Tegenaria*) with a membranous or massive transversal ridge (as in *Lycosoides*, *Maimuna* and *Textrix*; in other genera absent or thin sclerotised) and a complex or strongly elongated terminal ending (as in *Allagelela* and *Maimuna*; simple in *Tegenaria*), only moderately elongated median apophysis with distal plate like sclerite (absent in *Histopona* and *Textrix*; without sclerite in *Agelena*, *Agelescape* and *Benoitia*). Female: epigyne without separated or strongly fused median area (as in *Agelena*, *Agelescape*, *Allagelela*, *Benoitia*, *Lycosoides* and *Maimuna*; clearly separated in *Tegenaria*). Vulvae with an irregularly sclerotised RC with enclosed convoluted ducts or with distinct appendages at the copulatory duct (exception: *E. sicana*).

**Description**

Body size medium to large (carapace length between 2 and 7 mm). Margin of carapace narrowly and continuously darkened, continuous (for cave living species, pigmentation is absent); two symmetric longitudinal dark bands dorsally on carapace present, serrated, continuous or reduced to 3 to 4 pronounced triangles. Sternum slightly longer than wide with a distinct pattern of pale median region, sometimes additionally with 3–4 lateral spots; plumose hairs present on carapace, legs and opisthosoma. Chelicerae with 3 promarginal teeth and 6 or more retromarginal teeth; retromarginal teeth getting distinctively smaller more proximally. Labium mostly as wide as long. AER and PER straight or only slightly pro- or recurved in dorsal view and moderately procured in frontal view. Anterior eyes bigger than posterior eyes or lateral eyes bigger than median eyes or all equal, except AME somewhat smaller. All trochanter straight or slightly curved. Leg I or IV longest, III shortest. Legs can be without pattern, only coxa and proximal of femora darkened, annulated or completely darkened. Palp and leg spination: palpal femora with 1–2 dorsal and sometimes 1 pro- and/or 1 retrolateral spines, female palp tibia with 2 dorsal and either 1 + 1 pair or 2 or 2 paired prolateral spines; male palp tibia dorsodistally often with a short spike and prolateral with 1 + 1 pair, 2 or 2 pair of spines; all leg femora with 1–2 dorsal spines and variable lateral spines; patellae with 2 dorsal and no lateral spines; number of dorsal spines on metatarsi variable; metatarsus I without or 1 prolateral spine, others variable; metatarsi III and IV with 1 pair +1 ventrodistal spines; tarsi I and II spineless, III and IV with 0 to several prolateral and 1 to several retrolateral spines, no ventral spines. Spinnerets: colulus developed as rectangular or trapezoidal plate with the distal margin straight or “w”-shaped. ALS one segmented, distally with a field of several pyriform spigots and medially with 2 major ampullate spigots (present in all Agelenids). PMS as long as or slightly shorter than ALS, bearing 1 conspicuously prominent spigot. PMS with 1 minor ampullated and 2–4 cylindrical gland spigots, 1 medially and 2–4 more posteriolaterally and several aciniform gland spigots. PLS longer than all others with distal segment as long as or longer than basal segment. PLS bearing typically 1 basal and 1 medial cylindrical gland spigots. Male palp without femoral apophyses, patellar apophysis can be present. RTA mostly with 2 branches and low complexity (in some species several short or bent points can be expressed), can also be reduced to one branch or even be absent. Embolus filiform, getting thinner to apex. Conductor mostly massive (thick and broad, if not then always median with a white membranous part), transversally with a membranous or massive ridge, mostly indistinct elongated distal portion (exception: *E. picta*) and lateral margin folded along the terminal half or the whole length, terminal end consists mostly of one elongated peak or a more complex structure (spiral, several points) but dorsally only rarely with rounded bulge. Median apophysis mostly not protruding, (as wide as or wider than long, exception e. g. *E. sardoa*), consisting of membranous base and distal sclerite which is pocket- or spoon-like shaped and can be fixed to the tegulum by strong sclerotisation. Epigynal plate
strongly sclerotised without or with strongly fused median plate; epigynal plate can show a distinct, cave-like atrium. Posterior sclerite is either absent, a big bulge or expressed as a strongly sclerotised transversal plate, protruding ventrally (posteriorly of the copulatory openings!). Epigynal teeth mostly present, originating posteriorly of the genital openings, but may be reduced or expressed as “pseudo teeth” (= elongation of lateral margin of atrial region). Vulvae at least partly with irregularly sclerotised structure enclosing a convoluted duct or with appendages at the copulatory duct (may be homologous to “spermathecal head”, see e.g. Bennett, 2006 or Sierwald, 1989) (exception: *E. sicana*). Fertilisation ducts only represented by the short leaf shaped appendages.

Distribution
Most species are limited to Italy, France and the Iberian Peninsula. *E. agrestis* and the species of the *E. atrica*-complex occur also in Central Europe, Great Britain as well as North America where they may have been introduced.

### 3.2.3. Key to European *Eratigena* n. gen. species

1. Legs distinctly annulated, at least two femora with more than 2 dorsal spines, male bulb with distinct and massive transversal ridge at conductor base (Fig. 19 A), vulva with distinct and long appendages at the CD ................................................................. 2
   - Legs either pale, completely darkened or only coxa and proximal part of femora darkened (exception: *E. sicana*, legs may be annulated), other characters different ....... 3
2. Basal part of MA very strongly sclerotised, transversal ridge at conductor base with distinct border line of sclerotisation, long appendix anteriorly of CD shorter than RC height .................................................................................................................... *inermis*
   - Basal part of MA less sclerotised, transversal ridge at conductor base without special border line of sclerotisation, long appendix anteriorly of CD reaches at least to the top of the RC ................................................................. *vomeroi*
3. Trichobothria on female tarsal tibia and on male cymbium present, length of male tibia I shorter or equal the length of carapace ........................................................................ 4
   - Trichobothria on female tarsal tibia and on male cymbium absent, male tibia I longer than carapace (exceptions: *E. fuesslini* and *E. bucculenta sensu Barrientos, 1991*) .......... 7
4. Patellar apophysis at male palp present, RTA strongly reduced, epigyne with special posterior plate, protruding posteriad (Figs. 14, G, I, K, 15 B, D) ........................................... 5
   - Patellar apophysis absent, RTA with two simple branches, distally truncated, epigyne without posterior sclerite ........................................................................ 6
5. Patellar apophysis with 2 well separated points, conductor as long as the alveolus with straight terminal end, epigynal posterior sclerite rectangularly shaped, copulatory openings lateral ................................................................................................. *feminea*
   - Patellar apophysis with 3 moderately separated points, conductor shorter than the alveolus with terminal end bent ventrad, epigynal posterior sclerite more triangular, copulatory opening anterior ........................................... *E. bucculenta* (sensu Machado, 1941)
6. Male palp with pyramidally shaped structure at conductor connection, terminal end of conductor pointing orthogonally away from cymbium (in lateral view), vulva with small diverticula at copulatory duct originating laterally, egg-shaped receptacula irregularly sclerotised .................................................................................................................. *barrientosi*
   - Male palp without conspicuous structure at connection of conductor, terminal end of conductor pointing dorsad or posteriad (in lateral view), vulva with small diverticula at copulatory duct originating dorsally, globular receptacula smoothly sclerotised ........... *incognita*
7 Legs with only coxa and proximal part of femora darkened (exception: E. fuesslini, completely darkened), distal segment of PLS as long as or only marginally longer than basal segment, median apophysis on male left palp originating 7–9 o’clock, basal portion of tegulum not visible between embolus and conductor in ventral view (Fig. 10 A), epigyne with “pseudo teeth” (Fig. 12 A, C) or with distinct atrial cavity in combination with a posterior sclerite expressed as a big bulge ............................................. 8
- Legs either pale or completely darkened (exception: E. sicana, legs may be annulated), distal segment of PLS longer than basal segment, median apophysis on male left palp originating 5–7 o’clock, basal portion of tegulum visible in ventral view (Fig. 13 E), epigyne different ........................................................................................................................................ 10

8 Sternum with a pattern of a pale median band and symmetric pale dots laterally, female tibia I longer than carapace length, origin of embolus at 10–11 o’clock, terminal end of conductor simple, epigynal “pseudoteeth” present, atrium without a distinct cavity ...... ......................................................... atrica-complex
- Sternum with a pale median band, female tibia I shorter than or as long as carapace length, origin of embolus at 8–10 o’clock, terminal end of conductor complex, epigynal teeth present, atrium forms a distinct cavity in combination with a posterior sclerite expressed as a big bulge ......................................................................................................................... 9

9 Carapace larger than 4.8 mm, conductor very broad in retrolateral view with a very complex terminal end, epigyne with a posterior sclerite expressed as a big bulge, not protruding posteriad, copulatory ducts relatively short.............................. agrestis
- Carapace shorter than 4.5 mm, conductor relatively slender in retrolateral view with a bifid terminal end, epigyne with a posterior sclerite expressed as a big bulge protruding posteriad, copulatory ducts relatively long ........................................................................ fuesslini

10 Distal portion of conductor not elongated (shorter than broad), lateral margin of conductor folded only at the terminal half, transversal ridge massive and moderately protruding, epigyne and vulva as in Figs. 13 G–H and 14 N–P....................................................... 11
- Distal portion of conductor moderately to strongly elongated, lateral margin of conductor completely folded, transversal ridge (if present) only expressed as a membranous ridge, epigyne and vulva different................................................................. 12

11 RTA strongly protruding ventrad, terminal end of conductor bifid and with additional spur (Fig. 13 F, black arrow), strongly sclerotised epigynal plate with two symmetrically arranged reniform depressions with its copulatory openings (Fig. 13 G)........... montigena
- RTA simple, terminal end indistinct with only one somewhat elongated point, epigyne with posterior sclerite expressed as strongly sclerotised and protruding plate (median of the atrium) ................................................... bucculenta (sensu Barrientos, 1991)

12 Dorsal branch of RTA dorsally bent posteriad (Fig. 17 A), short dorsal spike at male palp tibia present, terminal end of conductor bent or convoluted, complex, median apophysis only moderately protruding, epigyne with a distinct atrial cavity......................... 13
- Dorsal branch of RTA different, short dorsal spike at male palp tibia absent, terminal end of conductor simple elongated point, median apophysis protruding, epigyne with a distinct posterior sclerite expressed as a protruding sclerotised plate or with a strongly posteriad protruding portion (Fig. 16).................................................................................................... 14

13 Distal portion of conductor strongly elongated, terminal end of conductor convoluted, relatively short male palpal tibia, CD barely visible through epigynal plate, vulva with very long and convoluted CD (Fig. 17 F)................................................................................................... picta
- Distal portion of conductor only moderately elongated, terminal end of conductor bent, relatively long male palpal tibia, CD distinctly visible trough epigynal plate, vulva with short CD ................................................................................................. balearica
Eyes very small, clypeus higher than 3 x AME, at least 1 pair of spines prolateral at palp tibia, 7 or more tarsal trichobothria, dorsal branch of RTA distinct (Figs. 16 L–M)
- female tibia I longer than carapace, appendages at copulatory ducts long .............................. 15
- Eyes larger, clypeus lower than 3 x AME, 2 (not paired) prolateral spines at palp tibia, up to 6 tarsal trichobothria, dorsal branch of RTA different, female tibia I shorter or equal length of carapace, appendages at copulatory ducts short or absent .......................... 16

Carapax shorter than 3.5 mm, distal tip of conductor not reaching distal margin of alveolus, epigyne lacking distinct membranous region anteriorly of posterior sclerite, vulva with short convoluted appendages ............................................................... herculea
- Carapax longer than 4 mm, RTA as in Fig. 16 L–M, distal tip of conductor reaching distal margin of alveolus, epigyne with distinct membranous region anteriorly of posterior sclerite, vulva with long convoluted appendages.................................................. hispanica

Dorsal branch of RTA 3-pointed (Fig. 16 O), vulva with oblong oval and irregularly sclerotised (enclosing convoluted ducts) receptacula ................................................. arganoi
- Dorsal branch of RTA with 1 point, vulva with globular and smoothly sclerotised receptacula.................................................................................................................. 17

Ratio bulb to cymbium length larger than 0.65, terminal end of conductor expressed as a strongly posteriad elongated point, epigyne with a strongly posteriad protruding portion, vulva with very long convoluted ducts ................................................................. sardoa
- Ratio bulb to cymbium length smaller than 0.60, terminal end of conductor inconspicuous, epigyne with a posterior vulva .............................................................. sicana

3.2.4. Eratigena n. gen. species

The following species are listed in alphabetic order. For each taxon, taxonomical and nomeclatorial relevant references are provided (first descriptions, synonymies, etc.). Additional citations concerning the distribution (see e. g. van Helsdingen, 2009) or published illustrations see Bonnet (1959) and Platnick (2010).

The examined material is listed in the following order: Country: state/region/canton: commune, locality, number of specimens (comments, Collection code, voucher number), collecting date, collector(s).

Eratigena agrestis (Walckenaer, 1802) new combination
Figs. 2 A, 9 c–f, 10 A–H

Aranea agrestis Walckenaer (1802): 216.
Tegenaria agrestis Walckenaer (1805): 50.
Tegenaria alpestris Walker (1864): 9276; probably lapsus (see P. Bonnet, 1959: 4269).
Tegenaria rhaetica Thorell (1875b): 94, female; Thorell (1875a): 79.
Tegenaria magnacava Exline (1936): 23, pl. 1, fig. 3, male; Exline (1938): 24, pl. 4, fig. 34, female.
Tegenaria osellai Brignoli (1971a): 76–79, figs. 20–22, new synonym.
Tegenaria trinacriae Brignoli (1971a): 79–81, figs. 23–25, new synonym.

Type material examined
Type material of Eratigena agrestis, T. rhaetica and T. magnacava was not available for examination.


Other material examined

**Austria:** Pfaffenberg, 2 $, 1 £ (SMF, 24022/3-135); **Tyrol:** 1 $ (MNHN, 1951), L. Koch.

**Croatia:** Dubrovnik-Neretva: Dubrovnik, Ragusa, 1 $, 1 £ (NHMW), 1896, Reimoser.

**Czech Republic:** Středočeský kraj: Kopec, close to Odolena Voda, 7 £ (NMB, AB606), 30.IX.2006, Bolzern & Buchar; **Zlínský:** Radotin, 1 $ (SMF, 17647/1-135), 28.IX.1960, Zdarkova.

**France:** Alpes-de-Haute-Provence: La Palud sur Verdon, 1 £ (SMF, 34070-135), VII.1982, Müller; Briançon, Orpierre, 1 $ (SMF, 33288-135), 26.IX.1982, Müller; **Alpes-Maritimes:** Sospel, 1 $ (NMB, AB982), 6.IX.2008, Schönhofers; Grasse, “nahe Quelle der Siagnole”, 1 £ (NMB, AB824), VIII.2007, Wunderlich; **Var:** Toulon, la Crau, 10 $, 10 £ (MNHN, 1951), 12.XI.1913; Callian, 1 $, 1 £ (MNHN); Pyrenees-Orientales: Banyuls, 10 $, 10 £ (MNHN, 1951), 12.XI.1908; Prades, Villefranche-de-Conflent, Grotte de Villefranche, 1 £ (MHNG), III.1906, Revilliod; La Massane, 2 £ (MNHN, 1951), 20.XI.; Massane, 1 £ (MCSN, 540), II.1969, Marcuzzi; **Isère:** Gorges de la Romanche, below Rochetaillée, 1 £ (NMB, AB989), 1.X.2008, Schönhofers; **Ardèche:** Roche Sauve, “pl. du Choiron”, 1 £ (MHNG), 16.VIII.1971, Billaud.


Romania: Batin, Sibin, 1 £ (MCSN, 540), 27.VIII.1972, Rampini.


Switzerland: Ticino: Mte. S. Giorgio, Cugnoli, 1 £ (NMB, 384 d), 3.X.1989, Hänggi. No data, 1 £ (NHMG), Lindberg; “Umgebung Basel” (includes parts of Switzerland, Germany and France), 11 £, 19 £ (NMB, 384 b), Schenkel; La Grandièr, 1 £ (MNHN, 1951), 30.IX.1917, Dalmas (this specimen is labeled as “neotype” by de Blauwe; this has never been published and is therefore invalid).

North America


Diagnosis

E. agrestis can be separated from other Eratigena n. gen. species by leg coxa and proximal parts of femora darkened (spotted, as in the atrica-complex, all other Eratigena n. gen. species with different patterns), short dorsal spike at male palp tibia present (as in the atrica-complex, E. fuesslini, E. barrientosi, E. montigena, E. picta and E. balearica, all other species absent), MA expressed as a broad pocket, strongly attached to the tegulum, originating at 7–9 o’clock (as in atrica-complex and E. fuesslini, in all other species more basal, 5–7 o’clock), basal portion of tegulum almost completely hidden by upper part (embolic devision) of tegulum (as in atrica-complex, E. fuesslini, and to some extend also in E. sardoa, in all other species of Eratigena n. gen, good visible), the distinct terminal end of the conductor, and the atrial cavity posteriorly limited by a big bulge, bearing epigynal teeth pointing posteriomedial (these characters do show variation to some extend). From the closely related species, E. fuesslini, it can be separated by the body size (E. fuesslini much smaller than E. agrestis), the broad conductor (in retrolateral view, less broad in E. fuesslini), the terminal end of the
conductor, the posterior bulge at the epigyne (not protruding to posterior in *E. agrestis* but in *E. fueslini*).

**Description**

**Measurements**

Male (n=2): CL 5.0–5.25, CW 3.5–3.75, STL 2.3, STW 2.0–2.23, OL 5.0–6.0, OW, 3.25–3.5. Leg I (5.4–6.0, 1.75–2.0, 5.5–6.0, 5.35–5.75, 3.15–3.4), II (4.5–5.0, 1.65–1.85, 4.2–4.5, 2.5–2.75), III (4.1–4.15, 1.5, 3.5, 4.3–4.5, 2.15–2.35), IV (5.25–6.0, 1.75–1.85, 5.1–5.25, 6.1–6.35, 2.75–3.0). Pedipalp (2.23, 0.96, 0.83, 2.2–2.25), bulbl 1.25–1.5.

Female (n=3): CL 5.4–6.1, CW 3.7–4.25, STL 2.65–2.85, STW 2.35–2.5, OL 5.5–8.85, OW 3.75–5.75. Leg I (5.55–5.75, 2.0–2.15, 5.1–5.75, 4.9–5.25, 2.95–3.1), II (4.8–4.85, 1.85–2.0, 3.75–4.25, 4.1–4.5, 2.35–2.5), III (4.5, 1.65–2.0, 3.2–3.65, 4.5–4.75, 2.0–2.4), IV (5.7–6.0, 1.9–2.0, 4.9–5.5, 6.35–6.65, 2.6–2.8). Pedipalp (2.2–2.35, 1.02–1.06, 1.36–1.38, 2.29–2.42).

EPL 0.95–1.04, EPW 1.1–1.4, ATL 0.3, ATW 0.55.

Eyes: PME 0.18–0.19, PLE 0.21–0.24, AME 0.22–0.23, ALE 0.23–0.24. Eye distances: PME-PME 1.5 x PME, PME-AME 1 x PME, PME-PLE 1–1.5 x PME, PME-ALE 1.5 x PME, AME-AME 0.5–1 x AME, AME-ALE <0.5 x AME. CLY1 2–3 x AME, CLY2 2–2.5 x AME. 

**Male palp**

RTA with 2 branches, lateral branch simple and pointed, dorsal branch a broad apophysis, distally truncated and variable shaped (from one bigger and several smaller points to almost only one point). Short dorsal spike on palp tibia present. Embolus base between 9–10 o’clock. Embolus less than 1.5 CB with distal tip at 3–4 o’clock. Conductor massive and very broad (in retrolateral view), anteriodistally not elongated, folded only at the terminal half which is strongly twisted ventroposterolaterally. Terminal end very complex, consisting of 2 to 3 strongly sclerotised, stepped and elongated points (can be very variable in size). Retrolaterally, conductor distinctly furrowed. Transversal ridge at the conductor consists of a membranous lamella. Connection of conductor to tegulum is membranous. MA wider than long, originating at 7–8 o’clock, only moderately protruding, distal sclerite plate like shaped forming a pocket, connection of MA at least partly strongly sclerotised.

**Epigyne and vulva**

Epigyne medially with a distinct atrial cavity, posteriorly limited by a posterior sclerite expressed as a distinct big bulge (due to variation, this bulge can be strongly extended anteriorly, described in Lit., e.g. Brignoli (1971a)), which is strongly fused to the epigynal plate. Epigynal teeth present, originating lateral on the posterior bulge, pointing posteriomedial. Vulva consists of distinguishable CD, RC and FD. CD very short and curved, distinct appendages absent. RC irregularly oblong and not constantly sclerotised enclosing convoluted ducts, separated by about their diameter or less. FD only represented by small leave shaped appendages.

**Other important characters**

Cheliceral retromargin with 6–9 teeth. Colulus rectangularly shaped with distal margin “w” shaped. PMS with 1 prominent minor ampullate gland spigot and 3–4 cylindrical gland spigots laterally. Tarsal trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 7–10. Denticles at paired claw of leg I 17–18. Leg spination: male palp (2–0–0–0, 2–0–0–0, 1–2p–0–0 or 2–2p–0–0), female palp (2–0–0–0, 2–0–0, 2–2p–0–0), leg femora (2–2–0–0 or 2–3–0–0 or 2–2–1–0 or 2–2–2–0 or 2–3–1–0 or 3–2–1–0, 2–2–1–0 or 2–2–3–0 or 2–3–2–0 or 2–3–2–0 or 2–3–3–0, 2–1–1–0 or 2–2–1–0), patellae (all 2–0–0–0), tibiae (0–0–0–3p or 0–0–0–3p+1 or 0–0–0–4p, 0–1–0–3p or 0–1–0–3p+1 or 0–2–0–3p, 2–2–2–3p+1, 1–2–2–3p+1 or 2–2–2–3p or 2–2–2–3p+1), metatarsi (0–0–0–4p+1, 0–2–0–5p, 1–4–4–5p or 1–4–4–5p+1, 1–4–4–1p+2+3p), tarsi (I–II 0 (in males 1 prolateral spike on tarsus II possible), III 0–2–3–0; IV 0–2–3–0 or 0–2–4–0).

**Colouration**
Carapace with weakly serrated symmetric longitudinal dark bands. Sternum with distinct pale median region. Opisthosoma darkened green-brownish, at the cardiac mark yellowish, continuing posteriorly in broad chevrons (~5). Legs not annulated, only coxa and proximal part of femora with dark spotted. ALS and both segments of PLS dorsally darkened.

Distribution

*E. agrestis* is known from most European countries. This species has been introduced to North America in the early years of the last century (Baird & Stoltz, 2002; Roth, 1968).

Discussion

The examination of a large number of specimens from a wide geographical range showed clearly, that different characters of this species, in particular the male and female genital structures, are highly variable. In females, this variation has been documented by Bignoli (1971a) and in the present work by the Figures 10 E–F. Surprisingly, Brignoli did not expect such a high variation in males. This led him to describe two new species: *T. osellai* and *T. trinacriae* (Brignoli, 1971a). In his description he mentioned that both species are very close to *T. agrestis* and that they differ only by the shape of the distal end of the conductor and the dorsal branch of the RTA. This observation is obviously true. But after the examination of a large number of specimens, also from locations close to the type localities of the two other species, these differences seem not to be constant and, therefore, reflect intraspecific variation. Brignoli’s two species represent extreme forms of *E. agrestis*. It is noticeable that the descriptions of both species are each based on a single male only.

*Eratigena arganoi* (Brignoli, 1971) new combination

Figs. 16 C–D, H, N–O


Type material examined

Paratype. Italy: Lazio: Roma, Altopiano di Arcinazzo (MHNG); 17.IV.1966, Brignoli.

Other material examined

**Italy:** Abruzzo: L’Aquila, Street close to Rovere – Secinaro, 1 £ (NMB, AB770), 8.VI.2007, Bolzern; Teramo, Tossicia, Tozzanella, verso Colle Petato, Gran Sasso, 13 $ (MSN, 002), 27.VIII. and 3.X.2002, Marotta, Carissimi & Di Marco; Teramo, Rocca Santa Maria, Monti della Laga, 3 $, 1 £ (MSN, 002), 28.X.2001 and 6.X.2002, Marotta; Basilicata: Potenza, San Severino Lucano, 6 $, 2 £ (MSN, 003), VI.1990, 1993, Buttarelli, Ghilardi, Pantini & Valle; Potenza, Lucania, Accettura, 1 $, 2 £ (MSN, 002), 21.VIII.1991, Giachino; Calabria: Parco Naz. Del Pollino, Cosenza, 1 £ (was juvenile, raised in the lab, NMB, AB783), 31.V.2007, Bolzern, Lazio: street from Cave to Valmontone, 1 £ (SMF), 10.IV.2006, Schönhofer; Castelnuovo di Farfa, Gr. Scura, 1 £ (MSN, 004), 26.I.2003, Sbordoni; Marche: Macerata, Fiuminata, Passo Cornello, 1 $, 2 £ (MSN, 003), VI.1991 and VI.1992, Buttarelli, Ghilardi, Pantini & Valle; Ascoli Piceno, Montemonaco, Isola S. Biagio, 1 £ (MSN, 001), 23.VI.2004, Rismondo & Fabbri; Macerata, Castelsantangelo sul Nera, Sopra Rapestegna, 1 £ (MSN, 003), VI.1991, Buttarelli, Ghilardi, Pantini & Valle; Umbria: Perugia, S. Giustino, Parnacciano, 1 $, 3 £ (MSN, 003), VI.1992, Pantini & Valle; Perugia, Sigillo, Monte Cocco, 4 £ (MSN, 003), 15.VI.1992, Buttarelli, Ghilardi, Pantini & Valle; Perugia, Nocera Umbra, Colle Aprico, Pendici Monte Pennino, 6 $, 1 £ (MSN, 003), VI.1991, Buttarelli, Ghilardi, Pantini & Valle; Perugia, S. Giustino, Monte Moziccio, 3 £ (MSN,
Diagnosis
The differentiation of *E. arganoi*, *E. sardoa* and *E. sicana* ("arganoi – group") from other *Eratigena n. gen.* species is provided in the diagnosis section of *E. herculea*. The "arganoi – group" can be separated from *E. herculea* and *E. hispanica* by having 2 prolateral spines at the palp tibia (in males and females, other species with 1 pair of spines), the small number of tarsal trichobothria (more than 6 in the other species) and the PMS bearing 2 cylindrical gland spigots laterally (others with 3–4). *E. arganoi* can be separated from *E. sardoa* and *E. sicana* by the very special, 3-pointed dorsal branch of the RTA (only one point in the other species), the very long and convoluted CD with attached diverticula (as in *E. sardoa*, much shorter and straight in *E. sicana*) and the oblong oval and irregularly sclerotised RC (globular and smoothly sclerotised in the other species).

Description

Measurements
Male (n=1): CL 2.16, CW 1.65, STL 1.23, STW 1.08, OL 2.31, OW 1.62. Leg I (2.85, 0.88, 2.64, 2.67, 1.42), II (2.32, 0.80, 1.90, 1.94, 1.16), III (2.15, 0.75, 1.65, 2.12, 1.12), IV (2.96, 0.82, 2.54, 3.04, 1.35). Pedipalp (1.12, 0.42, 0.49, 0.95), bulbL 0.69.
Female (n=1): CL 1.80, CW 1.30, STL 1.00, STW 0.89, OL 2.47, OW 1.63. Leg I (1.83, 0.70, 1.57, 1.51, 1.09), II (1.55, 0.61, 1.14, 1.24, 0.83), III (1.49, 0.57, 1.10, 1.39, 0.73), IV (2.02, 0.63, 1.73, 2.03, 1.03). Pedipalp (0.78, 0.33, 0.48, 0.77). EPL 0.41, EPW 0.54, ATL 0.13, ATW 0.22.

Eyes: PME 0.09–0.12, PLE 0.09–0.11, AME 0.06–0.08, ALE 0.10–0.12. Eye distances: PME-PME 0.5–1 x PME, PME-AME 0.5–1 x PME, PME-PLE 0.5–1 x PME, PME-ALE 0.5–1 x PME, AME-AME 0.5–1 x AME, AME-ALE <0.5–0.5 x AME. CLY1 2–2.5 x AME, CLY2 0.5–1 x ALE.

Male palp
RTA with 2 branches, lateral branch only slightly protruding, lobe like, dorsal branch strongly sclerotised and protruding, distally curved triangularly shaped with 3 points. Short dorsal spike on male palp tibia absent. Embolus length about 0.75–1.25 CB, originating at 10 o’clock, distal tip at 4 o’clock. Conductor with distal portion moderately elongated, as long as wide, not reaching distal margin of alveolus, lateral margin folded. Terminal end simple, long drawn out and pointed. Transversal ridge at conductor weakly expressed as membranous lamella. Conductor membranously connected to tegulum. MA originating at 6–7 o’clock, protruding, longer than wide, distally with plate like sclerite forming a spoonlike structure, membranously connected with tegulum.

Epigyne and vulva
Epigyne with a distinct posterior sclerit, forming a strongly sclerotised, triangularly shaped and protruding pocket, opening posteriorly. Epigynal teeth present, originating distally of the posterior sclerit, pointing posteriomedially. CO located anteriolaterally of the posterior sclerit. Vulva consists of distinguishable CD, RC and FD. CD long and convoluted with attached appendages. RC long oval, irregularly formed and sclerotised enclosing convoluted duct, separated by about the diameter. FD only represented by small leave shaped appendages.

Other important characters
Cheliceral promargin with 3, retromargin with 8–9 teeth. Colulus rectangularly shaped with distal margin almost straight. Distal segment of PLS longer than basal segment. PMS with 1 prominent minor ampullate gland spigot and 2 cylindrical gland spigots laterally. Tarsal trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 6. Denticles at paired claw of leg I 12–13. Leg spination: male palp (2–0–0–0, 2–0–0, 1–2–0–0), female palp (1–0–
0–0 or 2–0–0–0, 2–0–0, 2–2–0–0), leg femora (2–1–0–0, 1–1–1–0 or 2–1–1–0, 2–1–1–0, 1–1–1–0), patellae (all 1–0–0), tibiae (2–0–0–1 or 2–0–0–2p, 2–0–0–2 or 2–1–0–2+1p, 2–2–1–0 or 2–2–1–1+1p+1, 2–2–2–1+1p+1 or 2–2–2–3), metatarsi (0–0–0–1+2p+1 or 0–0–0–1p+1+2p+1, 0–0–0–3p+1 or 0–1–0–3p+1, 0–3–2–3p+1 or 0–3–3–3p+1, 0–3–3–1p+1+2p+1 or 0–4–3–1p+1+2p+1), tarsi (I–IV 0).

**Colouration**
Carapace dorsally with two symmetric longitudinal dark bands, sometimes reduced. Sternum with a distinct pale median region. Opisthosoma brown-grey-green, dorsoanteriorly with two symmetric longitudinal pale bands continuing posteriad in chevrons and spots. Legs without a pattern. ALS indistinctly darkened, PLS both segments darkened.

**Distribution**
Endemic to mainland Italy.

**Discussion**
Drawings of the male palp are provided by Bolzern et al. (2008). Drawings of both sexes, also with comment on the variation, are given by Brignoli (1971a, 1977a).

**E. atrica – complex**
Comprising 3 nominal taxa: *Eratigena atrica*, *E. saeva* and *E. duellica*. For the separation of the three species, see Merret (1980) and Oxford (2008).

*Eratigena atrica* (C. L. Koch, 1843) new combination, type species of the *Eratigena* n. gen.
Figs. 2 B, 9 a–b, 11 A–D, 12 A–B, G–H,

*Tegenaria atrica* C. L. Koch (1843): 105–107, fig. 825.
*T. larva* Simon (1875): 86–87, Planche V: fig. 8.
*T. nervosa* Simon (1870): 273–275, synonymised by Simon (1937), reactivated by Brignoli (1978a) but only based on drawings.
*T. hibernica* O. P.-Cambridge (1891): 86, fig. 4, male; Cambridge (1893): 150, fig. 6, female.
*T. praegrandis* Fox (1937): 176–177, fig. 3.

Type material examined
No type material available for *Tegenaria atrica, T. larva, T. nervosa* and *T. derouti* in the collection of the MNHN or NHML.

Other material examined
**Austria: Salzburg:** Salzburg, 1 £ (NMB, AB265), 21.IX.2005, Bergthaler; **Vienna:** Wien 23, Siebenhirten, 1 £ (NHMW), 24.XI.1988, Hamberger; **Kärnten:** Mallnitz, 2 £ (SMF, Roewer 9068); Döbriach, 1 $ (SMF), 28.VII.1993, Schomecher.
**Czech Republic: Ústecky kraj:** Rana close to Louny, 2 £ (NMB, AB802, AB844), 1.X.2006, Bolzern.

**Diagnosis**

E. atrica, E. saeva and E. duellica can be separated from all other Eratigena n. gen. species having leg coxa and proximal parts of femora darkened (spotted, as in E. agrestis, all other Eratigena n. gen. species with different patterns), short dorsal spike at male palp tibia present (as in E. agrestis E. fuesslini, E. barrientosi, E. montigena, E. picta and E. balearica, all other species absent), very massive conductor, laterally folded only at the terminal half with the very distinct shape of the conductor in retrolateral view (Figs. 11 A, E, G), MA expressed as a broad pocket, strongly attached to the tegulum, originating at 7–9 o’clock (as in E. agrestis and E. fuesslini, in all other species more basal, 5–7 o’clock), basal portion of tegulum almost completely hidden by upper part (embolic deviation) of tegulum (as in E. agrestis, E. fuesslini, and to some extend also in E. sardoa, in all other species of Eratigena n. gen. good visible), strongly expressed epigynal “pseudo teeth” (Figs. 12 A, C, E, white arrows), which are missing in all other Eratigena n. gen. species.

**Description**

**Measurements**

Male (n=1): CL 6.78, CW 5.12, STL 3.23, STW 3.05. Leg I (11.12, 2.85, 11.40, 11.31, 4.43), II (8.69, 2.69, 7.93, 9.38, 3.43), III (7.52, 2.30, 6.32, 8.94, 3.36), IV (9.32, 2.49, 8.60, 12.56, 4.21). Pedipalp (3.24, 1.26, 1.42, 2.81), bulbL 1.30.

Female (n=1): CL 5.84, CW 4.10, STL 2.82, STW 2.49, OL 6.27, OW 4.13. Leg I (6.94, 2.28, 6.61, 3.21), II (6.12, 2.03, 5.08, 5.83, 2.85), III (5.60, 1.94, 4.37, 6.05, 2.55), IV (7.10, 1.99, 6.43, 8.67, 2.96). Pedipalp (2.78, 1.10, 1.80, 2.68). EPL 1.19, EPW 1.41, ATL 0.95, ATW 0.60.

Eyes: PME 0.22–0.24, PLE 0.23–0.25, AME 0.25–0.27, ALE 0.26–0.27. Eye distances: PME-PME 1 x PME, PME-AME 0.5 x PME, PME-PLE 1–1.5 x PME, PME-ALE 1–1.5 x ALE, PME-AME 0.5 x AME, AME-ALE <0.5 x AME. CLY1 2–2.5 x AME, CLY2 1.5–2 x AME.

**Male palp**

RTA with 2 branches, lateral branch simple and pointed, dorsal branch a big knoll with a strongly sclerotised and pointed apophysis. Short dorsal spike on palp tibia present. Embolus base at 10–12 o’clock. Length of embolus 1–1.25 CB, distal tip at 4 o’clock. Conductor massive, distal portion not elongated, folded only at the terminal half. Terminal end consists of 1 strongly sclerotised and elongated point, pointing ventrad. Transversal ridge at the conductor developed as membranous lamella. Connection of conductor to tegulum is membranous. MA wider than long, originating at 7–9 o’clock, moderately protruding with distal sclerit plate like forming a pocket. MA connection to tegulum at least partly sclerotised. **Epigyne and vulva**

Epigyne medially with a strongly sclerotised, long rectangular plate, anteriorly of which the symmetric CO are located. Posterior sclerit absent. Epigynal teeth absent, but “pseudo teeth” present. Vulva consists of distinguishable CD, RC and FD. CD short and straight without long appendages. RC irregularly oblong and not constantly sclerotised, enclosing convoluted ducts.
separated by more than 2 times their diameter. FD only represented by small leaf shaped appendages.

**Other important characters**

Cheliceral promargin with 3, retromargin with 7–9 teeth. Colulus rectangulately shaped with distal margin “w” shaped. PMS with 1 prominent minor ampullate gland spigot and 3–4 cylindrical gland spigots laterally. Tarsal trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 7–10. Denticles at paired claw of leg I 13–14. Leg spination: male palp (2–0–0–0 or 2–1–1–0 or 2–1–0–0, 2–0–0, 2–2p–0–0), female palp (2–0–0–0 or 2–0–1–0 or 2–1–0–0, 2–0–0, 2–2p–0–0), leg femora (2–3–3–0 or 2–3–4–0 or 3–3–2–0 or 3–3–3–0 or 3–3–4–0 or 3–4–4–0, 2–3–2–0 or 2–3–3–0 or 3–3–3–0, 2–2–2–0 or 2–2–3–0, or 2–3–3–0 or 2–3–4–0 or 2–4–2–0, 2–2–1–0 or 2–3–1–0 or 2–3–2–0), patellae (all 2–0–0), tibiae (0–0–0–0–1p+1+1p or 0–0–0–2p or 0–1–0–1p+1, 0–1–0–2p or 0–2–0–2p or 2–2–0–2p, 2–1–1–1p+2+1p or 2–2–2–1p+1+1p or 2–2–2–2p or 2–2–3–2p, 2–2–2–1p+1+1p+1 or 2–2–2–2p or 2–2–3–2p, 2–2–2–1p+1p+1 or 2–2–2–2p or 2–2–3–2p, 2–2–2–1p+1p+1 or 2–2–2–2p or 2–2–3–2p), metatarsi (0–0–0–1p+2+1p+1 or 0–0–0–4p+1, 0–2–0–4p+1 or 0–3–0–3p+1+2p or 0–3–0–5p, 1+1p–4–3–5p or 2–4–4–5p, 3–4–4–1p+1p+2+2p or 3–4–4–5p+1), tarsi (0, 0 or 0–1–0–0 or 0–1–0–0 or 0–1–0–0 or 0–1–0–0 or 0–2–2–0, 0–1–3–0 or 0–2–3–0, 0–2–3–0 or 0–2–4–0).

**Colouration**

Two symmetric longitudinal dark bands dorsally on carapace, sometimes serrated or reduced to triangular dots. Sternum with distinct pattern of pale median band and 3 symmetric pairs of pale dots laterally. Opisthosoma darkened with 1 pale band anteriorly in the middle, laterally with pale dots, continuing to the back in chevrons. Legs not annulated, darkened, sometimes only coxa and proximal part of femora dark spotted. ALS slightly darkened, PLS with both segments dorsally darkened, distal segment moderately paler.

**Distribution**

*Eratigena atrica* is known from most West-, Central-, and North European countries. Since this species also lives in man built habitats, it has been introduced to North America (first mentioned sub *Tegenaria praegrandis* Fox, 1937). Additionally, there was a specimen from Lebanon in the collection of the SMF, unfortunately with insufficient information written on the related label.

**Discussion**

As in some other species of the *Tegenaria* and *Eratigena* n. gen. *E. atrica* is highly variable in some morphological characters, e.g. the size of different body parts (e.g. E. Simon, 1937: 1003) or the patterns of leg spination. This variation is reflected and discussed in many publication (Barrientos & Ribera, 1988; Blackwall, 1861; Brignoli, 1978a; Crawford & Locket, 1976; Croucher et al., 2007; Croucher, Oxford, & Searle, 2004; Denis, 1959; Denis, 1959; Locket & Millidge, 1951, 1953; Locket, Millidge, & Merrett, 1974; Merrett, 1980; Roth, 1968; Simon, 1937). While some authors consider this variation of intraspecific nature, others use it to recognise three species (*E. atrica*, *E. saeva*, *E. duellica*). Proponents of the former idea are Barrientos & Ribera (Barrientos & Ribera, 1988). Their view is supported as follows:

1. as shown by Croucher (2004), Bolzern et al. (Bolzern et al., accepted) and the present paper, the three species are not recovered with CO1 and NADH1 gene sequences (the genetic distances are very small).
2. as suggested by Barrientos & Ribera (Barrientos & Ribera, 1988), seemingly major morphological differences arise when structures are not observed in the same perspectives. This is particularly relevant if published drawings are compared, as in the case of *T. nervosa* which was synonymised with *T. atrica* by Simon (1937) and later agian recognised as valid species by Brignoli (1978) based only on the drawing of Simon (1875).
Member of the British research group around Geoff Oxford (Anderson, Bai, Thomas, & Oxford, 2009; Croucher et al., 2007; Oxford & Plowman, 1991; Oxford & Smith, 1987) suggested that in Great Britain the three species are mostly allopatric with narrow hybrid zones. The major problem with this concept is that it is not applicable to the Continent where transitional morphotypes exist. For solving this problem additional research is necessary.

**Eratigena saeva** (Blackwall, 1844) new combination
Figs. 11 E–F, 12 C–D, I

*Tegenaria saeva* Blackwall (1844): 179–182.
*T. atrica* Blackwall (1861): 165, pl. 11, fig. 106 (misidentification).
*T. atrica* Simon (1875): 81, pl. 5, fig. 5 (misidentification).
*T. saeva* Locket (1975): 85–90, figs. 1, 4, 6–11, 13–16.

Type material examined
No type material available from *Tegenaria saeva* in the collection of the MNHN or NHML.

Other material examined

**France:** Gallia”, 1 $ (MNHN, 1958; specimen is labelled as “neotype” by de Blauwe; this was never published and is therefore invalid); **Basse-Normandie:** Manche, Carr. du Moulin de Montbray, 1 $ (MNHN, 1959), 1.X.1944, Dresco; Calvados, Ouistreham, 1 £ (SMF), 24.IX.1992, Jäger; Calvados, Luc-sur-Mer, 2 $ (SMF), 19.IX.1997, Jäger; Calvados, Courseulles, 1 £ (SMF), 21.IX.1992, Jäger; **Bretagne:** Finistère, Roscoff, 2 £ (MNHN), 3.II.1974; Morbihan, Lorient, Guidel, monastery St.-Maurice, 1 £ (NMB, AB289), 23.IX.2006, Schönhofer; Morbihan, Lorient, Aniberon, 1 $, 1 £ (NMB, AB286), 19.IX.2005, Schönhofer; **Hautes-Pyrénées:** Val de la Glère, 1 £ (MNHN, 1978), 15.VII.1954, Denis; Gavarnie, 1 £ (MNHN, 1978), 28.VII.1954, Denis; **Hauts-de-Seine:** Paris, Antony, 1 $, 1 £ (MNHN, 1958, 1959), X.1957, 18.VII.1958; **Essonne:** Puiselet, 1 $ (MNHN, 1959), 21.X.1967, Dresco.

**Great Britain:** England: Dorset: Monkton, 2 $ (coll. Blick), 4.IX.2004, Blick; **Cornwall:** Porthpean ($) and Pentewan (£), 1 $1 £ (MNHN; 1958), Buttler; Porthpean, 2 $,1 £ (SMF, 29041-135), Butler; **Greater London:** London, 1 $, 1 £ (MCSN, 539), Jackson; **Wales:** Cardiff: Cardiff, 1 $ (NMB, AB915), 2007, Mühlethaler.

**Portugal:** Lisbon: Sintres, 4 £ (NMB, AB588), 23.X.2006, Huber; **Faro:** Canavial, 1 £ (NMB, AB281), 14.X.2003, Cardoso.

**Spain:** Est-Pyrenees, 1 $ (SMF, Roewer 8817); **Basque region:** Sierra de Penagobia, c/o Cueva de Pinedo, 2 £ (NMB, AB, 668, AB670), 30.IV.2007, Huber; **Castilla y León:** Burgos, Hontanas, 1 $ (MSNB), 8.VIII.2004, Ferrario; **Galicia:** Le Ferrol, 1 £ (MNHN, 1975), Seoane; **Andalucia:** Almeria, 1 $ (SMF, coll. Wiehle), V.1930.

**Diagnosis & Description**
See comments at *E. atrica*.

**Measurements**
Male (n=1): CL 4.87, CW 3.65, STL 2.35, STW 2.12. Leg I (7.66, 1.91, 7.40, 7.79, 3.52), II (6.17, 1.76, 5.42,6.29, 2.79), III (5.42, 1.62, 4.47, 6.23, 2.48), IV (6.95, 1.69, 6.33, 8.58, 3.19). Pedipalp (2.50, 0.92, 1.10, 2.22), bulbL 1.26.

**Distribution**

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Western Europe (including Great Britain) and North America.

Eratigena duellica (Simon, 1875) new combination
Figs. 11 G–H, 12 E–F

Tegenaria duellica Simon (1875): 83–85, pl. V, fig. 6.
Tegenaria saeva Locket, Millidge & Merrett (1974): 42, figs. 23A, E.

Type material examined
No type material of Tegenaria duellica traceable in the collection of the MNHN.
Sub Tegenaria gigantea: paratypes. Canada: British Columbia: Vancouver Island, Sidney, 2 $, 2 £ (AMNH), 16.IX.1935, Chamberlin & Ivie; 4 $, 4 £ (AMNH), same data as previous; Vancouver Island, South Saanich, 1 $ (AMNH), 1922.

Other material examined
Spain: Castilla y León: Zamora, Sandin de Carballeda, 3 £ (MHNG, MCSN, 543), VII.1972, Haymoz.

North America

Diagnosis & Description
See comments at E. atrica.

Distribution
Same distribution pattern as E. saeva.

Discussion
As mentioned by Locket (1975) and Brignoli (1978a), no type material is available for T. duellica. Here the argumentation of Brignoli (1978a) is followed. The examined type material of E. gigantea and the examined specimens sub E. duellica are not separable. Therefore, T. gigantea Chamberlin & Ivie has to be recognised as a junior synonym of E. duellica Simon (sub Tegenaria).
**Eratigena balearica** (Brignoli, 1978) new combination
Figs. 17 C–D, G–H

*Malthonica balearica* Brignoli (1978a): 278–279, fig. 8, female.

Type material examined

Other material examined
**Spain: Balearic Islands:** Majorca, on the mountain l’Ofre, 3 $, 1 £ (NMB, AB823), V.2007, Wunderlich; Majorca, W of Soiler, 2 £ (NMB, AB977), VI.2008, Wunderlich.

**Diagnosis**
See diagnosis section at *E. picta*.

**Description**

**Measurements**
Measurements of males are provided by Barrientos & Febrer (1986).
Female (n=1): CL 2.1, CW 1.4, STL 1.2, STW 1.0. Leg I (2.1, 0.7, 2.0, 1.7, 1.2), II (1.75, 0.7, 1.5, 1.4, 1.0), III (1.7, 0.6, -, -, -), IV (2.2, 0.8, 2.1, 2.0, 1.1). Pedipalp (0.85, 0.3, 0.55, 0.8).
Eyes: PME 0.095, PLE 0.124, AME 0.105, ALE 0.114. Eye distances: PME-PME 1–1.5 x PME, PME-AME 1–1.5 x PME, PME-AME 1–1.5 x PME, PME-AME 0.5–1 x AME, AME-AME <0.5–0.5 x AME. CLY1 1.5–2 x AME, CLY2 0.5–1 x AME.

**Male palp**
RTA with 2 branches, lateral branch very broad, flattened and distally truncated, dorsal branch broad, dorsodistally elongated and bent posteriad. Short dorsal spike on male palp tibia present. Embolus base at 8 o’clock. Length of embolus 1.5–1.75 CB, distal tip at 2–4 o’clock. Conductor oblong oval, distal portion moderately elongated, as long as wide, lateral margin almost completely folded. Terminal end complex, strongly sclerotised and with 2 spirally twisted point. Transversal ridge at conductor developed as membranous lamella. Conductor membranously connected to tegulum. MA originating at 5 o’clock, wider than long with distal plate like sclerit forming a pocket. MA connection to tegulum at least partly strongly sclerotised.

**Epigyne and vulva**
Epigyne medially with a distinct oval atrial cavity, posteriorly limited by a narrow margin. Epigynal teeth absent. Anteriorly, the CD are visible trough the epigynal plate. Vulva consists of distinguishable CD, RC and FD. CD is a convoluted duct, ending in the not constantly sclerotised thickened tube like RC, separated by about 1.5 x their diameter. FD only represented by small leave shaped appendages.

**Other important characters**
Cheliceral retromargin with 8–9 teeth. Colulus rectangularly shaped with distal margin “w” shaped. Distal segment of PLS longer than basal segment. PMS with 1 prominent minor ampullate gland spigot and 2 cylindrical gland spigots on both lateral sides. Tarsal trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 5–6. Denticles at paired claw of leg I 16. Leg spination: female palp (2–0–0, 2–0–0, 2–2–0, several), male palp (2–0–0, 2–0–0, 1–2–0, several), leg femora (2–2–0–0, 2–1–0–0 or 2–1–1–0 or 2–2–1–0, 2–1–1–0, 1–1–1–0 or 2–1–1–0), patellae ( all 2–0–0), tibiae (0–0–0–2+1p or 0–0–0–2p or 0–0–0–
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4, 0–1–0–1+1p or 2–1–0–1+1p, 2–2–1–1+1p or 2–2–2–1+1p or 2–2–2–1+1p+1, 2–2–2–2+1p+1 or 2–2–2–3), metatarsi (0–0–0–3p+1, 0–2–0–3p+1 or 0–3–0–3p+1, 1–3–3–4p+1 or 1–4–3–1p+1+2p+1, 1–4–4–1p+1+2p+1 or 1–4–4–3p+1), tarsi (I and II 0, 0–1–2–0, 0–1–1–0 or 0–1–2–0).

**Coloration**
Carapace with two symmetric longitudinal dark bands. Sternum with distinct pale median region. Opisthosoma brownish to dark brownish, anteriorly with 3 bands, yellowish, posteriorly continuing in chevrons. Legs weakly but continuously darkened. ALS and both segments of PLS darkened.

**Distribution**
Endemic to the Balearic Islands.

**Discussion**
Barrientos & Febrer (1986) suggested that this species is closely related to *E. picta*. The generic assignment of this species was controversial until the restricted definition of *Malthonica* by Barrientos & Cardoso (2007). Their hypothesis, that *E. balearica* does not belong to *Malthonica* and that it is closely related to *E. picta* is fully supported here.

**Eratigena barrientosi** (Bolzern, Crespo & Cardoso, 2009) new combination

**Material examined**
All type material and other known specimens had been examined and listed in Bolzern et al. (2009, sub *Tegenaria*).

**Diagnosis**
*E. barrientosi* can be separated from other *Eratigena* n. gen. species by the presence of dorsal trichobothria on the female and male palp tarsus/cymbium (shared character with *E. feminea, E. bucculenta* sensu Machado and *E. incognita*; in all other *Eratigena* n. gen. species absent), and the male tibia I shorter or equal the length of carapace (as in *E. feminea, E. incognita* and *E. fuesslini*, all other *Eratigena* n. gen. species tibia I longer), presence of more than 2 dorsal spines at all metatarsi (as in *E. incognita*, all other *Eratigena* n. gen. species without dorsal spines on tibia I and II) and having only 2 cylindrical gland spigots laterally on PMS (as in *E. picta, E. balearica, E. arganoi, E. sardoa* and *E. sicana*, all other species with 3–4 such spigots).

**Distribution**
Portugal, only known from two localities in Portugal.

**Eratigena bucculenta** (L. Koch, 1868) new combination
Figs. 14 C–D, K–M, 15 c–d, i–j

*Coelotes bucculentus* L. Koch (1868): 36–38, fig. 17, female.
*Tegenaria bucculenta* Simon (1875): 106–107, male and female.
Tegenaria bucculenta Brignoli (1978a): 275–276, fig. 2.

Type material examined
According to Simon (1875: 107) one of the females in his sample 467 represents Koch's type specimen (=syntype) collected in El Escorial (L. Koch, 1868: 38, "Escorial"). Spain: Sierra Nevada, Guadarrama, 2 £ (long CD) (MNHN, 1974, 467). The male of sample 467 mentioned by mentioned by Simon (1875: 107) and Machado (1941) could not be found in this tube. According to Machado (1941) this male with the location “Sierra Nevada” represents the "type" of T. patula Simon (1870) (cf. E. feminea).

Comment
E. bucculenta is morphologically very variable and can is grouped here into three morphotypes:

Morph A
Figs. 14 I–J
Only female. Corresponds to the syntype with long CD.

Material examined
Spain: Madrid: Sierra Guadarrama, Puerto de Paular, 1 £ (long CD) (same tube as male of E. bucculenta sensu Barrientos, MCSN, 542, 9.V.1967, Osella. They are stored in the collection of Brignoli ($) and the MCSN (£). Today, these collections are housed together in the same institution (MCSN). Brignoli (1978a: 275) only cites the male, but provides drawings of the female.

Morph B
Figs. 14 C–D, K–L, 15 c–d, i–j
Males and females (vulva with short CD) as presented by Machado (1941).

Material examined
Spain: Castilla y León: Zamora, Sandin de Carballeda, 1 £ (short CD) (MHNG), VII.1975, Haymoz.

Morph C
Figs. 14 E–F, N–O, 15 e–f
Males as presented by Barrientos (1991).

Material examined

Discussion
Morphotype A is represented by the syntype of *E. bucculenta* (MNHN, 1974, 467) with long convoluted CD (Fig. 14 J). The female specimen described by Brignoli (1978a: fig. 2) is morphologically similar, his male, however, corresponds to the male described by Barrientos (morphotype C, Figs. 14 E–F). Morphotype B corresponds to the male and female (vulva with short CD) described by Machado (1941: 38, fig. 26). No other morphological character could be found, separating morphotypes A and B. Morphotype C comprises the male described by Barrientos (1991) and the female which differs from the other two morphotypes (Figs. 14 N–O) by following characters: distinctly pronounced atrium (much shallower in morph A and B), much stronger pronounced and elongated epigynal teeth, differently shaped vulva (RC relatively smaller in respect to the CD) and the absence of dorsal trichobothria on the palpal tarsus/cymbium (trichobothria are present in morphotypes A and B and also in *E. feminea*). Morphotypes A and C are restricted to the “Sistema Central”, a system of mountain ranges on the Iberian Peninsula, whereas morphotype B occurs in an area north-west of the “Sistema Central” without geographical overlap with morphotypes A and C. The syntype of *T. bucculenta* corresponds to morphotype A which has to bear this name. Morphotype C differs significantly from *T. bucculenta* s.str. and represents a new species (*T. bucculenta* sensu Barrientos (1991)). Morphotype B could be a variation of morphotype A. If this would be the case *T. bucculenta* sensu Machado (1941) (female with short CD) should be called *T. bucculenta*. The available material is insufficient for solving this problem.

**Diagnosis for *E. bucculenta* sensu Machado**

See diagnosis section at *E. feminea*.

**Description**

Detailed description with measurements is provided by Machado (1941) for *E. bucculenta* sensu Machado (sub *Tegenaria*) and by Barrientos (1991) for *E. bucculenta* sensu Barrientos (only for the male).

**Eratigena feminea (Simon, 1870)** new combination

Figs. 14 A–B, G–H, 15 a–b, g–h

*Tegenaria feminea* Simon (1870): 283–284, male.


*Tegenaria maderiana* Thorell (1875a): 76–77, new synonym.


**Type material examined**


Sub *Tegenaria cisticola*, probably syntypes. Spain: Sierra Morena, 1 $, 3 £ (MNHN, 1974, 477), Simon.


**Other material examined**

Spain: ¿?; “Spanien 14”, 1 $ (SMF, 21937/1-135), Franz; Andalusia: Tarifa, 1 $, 8 £ (MNHN, 1974, 24833); Castilla-La Mancha: Pozuelo de Calatrava, 1 £ (MNHN, 1974, 24522); de la Fuente; Toledo, 2 $, 1 £ (NMB, AB673–674, AB680), 20.IV.2006, ALARM; Extremadura: Caceres, Torrejon el Rubio, Canada Real de la Plata, 1 $ (SMF, 40946-135), 8.XI.1996, Stengele; Madrid: Torrejon de Ardoz, 1 £ (AMNH), 1961, Haller.

Africa
Algeria: Tlemcen: Tlemcen 3 £ (MNHN, 1974), Simon.

Asia
Syria (?): 1 $ (MNHN, 1974, 469), de la Brûlerie.

Diagnosis
E. feminea can be separated from all other Eratigena n. gen. species by the reduced RTA and the presence of a two pointed patellar apophysis at the male palp (as in E. bucculenta sensu Machado, 1941; all other Eratigena n. gen. species with RTA and without patellar apophysis), the presence of dorsal trichobothria on the female and male palp tarsus/cymbium (shared character with E. bucculenta sensu Machado, E. barrientosi and E. incognita; in all other Eratigena n. gen. species absent, also absent E. bucculenta sensu Barrientos (1991)) and the male tibia I shorter or equal the length of carapace (as in E. barrientosi, E. incognita and E. fuesslini, all other Eratigena n. gen. species tibia I longer). From the closely related E. bucculenta sensu Machado (1941) it can be separated by the patellar apophysis having well separated two points, the conductor as long as the alveolus and the straight terminal end of the conductor (E. bucculenta: three pointed patellar apophysis, close together, conductor shorter than the alveolus with terminal end bent ventrad). Females can be separated by the rectangularly shaped posterior sclerit with CO facing laterally (E. bucculenta sensu Machado, triangular posterior sclerit and CO facing anteriorly).

Description
Some measurements are provided by Simon (1870: 283–287, sub Tegenaria feminea, T. patula and T. cisticola) and Brignoli (1978a: 276–277, sub Tegenaria carpetana). The examined specimens are in the same range.
Eyes: PME 0.11, PLE 0.15, AME 0.13, ALE 0.13. Eye distances: PME-PME 1.5 x PME, PME-AME 1 x PME, PLE-AME 1–1.5 x PME, PME-ALE 1.5–2 x PME, AME-AME 0.5–1 x AME, AME-ALE <0.5 x AME. CLY1 1.5–2 x AME, CLY2 1–1.5 x AME.

Male palp
Patellar apophysis at male palp present, dorsally large and sclerotised point, lateroventrally smaller point, both well separated. RTA reduced. Short dorsal spike on male palp tibia absent. Embolus base at 9 o'clock. Length of embolus 0.75–1.25 CB, distal tip at 4 o'clock. Conductor with distal portion as long as wide, not reaching over distal margin of alveolus, lateral margin folded only at terminal half. Terminal end simple, long draw out, straight and inconspicuously pointed. Transversal ridge at conductor membranous, lamelliform. Conductor membranously
conned to tegulum. MA only moderately protruding, as long as wide, distal sclerite plate like forming a pocket, membranously connected to tegulum, originating at 5–6 o’clock.

**Epigyne and vulva**

Epigyne with a distinct posterior sclerite, forming a strongly sclerotised, rectangularly shaped pocket, opening towards posterior. Epigynal teeth present, originating posteriordistally of the posterior sclerit, pointing posteriorly. CO located laterally of the posterior sclerit, opening laterad. Vulva consists of distinguishable CD, RC and FD. CD long and convoluted, without appendages but expanded region at its beginning (probably homologous to the appendages of *E. bucculenta*). RC oblong, irregularly formed and sclerotised, enclosing convoluted ducts, separated by less or about their diameter. FD only represented by small leaf shaped appendages.

**Other important characters**

Cheliceral promargin with 3, retromargin with 7–11 teeth. Colulus rectangularly shaped with distal margin “w” shaped. Distal segment of PLS as long as basal segment. PMS with 1 prominent minor ampullate gland spigot and 3–4 cylindrical gland spigots laterally. Tarsal trichobothria at cymbium and palpal tarsus present. 7–9 tarsal trichobothria. Denticles at paired claw of leg I 11–13. Leg spination: male palp 2–0–0–0, 2–0–0, 2–2p–0–0, female palp 2–0–0, 2–0–0, 2–2p–0, leg femora 1–2–1–0 or 2–2–0–0 or 2–2–1–0 or 3–2–0–0, 2–2–1–0 or 2–3–1–0, 2–1–2–0 or 2–2–2–0 or 2–2–3–0, 1–1–1–0, patellae (all 2–0–0), tibiae (0–0–0–2p or 0–0–0–3p, 0–1–0–3p or 0–2–0–3p, 2–2–2–1+1p or 2–2–2+1p or 2–2–2–2p or 2–2–2–3p, 1–2–1+2p+1 or 2–2–2–1+3p or 2–2–2+2+1p+1 or 2–2–2–4p), metatarsi (0–0–0–4p+1, 0–2–0–4p+1, 1p–4–3–4p+1, 1p–4–3–4p+1 or 2–4–4–4p+1), tarsi (I & II 0, III & IV 0–2–3–0).

**Colouration**

Two symmetric longitudinal dark bands dorsally on carapace present, sometimes reduced to only triangular dots. Sternum with a distinct pale median region. Opisthosa brown-grey-green, dorsoanteriorly with two symmetric longitudinal pale bands continuing posteriorly in chevrons and then in dots. Legs without a pattern or spotted. ALS indistinctly darkened (occasionally only distally), PLS both segments darkened.

**Distribution**

This species is recorded for the Iberian Peninsula. The specimen from Algeria was already mentioned by Machado (1941). In one tube labelled with the number 469 by Simon (Syria), one male could be determined to *E. feminea*, together with other specimens belonging to other species. Since it is known that Simon did add specimens to some tubes, it remains unsure if the specimen in the tube from Syria refers to that location.

**Discussion**

*Eratigena feminea* has very distinct male and female genitalia. The colouration (spotted legs or not, black dots on cephalothorax) and the size are very variable which led to the description of several species which were subsequently synonymised. One synonym, established by Lehtinen (1967: 267) has to be corrected: the specimens of *T. cisticola* preserved in MNHN (Simon’s nr. 477) belong, as mentioned by Machado (1941), Barrientos (1980) and Brignoli (1978a), to *Eratigena feminea* and not to *E. bucculenta*.

There is another apparent problem: *E. feminea* seems to be closely related to *E. bucculenta*. In one sample from Portugal (Boticas) both species are present with one male (male of *E. bucculenta* sensu Machado (1941)). For further discussion see *E. bucculenta*.

**Eratigena fueslini** (Pavesi, 1873) new combination

Figs. 9 g–i, 13 A–D
*Tegenaria fuesslinii* Pavesi (1873): 105–107, figure without a number, only female.

*Tegenaria pallidula* Simon (1875): 95–96, only male.

*Tegenaria capra* Simon (1875): 97–98, only male.


*Tegenaria corsica* Simon (1937): 1038–1039, figs. 1539–1540; Simon synonymised *T. pallidula*, *T. capra* and *T. ericarum* with *T. corsica* Bremi-Wolf (also Bremi-Wolff); the name *T. corsica* is considered a nomen nudum (see Brignoli, 1971a: 84).

Type material examined

No type material available for this study (could not be traced, apparently not represented in the collection of Genova (Giuliano Doria, pers. comm.) and until now not traceable in the collection of the Museo di Storia Naturale dell’Università di Pavia (Michele Abderhalden, pers. comm.)).

Other material examined

**France:** Pyrénées-Orientales: La Massane, 4 $, 22 £ (sub *Tegenaria ericarum*, MNHN, 1974), 20.XI.1911; Banyuls, Canigou, la Plata, Mt. Louis, 6 $ (sub *Tegenaria ericarum*, MNHN, 1979), Simon; Banyuls (Palau del Vidre), 1 $ (sub *Tegenaria pallidula*, MNHN, 1952); Haut Vallespir, Prats-de-Mollo-la-Preste, 1 $, 1 £ (NMB, AB553), 10.IX.2006, Huber;


**Provence:** Collobrières, 8 $, 10 £ (MNHN, 1979);

**Var:** Toulon, la Crau, 10 $, 10 £ (MNHN, 1951), 12.XI.1913; Esterel, 1 £ (NHMW), 5.V.1962, Nemenz; Cuers, 2 £ (SMF), V.2008, Wunderlich.


**Spain:** Madrid: Guadarrama, Sierra Nevada, 1 £ (sub *Tegenaria ericarum*, MNHN, 1974);

Diagnosis

_E. fuesslini_ can easily be separated from all other _Eratigena_ n. gen. species by the distinct terminal end of the conductor, and the atrial cavity posteriorly limited by a big bulge. From the closely related species, _E. agrestis_, it can be separated by the body size (_E. fuesslini_ much smaller than _E. agrestis_), the less broad conductor (in retrolateral view, broader in _E. agrestis_), the terminal end of the conductor, the posterior bulge at the epigyne protruding to posterior (not protruding in _E. agrestis_), and the CD visible through the epigynal plate (anterior or the atrial cavity).

Description

**Measurements**

**Male** (n=2): CL 3.25–4.2, CW 2.35–3.0, STL 1.7–2.05, STW 1.4–1.75, OL 3.75–4.0, OW, 2.3. Leg I (3.4–4.35, 1.2–1.55, 3.2–4.0, 3.3–4.2, 2.0–2.65), II (2.95–3.5, 1.1–1.5, 2.4–2.85, 2.75–3.4, 1.75–2.2), III (2.75–3.3, 1.1–1.3, 2.05–2.5, 2.25–3.5, 1.3–1.9), IV (3.6–4.0, 1.15–1.5, 3.15–3.7, 4.0–4.6, 2.0–2.3). Pedipalp (1.5–1.75, 0.55–0.65, 0.6–0.75, 1.45–1.75), bulbL 1.0–1.25.

**Female** (n=2): CL 2.25–4.2, CW 1.6–2.7, STL 1.25–2.1, STW 1.05–1.7, OL 2.75–4.9, OW 1.85–3.0. Leg I (1.9–3.5, 0.85–1.5, 1.6–3.1, 1.6–2.95, 1.15–2.0), II (1.65–3.1, 0.75–1.45, 1.2–2.4, 1.45–2.7, 1.0–1.8), III (1.5–3.0, 0.7–1.35, 1.05–2.1, 1.45–2.75, 0.9–1.75), IV (2.05–3.9, 0.8–1.45, 1.8–3.4, 2.1–4.0, 1.05–2.1). Pedipalp (0.85–1.65, 0.45–0.7, 0.5–1.05, 0.6–1.6). EPL 0.48–0.54, EPW 0.62–0.71, ATL 0.07–0.08, ATW 0.29–0.3.

**Eyes:** PME 0.09–0.143, PLE 0.10–0.152, AME 0.08–0.129, ALE 0.10–0.171. Eye distances: PME-PME 1.5–2 x PME, PME-AME 1 x PME, PME-PLE 1–1.5 x PME, PME-ALE 1.5 x PME, AME-AME 0.5–1 x AME, AME-ALE 0.5 x AME. CLY1 2–2.5 x AME, CLY2 1–1.5 x ALE.

**Male palp**

RTA with 2 branches, lateral branch simple and pointed, dorsal branch a broad apophysis, distally truncated and variable shaped (from one bigger and several smaller points to almost only two point). Short dorsal spike on palp tibia present. Embolus base at 9–10 o'clock. Length of embolus 1.25–1.5 CB with distal tip at 4–5 o'clock. Conductor massive, not conspicuously broad in retrolateral view, distal portion not elongated, folded only at the terminal half which is twisted ventroprolaterad. Terminal end complex, consisting of 2 strongly sclerotised, stepped and elongated points (median 1 additional thorn like point possible, Fig. 2.7 h), ventral point with a strongly sclerotised dark posterior margin and a much thinner plate like anterior part. Conductor retrolaterally moderately furrowed. Transversal at conductor a membranous lamelliform ridge. Conductor membranously connected to tegulum. MA wider than long, originating at 6–8 o'clock, protruding with distal plate like sclerite forming a pocket. MA at least partly strongly sclerotised connected to tegulum.

**Epigyne and vulva**

Epigyne medially with a distinct atrial cavity, posteriorly limited by a posterior sclerit expressed as a distinct big bulge, strongly fused with the epigynal plate and moderately protruding posterioriad. Epigynal teeth present, originating lateral on the posterior bulge, pointing posteriomediad. Anteriorly, CD are visible trough the epigynal plate. Vulva consists
of distinguishable CD, RC and FD. CD moderately convoluted, with a kind of a protuberance ventrally (close to the CO). RC irregularly oblong and sclerotised, enclosing convoluted ducts, separated by about 1.5 x their diameter. FD only represented by small leaf shaped appendages.

Other important characters

Cheliceral retromargin with 8–12 teeth. Colulus rectangularly shaped with distal margin “w” shaped. PMS with 1 prominent minor ampullate gland spigot and 3–4 cylindrical gland spigots laterally. Tarsal trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 5–9. Denticles at paired claw of leg I 12–14. Leg spination: male palp (2–0–0–0, 2–0–0, 1–1+1p–0–0 or 1–2–0–0), female palp (2–0–0–0, 2–0–0, 2–2–0–0), leg femora (2–2–0–0, 1–0–0–0 or 2–2–0–0 or 2–3–1–0 (in small female with only 1 dorsal spine), 1–0–0–0 or 2–2–2–0 or 2–2–3–0 or 2–3–3–0 (in small female with only 1 dorsal spine), 1–0–1–0 (only in small female) or 1–1–1–0 or 2–2–1–0 or 2–2–2–0, patellae (all 2–0–0), tibiae (0–0–0–1+1p or 0–0–0–1+2p or 0–0–0–2 or 0–0–0–2p or 0–0–0–3p (indistinct dorsal spines possible), 0–1–0–1 or 0–1–0–1p+1p or 0–2–0–1p+1p, 2–2–1–1 or 2–2–1–2 or 2–2–2–2p or 2–2–2–3p, 2–2–2–1p+1p or 2–2–2–2 or 2–2–2–2p, metatarsi (0–0–0–4p+1, 0–0–0–2p+1 or 0–1–0–2p+1 or 0–2–0–4p+1, 0–2–2–1p+1p+2 or 0–3–2–1p+1p+2 or 1p–4–3–5p or 1p–4–4–5p, 0–4–3–1p+2p or 1p–4–3–1p+4p or 1–4–4–5p or 1p–4–3–4p+1), tarsi (I–II 0, III 0–0–1–0 or 0–2–3–0, IV 0–0–1–1 or 0–2–4–0).

Colouration

Carapace with weakly serrated longitudinal dark symmetric bands, may be reduced to only triangular dots. Sternum with distinct pale median region. Opisthosoma darkened green-brownish, at the cardiac mark yellowish, posteriorly continuing in broad chevrons (~ 5). Legs moderately continuous darkened. ALS and both segments of PLS dorsally darkened.

Distribution

Recorded for central- to south-western- Europe (CH, FR, IT, ES, PT). Some records may be unsure (e.g. YU, DE, UA).

Discussion

As described for the previous species, E. fuesslini shows a very high morphological variation in genital characters. This variation led Simon (1875) to describe three species which he subsequently synonymised (Simon, 1937). Some specimens are strikingly smaller and the female and male genitalia differ in some morphological details. This, however, may be due to smaller size. With the evidence at hand it is not possible to decide whether these differences reflect intraspecific or interspecific variation.

Eratigena herculea (Fage, 1931) new combination

Figs. 16 A–B, only female

Tegenaria herculea Fage (1931): 210–211, fig. 47, female.  
Tegenaria herculea Brignoli (1977c): 69–70, fig. 3, female.  

Type material examined


Other material examined


Diagnosis
E. herculea, E. hispanica, and three species originally described in Malhonica (E. arganoi, E. sardoa and E. sicana, the “arganoi-group”) have the distal segment of PLS longer than basal segment (as in E. picta, E. balearica and E. montigena; segment as long as basal in other species), short dorsal spike at male palp tibia absent (shared with E. feminea, E. incognita, E. inermis and E. vomeroi, all other Eratigena n. gen. species with spike), conductor with lateral margin entirely folded (as in E. picta and E. balearica, all other species with folded margin only at the terminal half), terminal end of conductor one simple elongated peak (comparable with E. atrica – complex, E. bucculenta, E. feminea, E. barrientosi and E. incognita, in all other Eratigena n. gen. species more complex), MA protruding, longer than wide, spoon like (all other Eratigena n. gen. species with the length of MA not exceeding its width, pocket like), connection of MA to tegulum membranous (only similar in E. incognita), epigyne with a distinct posterior sclerit, forming a strongly sclerotised and protruding pocket-like structure (shared with E. bucculenta and E. feminea, all other Eratigena n. gen. species without such structure).

E. herculea and E. hispanica can be separated form the “arganoi – group” by the length of tibia I (longer than CL, in other species shorter or equal CL), the PMS bearing 3–4 cylindrical gland spigots laterally (others with only 2), the shape of the dorsal branch of the RTA, the conductor and the MA, the very long appendages at the CD (short or absent in other species), and the special form of the RC. From E. hispanica it differs by the smaller size (Ribera, 1978; Ribera & Barrientos, 1986) (even though this character is strongly variable in many species of the genus, there are very few other discriminating character mentioned in literature), the shape of the RTA in dorsal view (Ribera & Barrientos, 1986: 190, figs. 3 and 5), the conductor not reaching the distal margin of the alveolus (reaching it in E. hispanica), the differently shaped epigynum (larger membranous part anteriorly of distinctly different shaped posterior sclerit in E. hispanica), the absence of epigynal teeth (present in E. hispanica) and the distally less convoluted appendages at the CD (more elongated and convoluted in E. hispanica).

Description
Measurements
Measurements of males are provided by Ribera & Barrientos (1986).
Female (n=2): CL 2.96–3.16, CW 2.11–2.15, STL 1.53–1.56, STW 1.31–1.33, OL 2.55–3.63, OW 1.67–2.65. Leg I (4.46, 1.19, 4.64, 4.77, 2.57), II (3.83–3.99, 1.04–1.16, 3.42–3.51, 3.68–4.09, 1.88–2.2), III (3.6–3.74, 1.02–1.05, 3.1–3.24, 3.98–4.22, 1.72–1.93), IV (4.58–4.85, 1.04–1.07, 4.54–4.57, 5.62–5.91, 1.95–2.2). Pedipalp (1.57–1.59, 0.56–0.59, 1.11–1.17, 1.6–1.69). EPL 0.31, EPW 0.53, ATL 0.18, ATW 0.2.
Eyes (somewhat reduced!): PME 0.04–0.06, PLE 0.05–0.06, AME 0.03–0.05, ALE 0.06–0.08. Eye distances: PME-PME 2 x PME, PME-AME 1.5–2 x PME, PME-PLE 1.5–2 x PME, PME-AME 2–2.5 x PME, AME-AME 1.5–2 x AME, AME-ALE 1.5–2 x AME. CLY1 >3 x AME, CLY2 2–3 x ALE.
Male palp
No male specimen was available for examination. Relevant information is provided by Ribera & Barrientos (1986).
Epigyne and vulva
Epigyne with a distinct posterior sclerit, forming a strongly sclerotised, triangularly shaped and protruding pocket, opening posteriad. Epigynal teeth absent. CO located anteriolaterally
of the posterior sclerit. Vulva consists of distinguishable CD, RC and FD. CD short, with a long, distally somewhat convoluted appendix. RC irregularly formed and sclerotised with several “chambers”, separated by about 1.5 x the diameter. FD only represented by small leaf shaped appendages.

Other important characters
Cheliceral promargin with 3–4, retromargin with 7–10 teeth. Colulus rectangularly shaped with distal margin “w” shaped. Distal segment of PLS longer than basal segment. PMS with 1 prominent minor ampullate gland spigot and 3–4 cylindrical gland spigots laterally. Tarsal trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 7–8. Denticles at paired claw of leg I 18. Leg spination: female palp (1–0–0–0, 2–0–0, 2–1+1p–0), leg femora (2–2–1–0 or 2–2–3–0, 1–2–2–0 or 2–3–2–0, 1–2–2–0 or 2–2–3–0 or 3–2–1–0, 1–1–1–0 or 2–1–1–0 or 2–1–2–0 or 2–2–1–0), patellae (all 2–0–0, one specimen with one retrolateral spine at patella IV), tibiae (0–0–0–1+1p or 0–1–0–1+1p or 2–2–0–1+1p, 0–2–0–1+1p or 2–2–0–1+2p or 2–2–1–2p, 2–2–1–2p+1 or 2–2–2–1+1p or 2–2–2–2 or 2–2–2–2p, 2–2–2–3p, or 2–2–3–2, or 2–3–2–2), metatarsi (0–0–0–3p+1, 0–1–0–3p+1 or 0–2–0–3p+1, 0–4–3–3p+1 or 0–4–4–1p+1+2p+1 or 1–4–3–1p+1+2p+1), tarsi (I & II 0, III 0 or 0–0–1–0, IV 0–0–1–0 or 0–0–2–0).

Colouration
Carapace not darkened (troglobiont?). Sternum with a weakly expressed pale median region. Opisthosoma brown-yellowish, only cardiac mark darker. Legs without a pattern.

Distribution
Records are known only from southern Spain (mainland and Balearic Island, Ibiza) (Brignoli, 1977c; Fage, 1931; Ribera & Barrientos, 1986).

Discussion
The specimen from Lima Gesus differs slightly from the other material: the conspicuously different run of the copulatory duct, the bigger size and the leg spination. More material is necessary to decide if this specimen represent an other species.

Eratigena hispanica (Fage, 1931) new combination
Figs. 16 F–G, L–M

Tegenaria hispanica Fage (1931): 212–213, fig. 48, only female.

Type material examined

Other material examined

Diagnosis
See the diagnosis section at E. herculea.

Description
Measurements
Male (n=1): CL 4.34, CW 3.14, STL 2.14, STW 2.02, OL 2.97, OW 1.65. Leg I (7.33, 1.71, 7.43, 7.71, 3.61), II (6.32, 1.73, 5.78, 7.17, 3.1), III (5.53, 1.36, 4.89, 6.93, 2.86), IV (6.6, 1.43, 6.31, 9.51, 3.64). Pedipalp (2.31, 0.76, 1.34, 1.81), bulbL 0.66.
Female (n=1): CL 5.32, CW 3.54, STL 2.43, STW 2.16, OL 5.01, OW 2.7. Leg I (7.42, 1.98, 7.58, 7.99, 3.53), II (6.77, 1.93, 6.27, 7.56, 3.59), III (6.39, 1.78, 5.73, 7.89, 3.2), IV (7.65, 1.98, 7.51, 10.68, 3.92). Pedipalp (2.74, 0.96, 1.97, 2.84). EPL 0.49, EPW 0.76, ATL 0.33, ATW 0.28.

Eyes (somewhat reduced!): PME 0.13, PLE 0.13–0.17, AME 0.10–0.11, ALE 0.16–0.17. Eye distances: PME-PME 1–1.5 x PME, PME-AME 1 x PME, PME-PLE 1.5–2 x PME, PME-ALE 1.5–2 x PME, AME-AME 1–1.5 x AME, AME-ALE 0.5–1 x AME. CLY1 3–3.5 x AME, CLY2 1.5–2 x ALE.

Male palp
RTA with 2 branches, lateral branch only very slightly protruding, dorsal branch strongly sclerotised and protruding, somewhat lobe like, distally with a short claw like appendix. Short dorsal spike on male palp tibia absent. Embolus base at 7–8 o'clock. Length of embolus 1.75–2 CB, distal tip at 4 o'clock. Conductor long triangular, distal portion moderately elongated, as long as wide, reaching distal margin of alveolus, lateral margin folded. Terminal end simple, long draw out and pointed. Transversal ridge at conductor membranously lamelliform.
Conductor membranously connected to tegulum. MA protruding, longer than wide, distally with plate like sclerite forming spoon like structure, membranously connected to the tegulum, originating at 5 o'clock.

Epigyne and vulva
Epigyne with a distinct posterior sclerit, forming a strongly sclerotised, triangularly to rectangularly shaped and protruding pocket, opening posteriad. Epigynal teeth present, originating distally of the posterior sclerite, pointing posteriomedially. CO located anteriolaterally of the posterior sclerite at a rectangularly shaped membranous area (atrium?). Vulva consists of distinguishable CD, RC and FD. CD short, with a long, distally strongly convoluted appendix. RC irregularly formed and sclerotised with several “chambers”, separated by 2 x the diameter. FD only represented by small leave shaped appendages.

Other important characters
Cheliceral promargin with 3, retromargin with 9–10 teeth. Colulus rectangularly shaped with distal margin more or less straight or moderately “w” shaped. Distal segment of PLS longer than basal segment. PMS with 1 prominent minor ampullate gland spigot and 3–4 cylindrical gland spigots laterally. Tarsal trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 8–9. Denticles at paired claw of leg I 13–14. Leg spination: male palp (2–1–1–0, 2–0–0, 1+1p–0–0), female palp (2–1–0–0 or 2–1–1–0, 2–0–0, 2–2p–0–0), leg femora (2–3–3–0 or 2–3–4–0 or 2–4–3–0), patellae (all 2–0–0), tibiae (2–0–0–4p or 2–1–0–4p or 2–2–0–4p (lateral spines only in female), 2–2–0–4p, 2–2–1+3p or 2–2–1+3p or 2–2–2–4p), metatarsi (0–0–0–4p+1, 0–2–0–4p+1 or 0–2–1–4p+1, 0–5–4–4p+1 or 1–5–4–4p+1, 0–5–4–4p+1 or 1–5–4–4p+1), tarsi (I & II 0, III 0 or 0–0–1–0 or 0–1–2–0, IV 0–2–2–0 or 0–2–3–0).

Colouration
Carapace not darkened (troglobiont?). Sternum with a weakly expressed pale median region. Opisthosoma brown-yellowish, only cardiac mark darker. Legs without a pattern.

Distribution
Recorded from Catalonia and Valencia (Ribera, 1978; Ribera & Barrientos, 1986).

Eratigena incognita (Bolzern, Crespo & Cardoso, 2009) new combination

Material examined
All type material and other known specimens had been examined and listed in Bolzern et al. (2009, sub *Tegenaria*).

Diagnosis
See diagnosis section at *E. barrientosi*.

Description, diagnosis and other information are provided by Bolzern et al. (2009, sub *Tegenaria*).

Distribution
Portugal, only known from the type locality.

**Eratigena inermis** (Simon, 1870) new combination
Figs. 18 A–B, E–G, 19 a–b, e–f

*Tegenaria inermis* Simon (1870): 271–273, pl. 1, figs. 7, 11 (figures not useful for determination).

Type material examined
Syntypes (in the same tube several labels were present, one from the type locality). Spain: León: Brañuelas; Navarra: Alsasua; “Pyr. Raun Bonnes.” (?), 1 $ (MNHN, 1960, specimen selected and labelled as “neotype” by R. De Blauwe), here designated as lectotype; remaining specimens, 4 $, 3 £, (MNHN, 1960), paralectotypes.

Comment
For stabilising the nomenclature a lectotype is designated here (ICZN 1999: Art. 74.1).

Other material examined
**France: Ariège:** „Grotte inférieure du Queire“, 1 $ (MHNG, Biospeologica No. 199, 870), 13.IX.1979, Hauser; Massat, „Carr. de Fallat nr. 3“, Caubère, 2 £ (MNHN, 1960); „Grotte d’Enlène“, 1 $, 4 £ (MNHN, 1960), 8.X.1964, Hubert; **Basses-Pyrénées:** „Au pied du Bois d’Orion dans l’affluent de l’Orion qui se jette dans la Petite Nive“, 1 £ (MHNG), VI.1974, Haymoz; Béhérobie, 2 $ (MHNG), VI.1974, Haymoz; „Forêt d’Orion au bord de l’Orion“, 1 $, 2 £ (MHNG), 1 $ (MCSN, 542), VI.1974, Haymoz; **Hautes-Pyrénées:** „Gr. de Gourgue“, 1 £ (MNHN, 1960), 11.VIII.1946; Bagnères de Bigorre, 1 £ (MCSN, 542).

**Portugal: Coimbra:** Albergaria, 7 £ (ZMUC, ZMUC00012624 and others), 4.VI.2005, Cardoso.

**Spain:** „Toute de l’Espagne, St. Laurent de Nesto“ (?), 2 $, 4 £ (MNHN, 1960); “Cueva de las Campanas”, Negre, 10 $, 10 £ (MNHN, 1960), 23.6.1956, Dresco; **Cantabria:** Santander, Villacarrirro, “C. de la Castañeda”, 1 $ (MNHN, Zootheque); 1 £ (SMF, coll. Franz, Slg. Wiehle); **Guipúzcoa:** Gipuzkoa, Tolosa, “C. de Hernialde”, 1 £ (MNHN, Zootheque), 10.IX.1917; „Altamira“, 1 £ (SMF, coll. Wunderlich), Wunderlich.

Diagnosis
*E. inermis* differs from other congeneric species by having distinctly annulated legs (all other *Eratigena* species with other patterns), at least two femora with more than 2 dorsal spines (could also be observed in *E. saeva* n. comb.; all other species with 1 or 2 spines), tibia I with
prolateral spines (could also be observed in *E. herculea, E. hispanica* and *E. sicana*; all other species without prolateral spines), massive transversal ridge or bulge at the conductor of the male bulb (Figs. 18 A–B, 19 a–b, distinctly different to all other species), conductor dorsally with a small rounded bulge (as in several *Tegenaria*, but not in *Eratigena* species), conspicuous big and strongly sclerotized MA, epigynal teeth absent and long appendages at CD (Figs. 19 e–f, as in *E. herculea* and *E. hispanica*). From the closely related *E. vomeroi* it can be separated by having the basal part of the median apophysis stronger sclerotized in *E. inermis* than in *E. vomeroi*, the very special massive and prominent transversal ridge at the conductor showing a distinct border line of sclerotization only indistinctly expressed in *E. vomeroi*, the long appendages anteriorly of the CD reaching at least to the top of the RC (or is even larger) in *E. vomeroi* but shorter in *E. inermis* (Figs. 19 e–h).

**Description**

**Measurements**

Male (n=1): CL 4.75, CW 3.34, STL 2.11, STW 2.04, OL 5.10, OW 2.92. Leg I (7.4, 2.02, 7.39, 8.21, -), II (6.45, 1.83, 5.83, 6.75, 3.22), III (5.78, 1.64, 4.79, 6.88, 3.04), IV (6.51, 1.66, 6.11, 7.36, -). Pedipalp (2.31, 0.76, 0.92, 2.25), bulbL 1.15.

Female (n=3): CL 5.42–5.68, CW 3.73–3.91, STL 2.17–2.56, STW 2.17–2.43, OL 6.10–8.61, OW 3.70–5.64. Leg I (5.99–7.13, 1.87–2.12, 5.69–6.81, 5.85–7.48, 3.14–3.61), II (5.35–6.39, 1.73–2.00, 4.64–5.86, 5.27–6.94, 2.81–3.14), III (4.9–6.13, 1.64–1.86, 4.02–5.10, 5.38–7.09, 2.17–2.93), IV (6.14–7.51, 1.71–1.96, 5.36–6.67, 7.49–9.37, 3.07–3.66). Pedipalp (2.55–2.56, 0.97–0.98, 1.72–1.77, 2.64–2.89). EPL 0.65–0.73, EPW 0.94–1.19, ATL 0.29–0.42, ATW 0.45–0.58.

Eyes: PME 0.22–0.26, PLE 0.22–0.28, AME 0.17–0.23, ALE 0.23–0.26. Eye distances: PME-PME 1 x PME, PME-AME 0.5–1 x PME, PME-PLE 0.5–1 x PME, PME-ALE 1–1.5 x PME, AME-AME 0.5–1 x AME, AME-ALE <0.5–0.5 x AME. CLY1 2.5–3 x AME, CLY2 1.5–2 x ALE.

**Male palp**

RTA with 2 branches, lateral branch bulge like, dorsal branch a strongly sclerotized peak. Embolus base at 8–10 o'clock. Length of free apex less than 1 1/4 CB with distal tip at 2–4 o'clock. Conductor reversed drop-shaped, folded only at the terminal half. Terminal end consists of 2 strongly sclerotized points. Dorsally with a small rounded bulge. Transversal ridge at the conductor massive and prominent, with a distinct ventral border between membranous and more sclerotized areas. Connection of conductor to tegulum is membranous. MA wider than long, originating at 5–7 o'clock, only somewhat protruding but very broad, pocket like, connection to tegulum strongly sclerotized.

**Epigyne and vulva**

Epigyne medially with a big bulge, anteriorly of which the symmetric genital openings are located in a transversally depression. Posterior sclerit absent. Epigynal teeth absent. Vulva consists of distinguishable CD, RC and FD. CD short and straight with long appendages. RC irregularly formed and not constantly sclerotized but not a real duct enclosed. FD only represented by small leave shaped appendages.

**Other important prosomal characters**

Cheliceral retromargin with 6–7 teeth. Colulus rectangular with distal margin straight. PMS with 1 elevated minor ampullate gland spigot and 3–4 cylindrical gland spigots laterally. Tarsal trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 8–10. Denticles at paired claw of leg I 12–14. Leg spination: male palp (2–1–0–0, 2–0–0–0, 1–2p–0–0), female palp (2–0–0–0 or 2–1–0–0, 2–0–0, 2–2p–0–0), leg femora (3–3–3–0 or 3–3–4–0 or 3–4–4–0, 3–3–3–0 or 3–3–4–0 or 3–3–4–0 or 3–4–4–0 or 3–4–4–0, 2–2–2–0 or 2–3–2–0 or 2–3–3–0 or 2–4–2–0 or 3–2–2–0 or 3–3–3–0), patellae (all 2–0–0–0), tibiae (0–2–0–1+2p or 0–2–0–4p, 0–2–0–1+3p or 0–2–0–4p or 0–2–1–4p (dorsally on I
& II 2 indistinct spines possible), 2–2–2–1+3p or 2–2–2–3+1p or 2–2–2–4p, 2–2–2–1+3p or 2–2–2–2+2p or 2–2–2–3+1p or 2–2–2–4p), metatarsi (0–0–0–4p+1, 0–2–0–4p+1 or 0–2–1–4p+1, 0–4–4–4p+1 or 0–5–4–4p+1, 0–5–4–4p+1).

**Colouration**

Two symmetric longitudinal dark bands dorsally on carapace present (sometimes reduced to triangular dots). Distinct sternal pattern of median region and 3 symmetric pale dots laterally, most distal pair fused to the median region (Fig. 18 G). Opisthosoma with three pale bands anteriorly, continuing to the back in chevrons. Legs annulated. ALS somewhat darkened, PLS both segments darkened.

**Distribution**

Records are know for the northern part of France, Spain and Portugal.

**Comments**

Useful drawings for the determination of this species are provided by Simon (1937) and Brignoli (1978a).

_Eratigena montigena_ (Simon, 1937) new combination

Figs. 13 E–H

_Tegenaria lusitanica_ Schenkel (1938): 11–13, fig. 4, male; synonymized by Bacelar (1940): 107.
_Tegenaria feminea_ Brignoli (1978a): 276, fig. 3, female, misidentification.

Type material examined


Other material examined


Spain: 4 £ (SMF, coll. Franz, Sig. Wiehle); Aragón: Balnearis de Panticosa, 1 £ (MCSN, 543), 17.V.1967, Osella; Castilla y León: Zamora, Sandin de Carballeda, 2 $, 3 £ (MHNG, 1 $ MCSN, 52), V.1973, VII.1975, Haymoz; Galicia: Le Ferrol, 4 £ (MNHN, 1975), Seoane.

**Diagnosis**

_A. montigena_ can easily be recognised by the very unique and distinctive terminal end of conductor in lateral view (Fig. 13 F), the shape of the one-branched and protruding RTA, the strongly sclerotised epigynal plate with two symmetrically arranged reniform depressions with its CO and the epigynal teeth and the simply shaped vulva (Figs. 13 G–H).

**Description**

**Measurements**

Measurements and detailed description of male is provided by Schenkel (1938: 11–13, sub _Tegenaria lusitanica_).

Female (n=1): CL 4.64, CW 3.14, STL 2.36, STW 2.01, OL 6.42, OW 4.16. Leg I (4.20, 1.77, 3.65, 3.65, 2.27), II (3.65, 1.60, 2.67, 3.14, 1.93), III (3.32, 1.39, 2.34, 3.44, 1.76), IV (4.39,
1.56, 3.81, 4.91, 2.14), Pedipalp (1.85, 0.80, 1.05, 1.85). EPL 0.70, EPW 1.08, ATL 0.36, ATW 0.52.

Eyes: PME 0.18, PLE 0.18, AME 0.14, ALE 0.19. Eye distances: PME-PME 1 x PME, PME-AME 1 x PME, PME-PLE 1 x PME, PME-ALE 1–1.5 x PME, AME-AME 0.5–1 x AME, AME-ALE <0.5 x AME. CLY1 2.5–3 x AME, CLY2 1–1.5 x ALE.

**Male palp**

RTA with 1 branche, laterally oblong protruding ventrad, lobe like or distally broadly truncated. Short dorsal spike at male palp tibia present. Embolus base at 10 o'clock. Length of embolus 1–1.25 CB, distal tip at 4 o'clock. Conductor with distal portion moderately elongated, shorter or almost as long as wide, not reaching distal margin of alveolus, lateral margin folded along moderately more than terminal half. Terminal end very complex with a simple and curved point ventrally and a strongly protruding and massive outgrowth dorsally, in between those structures a short sharp point. Transversal ridge at conductor membranously lamelliform. Conductor membranously connected to tegulum. MA originating at 7 o'clock, moderately protruding, as long as wide, distally with plate like sclerit froming a pocket. Connection of MA to tegulum moderately sclerotised.

**Epigyne and vulva**

Epigyne medially with a strongly sclerotised, trapezoidal to oval plate, anteriorly of which the well separated genital openings are located at the anterior end of two symmetrically arranged reniform depressions. Posterior sclerit absent. Epigynal teeth present, originating posteriolateral at the epigynal plate, medially directed. Vulva consists of short and convoluted CD leading into RC, irregularly sclerotised, enclosing convoluted ducts, separated by more than their diameter. FD only represented by small leave shaped appendages.

**Other important characters**

Cheliceral promargin with 3, retromargin with 8–9 teeth. Colulus rectangularly shaped with distal margin “w” shaped. Distal segment of PLS longer than basal segment. PMS with 1 prominent minor ampullate gland spigot and 3–4 cylindrical gland spigots laterally. Tarsal trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 7–9. Leg spination: male palp (2–0–0–0, 2–0–0, 1–1+1p–0–0 or 1–2p–0–0), female palp (2–0–0–0, 2–0–0, 2–2p–0–0), leg femora (I: 2–2–0–0. II: 2–2–0–0. III: 2–2–2–0. IV: 1–1–1–0.), patellae (all 2–0–0), tibiae (I: 0–0–0–3p, or 2–0–0–3p (dorsal spines very skinny). II: 0–1–0–3p, or 2–1–0–3p (dorsal spines very skinny). III: 2–2–2–3p. IV: 2–2–2–3p+1+1p), metatarsi (0–0–0–4p+1, 0–2–0–4p+1, 1–4–4–4p+1 or 2–4–3–5p, 2–4–4–2p+1+3p), tarsi (I–II 0, III 0–2–3–0, IV 0–2–4–0).

**Colouration**

Carapace with longitudinal dark symmetric bands, may be reduced to only triangular dots. Sternum without a pattern or with moderately paler median region. Opisthosoma dark brown-grey-green, at the cardiac mark yellowish, continuing posteriorly in broad chevrons. Legs without a pattern. ALS fairly darkened, PLS both segments darkened.

**Distribution**

Only recorded from the Iberian Peninsula (Portugal and Spain).

**Discussion**

Brignoli’s concept of *E. montigena* is slightly confusing. He illustrated of the vulva (Brignoli, 1971b) of this species under the name *Tegenaria montigena* and then again later under the name *T. feminea* on the basis on a misidentified specimen from “Zamora, env. Sandin de Carballeda” (Brignoli, 1978a: 276, fig. 3) which was reexamined here.

**Eratigena picta (Simon, 1870)** new combination


Tegenaria pusilla Simon (1870): 101, female; Becker (1896): 202, pl. 13, fig. 10, male.

Tegenaria perita Simon, (1870): 102, (juv.?).

Tegenaria malacensis Thorell (1875a): 80–81, male (wrongly cited page number and sex by Roewer (1954) and subsequently also by Platnick (2010)).


Malthonica picta Guseinov et al. (2005): 164.

Type material examined

The type specimens, representing *picta* and *pusilla*, could not be traced in the MNHN. Several specimens (MNHN) from the type locality of *picta* (Guadarrama) were determined by E. Simon.

Sub *Tegenaria minuta*: probably male holotype. Spain: Guadarrama, 1 $, 2 £ (MNHN, 1965, 476; also labelled as “*Tegenaria picta minuta*”, det. Simon; additional location-label: “Banyuls”), Simon.

Other material examined

France: „Gallia“, >10 $, >10 £ (sub *Tegenaria pusilla*, MNHN, 1962), Simon; Moulis, 1 £ (MCSN, 52), Marcuzzi; Finistère; Quimperlé, Locunolé, 1 £ (NMB, AB287), 24.IX.2005, Schönhofer; Hautes-Pyrénées: Bagnères de Bigoire (?, 10 £ (MNHN, 1965); Haute-Vienne: >10 $, >10 £ (sub *Tegenaria pusilla*, MNHN, 1962); Landes: Biscasone, >10 $, >10 £ (MNHN, 1965, 29.IV.1917, Dalmas; Manche: Tatihou, 2 £ (MNHN, 1976);


Diagnosis
E. picta and the close related E. balearica have the dorsal branche of the RTA distally elongated and bent posteriad (all other species of Eratigena n. gen. with differently shaped RTA), a short dorsal spike at male palp tibia (absent in E. inermis, E. vomeroi, E. arganoi, E. saroda, E. sicana, E. hispanica, E. herculea, E. incognita and E. feminea), a moderately to strongly elongated distal portion of conductor (not elongated in E. inermis, E. vomeroi, E. atrica – complex, E. agrestis and E. fuesslini), the distal margin of conductor entirely folded (shared character with E. herculea, E. hispanica, E. arganoi, E. sardoa and E. sicana) and an epignye with distinct atrial cavity (shared character with E. agrestis and E. fuesslini, absent in all other Eratigena n. gen. species). Male E. picta can easely be separated from the closely related E. balearica by having the distal portion of conductor much more elongated, the more convoluted terminal end of conductor and the relatively much shorter male palpal tibia. Females of E. picta can be separated from E. balearica females by the shape of the transparently visible CD on the epigynal plate and the very differently shaped vulvae.

Description
Redescriptions of E. picta are, at least partly, provided by Dahl (1931: 32-33 sub Tegenaria picta, 41–42 sub T. pusilla) and Jones (1984). Partly good drawings are also provided by Brignoli (1971b).

Distribution
Records are known in all most western European countries. The eastern boundary of distribution my run through western Germany and Switzerland. Records from Hungary, the Balkan region and Russia may be doubtful (see e.g. Delshev, 2008a).

Discussion
In E. picta an incredibly high variation in size can be observed which influence also the genital structures (Figs. 17 A–B). Such a variation is also found in other related species (e.g. Bolzern et al., 2008: 763; Kraus, 1955: 379; Simon, 1937: 1003).
Together with E. balearica E. picta forms the “picta-group”. This is in contrast to previous concepts which are based on that of Simon (1937) who grouped E. picta with Aterigena soriculata and A. ligurica (all sub Tegenaria) making it polyphyletic.

**Eratigena sardoa** (Brignoli, 1977) new combination
Figs. 16 I–J, P–Q


Type material examined
All type material (5 £) and other specimens had been examined and listed in Bolzern et al. (2008).

Other material examined
**Italy: Sardinia**: Cagliari, Pula, Is Cannoneris, 3 £ (MSNB, 002), 1.XII.2006, Rizzante; Sorgono, 1 $, 1 £ (sub Tegenaria ericarum, NHMW), 15.X.1938, Krausse.

Diagnosis
_E. sardoa_ can be separated from E. herculea and E. hispanica by the characters mentioned in the diagnosis section of E. arganoi. From E. arganoi and E. sicana it can be separated by the simple pointed dorsal branch of the RTA (as in E. sicana, complex and with 3 points in E.
arganoi), the very long drawn out and strongly sclerotised terminal end of conductor (much shorter in the other species), the very long and convoluted CD with attached appendages (as in E. arganoi, much shorter and straight in E. sicana) and the globular and smoothly sclerotised RC (oblong oval and irregularly sclerotised in E. arganoi, with 2 pairs of globular RC in E. sicana).

Description and other information are provided by Brignoli (1977a) and Bolzern et al. (2008).

Distribution
Endemic to Sardinia.

Eratigena sicana (Brignoli, 1976) new combination
Figs. 16 E, K

Malthonica sicana Brignoli (1976a): 30–33, figs. 1–2, 4.

Material examined
Some type material (£ holotype, several $ and £ paratypes) and other specimens had been examined and listed in Bolzern et al. (2008).

Diagnosis
E. sicana can be separated from E. herculea and E. hispanica by the characters mentioned in the diagnosis section of E. arganoi. From E. arganoi and E. sardoa it can be separated by the simple pointed dorsal branch of the RTA (as in E. sardoa, complex and with 3 points in E. arganoi), the relative bulb to cymbium length (ratio equal or shorter 0.5, in the other species larger than 0.6), the relatively long male palp tibia (shorter in the other species), short and straight CD and the presence of two pairs (one smaller than the other) globular and smoothly sclerotised RC (long and convoluted CD with attached diverticula and one pair of RC in the other species).

Description and other information are provided by Brignoli (1976a) and Bolzern et al. (2008).

Distribution
Endemic to Sicily (Brignoli, 1976a) and Sardinia (Bolzern et al., 2008).

Eratigea vomeroi (Brignoli, 1977) new combination
Figs. 18 C–D, H–L, 19 c–d, g–h

Tegenaria vomeroi Brignoli (1977a): 50–51, figs. 31–33.
Malthonica vomeroi Guseinov et al. (2005): 164.

Type material examined

Other material examined
Italy: Calabria: Cosenza, close to Paola, 1 £ (NMB, AB739), 29.V.2007, Bolzern, “pine forest, at stones and bark”; Campania: Salerno, Sanza, beech grove, Monte Cervati, 3 £, 1 juv. (NMB, AB721, AB734, AB829*); 31.V.2007, Bolzern, “at stones in a beech forest”. *specimen was juvenile when collected, adult at 27\textsuperscript{th} of August.

Diagnosis
See diagnosis section at E. inermis.

Description
Measurements
Male (n=1): CL 5.59, CW 3.97, STL 2.58, STW 2.47, OL 6.0, OW 3.6. Leg I (10.20, 2.23, 10.00, 11.00, 4.60), II (8.63, 2.15, 7.28, 10.10, -, ) III (6.98, 1.88, 6.15, 9.50, 3.58), IV (9.90, 1.92, 7.88, 12.60, 4.31). Pedipalp (2.55, 0.86, 1.12, 2.64), bulbL 1.06?


Eyes: PME 0.23–0.26, PLE 0.25–0.27, AME 0.21–0.24, ALE 0.25–0.32. Eye distances: PME-PME 1 x PME, PME-AME 0.5–1 x PME, PME-PLE 0.5–1 x PME, PME-ALE 1–1.5 x PME, AME-AME 0.5–1 x AME, AME-ALE <0.5–0.5 x AME. CLY1 2.5–3 x AME, CLY2 1.5–2 x ALE.

Male palp
As in E. inermis except massive transversal ridge at the conductor with indistinct ventral border between membranous and more sclerotised areas.

Epigyne and vulva
As in E. inermis. Since the appearance of the epigyne and vulva seems to be quite variable, no distinct differences between the two species could be found.

Other important characters and colouration
As in E. inermis except spination at male and female palp femora 2–1–1–0.

Distribution
Central to Southern Italy.

3.2.5. Genus diagnosis and description: Tegenaria Latreille, 1804

Genus: Tegenaria Latreille, 1804

„Tapiformes (Vestiariae)“ Walckenaer, 1802: 215.

Tegenaria Latreille (1804): 134.

Type species: Tegenaria domestica (Clerck, 1757), sub Araneus domesticus

Diagnosis
Agelenid spiders bearing the combination of following characters: plumous hairs present (absent in Lycosoides, Maimuna and Textrix). AER and PER straight or only slightly pro- or recurved in dorsal view (both rows recurved in Lycosoides, Maimuna and Textrix; both rows procurred in Agelena, Agelescape, Allagelena and Benoitia) and moderately procurred in frontal view (AER strongly procurred in Agelena, Agelescape, Allagelena, Benoitia and Malthonica; AER recurved in Lycosoides, Maimuna and Textrix). Cheliceral retromargin with
3–6 teeth (less than 3 teeth in *Lycosoides*, *Maimuna* and *Textrixa*; 6 and more teeth in *Eratigena* n. *gen.* approximately equally in size (as is in *Histopona*, all other European genera different pattern). Trochanter straight or slightly curved (notched in *Aterigena*, *Histopona* and *Malthonica*). Patellae with dorsal but no lateral spines (as is in *Eratigena* n. *gen.*, *Histopona* and *Malthonica*; all other European genera with lateral patellar spines). Absence of ventral spines at all tarsi (as is in *Eratigena* n. *gen.* and *Malthonica*; all other European genera with ventral spines). Colulus expressed as trapezoidal plate with the distal margin straight or notched medially (in *Eratigena* n. *gen.* more rectangular or “w”-shaped; colulus strongly reduced in *Hadites* and *Malthonica*; two separated plates in all other European Agelenids). Females with 1–2 minor ampullate gland spigots and 2–3 cylindrical gland spigots, 2–3 spigots conspicuously prominent on PMS (as in *Histopona*, all other European genera with other pattern). Male palp: RTA with a lateroventral ridge (absent in *Eratigena* n. *gen.*, *Histopona* and *Malthonica*), filiform embolus (sometimes terminally truncated), lamelliform conductor with a mostly simple ventral terminal ending (dorsal part may be more complex; more complex or strongly elongated in *Eratigena* n. *gen.*, *Allagelena* and *Maimuna*), elongated median apophysis with distal sclerite (absent in *Histopona* and *Textrixa*; without sclerite in *Agelescape* and *Benoitia*). Female: epigyne with a separated median region (strongly fused or absent in *Agelescape*, *Allagelena*, *Benoitia*, *Eratigena* n. *gen.*, *Lycosoides* and *Maimuna*). Vulvae very differently shaped but always without diverticula or long appendages at any duct.

**Description**

Body size medium to large (carapace length between 2 and 6 mm). Margin of carapace narrowly darkened, mostly with 3 crescent shaped spots (for cave living species, pigmentation is absent); two symmetric longitudinal dark bands dorsally on carapace present, serrated or reduced to 3 to 4 pronounced triangles. Sternum slightly longer than wide with a distinct pattern of pale median band and 3–4 lateral spots, sometimes fused together; plumose hairs present on carapace, legs and opisthosoma. Chelicerae with 3–5 promarginal teeth and 3–6 retromarginal teeth, the later all equal in size (sometimes second proximal tooth somewhat smaller or most proximal somewhat bigger). Labium wider as or as wide as long. AER and PER straight or only slightly pro- or recurved in dorsal view and moderately procured in frontal view. AME, sometimes also PME, somewhat smaller than all other eyes, which are approximately equal in size. All trochanter straight or slightly curved. Leg I or IV longest, III shortest. All legs annulated or no pattern expressed. Palp and leg spination: palpal femora with 1–3 dorsal and sometimes 1 prolateral spines, female palp tibia with 2 dorsal and 2 prolateral spines (exception: *T. ariadnae*, 1 paired + 1 spines), male palp tibia without, 1–2 or 1 pair of prolateral spines; all leg femora with 1–2 dorsal spines and variable lateral spines, patellae with 2 dorsal and no lateral spines, metatarsi without or III and IV sometimes with 1–2 dorsal spines, metatarsus I without or 1 prolateral spine, others variable lateral spines, metatarsi III and IV with 1pair +1 ventrodistal spines, tarsi I and II spineless, III and IV with 0–1 prolateral and 1 to several retrolateral spines, no ventral spines. Spinnerets: colulus developed as trapezoidal plate with the distal margin straight or notched medially. ALS one segmented, distally with a field of several pyriform spigots and medially with 2 major ampullate spigots (present in all Agelenids). PMS as long as or slightly shorter than ALS, bearing 2–3 conspicuously prominent spigots. PMS of females with 1–2 minor ampullate and 2–3 cylindrical spigots (2–3 spigots are prominent medially) and several aciniform gland spigots. PLS longer than all others with distal segment shorter or longer than basal segment. PLS bearing 1 basal and 1 medial cylindrical spigots. Male palp without femoral and patellar apophyses. RTA 2–3 branched, mostly complex (several peaks, bent points, fused branches) and with lateroventral ridge, potentially somewhat reduced. Embolus filiform, getting thinner to apex (may be truncated in some species); sometimes with special formed terminal end.
Conductor mostly lamelliform (in some species very differently expressed), moderately to strongly elongated distal portion, lateral margin folded along the whole length, terminal end (proximal, best viewed from retrolateral) mostly bifid, dividing it in a ventral (functional) and dorsal part (dorsal ending sometimes reduced to rounded bulge). Median apophysis elongated, consisting of membranous base and distal sclerite which is spoon-, thorn- or hook like or more complexly shaped, always membranously connected to the tegulum. Epigynal plate strongly sclerotised with at least moderately distinct median plate with distinct lateral disruptions (lateral margin of median region); median plate may be interrupted transversally, forming a posterior sclerit. Epigynal teeth mostly absent; if present, expressed as “pseudo teeth” (= elongation of lateral margin limiting median region) or denticles originating anteriorly of the genital openings. Vulva consists of 1 or 2 pairs of receptacula or only of a convoluted duct (in some species, a mergence of sclerotised parts can be observed); often with a less sclerotised segment at its origin. Fertilisation ducts mostly only represented by the short leaf shaped appendages.

Distribution
Most species are limited to southeastern Europe and western Asia. Some species, e. g. T. domestica, are globally distributed, most probably due to introductions by man.

3.2.6. Key to European Tegenaria species

In the following key, only European species are included. Following species are excluded as material was unavailable for examination or was in poor state: T. animata Kratochvil & Miller, 1940, T. bayeri Kratochvil, 1934, T. bosnica Kratochvil & Miller, 1940, T. chumachenkoi Kovblyuk & Ponomarev, 2008, T. decolorata Kratochvil & Miller, 1940), T. oribata Simon, 1916, T. podoprygorai (Kovblyuk, 2006), T. scopifera Barrientos, Ribera & Pons, 2002 and T. taurica Charitonov, 1947. Due to the absence of available material only the male of Tegenaria lapicidinarum Spassky, 1934 and the female of Tegenaria levantina Barrientos, 1981 are included in the key.

1 Male......................................................................................................................... ......... 2
- Female ........................................................................................................................................ 35
2 Row of several dorsal trichobothria present on cymbium................................................ 3
- Trichobothria on cymbium absent.................................................................................. 12
3 Tegular apophysis between tegulum and conductor present (e. g. Figs. 20 I)................. 4
- Tegular apophysis absent ......................................................................................... 6
4 Tegular apophysis protruding only retrolaterad, ventral branch of RTA with indistinct
   rim and moderately protruding bulge................................................................. eleonorae
- Tegular apophysis protruding also distally, ventral branch of RTA with distinct
   longitudinal rim........................................................................................................ 5
5 Ventral branch of RTA with long drawn out rim, almost as long as palpal tibia, distal
   branch of conductor reaching 2/3 of cymbium tip, distal segment of PMS shorter than
   basal segment ........................................................................................................ armigera
- Long drawn out rim of RTA relatively shorter than palpal tibia, distal branch of
   conductor reaching 1/3 of cymbium tip, distal segment of PMS longer than basal
   segment........................................................................................................ tyrrenica
6 Dorsal branch of RTA with 2–3 elongated spine like points........................................... 7
- Dorsal branch of RTA different ............................................................................... 8
7 Distal portion of conductor transversal to cymbium......................................................... dalmatica
- Distal portion of conductor parallel to cymbium .....................................................ramblae
8 Dorsal branch of RTA strongly protruding and pointed ........................................... 9
- Dorsal branch of RTA distally truncated and stepped .................................................. 10
9 Ventral branch of RTA distally not protruding, terminal end of conductor bifid (retrolateral view) .................................................................femoralis
- Ventral branch of RTA distally tusk like elongated and protruding, terminal end of conductor indistinctly bifid (retrolateral view) ...........................................annulata
10 Conductor much shorter than cymbium .................................................. parietina
- Conductor longer than 3/4 cymbium length .............................................................. 11
11 Lateral branch of RTA distinctly truncated, flat, ventral portion of terminal end of conductor truncated.................................................................ferruginea
- Lateral branch of RTA moderately pointed, longer than broad, ventral portion of terminal end of conductor pointed ........................................carensis
12 Median apophysis with distal sclerite plate-, spoon- or pocket like ..................... 13
- Median apophysis with distal sclerite forming a finger shaped, thorn- or hook-like structure (can be in combination with a plate) .......................................................... 21
13 RTA with dorsal and lateral branch equally long, dorsal branch distally truncated (Figs. 21 b, 22 C, 25 J), median apophysis long band-like, distally moderately bent ventrad. 14
- RTA and median apophysis differently shaped .......................................................... 15
14 Embolus short and distally truncated, distal portion of conductor only moderately elongated .......................................................... domestica
- Embolus longer, filamentous, distal portion of conductor longer than wide, conductor with bifid terminal end with very distinctive formed dorsal part .................. annae n. sp.
15 Distal portion of conductor almost parallel to cymbium ........................................ 16
- Distal portion of conductor transversal to cymbium, elongated posteriad, RTA with a row of small denticles .................................................................argaeica
16 RTA with lobe, bulge or rim like dorsal branch .................................................. 17
RTA with pointed branche/branches ........................................................................ 18
17 RTA with strongly protruding lobe or rim like dorsal branch, very special formed terminal end of conductor, tegular apophysis absent, cymbium inconspicuous ........................................... hauseri
RTA with bulge like branches, terminal end of conductor inconspicuously pointed, lamelliform tegular apophysis present, cymbium conspicuously modified and distally elongated .................................................. ariadnae
18 Lateral branch of RTA shifted posteriad (originating median of the tibia), distant, strongly protruding and pointed ........................................... vankeeri n. sp.
- Lateral branch of RTA different ........................................................................... 19
19 Conductor reduced to transparent lamelliform appendage ................................ racovitzai
- .......................................................................................................................... 20
20 RTA with two strongly sclerotised points, tegular apophysis absent .................... hasperi
- RTA with only one strongly sclerotised point, tegular apophysis expressed as pocket like structure .................................................................................... rhodiensis
21 Ventral part of terminal end of conductor distinctly elongated and pointed (Figs. 28 a, b, d, e), dorsal part complex ................................................................. 22
- Different ........................................................................................................... 24
22 RTA with massive protruding bulge, good visible in ventral view ........ circeoensis n. sp.
- RTA lobe or moderately bulge like, may be distally bent ........................................ 23
23 RTA distally not bent, dorsal part of terminal end of conductor convex “rounded” ................................................................. parmenidis
- RTA distally bent, dorsal part of terminal end of conductor concave or straight sbordonii
24 Dorsal branch of RTA broadly elongated and protruding, distally bifid (Fig. 26 G)
............................................................................................................................campestris, bozhkovi, montana, rilaensis
- Dorsal branch of RTA differently shaped or absent ........................................... 25
25 Lateral branch of RTA broad and strongly protruding, distally with a straight, truncated
ventral part and a strongly elongated, finger shaped dorsal protuberance (Fig. 23 F, H),
conductor and median apophysis strongly elongated and narrowly pointed, hook like
(Fig. 23 F–I) ...........................................................................................................schoenhoferi n. sp.
- Lateral branch of RTA different, never conductor and median apophysis strongly
elongated and narrowly pointed, hook like .................................................................. 26
26 Tegulum medially strongly protruding (Figs. 36 B, F, 37 b–c) ........................................ 27
- No distinct protuberance at medially of the tegulum ............................................. 28
27 Dorsal branch of RTA truncated, median protrusion of tegulum more or less constantly
rounded (Fig. 36 B), distal end of distal portion of conductor moderately bent ventrad
(lateral viewed) ...........................................................................................................silvestris
- Dorsal branch of RTA hook like pointed and distally bent ventrad, median protrusion of
tegulum distally bent (Fig. 36 F), distal portion of conductor straight (lateral viewed)
............................................................................................................................... parvula
28 Embolus relatively short, not exceeding cymbium width or truncated.......................... 29
- Embolus long, filiform .................................................................................................. 31
29 Terminal end of embolus truncated ........................................................................... mirifica
- Terminal end of embolus pointed ............................................................................... 30
30 Conductor with distinctly protruding dorsal portion, terminal end of conductor bifid,
RTA with two protruding points ................................................................................. mercanturensis
- Dorsal portion of conductor not protruding, terminal end of conductor with only one
point, RTA different ................................................................................................... percuriosa
31 Conductor parallel to cymbium ................................................................................... 32
- Dorsal portion of conductor transversally orientated to cymbium.............................. pagana
32 Distal branch of RTA distinctly leave-shaped .............................................................. regispyrrhi
- Distal branch of RTA different .................................................................................... 33
33 Dorsal branch of RTA hook like, pointing anteriad, distinct rim at conductor present
................................................................................................................................. henroti
- Dorsal branch of RTA pointed, straight or distally bent ventroposteriad....................... 34
34 Dorsal branch of RTA pointed and distally bent ventroposteriad, terminal end of
conductor bifid ............................................................................................................. tridentina
- Dorsal branch of RTA pointed but not bent, terminal end of conductor with one point
only .............................................................................................................................. lapidicinarum
35 Row of several dorsal trichobothria present on palp tarsus ........................................ 36
- Trichobothria on palp tarsus absent ............................................................................... 45
36 Epigyne with distinct band or bar like posterior sclerite with anterior margin concave 37
- Epigyne without posterior sclerite or with sclerite with anterior margin convex ....... 40
37 Posterior sclerite posteriorly protruding along its whole width (Fig. 25 C) ................. caresensis
- Posterior sclerite with straight posterior margin or only medially protruding ............. 38
38 Posterior sclerite medially almost half as long as wide .............................................. ramblae
- Posterior sclerite mediiallya much shorter than wide ................................................. 39
39 Lateral margins of the median region of the epigyne follows distinctly the run of the
posterior sclerite (especially anteriorly, Fig. 33 C, white arrow), vulva strongly
convoluted (in two spirals), separated by less than 2 duct diameters, more than 3 in T.
parietina) ...................................................................................................................... ferruginea
- Lateral margins of the median region of the epigyne runs toward the middle of the
epigyne (Fig. 33 G, white arrow), vulva less convoluted (especially first spiral),
separated by more than 3 duct diameters ................................................................. parietina
40. Epigyne with well separated posterior sclerite, expressed as large plate or bulge...
41. Epigyne without posterior sclerite or with median plate distinctly connected to epigynal plate (anteriorly) or with broad opening posteriorly
42. Posterior sclerite expressed a large plate, copulatory openings laterally of this plate (Fig. 31 H)................................................................. *eleonorae*
43. Posterior sclerite bulge like.................................................................................................................................................. 42
44. Posterior sclerite globular bulge like, copulatory openings laterally, vulva strongly convoluted, almost touching each other .................................. *tyrrhenica*
45. Posterior sclerite trapezoidal bulge like, copulatory openings anteriorly, vulva distinctly convoluted, well separated.......................................................... 45
46. Epigyne with a distinct, strongly sclerotised transversal rim forming a pocket, opening anteriad (Figs. 30 C)................................. *hauseri*
47. Epigyne with protruding median plate, suboval, anteriolaterally with distinct pockets, opening medioposteriad, orthogonal in the middle of each of these pockets another pocket originates orthogonally (Figs. 35 C–E, I)......................................................... *regispyrri*
48. Epigyne with a distinct posterior sclerite, expressed as bar-, bulge- or plate like structure
................................................................. 47
49. Posterior sclerite absent or strongly fused with epigynal plate........................... 59
50. Posterior sclerite expressed as plate like structure reaching the anterior margin of median region or bulge like with anterior margin convex, “pseudo teeth” present...... 51
51. Posterior sclerite expressed as plate like structure reaching the anterior margin of median region, “pseudo teeth” absent......................................................... *regispyrri*
52. “Pseudo teeth” present.................................................................................................................. 53
53. CT longer than 3 mm, vulva as long as wide, sub circularly shaped ............... *domestica*
54. Posterior sclerite broad pocket like or narrow semi circularly shaped, protruding posteriad ......................................................................................................................... 54
55. Posterior sclerite broad bar- or bulge like, only inconspicuously protruding........... 56
Epigyne distinctly shaped like a “half-mask” (Fig. 20 M), vulva as in Fig. 20 N–O.

- Posterior sclerite narrow semi circularly shaped, protruding posteriad, vulva with distinct appendages, visible trough the epigynal plate............................... *percuriosa*

Distal margin of posterior sclerite straight............................................................... *faniapollinis*

- Distal margin of posterior sclerite concave........................................................................ 57

Distal margin of posterior sclerite only moderately concave, as wide as deep, vulva globularly shaped ................................................................. *pieperi*

- Distal margin of posterior sclerite distinctly concave or anteriorly with a very distinct, tongue like median septum, vulvae without distinguishable RC, duct like ............... 58

Distal margin of posterior sclerite distinctly concave, semi circularly shaped (Fig. 34 E) .................................................................................................................. *tridentina*

- Anteriorly of posterior sclerite with a very distinct, tongue like median septum (Fig. 34 I) ......................................................................................... *levantina*

Epigyne with distinct epigynal teeth, originating at the posterior margin of the median plate or “pseudo teeth” (distally pointed projections of lateral margin of median region) ................................................................. 60

- Epigyne without epigynal teeth.................................................................................. 61

Epigynal median region anteriorly continuously separated from the epigynal plate by a distinctly sclerotised rim (Figs. 29 F, white arrow) ............................................................................................... 64

- Distinct separation of the median region by a sclerotised rim absent..................... 68

Median region oval, no pocket expressed, vulva sub rectangular shaped .......... *mirifica*

- Median region rectangular or trapezoidal shaped, vulva globular or sub oval shaped .. 65

Median region with a distinct pocket in the middle, opening anteriad ............... 66

- Median region without median pocket................................................................. 67

Copulatory openings are located at the lateral sides of the median pocket.......... *sbdornoi*

- Copulatory openings are much more anteriorly located (Fig. 28 j) ...................... *parmenidis*

Copulatory openings originating distant from the lateral rim, no lateral pockets developed .................................................................................................................. *capolongoi*

- Copulatory openings originating right at the lateral rim, distinct pockets posteriorly of the copulatory openings at the lateral rim present.............................................. *circeoensis n. sp.*

Distinct median plate, smoothly sclerotised, vulva developed as a strongly convoluted duct ........................................................................................................ 69

- Median plate distinctly or indistinct, mostly irregularly sclerotised, vulva globular or irregularly shaped, never only duct like ............................................. 71

Epigynal median plate almost as long as wide, epigyne and vulva as in Figs. 36, 37.. 70

- Epigynal median plate wider than long (Figs. 26 A–B).............................................

- Epigynal teeth, originating at the posterior margin of the median plate.............. *rhodiensis*

- “Pseudo teeth” (distally pointed projections of lateral margin of median region) present

Epigyne with distinct epigynal teeth, originating at the posterior margin of the median plate or “pseudo teeth” (distally pointed projections of lateral margin of median region) ................................................................. 60

- Epigyne without epigynal teeth.................................................................................. 61

Epigynal median region anteriorly continuously separated from the epigynal plate by a distinctly sclerotised rim (Figs. 29 F, white arrow) ............................................................................................... 64

- Distinct separation of the median region by a sclerotised rim absent..................... 68

Median region oval, no pocket expressed, vulva sub rectangular shaped .......... *mirifica*

- Median region rectangular or trapezoidal shaped, vulva globular or sub oval shaped .. 65

Median region with a distinct pocket in the middle, opening anteriad ............... 66

- Median region without median pocket................................................................. 67

Copulatory openings are located at the lateral sides of the median pocket.......... *sbdornoi*

- Copulatory openings are much more anteriorly located (Fig. 28 j) ...................... *parmenidis*

Copulatory openings originating distant from the lateral rim, no lateral pockets developed .................................................................................................................. *capolongoi*

- Copulatory openings originating right at the lateral rim, distinct pockets posteriorly of the copulatory openings at the lateral rim present.............................................. *circeoensis n. sp.*

Distinct median plate, smoothly sclerotised, vulva developed as a strongly convoluted duct ........................................................................................................ 69

- Median plate distinctly or indistinct, mostly irregularly sclerotised, vulva globular or irregularly shaped, never only duct like ............................................. 71

Epigynal median plate almost as long as wide, epigyne and vulva as in Figs. 36, 37.. 70

- Epigynal median plate wider than long (Figs. 26 A–B).............................................

- Epigynal teeth, originating at the posterior margin of the median plate.............. *rhodiensis*

- “Pseudo teeth” (distally pointed projections of lateral margin of median region) present

Epigyne with distinct epigynal teeth, originating at the posterior margin of the median plate or “pseudo teeth” (distally pointed projections of lateral margin of median region) ................................................................. 60

- Epigyne without epigynal teeth.................................................................................. 61

Epigynal median region anteriorly continuously separated from the epigynal plate by a distinctly sclerotised rim (Figs. 29 F, white arrow) ............................................................................................... 64

- Distinct separation of the median region by a sclerotised rim absent..................... 68

Median region oval, no pocket expressed, vulva sub rectangular shaped .......... *mirifica*

- Median region rectangular or trapezoidal shaped, vulva globular or sub oval shaped .. 65

Median region with a distinct pocket in the middle, opening anteriad ............... 66

- Median region without median pocket................................................................. 67

Copulatory openings are located at the lateral sides of the median pocket.......... *sbdornoi*

- Copulatory openings are much more anteriorly located (Fig. 28 j) ...................... *parmenidis*

Copulatory openings originating distant from the lateral rim, no lateral pockets developed .................................................................................................................. *capolongoi*

- Copulatory openings originating right at the lateral rim, distinct pockets posteriorly of the copulatory openings at the lateral rim present.............................................. *circeoensis n. sp.*

Distinct median plate, smoothly sclerotised, vulva developed as a strongly convoluted duct ........................................................................................................ 69

- Median plate distinctly or indistinct, mostly irregularly sclerotised, vulva globular or irregularly shaped, never only duct like ............................................. 71

Epigynal median plate almost as long as wide, epigyne and vulva as in Figs. 36, 37.. 70

- Epigynal median plate wider than long (Figs. 26 A–B).............................................

- Epigynal teeth, originating at the posterior margin of the median plate.............. *rhodiensis*

- “Pseudo teeth” (distally pointed projections of lateral margin of median region) present

Epigyne with distinct epigynal teeth, originating at the posterior margin of the median plate or “pseudo teeth” (distally pointed projections of lateral margin of median region) ................................................................. 60

- Epigyne without epigynal teeth.................................................................................. 61

Epigynal median region anteriorly continuously separated from the epigynal plate by a distinctly sclerotised rim (Figs. 29 F, white arrow) ............................................................................................... 64

- Distinct separation of the median region by a sclerotised rim absent..................... 68

Median region oval, no pocket expressed, vulva sub rectangular shaped .......... *mirifica*

- Median region rectangular or trapezoidal shaped, vulva globular or sub oval shaped .. 65

Median region with a distinct pocket in the middle, opening anteriad ............... 66

- Median region without median pocket................................................................. 67

Copulatory openings are located at the lateral sides of the median pocket.......... *sbdornoi*

- Copulatory openings are much more anteriorly located (Fig. 28 j) ...................... *parmenidis*

Copulatory openings originating distant from the lateral rim, no lateral pockets developed .................................................................................................................. *capolongoi*

- Copulatory openings originating right at the lateral rim, distinct pockets posteriorly of the copulatory openings at the lateral rim present.............................................. *circeoensis n. sp.*

Distinct median plate, smoothly sclerotised, vulva developed as a strongly convoluted duct ........................................................................................................ 69

- Median plate distinctly or indistinct, mostly irregularly sclerotised, vulva globular or irregularly shaped, never only duct like ............................................. 71

Epigynal median plate almost as long as wide, epigyne and vulva as in Figs. 36, 37.. 70

- Epigynal median plate wider than long (Figs. 26 A–B).............................................

- Epigynal teeth, originating at the posterior margin of the median plate.............. *rhodiensis*

- “Pseudo teeth” (distally pointed projections of lateral margin of median region) present

Epigyne with distinct epigynal teeth, originating at the posterior margin of the median plate or “pseudo teeth” (distally pointed projections of lateral margin of median region) ................................................................. 60

- Epigyne without epigynal teeth.................................................................................. 61

Epigynal median region anteriorly continuously separated from the epigynal plate by a distinctly sclerotised rim (Figs. 29 F, white arrow) ............................................................................................... 64

- Distinct separation of the median region by a sclerotised rim absent..................... 68

Median region oval, no pocket expressed, vulva sub rectangular shaped .......... *mirifica*

- Median region rectangular or trapezoidal shaped, vulva globular or sub oval shaped .. 65

Median region with a distinct pocket in the middle, opening anteriad ............... 66

- Median region without median pocket................................................................. 67

Copulatory openings are located at the lateral sides of the median pocket.......... *sbdornoi*

- Copulatory openings are much more anteriorly located (Fig. 28 j) ...................... *parmenidis*

Copulatory openings originating distant from the lateral rim, no lateral pockets developed .................................................................................................................. *capolongoi*

- Copulatory openings originating right at the lateral rim, distinct pockets posteriorly of the copulatory openings at the lateral rim present.............................................. *circeoensis n. sp.*

Distinct median plate, smoothly sclerotised, vulva developed as a strongly convoluted duct ........................................................................................................ 69

- Median plate distinctly or indistinct, mostly irregularly sclerotised, vulva globular or irregularly shaped, never only duct like ............................................. 71

Epigynal median plate almost as long as wide, epigyne and vulva as in Figs. 36, 37.. 70

- Epigynal median plate wider than long (Figs. 26 A–B).............................................
72 Strongly sclerotised epigyne, copulatory openings triangular or almond like shaped, vulva sub oval shaped ..............................................................ariadnae  
- Epigyne less sclerotised without distinct median plate, vulva irregularly formed or with convoluted fertilisation duct................................................................. 73

73 Indistinct median region rectangular shaped, copulatory openings at the anterior border of this area, most often plugged, vulva very distinctly shaped (Fig. 20 L).......... hasperi
- Median region trapezoidal shaped, copulatory opening laterally of this area, ducts and receptaculi well visible through the epigynal plate, vulva with broad copulatory ducts, small globular receptaculum and convoluted fertilisation duct (Fig. 30 K–O)..................

.....................................................................................................................croatia n. sp.

3.2.7. Tegenaria species

The species are listed in alphabetic order for each of which taxonomical and nomenclatural relevant references are provided (e.g. first descriptions, synonymies). The species are diagnosed with the key. In some cases additional diagnostic or grouping characters are provided. For additional citations concerning the distribution (see e. g. van Helsdingen, 2009) or published illustrations see Bonnet (1959) and Platnick (2010).

The examined material is listed in following order: Country: state/region/canton: commune, locality, number of specimens (comments, Collection code, voucher number), collecting date, collector(s).

Tegenaria achaea Bringoli, 1977
Fig. 20 A–B

Tegenaria achaea Brignoli (1977b): 945, fig. 4, female.

Type material examined

Description
General description is provided by Brignoli (1977b). Due to his statement on page 945, “Misura: (in mm, leggermente approssimate):…” (Brignoli, 1977b: 945), the two females are remeasured here:
Female (n=2): CL 2.03–2.60, CW 1.46–1.91, STL 1.01–1.33, STW 1.01–1.15, OL 3.72, OW 2.69. Leg I (3.41, 1.04, 3.22, 3.3, 1.9), II (2.54–2.75, 0.78–0.92, 2.22–2.68, 2.33–3.05, 1.36–1.53), III (2.15, 0.66, 1.89, 2.3, 1.15), IV (2.68–3.56, 0.76–0.96, 2.48–3.26, 3.14–4.08, 1.37–1.57). Palp (0.99–1.31, 0.35–0.51, 0.79–0.92, 0.88–1.19). Eyes: PME 0.08, PLE 0.09, AME 0.06, ALE: 0.09. Eye distances: PME-PME 1.5 x PME, PME-AME 1.5 x PME, PME-PLE 1.5 x PME, PME-ÂLE 1–1.5 x PME, AME-AME 1 x AME, AME-ÂLE 1 x AME.

Distribution
The only records known are the type specimens from the island Ikaria, Greece.

Tegenaria animata Kratochvíl & Miller, 1940
Tegenaria animata Kratochvíl & Miller (1940): 196–198, fig. 4, female.
**Pseudotegenaria animata** Lehtinen (1967): 261; transfer doubted by Brignoli (1971a: 61); rejected by Bolzern et al (accepted).

No material examined, type material probably lost (see Ruzicka, Kurka, Buchar, & Rezac, 2005).

**Description**
A very detailed description, including measurements, is provided by Kratochvíl & Miller (1940).

**Distribution**
The species is recorded from Serbia and Montenegro and Macedonia (Platnick, 2010; van Helsdingen, 2009).

**Tegenaria annae** new species
Figs. 21 a–d, 22 A–G

**Type material**

**Etymology**
The species is named after the youngest sister of Johan and Koen van Keer (Belgium), Ann van Keer. It was the wish of Ann’s brothers to dedicate a new spider species to her as a special gift; genitive singular case, first declension.

**Diagnosis**
The dorsal part of the bifid terminal end of the conductor and the RTA with its round and plate like ventral branch are two very distinctive character for the determination of *T. annae n. sp.* and not confusable with other known species so far. Females do show a close similarity in genitalia with *T. domestica* but can be separated from this species by the distinctly oval oblong vulva (more irregularly globular in *T. domestica*).

**Description**
*Measurements*

**Male** (n=2): CL 3.40–3.46, CW 2.65–2.81, STL 1.71–1.73, STW 1.63–1.66, OL 4.12–4.42, OW 2.66–3.03. Leg I (3.91–4.18, 1.29–1.38, 3.64–3.82, 3.91–4.29, 2.29–2.50), II (3.74–3.87, 1.26–1.37, 3.07–3.36, 3.54–3.99, 1.98–2.24), III (3.64–3.73, 1.31–1.35, 3.09–3.16, 3.81–3.84, 1.70–1.89), IV (4.37–4.62, 1.08–1.35, 3.84–4.04, 4.85–4.98, 1.91–2.17). Pedipalp (1.32–1.39, 0.51–0.52, 0.50–0.54, 1.45–1.49), bulbL 0.86–0.98.

**Female** (n=2): CL 2.39–2.99, CW 1.80–2.24, STL 1.17–1.55, STW 1.12–1.38, OL 2.95–3.34, OW 1.94–2.27. Leg I (2.42–3.02, 0.87–1.10, 2.24–2.77, 2.32–2.91, 1.49–1.83), II (2.14–2.78, 0.75–0.99, 1.97–2.39, 2.06–2.60, 1.26–1.56), III (2.06–2.73, 0.66–0.88, 1.75–2.03, 1.95–2.64, 0.89–1.31), IV (2.67–3.38, 0.82–0.86, 2.45–3.15, 2.83–3.57, 1.31–1.50). Pedipalp (0.92–1.21, 0.41–0.54, 0.61–0.82, 0.99–1.27). EPL 0.42, EPW 0.56–0.69, ATL 0.08–0.09, ATW 0.27–0.34.

**Eyes:** PME 0.12–0.16, PLE 0.14–0.17, AME 0.09–0.14, ALE 0.12–0.16. Eye distances: PME-PME 0.5–1 x PME, PME-AME 0.5–1 x PME, PME-PLE 0.5–1 x PME, PME-ALE 1 x
PME, AME-AME <0.5–1 x AME, AME-ALE <0.5 x AME. CLY1 1.5–2 x AME, CLY2 1–1.5 x ALE.

Male palp
RTA with 3 branches, ventral branch broad round and plate like, lateroventral ridge clearly visible, lateral and dorsal branch equally long elongated, dorsal branch moderately pointed, dorsal branch distally broad truncated. Embolus filiform, originating at 9 o'clock, about 1.5 x CB with terminal end at 2–3 o'clock. Distal portion of conductor distinctly elongated, longer than wide, lateral margin almost completely folded. Terminal end strongly sclerotised and bifid, ventral part simple and pointed, dorsal part with lobe like distinct protrusion, bent ventrad. Connection of conductor to tegulum moderately sclerotised. MA protruding with distal plate like sclerite forming a spoon like structure, membranously connected to tegulum, originating at 6 o'clock.

Epigyne and vulva
Epigyne medially with a pale, membranous area. Posterior sclerite expressed as a sclerotised bar with anterior margin concave, limiting median area posteriorly. GO between and laterally of the membranous median area and the posterior sclerite. Epigynal „pseudo teeth“ present. Vulva consists of distinguishable CD, RC and FD. CD leading into oblong globular, irregularly formed RC which almost touching each other anteriorly. FD only represented by small leave shaped appendages distally of the RC.

Other important characters
Cheliceral promargin with 4 teeth, retromargin with 4 equally sized teeth. Colulus developed as trapezoidal plate with the distal margin medially notched. Same pattern of distal spigots on PMS (in females) as described for the type species. PLS with distal segment as long as basal segment. Tarsal trichobothria at palpal tarsus and cymbium absent. Tarsal trichobothria 6–8. Leg spination: male palp (2–0–0–0 or 2–1–0–0, 2–0–0, 0–2–0–0), female palp (1–0–0–0 or 2–0–0–0, 2–0–0, 2–2–0–0), leg femora (2–2–1–0 or 2–2–2–0 or 2–3–2–0, 2–1–1–0 or 2–1–2–0 or 2–2–2–0 or 2–3–2–0, 2–1–2–0 or 2–2–2–0, 1–2–1–0 or 2–1–1–0 or 2–2–1–0), patellae (all 2–0–0, except holotype with 2–0–1 at leg IV), tibiae (2–1–0–2p or 2–2–0–2p+1 or 2–2–2–3p, 2–2–0–2+1p or 2–2–2–1p+1+1p or 2–2–2–3p, 2–2–1–1p+1+1p or 2–2–2–3p, 2–2–1–1p+1+1p or 2–2–2–3p, 2–2–1–1p+1+1p or 2–2–2–3p, 2–2–0–1p+1+1p or 2–2–2–3p, 2–2–2–1p+1+1p), metatarsi (0–0–0–3p+1 or 0–1–1–3p+1, 0–1–0–3p+1 or 0–2–0–3p+1 or 0–1–1–3p+1 or 0–2–1–3p+1, 0–3–3–3p+1, 0–3–3–3p+1 or 1–3–3–3p+1), tarsi (all 0 or III and IV 0–1–0–0).

Colouration
Margin of carapace continuously darkened, dorsally with two longitudinal symmetric dark bands. Sternum with distinct median band and lateral three symmetric pale dots, most posterior pair may be fused with median band. Opisthosoma dark brownish with yellowish median band (also with indistinct paler lateral bands) and 1–2 symmetric lateral spots, continuing in chevrons posteriad. Legs annulated. ALS darkened, PLS with dark basal and pale distal segment.

Distribution
Only known from two locations in Greece, Evvoia.

Tegenaria annulata Kulczynski, 1913 stat. rev.
Fig. 23 A–E

Tegenaria annulata Kulczynski (1913): 6–10, female.
Tegenaria annulata Kulczynski (1914): 381, pl. 16, figs. 48, 51–52, male.
Malthonica annulata Guseinov et al. (2005): 164.
No typematerial available.

Other material examined

**Croatia (?)**: Lesina, 1 £ (sub *Tegenaria agrestis*, det. Steindachner, „not *T. agrestis*“, det. Gruber, NHMW, 2540), 1861, Steindachner.


**Description**

**Measurements**

Male (n=1): CL 3.58, CW 2.62, STL 1.81, STW 1.79. Leg I (6.29, 1.63, 6.32, 6.93, 2.74), II (5.35, 1.51, 5.04, 6.1, 2.24), III (4.64, 1.34, 3.90, 5.49, 1.92), IV (5.69, 1.47, 5.16, 7.23, 2.52), Pedipalp (2.09, 0.69, 0.78, 1.76), bulbL 1.52.

Female (n=1): CL 5.33, CW 3.89, STL 2.51, STW 2.24. Leg I (7.46, 2.27, 6.80, 7.86, 3.20), II (6.68, 1.88, 6.10, 6.62, 2.61), III (5.94, 1.84, 4.75, 6.44, 2.44), IV (9.02, 2.62, 7.85, 8.40, 2.76). Pedipalp (2.35, 0.94, 1.40, 2.37). EPL 0.82, EPW 1.10, ATL 0.42, ATW 0.56.

Eyes: PME 0.18–0.21, PLE 0.19–0.22, AME 0.15–0.19, ALE 0.19–0.24. Eye distances: PME-PME 0.5–1 x PME, PME-AME 1 x PME, PME-PLE 0.5–1 x PME, PME-ALE 1–1.5 x PME, AME-AME 0.5–1 x AME, AME-ALE <0.5 x AME. CLY1 2–2.5 x AME, CLY2 1–1.5 x ALE.

**Male palp**

RTA with 3 branches, ventral branch tusk like elongated, ventrally forming a distinct ridge, reaching almost three-fourths of tibia length, lateral branch short and simple pointed, pale, dorsal branch broad and strongly sclerotised, distally oblique truncated and moderately pointed. Embolus filiform, originating at 6–7 o'clock, longer than 2.5 CB with terminal tip at 4 o'clock. Conductor with distal portion conspicuously narrow and strongly elongated, distally moderately bent, lateral margin completely folded. Terminal end indistinctly bifid, ventral part simple and pointed or moderately truncated, dorsal part only indistinct protuberance. Connection between conductor and tegulum moderately sclerotised, distinctly arch like shaped. MA strongly protruding with hook like shaped distal sclerite, membranously connected to tegulum and originating at 5 o'clock. Basal part of tegulum good visible, undulated.

**Epigyne and vulva**

Epigyne with distinct median area, posterior sclerite expressed as a trapezoidal sclerotised bulge. CO anteriorly of posterior sclerite, anteriolaterally limited by moderately protruding, distinctly sclerotised massive margin of the epignal plate. Epigynal „pseudo teeth“ absent. Vulva consists of combined ducts (CBD), strongly convoluted, no distinct RC recognisable. CBD well separated from each other. FD only represented by small leave shaped appendages terminally of CBD.

**Other important characters**

Cheliceral promargin with 4, retromargin with 4–5 teeth. Colulus developed as trapezoidal plate with the distal margin straight. Female with 2 minor ampullate and 4 cylindrical gland spigots distally on PMS, 2 medially prominent and 4 laterally (2 on both sides). PLS with distal segment as long as basal segment. Tarsal trichobothria at cymbium and palpal tarsus present. Tarsal trichobothria 7–10. Denticles at paired claw of leg I 15. Leg spination: male palp (2–1–0–0, 2–0–0, 1–2–0–0 or 2–2–0–0), female palp (2–1–1–0, 2–0–0, 2–2–0–0), leg femora (1–3–2–0 or 1–4–2–0 or 1–4–4–0 or 2–3–2–0, 1–3–2–0 or 2–3–2–0, 1–2–2–0 or 1–3–2–0, 1–1–1–0 or 1–3–2–0, patellae (all 2–0–0), tibiae (0 or 0–0–0–2, 0–1–0–0 or 0–1–0–2 or 0–2–0–2, 2–2–1–3 or 2–2–2–2+1p or 2–2–2–2p, 2–1–1+2p or 2–1–1–2+1p or
Margin of carapace narrowly darkened with 3 distinctly crescent shaped spots, dorsally with 2 symmetrical longitudinal dark bands. Sternum with distinct pale median band and 3 symmetric pairs of pale dots laterally, moderately fused together. Opisthosoma pale yellowish (may be due to alcohol preservation) with many dark spots, 1 or 2 pairs of symmetric white spots anteriorly, posteriorly with chevrons. Legs annulated. Colulus, ALS and basal segment of PLS darkened, distal segment pale.

Distribution
Records are known from different Balkan countries (Bosnia and Herzegovina and Croatia). Also listed for Serbia and Montenegro (Platnick, 2010).

Discussion
As discussed by Brignoli (1971a) and Bolzern et al. (accepted), this species is closest related to species referred to *Pseudotegenaria* by Lehtinen (1967) and to *T. tridentina* (see Simon, 1937). This relationship is based on morphology and for *T. tridentina* also on DNA.

**Tegenaria argaeica** Nosek, 1905 stat. rev.
Figs. 20 C–F, 24 a–b

*Tegenaria argaeica* Nosek (1905): 136–138, pl. IV, figs. 15a–b.  
*Tegenaria boitanii* Brignoli (1978c): 518–519, figs. 94–95, only female (misidentification); the male belongs to *T. percuriosa* Brignoli (1972) (see Gasparo, 2007).  
*Malthonica argaeica* Guseinov et al. (2005): 164.

Type material examined
Syntypes. Turkey: Kayseri: „Asia Minor: Erdschias Dagh, Nordseite“, 1 $, 1 £ (NHMW), V.1902, Penther.  

Other material examined
**Turkey:** Corum: Mecitözü, 2 $ (MCSN, 544, MHNG), 5.VI.1969, Brignoli.

Diagnosis
*T. argaeica* is closely related to *T. lyncea* (Brignoli, 1978) and *T. pseudolyncea* Guseinov, Marusik & Koponen, 2005. Useful figures of both related species are provided by Guseinov et al. (2005: figs. 57–58, 63–68, 122–123 (lyncea), 51, 53–56, 59–62, 100–101, 125 (pseudolynecia)) Most important characters for the separation of these species are the small denticles at the dorsal branch of the RTA (absent in the other species), and the much longer and stronger convoluted duct of the vulva (shorter and less convoluted in the other species).

Description
Nosek (1905) provided a very detailed description of this species, including measurements and leg spination patterns. Except the drawing of the epigyne, this description is sufficient. Good pictures of the male palp are e.g. the SEM photographs provided by Seyyar et al. (2008).
Distribution

*T. argaeica* is described from the central/northern parts of Turkey. Its occurrence in Bulgaria (Drensky, 1942) is doubted, because no reference or newly collected specimens are available (Delschev, 1993).

Discussion

The original description of *T. argaeica* is very detailed and precise. However, the drawing of the epigyne (Nosek, 1905: plate IV, fig. 15b) does not seem to match the female paratype. Drensky (1942) listed the species from Bulgaria and provided a drawing of the epigyne which may have been copied from Nosek (Brignoli, 1978c). Unfortunately, the specimens from Drensky are not available for examination (see Delschev, 1993). Seyyar et al. (2008) redescribed *T. argaeica* without referring to this problem.

Based on the examination of fresh material, Gasparo (2007) showed that *T. boitanii* of previous authors was a mixture of species (males not conspecific with females). The holotype of *T. boitanii* being a male he synonymised *T. boitanii* with *T. percuriosa*. He further mentioned that females of *T. boitanii* sensu auct. may represent an undescribed species. The examination of the paratype of *T. argaeica* and the two females of *T. boitanii* of Kızılcahamam showed that they are conspecific. Also the descriptions of female *T. boitanii* and *T. argaeica* are matching (Brignoli, 1978c; Nosek, 1905).

*Tegenaria ariadnae* Brignoli, 1984

Figs. 21 e–h, 22 H–L


**Description of male.**

Type material examined


Other material examined


**Description**

**Measurements**

Male (n=1): CL 3.76, CW 2.94, STL 1.92, STW 1.70, OL 4.61, OW 2.78. Leg I (7.33, 1.51, 7.41, 7.49, 3.61), II (6.51, 1.44, 6.37, 7.52, 3.09), III (5.75, 1.42, 5.49, 7.21, 2.6), IV (6.79, 1.33, 6.74, 7.01, 3.15). Pedipalp (3.03, 1.06, 1.35, 1.72), bulbL 0.94.

Female (n=2): CL 4.45–4.64, CW 3.17–3.33, STL 2.16–2.24, STW 1.93–1.97, OL 5.30, OW 3.72. Leg I (7.28–7.55, 1.82–1.84, 7.07–7.44, 7.66–7.85, 3.41–3.63), II (6.76–6.86, 1.81, 6.1–6.37, 6.97–7.04, 3.03–3.10), III (6.15–6.36, 1.58–1.63, 5.46–5.7, 6.99–7.01, 2.55–2.65), IV (6.98–7.22, 1.65–1.78, 6.66–7.29, 7.49–9.32, 2.82–3.09). Pedipalp (2.57–2.74, 0.98–0.99, 1.70–1.80, 2.12–2.17). EPL 0.43–0.5, EPW 0.81–0.82, ATL 0.17–0.30, ATW 0.33–0.55.
Eyes: PME 0.11–0.15, PLE 0.14–0.16, AME 0.11–0.12, ALE 0.16–0.18. Eye distances:
PME-PME 1–2 x PME, PME-AME 0.5–1.5 x PME, PME-PLE 1–2 x PME, PME-ALE 0.5–1.5 x PME, AME-AME 0.5–1 x AME, AME-ALE 0.5–1 x AME. CLY1 2–3 x AME, CLY2 1.5–2 x ALE.

Male palp
Cymbium modified, dorsobasaly with a depression, distal portion narrowly elongated. RTA with 2 branches, lateral branch basaly strongly sclerotised, somewhat fused with the lateroventral ridge, distally membranous, protruding, very close to the dorsal branch which is protruding and strongly sclerotised, distally flattened and broadly rounded. Embolus filiform, originating at 8 o'clock, about 1 CB long, terminal tip at 2 o'clock. Conductor triangularly shaped, distal portion elongated, lateral margin completely folded. Terminal end with moderately protruding dorsal bulge, ventral part short and simply pointed. Tegular apophysis present, lamelliform, protruding basaly of conductor. Conductor membranously connected to tegulum. MA strongly protruding with distal plate like sclerit, distally tapered, membranously connected to tegulum, originating at 5 o'clock.

Epigyne and vulva
Epigynal plate strongly sclerotised. Posterior sclerite absent. CO at the anterior border of the median area, triangular or almond like shaped holes, surrounded by a moderately protruding bulge like margin, distinctly sclerotised. Vulva consists of distinguishable CD, RC and FD. CD very short leading into oblong globular and smoothly sclerotised RC, separated by 1.5–2 x their diameter. FD only represented by small leave shaped appendages distally of the RC.

Other important characters
Cheliceral promargin with 3, retromargin with 3–4 teeth. Colulus developed as trapezoidal plate with the distal margin medi ally notched. Same pattern of distal spigots on PMS (in females) as described for the type species. PLS with distal segment as long as basal segment. Tarsal trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 7–10. Denticles at paired claw of leg I 11–13. Leg spination: male palp (3–1–0–0, 2–0–0, 1–2–0–0), female palp (3–1–0–0, 2–0–0, 2–1p+1–0), leg femora (2–3–2–0 or 2–3–3–0 or 2–5–4–0, 2–4–2–0 or 2–4–3–0 or 2–4–4–0 or 2–5–4–0, 2–2–2–0 or 2–2–3–0 or 2–2–3–0 or 2–3–4–0, 2–1–1–0 or 2–1–2–0), patellae (all 2–0–0), tibiae (0–2–2–2 or 0–2–2–1+1p or 0–2–2–2p, 2–2–2–1+1p or 2–2–2–2p, 2–2–2–1+1p or 2–2–2–2, 2–2–2–1+1p or 2–2–2–2 or 2–2–2–3), metatarsi (0–2–0–4p+1 or 0–1–1–3p+1, 0–1–1–3p+1 or 0–2–1–3p+1, 0–3–2–3p+1 or 0–3–3–3p+1 or 2–3–2–3p+1, 1–3–3–1p+2p+1), tarsi (all 0).

Colouration
Carapace lacking distinct patterns, only headregion and femora of leg I and II in males moderately darker sclerotised. Sternum uniform with only slightly pale median region. Opisthosoma bright yellowish, anteriomedian with pale area surrounded by a very weakly pronounced pattern of dark pigments, inconspicuously continuing in broad chevrons posteriad. Legs not annulated. ALS indistinctly darkened, PLS basal segment dakened, distal segment pale or all spinnerets pale.

Distribution
Endemic to the Greece: Crete (in caves).

Discussion
Based on the examination a longer series of recently collected specimens along with types of T. ariadnae and T. labyrinthi the two are synonymised here. The epigynal characters used by Brignoli (1984) to diagnose the two species fall within the range of variation of the recently collected material. The same conclusion reached also Fulvio Gasparo (pers. comm., 2009) with males which he had collected.
T. ariadnae was only found several meters inside the caves with hardly any light. T. parietina, in contrast, was captured at the entrance of both caves. The funnel webs of both species are attached to stones on the ground or to the wall of the caves.

**Tegenaria armigera Simon, 1873**
Fig. 20 G–J

*Tegenaria armigera* Simon (1873): 140–141, figs. 82–87, female.  

Type material examined  
Syntypes. France: Corsica: 1 $, many £ (MNHN, 1965, 460), Simon.

Other material examined  
**France: Corsica:** Forêt de Tartagine, 3 $, 1 £ (MHNG), VI.1984, Müller; same locality as previous, 4 $, 2 £ (SMF, 35070, 35072–73); IX.1982 and VI.1984, Müller; Asco Valley, 1 £ (SMF, 35071), VI.1984, Müller.  
**Italy: Sardinia:** Nuoro, Seni, Grotta "Diavolus", 1 £ (MCSN, 542), 11.VIII.1970, Casale; Diaclasi, north of "Punta Corongiu", 1 £ (MHNG), 1968, Bassi; same data as previous, 1 £ (MCSN, 542).

Description  
A detailed redescription is provided by Heimer & Müller (1988).

Distribution  
Endemic to the two islands Corsica and Sardinia.

Discussion  
As mentioned by Heimer & Müller (1988) the specimen, which had been found by Roewer on Sardinia (Roewer, 1953: 49), with the SMF-Nr. 10696 belongs to *T. pagana*. But in contrast to their statement about Brignoli’s drawing and determination (Brignoli, 1971a), the specimens examined from Sardinia really belong to *T. armigera*.  
As in other species of the genus, a very high variation in size can be observed (e.g. Fig. 20 H).

**Tegenaria bayeri** Kratochvíl, 1934  
*Tegenaria bayeri* Kratochvíl (1934): 212–213, fig. 19, female.  
*Tegenaria bayeri* Kratochvíl (1935): 20–21, pl. 2, figs. 21–22, male.  
*Tegenaria bayeri* Kratochvíl & Miller (1940): 200–201, fig. 5.1, male.  
*Pseudotegenaria bayeri* Lehtinen (1967): 261; transfer doubted by Brignoli (1971a: 61); rejected by Bolzern et al. (accepted).

No material examined, female holotype is preserved in the collection of the National Museum, Praha, Czech Republic (Ruzicka et al., 2005).

Diagnosis  
This species belongs to the species complex around *T. annulata*.

Description
A detailed description, including measurements, is provided by Kratochvil (1934, female; 1935, male).

Distribution
This species is listed for two Balkan countries: Bosnia and Herzegovina and Serbia and Montenegro (Platnick, 2010; van Helsdingen, 2009).

*Tegenaria bosnica* Kratochvil & Miller, 1940
*Pseudotegenaria bosnica* Lehtinen (1967): 261; transfer doubted by Brignoli (1971a: 61); rejected by Bolzern et al. (accepted).

No typematerial available, probably lost (see Ruzicka et al., 2005).

Other material examined
**Serbia or Albania:** Kruja, 1 $ (MCSN, 52), IX.1941, Boldori.

Diagnosis
This species belongs to the species complex around *T. annulata.*

Description
A very detailed description, including measurements, is provided by Kratochvil & Miller (1940).

Distribution
This species is listed for three Balkan countries: Croatia, Bosnia and Herzegovina and Serbia and Montenegro (Platnick, 2010; van Helsdingen, 2009).

*Tegenaria bozhkovi* (Deltshev, 2008) new combination
Fig. 26 A–C


No typematerial examined

Other material examined

Diagnosis
See Deltshev (2008b).

Description
Detailed description is provided by Deltshev (2008b).

Distribution
Previously recorded from the West Rhodopy Mountains in Bulgaria (Deltshev, 2008b) and, sub *T. cf. campestris*, from the Falakron mountains in Greece (Wolf, 1998).
Discussion
Deltch (2008b) suggested that *T. bozhkovi* forms together with *T. campestris*, *T. montana*, and *T. rilaensis* a “super species” (cf. discussion under *T. rilaensis*).

*Tegenaria campestris* (C. L. Koch, 1834) stat. rev.

Figs. 26 D–G

Aranea decemguttata Martini & Goeze, in Lister, 1778: 288 (nomen oblitum).

*Aranea campestris* C. L. Koch (1834): 124, pl. 20, male.

*Tegenaria campestris* C. L. Koch (1841): 34–35, figs. 615–616.


*Malthonica campestris* Guseinov et al. (2005): 164.

No typematerial available.

Other material examined


**Hungary**: "Sinwytorgjra" (?), 1 $, 2 £ (SMF, 5432).

Description

**Measurements**

Male (n=1): CL 3.68, CW 2.93, STL 1.90, STW 1.75, OL 4.02, OW 2.64. Leg I (3.52, 1.46, 3.12, 3.18, 2.00), II (3.41, 1.39, 2.59, 2.82, 1.59), III (3.12, 1.15, 2.20, 2.90, 1.42), IV (3.93, 1.35, 2.98, 3.84, 1.71). Pedipalp (1.59, 0.62, 0.51, 1.78), bulbL 1.49.

Female (n=1): CL 3.65, CW 2.79, STL 1.94, STW 1.77. Leg I (3.59, 1.41, 3.14, 3.02, 1.89), II (3.20, 1.36, 2.45, 2.71, 1.60), III (2.94, 1.16, 2.00, 2.55, 1.22), IV (3.94, 1.37, 3.03, 3.74, 1.71). Pedipalp (1.35, 0.62, 0.77, 1.56), EPL 0.40, EPW 0.65, ATL 0.26, ATW 0.38.

Eyes: PME 0.18, PLE 0.19–0.21, AME 0.14–0.16, ALE 0.20–0.21. Eye distances: PME-PME 0.5–1 x PME, PME-AME 0.5–1 x PME, PME-PLE 0.5–1 x PME, PME-ALE 0.5–1 x PME, AME-AME <0.5 x AME, AME-ALE <<0.5 x AME. CLY1 1.5–2 x AME, CLY2 1 x AME.

**Male palp**

RTA with 3 branches, ventral branch extensive lobe like with distinct ridge, distally moderately protruding, lateral branch spur like and strongly sclerotised, dorsal branch broad and strongly protruding, distally with several points and ridges. Embolus filiform, originating at 7–8 o'clock. Embolus 2.5–3 x CB long with distal tip at 4–5 o'clock. Conductor irregularly shaped, in retrolateral view S-shaped, distal portion strongly elongated, lateral margin completely folded. Terminal end bifid, ventral part short and simply pointed, dorsal part plate like, rounded. Connection of conductor to tegulum moderately sclerotised. MA strongly protruding with distal plate like, complex sclerite (short point and a longer hook like ending),
membranously connected to tegulum, originating at 6 o'clock. Basal portion of tegulum visible and undulated.

Epigyne and vulva
Epigyne with distinct median plate, anteriomedially continuously connected to strongly sclerotised epigynal plate. Posterior sclerite absent. CO anterior of median plate, distinctly visible as gaps. Vulva consists of combined ducts (CBD), no distinct RC recognisable. First part (CD) of CBD less sclerotised and only somewhat convoluted, proximate part strongly convoluted and sclerotised. FD only represented by small leaf shaped appendages distally of the CBD.

Other important characters
Cheliceral promargin with 3, retromargin with 3–4 teeth. Colulus developed as trapezoidal plate with distal margin straight or indistinctly notched. Same pattern of distal spigots on PMS (in females) as described for the type species. PLS with distal segment shorter than basal segment. Tarsal trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 6–8. Denticles at paired claw of leg I 7–10. Leg spination: male palp (2–0–0–0, 2–0–0, 2–2–0–0), female palp (2–0–0–0, 2–0–0, 2–2–0–0), leg femora (2–2–1–0, 2–2–2–0 or 2–3–2–0, 2–2–1–0 or 2–2–2–0 or 2–3–2–0, 1–1–1–0 or 1–1–2–0 or 2–1–1–0), patellae (all 2–0–0), tibiae (0–0–0–1+2p or 0–0–0–1+1p or 0–0–0–2p or 0–0–0–3p or 2–0–0–1+2p, 0–2–0–1+2p or 0–2–0–1+1p or 2–2–0–2+1p, 2–2–2–1+2p or 2–2–2–2+1p or 2–2–2–3p, 2–2–2–1+2p or 2–2–2–2+1p or 2–2–2–3p), metatarsi (0–0–0–1+2p+1 or 0–0–0–3p+1, 0–2–0–1p+1+2p+1 or 0–2–0–3p+1, 0–3–2–3p+1 or 0–3–3–3p+1, 0–3–3–3p+1 or 0–3–3–3p+1 or 0–3–3–3p+1 or 0–3–3–3p+1, 0–3–3–3p+1 or 0–3–3–3p+1), tarsi (I & II 0, III: 0–0–1–0, IV: 0–0–1–0 or 0–1–1–0).

Colouration

Distribution
This species is distributed from Central Europe to the east as far as Azerbaijan (Blick et al., 2004; Otto & Dietzold, 2006; van Helsdingen, 2009). The record of T. campestris from Portugal (van Helsdingen, 2009) is doubtful and was removed from the Checklist of Portuguese spiders (Cardoso, 2009).

Discussion
*Tegenaria campestris* is part of a species-complex including *Tegenaria montana*, *T. rilaensis* and the recently described *T. bozhkovi* (Deltshev, 1993, 2008b).

*Tegenaria capolongoi* Brignoli, 1977
Figs. 27 A–B


Type material examined
Other material examined

Italy: Campania: Naples, 1 £ (sub Tegenaria, det. Simon, MNHN, 25043), 1917, Fage.

Diagnosis

*T. capolongoi* belongs to a species group together with *T. circeoensis* n. sp., *T. parmenidis* and *T. sbordonii*. Most useful characters for separating these species are the shape of the RTA, the bifid terminal end of the conductor, the presence/absence of pockets at the median plate of the epigyne and the location of the copulatory openings.

Description

The description, including measurements, is provided by Brignoli (1977a).

Distribution

Records are only known from the region around Naples, Campania, Italy.

Discussion

See *T. parmenidis*.

*Tegenaria carensis* Barrientos, 1981

Figs. 24 c–e, 25 A–D


No type material examined.

Other material examined

Spain: Catalonia: Cadi Moixero, 1 $ (UB), de Mas; Pedra Paret, Alsina d'Alinya, 1 £ (UB, 1869-75), 18.V.1970, Girona.

Description

Measurements

Male (n=1): CL 2.86, CW 2.33, STL 1.50, STW 1.41, OL 3.59, OW 2.33. Leg I (4.00, 1.25, 3.50, 3.75, 2.30), II (3.80, 1.13, 3.20, 3.58, 1.92), III (3.54, 1.05, 2.75, 3.33, 1.62), IV (4.30, 1.14, 3.65, 4.65, 2.08), Pedipalp (1.54, 0.49, 0.61, 1.57), bulbL 1.40.

Female (n=1): CL 3.97, CW 2.94, STL 1.91, STW 1.88, OL 5.65, OW 3.69. Leg I (5.61, 1.66, 5.25, 5.53, 2.73), II (5.46, 1.61, 4.66, 5.24, 2.46), III (4.87, 1.46, 3.75, 5.05, 2.18), IV (5.87, 1.45, 5.26, 6.90, -). Pedipalp (1.86, 0.71, 1.18, 1.88). EPL 0.68, EPW 0.90, ATL 0.19, ATW 0.37.

Eyes: PME 0.16–0.18, PLE 0.16–0.20, AME 0.12–0.13, ALE 0.15–0.18. Eye distances: PME-PME 0.5–1 x PME, PME-AME 1 x PME, PME-PLE 0.5–1 x PME, PME-ALE 0.5–1 x PME, AME-AME <0.5–0.5 x AME, AME-ALE <0.5–0.5 x AME. CLY1 1.5–2.5 x AME, CLY2 1–1.5 x AME.

Male palp

RTA with 3 branches, ventral branch developed as long drawn-out lobe reaching more than two third or tibia length, with distinct lateral ridge, lateral branch strongly sclerotised, as broad as long, distally broadly pointed, dorsal branch broad and strongly sclerotised, distally oblique truncated and stepped. Embolus filiform, originating at 7 o'clock, longer than 3 CB, terminal tip at 4 o'clock. Conductor with distal portion strongly elongated, lateral margin completely folded. Terminal end moderately bifid, ventral part simple and broadly flat
pointed, dorsal part consists of indistinct small peak. Connection between conductor and tegulum moderately sclerotised. MA strongly protruding with distal hook like sclerite, membranously connected to tegulum and originating at 5–6 o'clock. Basal part of tegulum very good visible and undulated.

_Epipyne and vulva_

Epigyne with a distinct median region separated anteriorly from the epigynal plate by a distinct rim. Median region membranous. Posterior sclerite expressed as a strongly sclerotised semi-circled bar, limiting atrial area posteriorly. CO between and laterally of the membranous median area and the posterior sclerite. Epigynal „pseudo teeth“ agsent. Vulva consists of combined ducts (CBD), no distinct RC recognisable. First part (CD) of CBD only moderately sclerotised and convoluted around second part which is strongly sclerotised and strongly convoluted more posterior. FD only represented by small leave shaped appendages distally of the CBD.

_Other important characters_

Cheliceral promargin with 4, retromargin with 4 teeth. Colulus developed as trapezoidal plate with the distal margin medially moderately notched. Same pattern of distal spigots on PMS (in females) as described for the type species. PLS with distal segment shorter than basal segment. Tarsal trichobothria at cymbium present. Tarsal trichobothria 7–9. Denticles at paired claw of leg I 13. Leg spination: male palp (2–0–0–0, 2–0–0–0, 1–2–0–0), female palp (2–0–0–0, 2–0–0, 2–2–0–0), leg femora (2–2–2–0 or 2–3–2–0, 2–2–2–0, 1–2–2–0 or 2–2–2–0, 1–1–1–0), patellae (all 2–0–0), tibiae (0–0–0–1 or 0–0–0–1p, 0–1–0–2 or 0–2–0–2, 1–2–1–2+1p or 1–2–2–2+1p, 1–2–2–2+1p), metatarsi (0–0–0–3p+1, 0–0–0–2p+1 or 0–1–0–3p+1, 0–3–3–3p+1, 0–3–3–1p+1+2p+1), tarsi (I & II 0, III 0 or 0–0–1–0, IV 0 or 0–0–1–0).

_Colouration_

Margin of carapace with 3 connected narrow crescent shaped darkened spots, dorsally with 2 symmetric longitudinal dark bands, serrated and not continuous. Sternum with distinct pale median band and 3 symmetric pairs of pale dots laterally. Opisthosoma yellowish with dark spots and indistinct chevrons dorsally. Legs annulated. Colulus and ALS indistinctly darkened, PLS with basal segment dakened, distal segment pale.

_Distribution_

_T. carensis_ has been reported from two provinces of Catalonia (Tarragona and Gerona) and one province of Castile and León (Burgos), all in north-eastern Spain (Ribera & Barrientos, 1986).

_Discussion_

The original description of _T. carensis_ contains only females. Based on somatic morphology (size relations, spination- and colouration patterns), the geographical location and the resemblance to the closely related _T. levantina_ (Barrientos, 1981; Ribera & Barrientos, 1986) the male described here is tentively referred to _T. carensis_.

_Tegenaria chumachenkoi_ Kovblyuk & Ponomarev, 2008


No material examined

_Description_

A detailed description, including measurements, is provided by Kovblyuk & Ponomarev (2008).
Distribution
Only known from the western Caucasus region (Kovblyuk & Ponomarev, 2008), Russia (Krasnodar province).

_Tegenaria circeoensis_ new species
Figs. 28 a–c, h–I, 29 A–H

Type material examined
Holo- and paratypes. Italy: Lazio: Frosinone, Esperia, holotype $ (NMB, AB827), 4.VI.2007, Bolzern & Mühlethaler; same data as for holotype, 1 $, 1 £ (1 £ was juv. until VII.2007, NMB, AB786, 832); Latina, at the street between Grotta delle Circeo and San Felice Circeo, 3 £ (NMB, AB463), 20.VII.2006, Bolzern & Ramseyer; same location as previous, 12 £ (9 £ were juv. until VII. 2007, NMB, 717, 735, 784, 789, 826, 913, 911), 5.VI.2007, Bolzern & Mühlethaler.

Etymology
The species epithet is derived from “Circeo” which is the name of the very beautiful National Park close to San Felice Circeo where the first specimens of this species had been collected.

Diagnosis
_T. circeoensis_ n. sp. belongs to a species group together with _T. capolongoi_, _T. parmenidis_ and _T. sbordonii_. Most useful characters for separating these species are the shape of the RTA, the bifid terminal end of the conductor, the presence/absence of pockets at the median plate of the epigyne and the location of the copulatory openings.

Description

Measurements
Male (holotype): CL 4.71, CW 3.88, STL 1.85, STW 1.92, OL 4.80, OW 2.95. Leg I (6.21, 1.63, 6.17, 6.92, 3.30), II (4.38, 1.21, 4.07, 5.15, 2.30), III (5.04, 1.33, 4.17, 5.83, 2.21), IV (6.13, 1.47, 5.89, 7.81, 2.83), Pedipalp (1.93, 0.81, 0.86, 1.54), bulbL 0.95.
Female (n=2, paratypes): CL 3.22–3.53, CW 2.60–2.70, STL 1.64–1.69, STW 1.53–1.63, OL 5.46, OW 4.00. Leg I (4.10–4.43, 1.27–1.36, 3.77–4.05, 3.80–4.20, 2.08–2.24), II (3.69–4.05, 1.17–1.26, 3.10–3.34, 3.33–3.75, 1.71–1.90), III (3.35–3.71, 1.09–1.12, 2.61–2.97, 3.21–3.55, 1.44–1.81), IV (4.21–4.64, 1.24–1.25, 3.46–4.13, 4.23–4.68, 1.71–1.96). Pedipalp (1.36–1.58, 0.57–0.59, 0.89–0.93, 1.42–1.47). EPL 0.68, EPW 1.28, ATL 0.48, ATW 0.19. Eyes: PME 0.17–0.19, PLE 0.18–0.19, AME 0.15–0.19, ALE 0.18–0.20. Eye distances: PME-PME 0.5–1 x PME, PME-AME 0.5–1 x PME, PME-PLE 0.5 x PME, PME-ALE 0.5–1 x PME, AME-AME <0.5 x AME, AME-ALE <<0.5 x AME. CLY1 1.5–2 x AME, CLY2 1–1.5 x ALE.

Male palp
RTA with 2 (possibly fused?) branches, dorsolateral branch very massive, strongly and broad protruding, distally with a distinct, stepped anteroventral orientated ridge, ventral branch indistinct but with a distinct ventral ridge. Embolus filiform, terminal part stronger bent, originating at 8–9 o'clock. Embolus equal CB or moderately longer, with terminal tip at 2 o'clock. Conductor very distinct and complex with distal portion moderately elongated, lateral margin completely folded, with a bulge like structure at the origin of the conductor. Terminal end strongly bifid, ventral part (functional) distally simple and sharp pointed, dorsal part larger than ventral portion with a massive protuberance, elongated ventrad, distally with several small points and knolls. Connection between conductor and tegulum sclerotised. MA
strongly protruding with distal long hook like sclerite, membranously connected to tegulum and originating at 6 o'clock. Basal part of tegulum visible and with undulated margin.

**Epigyne and vulva**

Epigyne with distinct sub rectangular median region, clearly separated from the epigynal plate by a sclerotised rim. Medially, this atrium is very smoothly sclerotised (a kind of septum visible in a variation found at the same place as the type specimens). Posterior sclerite absent. CO expressed as distinct holes located at the lateral rim. Posteriorly of the CO, a distinct pocket is developed, opening anteriomediacl. Epigynal „pseudo teeth“ absent. Vulva consists of distinguishable CD, RC and FD. CD short and straight, leading into globose bean like shaped, smoothly sclerotised RC, separated by more than 2 x their diameter. FD only represented by small leaf shaped appendages distally of the RC.

**Other important characters**

Cheliceral promargin with 3, retromargin with 4 teeth, in males the second proximal tooth smaller than the others. Colulus developed as trapezoidal plate with the distal margin almost straight. Same pattern of distal spigots on PMS (in females) as described for the type species. PLS with distal segment as long as basal segment. Trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 6–9. Denticles at paired claw of leg I 10–11. Leg spination: male palp (2–0–0–0, 2–0–0, 1–2–0–0), female palp (2–0–0–0 or 3–0–0–0, 2–0–0, 2–2–0–0), leg femora (1–3–2–0 or 2–2–1–0 or 2–3–2–0 or 2–4–2–0, 1–3–2–0 or 2–2–2–0 or 2–3–2–0, 1–2–2–0 or 2–2–2–0, 1–0–0–0 or 1–1–1–0), patellae (all 2–0–0–0), tibiae (0 or 2–0–0–0, 0–1–0–0 or 0–1–0–1 or 0–2–0–0, 2–1–0–2 or 2–1–1–0 or 2–1–1–1 or 2–1–2–1 or 2–2–1–1 or 2–2–2–1, 2–0–0–1 or 2–1–1–1 or 2–1–1–2), metatarsi (0–0–0–2p (only in male) or 0–0–0–3p+1, 0–1–0–3p+1, 0–2–2–1p+2+1p+1 or 0–2–2–3p+1, 0–2–2–1p+1+2p+1), tarsi (I & II 0, III & IV 0–1–0–0).

**Colouration**

Margin of carapace darkened with 3 distinct crescent shaped spots, dorsally with 2 longitudinal symmetric dark bands, distinctly serrated. Chelicerae with extensive dark spots. Sternum with pale median band, reaching only 2/3 of sternum length, and 4 symmetric pairs of pale dots laterally and posteriorly. Opisthosoma anteriorly with reddish-brown median band, laterally with 2 distinct symmetrical white markings, sides dark mottled, posteriorly with chevrons (pale, dark bordered). Legs annulated. ALS indistinctly darkened, PLS with basal segment darkened, distal segment pale.

**Distribution**

*T. circeoensis* n. sp. is only known from the two locations in Lazio, Italy. At both sites, the spiders were collected at a shaded rock face, where they had built their funnel webs.

**Discussion**

The variation of size, spination and epigyne morphology is marked in the new species (Fig. 29 H). The association of the males and females is strongly supported by their sympatrie (“close to Esperia”) and the genetic distance. This is also supported by the following successful breeding experiment: on 19 November 2007 a male from Esperia (AB832) was placed on the web of a female from San Felice Circeo (AB911), both having been kept in captivity since their capture in the field in spring 2007. After a short phase of immobility, the male started courtship behaviour by knocking on the web with the palps and the opisthosoma in a fast cadence followed after a short while by the copulation. The copulation lasted some 30 minutes after which the specimens were separated into different containers. One month later the female produced a cocoon (17.X.2007) and two month later (XII.2007) the spiderlings hatched. First they were kept together with the mother until only about 10 specimens were left when they were split into separate containers and fed...
with crickets (1–2 per week). The spiderlings reached maturity after one year (IX–X.2008).
The adult offspring, 2 $ and 4 £, are preserved in the collection of the NMB (AB964).

_Tegenaria croatica_ new species
Figs. 30 K–O

Male unknown.

Type material

Etymology
The species epithet is derived from the name of the Country where the only known specimen
of this species had been collected.

Diagnosis
_T. croatica_ n. sp. has a distinctly developed vulva with a broad and straight CD and a
smoothly sclerotised and evenly convoluted FD not confusable with other species.

Description

**Measurements**
Female (n=1): CL 1.85, CW 1.40, STL 1.03, STW 0.94, OL 2.45, OW 1.60. Leg I (2.01, 0.79,
1.87, 1.78, 1.09), II (1.80, 0.68, 1.50, 1.54, 0.90), III (1.60, 0.60, 1.28, 1.47, 0.68), IV (2.07,
0.69, 1.90, 2.13, 1.05). Pedipalp (0.80, 0.32, 0.49, 0.79). EPL 0.27, EPW 0.55, ATL 0.09,
ATW 0.20.

Eyes: PME 0.10, PLE 0.11, AME 0.05, ALE 0.11. Eye distances: PME-PME 0.5–1 x PME,
PME-AME 0.5–1 x PME, PME-PLE <0.5 x PME, PME-ALE 0.5–1 x PME, AME-AME 0.5
x AME, AME-ALE <0.5 x AME. CLY1 3–3.5 x AME, CLY2 1 x AME.

_Epigyne and vulva_
Epigynal plate moderately sclerotised. Median plate only laterally separated from epigynal
plate, medially slightly protruding. Posterior sclerite absent. GO distinct oblong oval or
almond shaped, largely filled with a smoothly and strongly sclerotised plate. Vulva consist of
distinguishable CD, RC and FD. CD strongly sclerotised, bulky and almost straight. RC
globular, smoothly sclerotised, leading in a consistently convoluted FD. FD ending in small
leave shaped appendages.

*Other important characters*
Cheliceral promargin with 3 teeth, retromargin with 5 equally sized teeth. Colulus developed
as trapezoidal plate with the distal margin medially notched. Same pattern of distal spigots on
PMS (in females) as described for the type species. PLS with distal segment as long as or
slightly longer than basal segment. Tarsal trichobothria at palpal tarsus and cymbium absent.

_Tarsal trichobothria 5–6_. Denticles at paired claw of leg I 7–8. Leg spination: female palp (2–
0–0–0, 2–0–0, 2–2–0–0), leg femora (2–1–0–0, 1–1–0–0, 1–1–0–0, 1–1–1–0), patellae (all 2–
0–0), tibiae (2–0–0–1p, 0–1–0–1, 2–2–1–1, 2–2–1–2), metatarsi (0–0–0–3p, 0–0–0–2p+1, 0–
1–0–3p+1 or 0–2–0–3p+1, 0–2–2–3p+1), tarsi (all 0).

_Colouration_
Margin of carapace with dark band, 2 longitudinal symmetric dark bands hardly recognisable,
but present (may be due to alcohol preservation). Sternum with pale median region.
Opisthosoma brown-green with pale median band anteriorly continuing in chevrons
posteriad. Colulus pale (probably due to alcohol preservation ?), AMS and basal segment of
PMS darkened, distal segment pale.
Distribution
Only known from the type locality in Croatia.

_Tegenaria dalmatica_ Kulczynski, 1906 stat. rev.
Figs. 1 G–H, 2 H, 3 D, 20 P–T

_Tegenaria dalmatica_ Kulczynski (1906): 162–164, fig. 5, female.
_Malthonica dalmatica_ Guseinov et al. (2005): 164.

Type material examined

Other material examined
Punta degli Stretti, 1 $ (sub *T. zinzulusensis*, MCSN, 539), 21.XII.1965, Brignoli; Firence, 4 £ (NMB), 1892, Stöcklin.

**Africa**

**Algeria:** Bejaia, Bougie, 1 £ (MNHN, 12557), Simon; Philippeville (current name is Skikda) 1 £ (MNHN, 1973, 13484), XII.1887, Simon.

**Tunisia:** Ain Draham, 2 £ (sub *T. zinzulusensis*, MCSN, 539), 1.VI.1980, Brignoli; Jendouba, „strada Babouch-Hammam Bourguiba“, 1 £ (MSNB, 002), 25.IV.2006, Pantini & Sassu.

**Asia**

**Lebanon:** Al-Shouf Cedar, Mount Lebanon, Barouk forest, 1 $ (NMB, AB577), 8.III.2005, Arnedo & Ribera; Mount Lebanon, Niha, 1 £ (NMB, AB578), 8.III.2005, Arnedo & Ribera.

**Syria:** 1 $, 2 £ (very uncertain! in the same tube with *T. maronita* Simon, det. Simon, also one male of *T. feminea*, MNHN, 1974, 469), de la Brûlerie.

**Turkey:** **Izmir:** Ephesus, Selcuk, 1 £ (SMF, 21905/1), Dobat.

**Description**

A very detailed redescription, including measurements and spination patterns, is provided by Kovblyuk & Nadolny (2007).

**Distribution**

The records of *T. dalmatica* display a central- to east Mediterranean distribution.

**Discussion**

As mentioned in the original description (Kulczynski, 1906: p. 163) the two syntypes greatly differ in size. A slimalar variation could also be observed in a sample from Lazio (Frosinone, Aquino, 3.VI.2007, Bolzern & Mühlethaler).

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**Tegenaria decolorata** **Kratochvil & Miller, 1940**

*Tegenaria decolorata* Kratochvil & Miller (1940): 198–201, figs. 5.2, 6.1–2, male.  
*Pseudotegenaria decolorata* Lehtinen (1967): 261; transfer doubted by Brignoli (1971a: 61); rejected by Bolzern et al. (accepted).

No material examined, holotype (without palps) preserved in the collection of the National Museum, Praha, Czech Republic (Ruzicka et al., 2005).

**Diagnosis**

Female unknown. This species belongs to the species complex around *T. annulata*.

**Description**

A very detailed description of the male, including measurements, is provided by Kratochvil & Miller (1940).

**Distribution**

This species is only listed for the island Krk, Croatia (Platnick, 2010; van Helsdingen, 2009).

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**Tegenaria domestica** **(Clerck, 1758)**

Figs. 1 A–D, 3 F, 24 f–h, 25 I–L
Araneus domesticus Clerck (1757: 61): 76–79, pl. 2, tab. 9, figs. 1–4, in part. For additional synonyms and published figures, see Platnick (2010).

Tegenaria modesta Keyserling (1878): 594, pl. 14, fig. 17, only male (the female, fig. 18, clearly belongs to Tegenaria pagana).


Type material examined
No typematerial available for T. domestica and T. modesta.


Other material examined

Europe
Germany: Pfalz, Bühl, 1 £ (SMF, 7433), 6.VII.1918, Stellwaag; Baden-Württemberg: Werbach / Tauber, 1 $ (SMF, 5828), X.1948, Felten; Taunus, Vockenhausen, 2 £ (SMF, 6497), 12.VI.1949, Pape; Odenwald, 3 $, 6 £ (SMF, 4812), Wider; Bayern: Kohlstein, 1 £ (SMF, 10081/1), X.1948, Schnellbäcker; Kaiserstuhl: Löss-Höhlen b. Oberrotweil, 1 £ (SMF, 17447/1), 30.V.1965, Kraus; Mittelfranken, Nürnberg, 4 $, 1 £ (coll. Bauchhenss), 2003, Pankratius; Nürnberg, 3 $, 3 £ (NHMW, ex. Coll L.Koch); Berlin: Dahlem, 1 $, 1 £ (SMF, 33953), Wunderlich; Berlin-Köpenick, 1 $ (NHMB), 5.VII.1792, Broen; Bremen: Bürgerpark, 1 £ (SMF); Bremen, 2 $, 4 £ (SMF, 1187, 1279); Hessen: Darmstadt, Frankfurt am Main, 1 £ (SMF, 5693), VIII.1948, Baumann; Schwanheim a. M., 1 £ (SMF, 10259/1), Schnellbäcker; Offenbach, Neu-Isenburg, 1 £ (SMF, 6104), VII.1915, Müller; Niedernhäusern, 1 £ (SMF, 4814), Knoblauch; Frankfurt, Zoologisches Institut, 1 £ (SMF, 39405), 1985, Dierkes; Nordrhein-Westfalen: Rösrath, 1 £ (SMF), 27.VII.1994, Koid; Rösrath, 1 £ (SMF), 7.VII.1993, Jäger; Rheinland-Pfalz: Mainz – Bretzenheim, 1 $, 1 £ (SMF, 15156), 4.V.1954, Braun; Thüringen: Jena, 1 £ (SMF, 1188).

Italy: Calabria: Gerace, 1 £ (sub T. pagana, NHMW), 1906, Paganetti-Humler; Campania: Salerno, Conrone, Grotta di Castelcivita, 1 $, 2 £ (NMB, AB439), 14.VII.2006, Bolzern; Lazio: Isola Ponza, Semaforo, 1 £ (MCSN, 542), 14.V.1966, Brignoli; Liguria: Savona,


Poland: Białowies, 1 $, 1 £ (NHMW).


Slovakia: Bratislavský: Pressburg/Bratislava, 1 $, 14 £ (NHMW), 1873.


Asia

China: Guizhou: Daozhen, Dashaha, Natural Reserve, 1 $ (SMF, 344), 11.V.2006, Zhang;


Japan: Nagano (Shinano), Kisofukushima, 1 £ (AMNH), 1927, Sherman; 1 £ (NHMW), Roretz.

Lebanon: 1 £ (SMF, RII-11964).


Tibet: 1 £ (type (?), sub T. thibetana Lucas, MNHN), 1870, David.

Australia


North America


South America


Chile: Vina del Mar, 1 £ (AMNH), II.1979, Tobar; Chile (?): „Isola di Pasqua lato S&E da Ahu ad Orango“, 2 $ (MCSN, 569, 30270), 13.XI.1982, Cottarelli & Brignoli.

Costa Rica: Irazu, 1 $ (NHMW), 1930, Reimoser.

Ecuador: Rio Blanco, nr Banos, 2 £ (AMNH), XII.1938, Clarke-Macintyre.
Diagnosis

*Tegenaria domestica* shows a distinct RTA (similar to *T. annae* n. sp.; all other *Tegenaria* species quite different), a truncated, very special formed terminal end of embolus (comparable but distinctly different in *T. mercanturensis* and *T. mirifica*) and the reversed drop shaped, terminally bifid conductor. The epigyne does have a strongly sclerotised posterior selerite with the anterior margin concave (similar in *T. annae* n. sp., *T. adomestica* Guseinov, Marusik & Koponen, 2005, *T. ferruginea*, *T. parietina*, *T. tridentina*) and the simple, irregularly globular vulva.

Description

**Measurements**

Male (n=1): CL 4.35, CW 3.25, STL 2.25, STW 2.0, OL 4.5, OW 2.4. Leg I (5.1, 1.7, 4.95, 5.45, 2.65), II (4.6, 1.65, 4.5, 5.05, 2.45), III (4.5, 1.6, 4.0, 5.0, 2.15), IV (5.65, 1.6, 5.35, 6.8, 2.5). Pedipalp (1.85, 0.61, 0.76, 1.27–1.64), bulbL 0.67.

Female (n=3): CL 4.0–4.1, CW 2.8–2.9, STL 2.0, STW 1.75–1.85, OL 4.1–4.5, OW 2.75–2.85. Leg I (3.9–4.0, 1.5, 4.0–4.1, 4.9, 2.35–2.5), II (3.75–4.0, 1.35–1.45, 3.5–3.75, 2.4–3.65, 2.0–2.1), III (3.5–3.8, 1.35–1.4, 3.0–3.2, 3.7–3.75, 1.75), IV (4.5–4.7, 1.45–1.5, 4.0–4.25, 5.0–5.35, 2.0–2.1). Pedipalp (1.92, 0.77, 1.15, 1.81). EPL 0.38–0.4, EPW 0.60–0.70, ATL 0.1, ATW 0.48.

Eyes: PME 0.17, PLE 0.17–0.2, AME 0.13–0.16, ALE 0.16–0.18. Eye distances: PME-PME 1 x PME, PME-AME 1.5 x PME, PME-PLE 1 x PME, PME-ALE 1 x PME, AME-AME 0.5–1 x AME, AME-ALE 0.5 x AME. CLY1 2–2.5 x AME, CLY2 1.5–2 x AME.

**Male palp**

RTA with 2 branches, lateral branch tusk like shaped, dorsal branch broad and strongly sclerotised, distally oblique truncated. Lateroventral ridge present, inconspicuously expressed. Embolus broad, terminally truncated, originating at 9 o'clock. Embolus shorter than 3/4 CB with terminal tip at 1–2 o'clock. Conductor reversed drop-shaped with distal portion moderately elongated, lateral margin almost completely folded. Terminal end bifid, ventral part short, simple and pointed, dorsal part plate like. Connection between conductor and tegulum moderately sclerotised. MA strongly protruding with distal plate like sclerite forming a spoon like structure, membranously connected to tegulum and originating at 5–6 o'clock. Basal part of tegulum barly visible.

**Epigyne and vulva**

Epigyne medially with a pale, membranous area. Posterior selerite expressed as a sclerotised bar with anterior margin concave, limiting atrial area posteriorly. CO between and laterally of the membranous median area and the posterior selerite. Epigynal „pseudo teeth“ present. Vulva consists of distinguishable CD, RC and FD. CD very short leading into globular, irregularly formed RC, separated by about their diameter. FD only represented by small leave shaped appendages distally of the RC.

**Other important characters**

Cheliceral promargin with 3, retromargin with 3–4 teeth. Colulus developed as trapezoidal plate with the distal margin medially notched. Female with 4–5 minor ampullate and cylindrical gland spigots distally on PMS, 3 medially prominent and 2 laterally. PLS with distal segment as long as basal segment. Tarsal trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 7–8. Denticles at paired claw of leg I 11–12. Leg spination: male palp (2–0–0–0, 2–0–0, 1–2–0–0 or 2–2–0–0), female palp (2–0–0–0, 2–0–0, 2–2–0), leg femora (2–2–1–0 or 2–2–2–0 or 2–2–3–0 or 2–3–2–0, 2–1–2–0 or 2–2–2–0 or 2–3–2–0, 2–2–2–0, 1–2–1–0 or 2–2–1–0), patellae (all 2–0–0), tibiae (2–0–0–2p or 2–1–0–2p+1 or 2–2–1–
3p (dorsal spine inconspicuously), 0–2–0–2+1p or 0–2–2–1p+1p or 2–1–0–3 or 2–2–0–2 or 2–2–0–3, 2–2–2–1p or 2–2–2–2 or 2–2–2–2p, 2–2–2–1p+1p or 2–2–2–1p+2 or 2–2–2– 2+1p or 2–2–2–3), metatarsi (0–0–0–3p+1 or 0–1–1–3p+1, 0–1–0–3p+1, 0–1–0–3p+1), tarsi (all 0).

**Colouration**
Margin of carapace continuously darkened, dorsally with 2 symmetric longitudinal dark bands. Sternum with distinct pale median band and 3 symmetric pairs of pale dots laterally. Opisthosoma dark brownish, anterior with yellowish median band, continuing in broad chevrons posteriad. Legs annulated, sometimes only coxa and proximal part of femora with dark dots. ALS indistinctly darkened, PLS with basal segment dakened, distal segment pale.

**Distribution**
This species is globally distributed (probably dispersed by man).

**Discussion**
This species has a complex and confusing taxonomical history. Simon (1875: 75) mentioned that *T. domestica* has been misinterpreted and confused with other species (cf. synonyms in Platnick, 2010). This may have been caused by Clerck (1757) who associated the female of *T. ferruginea* with his *T. domestica*. Most subsequent authors confused the two (and other species, e.g. *T. parietina*) and used *Tegenaria derhamii* (Scopoli) for this species (e.g. Chyzer & Kulczynski, 1897).

*Tegenaria eleonorae* Brignoli, 1974 stat. rev.
Figs. 31 A–B, H–I

*Tegenaria henroti* Brignoli (1971a): 68–72, figs. 8–12, missidentified.
*Malthonica eleonorae* Guseinov et al. (2005): 164.

**Type material examined**

Other material examined

**Description**
Diagnosis, redescription and discussion are provided by Bolzern et al. (2008).

*Tegenaria faniapollinis* Brignoli, 1978
Fig. 30 E
Tegenaria paragamiani Deldshev (2008b): 40–43, figs. 9–16, new synonym.

Material examined

Description
Descriptions, including measurements, are provided by Brignoli (1978b) and Deldshev (2008b; sub Tegenaria paragamiani).

Distribution
Recorded from Turkey (Brignoli, 1978b) and from Greece (East Rhodopy Mts, Maronia) (Deldshev, 2008b; sub T. paragamiani).

Discussion
The shapes of the eypigyne and vulva of T. faniapollinis and of T. paragamiani (based on drawings by (Deldshev, 2008b: 42, figs. 15–16)) are indistinguishable and they are, therefore, synonymised (Christo Deldshev, pers. comm., 2009).

Tegenaria femoralis Simon, 1873
Figs. 32 A–D

Tegenaria femoralis Simon (1873): 137–139, pl. I, fig. 17.

Type material examined

Other material examined
France: Corsica: ,“Höhle v. Castiglione“, 2 $, 5 $ (SMF, 8940/1, 8856/2, 8859/4), 20.IV.1954, Kahman; Col de Vizzarona, 1 $, 2 $ (SMF, 8855/2, 8857/2), 2.IX.1953, Kahman; Col de Vizzarona, 2 $ (small form, SMF, 8946–47/1), 2.IX.1953, Kahman.

Description
A short redescription is provided by Kraus (1955: 378–379, figs. 16–19).

Measurements
Male (n=1): CL 4.68, CW 3.81, STL 2.32, STW 2.16. Leg I (7.13, 1.89, 6.36, 7.69, 2.53), II (6.78, 1.87, 6.27, 7.29, 2.86), III (6.21, 1.69, 5.39, 7.04, 2.31), IV (6.98, -, -, -, -). Pedipalp (2.20, 0.78, 0.79, 2.21), bulbL 1.70.
Female (n=1): CL 4.28, CW 3.15, STL 2.11, STW 2.00. Leg I (5.41, 1.64, 5.71, 6.10, 2.49), II (5.00, 1.55, 4.79, 5.72, 2.21), III (4.84, 1.42, 4.23, 5.55, 1.99), IV (5.15, 1.55, 5.29, 7.03, 2.22). Pedipalp (1.87, 0.76, 1.19, 1.98). EPL 0.66, EPW 1.18, ATL 0.25, ATW 0.49.
Eyes: PME 0.20–0.21, PLE 0.21–0.22, AME 0.15–0.17, ALE 0.21–0.23. Eye distances: PME-AME 0.5 x PME or somewhat more, PME-AME 0.5–1 x PME, PME-PLE 0.5–1 x PME, PME-ALE 0.5–1 x PME, AME-AME <0.5 x AME, AME-ALE <0.5 x AME. CLY1 2–3 x AME, CLY2 1–1.5 x ALE.
Male palp

86/161
RTA with 3 branches, ventral branch lobe like, reaching more than three-fourths of tibia length, forming a distinct ridge, distally protruding, proximal arcuated. Lateral and dorsal branch forming strongly sclerotised and protruding lobes. Embolus filiform, originating at 7 o'clock. Embolus 2–2.5 x CB long with distal tip at 3 o'clock. Conductor moderately hammerhead shaped with distal portion elongated and tapered, lateral margin completely folded. Terminal end bifid, ventral part short and cone shaped, dorsal part plate like. Connection of conductor to tegulum moderately sclerotised. MA strongly protruding with hook like distal sclerit, membranously connection to tegulum, originating at 4–5 o'clock. Basal part of tegulum visible and undulated.

Epigyne and vulva
Epigynal median plate anteriomedially connected with strongly sclerotised epigynal plate. CO anteriorly of the median plate, very distinctly expressed as holes with a strongly sclerotised anterior margin. Vulva consists of combined ducts (CBD), no distinct RC recognisable. First half (CD) of CBD only moderately sclerotised and convoluted around second half, which is strongly sclerotised. FD only represented by small leave shaped appendages distally of the CBD.

Other important characters
Cheliceral promargin with 4, retromargin with 4–5 teeth. Colulus developed as trapezoidal plate with distal margin medially notched. Same pattern of distal spigots on PMS (in females) as described for the type species. PLS with distal segment as long as basal segment. Tarsal trichobothria at cymbium and palpal tarsus present. Tarsal trichobothria 7–9. Denticles at paired claw of leg I 12–14. Leg spination: male palp (2–0–0–0, 2–0–0, 1–2–0–0 or 2–2–0–0), female palp (2–0–0–0, 2–0–0, 2–2–0–0), leg femora (2–2–2–0 or 2–3–2–0 or 2–3–3–0, 2–3–2–0, 2–2–1–0 or 2–2–2–0), patellae (all 2–0–0), tibiae (0–0–0–2p or 0–0–0–2p+1, 0–2–0–1p+2 or 0–2–0–2+1p or 0–2–0–3p (very indistinct dorsal spines possible), 1–2–2–1+2p or 1–2–2–3p, 1–2–2–3p), metatarsi (0–0–0–3p+1, 0–1–0–3p+1, 0–3–3–3p+1, 0–3–3–3+1, 0–3–3–1+3p+1), tarsi (all 0).

Colouration
Carapace without a colour pattern (may be due to alcohol preservation). Sternum with distinct pattern of pale median region and 3 pairs of symmetric pale dots laterally, somewhat fused together. Legs only ventrally inconspicuously annulated. ALS and basal segment of PLS moderately darkened, distal segment pale.

Distribution
Endemic to the two islands Corsica and Sardinia.

Discussion
Contrary to the information provided by Platnick (2010) and Kraus (1955) Simon (Simon, 1873: 139) not only described the male but also the female of *T. femoralis*, though without any drawings. He mentioned several specimens in the original description (Simon, 1873: 139, 4th paragraph) but only one male could be found in the MNHN. Kraus (1955) described also two specimens (females), which were significantly smaller than the others. He concluded that, since these specimens share the same morphology and differ only in size, they must belong to the same species. Brignoli, in contrast, argued that this “forma nana” is not conspecific with *T. femoralis* and constitutes an undescribed species (Brignoli, 1979a: 41). More material is required to solve this problem.

*Tegenaria ferruginea* (Panzer, 1804) stat. rev.
Fig. 33 A–D

87/161
Araneus domesticus Clerck (1757): 76–79, pl. 2, tab. 9, fig. 1, only female in part (see discussion for T. domestica).

Aranea ferruginea Panzer (1804(?)): pl. 227, fig. 2.
Aranea subpilosa Panzer (1804(?)): pl. 227, fig. 3.

Aranea stabularia C. L. Koch (1834): 125, pl. 13, male.
Tegenaria stabularia C. L. Koch (1841): 32–34, fig. 614, female.
Tegenaria petrensis C. L. Koch (1841): 27–28, fig. 609, female.

Tegenaria ferruginea Simon (1875): 65–67, pl. 6, fig. 7.
Tegenaria heteropalpa Lebert (1877): 209–210, pl. 6, fig. 41 male; new synonym.
Malthonica ferruginea Guseinov et al. (2005): 164.

Comments

Tegenaria heteropalpa Lebert was synonymised with T. pagana (de Lessert, 1910: 455).

Types of T. heteropalpa are lost, however the description of Lebert (1877) and in particular his illustration is sufficiently diagnostic to suggest that T. heteropalpa is conspecific with T. ferruginea. T. heteropalpa is a new synonym of T. ferruginea rather than one of T. pagana as suggested by de Lessert (1910). The new synonymy is supported by the structure of the RTA, the shape of the MA, the relations of bulb to cymbium (Lebert, 1877: pl. 6, fig. 41), the overall size and the number of teeth on the chelicerae. Moreover, T. pagana is mostly restricted to mediterranean areas south of the Alps whereas T. ferruginea occurs on both sides of the Alps.

No type material available.

Other material examined

Albanien: Ljubotin (?), 1 £ (NHMW), Penther.


Styria: Admont, 1 £ (SMF, 21886/1), 13.IV.1949; Selzthal, 1 £ (SMF, 21887/1), 19.III.1946;


Croatia: „Dalmatien“, 1 £ (NHMW), Mann.


Brandenburg: Lossow, 1 $1 £ (NMB, AB555), 16.X.2005, Schönhofer; Potsdam, 1 £ (SMF, 40175), 28.IX.2003, Müller; Bremen: 1 £ (SMF, Roewer 9453); 2 £ (SMF, 2580); Hessen: Odenwald (?) Hoxohohl, 2 £ (SMF, 5786), IX.1948, Felten; Darmstadt, Taunus, Neuenhain, 1 £ (SMF, 6248), 18.IV.1949, Hesse; Darmstadt, Schwanheim a. M., 1 $, 1 £ (SMF, 5934, 6004-134), IX.1914 and XII.1915; Taunus, Falkenstein, 2 £ (SMF, 5912), 15.IX.1948;

Greece: Crete: Rethimno, Chora Sfakion, 3 £ (very problematic specimens! They may be hybrids of T. ferruginea and T. parietina. More detailed investigation needed. NMB, AB894 and 897), 9.X.2007, Bolzern & Ramseyer


Poland: „Süd-Polen, Leopolis“, 1 $ (SMF, 1190).

Slovenia: „Slowenien/Istrien: St. Canzian“ (probably Škocjan ?), 1 $, 2 £ (NHMW), 1903.


Unknown: 2 £ (GMMH), Lindberg.

South America

Venezuela: San Timoteo, 1 $ (SMF, RII-13388), no additional data.

Diagnosis

T. ferruginea females can be separated from T. parietina by the lateral margins of the median region of the epigyne following distinctly the run of the posterior sclerit (especially anteriorly, Fig. 33 C, white arrows, in T. parietina this margin runs towards the middle of the epigyne, Fig. 33 G, white arrow), the differently shaped posterior sclerit and the vulva much stronger convoluted (especially the first spiral) and less separated (less than 2 duct diameters, more than 3 in T. parietina). Other characters are presented in detail by Oxford & Merrett (2000). Males of T. ferruginea do have a relatively short cymbium (much longer, in relation to the bulb, in T. parietina), a distinctly longer and curved distal portion of the conductor (short and almost straight in T. parietina) and a differently shaped ventral porten of the terminal end of the conductor.

Description

A short redescription, including information about the variation, is provided by Oxford & Merrett (2000).

Measurements

Male (n=1): CL 6.40, CW 5.00, STL 3.00, STW 2.85, OL 7.35, OW 5.03. Leg I (7.85, 2.60, 6.95, 8.00, 3.60), II (7.35, 2.55, 6.05, 7.10, 3.25), III (6.50, 2.25, 5.25, 6.50, 2.55), IV (7.90, 2.45, 6.70, 8.55, 3.20), Pedipalp (3.20, 1.00, 1.35, 3.27), bulbL 2.57.

Female (n=1): CL 6.14, CW 4.90, STL 3.45, STW 2.88, OL 8.25, OW 5.93. Leg I (7.01, 2.40, 6.08, 7.13, 3.34), II (6.60, 2.40, 5.40, 6.38, 2.78), III (5.94, 2.10, 4.32, 6.00, 2.50.), IV (7.30, 2.40, 6.08, 7.13, 3.34).
2.35, 6.12, 7.90, 3.03). Pedipalp (2.69, 1.04, 1.54, 2.96). EPL 1.00, EPW 1.52, ATL 0.37, ATW 0.74.

Eyes: PME 0.22–0.26, PLE 0.25–0.30, AME 0.26–0.28, ALE 0.26–0.30. Eye distances:
PME-PME 1–1.5 x PME, PME-AME 1–1.5 x PME, PME-PLE 1–1.5 x PME, PME-AME 1.5 x PME, AME-AME <0.5 x AME, AME-AME <<0.5 x AME. CLY1 1.5–2 x AME, CLY2 1.5–2 x ALE.

Male palp
RTA with 3 branches, ventral branch broad lobe like, distally moderately protruding, distinct ridge. Lateral branch broad and flat protruding, distally broad truncated. Dorsal branch strongly sclerotised, protruding, as long as wide, distally obtusely and oblique pointed, anteriorly with a stepped small point. Embolus filiform, originating at 7–8 o'clock. Embolus longer than 2.5 CB with terminal tip at 4 o'clock, conspicuously formed. Conductor with distal portion strongly elongated and curved, lateral margin completely folded. Terminal end bifid, ventral part short, simple and truncated with a very small point, dorsal part plate like, shorter than ventral part. Connection between conductor and tegulum moderately sclerotised. MA strongly protruding with hook like distal sclerite, membranously connected to tegulum and originating at 6 o'clock. Basal part of tegulum good visible and with undulated margin.

Epigyne and vulva
Epigyne medially with a small pale, membranous area. Posterior sclerite expressed as an extensive sclerotised bar with anterior margin concave (semi-circled) and medially moderately protruding. CO between and laterally of the membranous median area and the posterior sclerit. Epigynal „pseudo teeth“ absent. Vulva consists of combined ducts (CBD), no distinct RC recognisable. Only very first part (CD) of CBD moderately sclerotised, largest part strongly sclerotised and convoluted, forming connected smaller anterior and a larger posterior spiral regions. Ducts are separated by less than their duct diameters. FD only represented by small leave shaped appendages distally of the CBD.

Other important characters
Cheliceral pro- and retromargin with 4 teeth. Colulus developed as trapezoidal plate with the distal margin almost straight or medially moderately notched. Same pattern of distal spigots on PMS (in females) as described for the type species. PLS with distal segment shorter than basal segment. Tarsal trichobothria at cymbium and palpal tarsus present. Tarsal trichobothria 7–8. Denticles at paired claw of leg I 11–12. Leg spination: male palp (2–0–0–0, 2–0–0, 1–2–0–0 or 2–2–0–0), female palp (2–0–0–0 or 3–0–0, 2–0–0, 2–2–0–0), leg femora (2–3–1–0 or 2–3–2–0 or 2–4–2–0, 2–2–2–0 or 2–3–2–0, 2–2–2–0, 1–2–2–0 or 2–2–1–0), patellae (all 2–0–0), tibiae (0–0–0–2p+1 or 0–1–0–2p+1 or 0–2–0–3p or 0–2–0–3p or 0–2–0–3p (dorsal spines very small), 0–2–0–2+1p or 0–2–0–3p or 2–2–0–2+1p or 2–2–0–2+1p (dorsal spines very small), 2–2–2–3p, 2–2–2–1+2p or 2–2–2–1+1p+1+2p, metatarsi (0–0–0–3p+1, 0–1–0–3p+1, 0–2–3–3p+1 or 0–3–3–3p+1, 0–3–3–3p+1 or 0–3–3–1p+1+3p or 0–3–3–1p+1+3p or 0–3–3–1p+1+3p or 0–4–3–1+3p+1), tarsi (I & II 0, III & IV 0–0–1–0).

Colouration
Margin of carapace with 3 broad crescent shaped darkened spots, dorsally with 2 symmetric longitudinal dark bands, serrated and not continuous. Chelicerae sometimes medially with darkened spot. Sternum with distinct pale median band, posteriorly very narrow or fused (sometimes with small dark spot in the middle of the posterior half of the pale median band), and 3 symmetric pairs of pale dots laterally. Opisthosoma dark brownish, laterally moderately yellowish mottled, dorsally with a distinct reddish median band. Anterior lateroly of red median band with short black bands and more laterally yellowish. More posteriodorsally with 1 or 2 symmetrical white spots and 4–5 indistinct chevrons more posteriad. Legs serrated annulated, borders of bands daker then medially. Colulus partly darkened, ALS ventrally indistinctly darkened, dorsally black, PLS with basal segment black, distal segment pale.
Distribution
Records are known from most European countries. Probably absent from northeast Europe. The specimen from Venezuela would be the first record outside of the Palaearctic region. If the label is correct, *T. ferruginea*, or at least one specimen of this species, has been introduced in South America.

Discussion
The identity of this species has been misinterpreted by some authors. The examination of Brignoli material showed that he misidentified female *Tegenaria tridentina* as *T. ferruginea* (see also Brignoli, 1971a: 92, fig. 40). One female in his collection, which is in fact true *T. ferruginea*, is labelled “prope *rhaetica*” (IT: Alto Adige, Bolzano, Collalbo, Renon, 15/20.VIII.1966, leg. Hartig) and is also mentioned and illustrated under this name (Brignoli, 1971a: 102, figs. 53, 55–56). Platnick (2010) listed “prope *rhaetica*” as synonym of *T. agrestis*.

*Tegenaria hasperi* Chyzer, 1897
Fig. 20 K–L

*Tegenaria hasperi* Chyzer & Kulczynski (1897): 167–168, tab. 7, fig. 1, female.

*Tegenaria nemorosa* Simon (1916): 210–211, figs. 82–87, new synonym.

*Malthonica nemorosa* Guseinov et al. (2005): 164.

Type material examined
Syntype. Croatia: Crkvenica (=Crikvenica ?), £ (HNHM, Araneae-4), VII., Chyzer.

Other material examined

**Bulgaria: Plovdiv**: Rhodopen, Trigrad Gorge, 1 £ (NMB, AB241), 7.VIII.2005, Bolzern;
**Sofiya**: Blagoevgrad, Pirin Mt., Monastery, near Melnik, 9 £ (NMB, AB242), 3.VIII.2005, Bolzern.
**Croatia**: „Istrien, Umgebung Pala”, 1 £ (sub *T. feminea*, MHNG), 10.VII.1982, Heimer;
Biograd, 1 $ (NHMW); Rovinj, 1 £ (SMF, 10523/1), 16.VIII.1956, Braun.

Asia

**Turkey:** **Adana:** 25 km north of Kozan, 1 £ (NMB, AB791), 5.VI.2007, Huber; **Birecik:** 3 km NNW Birecik, Waldapp-Station, 1 £ (sub *T. sp.*, det. Deltshev, SMF), 7.VIII.1988, Zoologie THD; **Hatay:** Iskenderun, River side, 1 £ (coll. Bayram, 202), 17.VIII.1994, Bayram; **Istanbul:** 1 $ (coll. Bayram, 200), 7.VII.2005, Ulasoglu; **Antakya:** “Grotta di Harbiye”, 3 $, 1 £ (MCSN, 100), 26.VI.1971, Osella.

Description

Good drawings of male are provided by Brignoli (1971a), SEM photographs by Seyyar et al. (2008), drawings of females by Deltshev (1993). Some additional information is provided here.


Eye distances: PME-PME 0.5–1 x PME, PME-AME 1 x PME, PME-PLE 0.5–1 x PME, PME-ALE 1 x PME, AME-AME <0.5 x AME, AME-ALE <0.5 x AME. CLY1 2 x AME, CLY2 1 x ALE.

Epigyne and vulva

Epigyne throughout sclerotised, distinct rectangularly shaped median plate. Posterior sclerite absent. CO at the anterior border of the median plate, developed as holes (very often filled with a “plug”). Epigynal „pseudo teeth“ absent. Vulva consists of distinguishable CD, RC and FD. CD short, leading into globular, irregularly but distinctly formed and smoothly sclerotised RC with well separated chambers. FD only represented by small leaf shaped appendages distally of the RC.

Other important characters

Cheliceral promargin with 3–4, retromargin with 4 teeth. Colulus developed as trapezoidal plate with the distal margin medially notched. Same pattern of distal spigots on PMS (in females) as described for the type species. PLS with distal segment as long as basal segment. Tarsal trichobothria at palpal tarsus absent. Tarsal trichobothria 6–9. Denticles at paired claw of leg I 8–10. Leg spination: female palp (2–0–0–0 or 3–0–0–0, 2–0–0, 2–2–0–0), leg femora (0–2–0–0 or 1–2–2–0 or 1–3–2–0, 1–1–2–0 or 1–2–1–0 or 1–2–2–0 or 1–2–2–0, 1–1–1–1–1–1–0), patellae (all 2–0–0–0), tibiae (0 or 0–0–0–1 or 0–0–0–1, 0–1–0–1 or 0–1–0–1+1, 0 or 1–1–1+1p or 0–1–1–1+1p or 0–1–1–1p or 0–1–1–1p or 0–1–1–1p or 0–1–1–1p or 0–1–1–1p or 0–1–1–1p or 0–1–1–1p or 0–1–1–1p, 2–1–1–1+1p, 0–1–0–1+1p, 0–1–0–1p+1, 0–1–0–1p+1, 0–1–0–1p, 0–1–0–1p, 2–1–1–1p or 2–1–1–1p or 2–1–1–1p or 2–1–1–1p or 2–1–1–1p, 2–1–1–1p or 2–1–1–1p or 2–1–1–1p or 2–1–1–1p or 2–1–1–1p or 2–1–1–1p or 2–1–1–1p or 2–1–1–1p, metatarsi (0–0–0–3 or 0–0–0–3p+1, 0–1–0–3p+1, 0–2–2–3p+1 or 0–3–3–3p+1, 0–3–3–3p+1 or 0–3–3–3p+1), tarsi (I & II 0, III & IV 0–0–1–0).

Coloursation

Margin of carapace with 3 narrow crescent shaped darkened spots, sometimes connected, dorsally with 2 symmetric longitudinal dark bands. Sternum with distinct pale median band and 3 symmetric pairs of pale spots laterally. Opisthosoma dark brownish, anteriorly with 3 yellowish bands, laterally with 1–2 pairs of white spots, continuing in broad chevrons posteriad. Legs annulated. Colulus partly darkened, ALS indistinctly darkened, PLS with basal segment dakened, distal segment pale.

Distribution
Records known from Croatia (Chyzer & Kulczynski, 1897), France (Simon, 1916, 1937), Italy (Brignoli, 1971a; Simon, 1937), Bulgaria (Delsheve, 1993) and Turkey (Brignoli, 1978c).

Discussion
Almost all examined females had the copulatory openings plugged with a dark hardened substance. The examination of one female syntype of *Tegenaria hasperi* from "Crkvenica" and two syntypes of Simons *T. nemorosa* showed that the latter is a junior synonym of *T. hasperi*.

*Tegenaria hauseri* Brignoli, 1979
Figs. 30 A–D


Type material examined

Description
Description, including measurements, is provided by Brignoli (1979b).

Distribution
Only known from the type locality in Greece.

*Tegenaria henroti* Dresco, 1956
Figs. 31 C–G


No type material available.

Other material examined
**Italy: Sardinia:** Ogliastra, Baunei, 1 $ (SMF, ex. coll Wunderlich), V., Wunderlich; Nuoro, Cala Gonone, Grotta di Gonone, 1 $ (MHNG), 20.III.1971, Strinati & Aellen; Nuoro, Cala Gonone, “Grotta NNE of Cala Gonone”, 1 $, 1 £ (NMB, 2791a, b), 5.VII.2006, Bolzern & Ramseyer; Nuoro, Cala Gonone, Cala Luna, 1 £ (NMB, 2791c), 6.VII.2006, Bolzern & Ramseyer; Nuoro, Oliena, Valle di Lanaitho, small cave above "Grotte Sa Oche", 4 £ (MHNG, AB425), 7.VII.2006, Bolzern & Ramseyer; Buo Marino, 1 $, 1 £ (SMF, 11399), Patrizi.

Description
A redescription and discussion are provided by Bolzern et al. (2008).

Distribution
Endemic to the island Sardinia, Italy.
Tegenaria lapicidinarum Spassky, 1934
Tegenaria lapicidinarum Spassk (1934): 2–4, pl. 1, figs. 3–5.

Type material examined

Description
A detailed description, including measurements, is provided by Kovblyuk (2004).

Distribution
Eastern Europe.

Discussion
Recently, a detailed redescriptions of this species was provided by Kovblyuk (2004) with drawings of male and female genitalia. Kovblyuk showed that the body measurements, including the size of legs and male palp, vary a lot. In comparing this species with T. mirifica Thaler, 1987 and T. taurica Charitonov, 1947 he stated that the spination-pattern of legs is insufficient to distinguish Tegenaria species.

Tegenaria levantina Barrientos, 1981
Figs. 34 I–J


No type material examined.

Other material examined

Description
Detailed descriptions, including measurements, are provided by Barrientos (1981) and Ribera & Barrientos (1986).

Distribution
Records for T. laventina are known from Spain (Catalonia: Tarragona, Castellon).

Tegenaria mercanturensis Bolzern & Hervé 2010

Comments
All relevant information is provided by Bolzern & Hervé (2010)

Distribution
Only known from the Mercantour National Park.
**Tegenaria mirifica** Thaler, 1987

Figs. 34 C–D, G–H


Type material examined  

Other material examined  
**Switzerland:** Grisons: Engadin, Ramosch, Platta Mala, 6 £ (NMB, AB367), 3.VI.2006, Bolzern & Ramseyer; Engadin, Ramosch, Rna Serviezel, 1 £ (NMB, AB373), 3.VI.2006, Bolzern & Ramseyer; Bergell, 1 $ (SMF, coll. Wunderlich), IX, Wunderlich.

Description  
A detailed description, including measurements, is provided by Thaler (1987).

Distribution  
Occurring in the Central and the Southeastern Alps. The species is listed for Italy (Pesarini, 1994) though without exact locality data (Bolzern, 2007). Here, detailed locality records are presented for the first time (MSNB).

**Tegenaria montana** Deltshev, 1993 stat. rev.  
*Malthonica montana* Guseinov et al. (2005): 164.

Type material examined  

Diagnosis  
*T. montana* belongs, together with *T. bozhkovi, T. campestris* and *T. rilaensis* to the “super species” described by Deltshev (2008b).

Description  
Several details and measurements are provided by Deltshev (1993). All examined characters mentioned for *T. campestris* were identical with this species except slight differences in genital morphology.

Distribution  
Endemic to the Pirin mountains in Bulgaria (Deltshev, 1993).
Discussion
See discussion under *T. rilaensis*.

**Tegenaria montizasensis** new species
Fig. 20 M–O

Male unknown.

Type material examined

Etymology
The species epithet is derived from “Mount Zas” which is the name of the mountain where the specimen had been collected. According to a story in Greek mythology, the young Zeus was raised in a cave on “Mount Zas” on Naxos.

Diagnosis
*T. montizasensis* n. sp. can easily be recognised by the distinctly “half-mask” shaped epigyne and the shape of the vulva.

Description

*Measurements*
Female (n=1): CL 3.70, CW 2.88, STL 1.86, STW 1.78, OL 5.50, OW 3.40. Leg I (6.10, 1.49, 6.02, 6.36, 3.00), II (5.40, 1.43, 5.00, 5.98, 2.40), III (5.10, 1.38, 4.51, 5.76, 2.13), IV (6.10, 1.39, 5.75, 7.44, 2.74). Pedipalp (2.12, 0.78, 1.42, 1.90). EPL 0.56, EPW 0.91, ATL 0.22, ATW 0.55.

Eyes (slightly reduced!): PME 0.10, PLE 0.11, AME 0.06, ALE 0.10. Eye distances: PME-PME 1.5–2 x PME, PME-AME 1.5 x PME, PME-PLE 2 x PME, PME-ALE 1.5–2 x PME, AME-AME 1.5 x AME, AME-ALE 2 x AME. CLY1 4.5 x AME, CLY2 2.5–3 x ALE.

*Epigyne and vulva*
Epigyne distinctly shaped like a “half-mask”. Median plate strongly sclerotised and only laterally separated from epigynal plate. Posterior sclerite absent. GO distinct almond-shaped holes. Vulva consists of distinguishable CD, RC and FD. CD less sclerotised and straight. RC very special formed, smoothly sclerotised. FD only represented by small leaf shaped appendages distally of the RC.

*Other important characters*
Cheliceral promargin with 3 teeth, retromargin with 5 equally sized teeth. Colulus developed as trapezoidal plate with the distal margin medi ally notched. Same pattern of distal spigots on PMS (in females) as described for the type species. PLS with distal segment longer than basal segment. Tarsal trichobothria at palpal tarsus and cymbium absent. Tarsal trichobothria 8–10.

Leg spination: female palp (2–0–0–0, 2–0–0, 1–2–0–0 or 2–0–0–0), leg femora (2–3–2–0, 2–3–2–0, 2–2–2–0, 2–2–1–0), patellae (all 2–0–0), tibiae (2–2–1–1+1p, 2–1–1–1+1p or 2–2–1–2p, 2–2–1–2p or 2–2–2–3p, 2–2–2–1+2p), metatarsi (0–0–0–3p+1 or 0–1–0–3p+1, 0–1–0–3p+1, 0–3–3–3p+1, 1–3–3–1p+1+1p+1p+1 or 1–3–3–1p+1+2p+1), tarsi (all 0).

*Colouration*
No colour pattern visible on carapace (may be due to alcohol preservation). Sternum with indistinct pale median region. Opisthosoma yellowish. Colulus and spinnerets pale.
Distribution
Only known from the type locality.

*Tegenaria oribata* Simon, 1916
*Tegenaria oribata* Simon (1916): 211.
*Tegenaria oribata* Simon (1937): 993–994, 1037, figs. 1524–1525.

Type material examined

Other material examined
**France:** Pyrénées-Orientales: “Massane b. Banyuls”, 1 $ (SMF, 16570/1), VII.1961, Volz; Collioure, 2 $, 1 € (MNHN, 1965); Céret, Prats-de-Mollo-la-Preste, La Preste, 1 € (MNHN, 1965, 4593), Simon; Amélie-les-Bains-Palalda, “Aamilie l. bains” (?), 1 € (MNHN, 1965), Berland.

Discussion
Due to the poor condition of the examined specimens some of the diagnostically relevant characters could not be recorded. Nevertheless we follow the opinion of Brignoli (1978a) and treat it under *Tegenaria*.

*Tegenaria pagana* C. L. Koch, 1840 stat. rev.

35 A–N

*Tegenaria pagana* C. L. Koch (1841): 31–32, pl. 262, figs. 612–613.
*Tegenaria subtilis* Simon (1870): 275–277; Simon (1873): 170, pl. 1, figs. 9–10, male; Thorell (1875a): 77.
*Tegenaria testacea* Simon (1870): 278–280, male; female belongs to *T. domestica* (see Machado, 1941).
*Tegenaria variata* Thorell (1875c): 74–75, female.
*Tegenaria bidentata* Keyserling (1878): 597–599, pl. 14, fig. 19, male.
*Tegenaria modesta* Keyserling (1878): 594–597, pl. 14, fig. 18, female (male, fig. 17, is a synonym of to *T. domestica*), **new synonym**.
*Tegenaria obscura* Banks (1898): 230, pl. 14, fig. 26; synonymised by Roth (1956: 176).
*Tegenaria pagana cavernicola* Simon (1907): 547–548.
*Tegenaria antrias* Crosby (1936): 2, pl. 1, fig. 3, female; synonymised by Roth (1956: 176).
*Tegenaria simplex* Bryant (1936): 90–91, pl. 3, fig. 9, female.
*Tegenaria pagana urbana* Simon (1937): 1010, 1041, **new synonym**.
*Philoicoides pallidus* de Mello-Leitão (1944): 335, fig. 21, female; Roth (1967): 314, pl. 51, fig. 3; synonymized by Ramirez et al. (2004).
Tegenaria marinae Brignoli (1971a): 120–121, figs. 80–81, female; Brignoli (1977a): 50, figs. 29–30, new synonym.
Malthonica pagana Guseinov et al. (2005): 164.

Type material examined
No typematerial available for T. pagana.
Sub Tegenaria baronii: holotype. Italy: Marche: Fabriano, Grotta Frasassi, 1 £ (MCSN, 102), IX.1964, Baroni.
Sub Tegenaria pagana urbana: possibly syntypes. France: Gallia, 9 $, 16 £ (MNHN, 1982).

Other material examined
Croatia: Biograd, 1 £ (NHMW); San Filippo, 1 £ (NHMW), 1891, Sturany.


Switzerland: Ticino: Chiasso, 1 £ (NMB, 388a).

Africa
Algeria: “Algérie”, 1 £ (sub T. longipalpis, det. Lucas, MNHN); “Alger”, 2 $, 12 £ (MNHN, 1977, 6078, 14335), Simon; Annaba: Bône, Edough, 2 £ (MNHN, 1977, 13889), Simon; Oran: 1 $ (MNHN, 1977, 12617), Simon; „Gr. de Misserghin“, 1 £ (MNHN, Biospéologica, 329), 17.XI.1909; Tlemcen: Tlemcen, 1 £ (MNHN, 1976, 13304), Simon (?).


Tunisia: Gabès, 2 £, 2 £ (MNHN, 1977, 13222).

Asia
Syria: 1 $, 1 £ (MNHN, 1976, 478), de la Brûlerie; Djéroud (?), 1 £ (MNHN), 1911, Gadeau de Kerville; Al-Lathqiyah: Latakia, 1 £ (MNHN); “road from Latakia to Tartus, Qal´at al-Marqab”, 1 £ (SMF), 7.III.1980, Kinzelbach.

South America
Chile: Octava Region Del Bio Bio: Nuble, Chillan, 4 £ (AMNH), 8.XI.1976, Moréno; Region Metropolitana: Santiago, Quilicura, 6 £, 2 £ (AMNH), III., V. and VIII.1979, Pena.

North America

Description
Several descriptions under different taxon names, partly including measurements, are provided by Roth (1952), Brignoli (1971a, 1977a) and Levy (1996). Some additional information are provided here.

Measurements
Female (n=1): CL 3.41, CW 2.66, STL 1.76, STW 1.59. Leg I (3.97, 1.38, 3.63, 3.72, 2.17), II (3.48, 1.29, 2.85, 3.29, 1.62), III (3.17, 1.10, 2.38, 3.12, 1.42), IV (4.09, 1.29, 3.64, 4.44, 1.68). Pedipalp (1.48, 0.62, 0.88, 1.36). EPL 0.22, EPW 0.54, ATL 0.14, ATW 0.39.
Eyes: PME 0.17, PLE 0.18, AME 0.14, ALE 0.19. Eye distances: PME-PME 0.5–1 x PME, PME-AME 1 x PME, PME-PLE 0.5–1 x PME, PME-ALE 0.5–1 x PME, AME-AME <0.5 x AME, AME-ALE <0.5 x AME. CLY1 1.5–2 x AME, CLY2 0.5–1 x ALE.

**Male palp**

RTA with 2 branches, lateral branch leaf shaped and distinctly stepped, distally protruding, dorsal branch strongly sclerotised and distally broad pointed. Embolus filiform, originating at 8 o'clock. Embolus shorter than 2 CB with terminal tip at 3 o'clock. Conductor almost orthogonal to cymbium with distal portion elongated and bent posteriad, lateral margin completely folded. Terminal end bifid, ventral part massive pointed, dorsal part indistinctly pointed. Connection between conductor and tegulum moderately sclerotised. MA strongly protruding with distal plate like sclerite finger shaped, distally moderately spoon like, membranously connected to tegulum and originating at 4–5 o'clock. Basal part of tegulum visible, with a strongly sclerotised band like structure.

**Epigyne and vulva**

Epigynal plate strongly sclerotised and oval or kidney shaped protruding. Posterior sclerite absent. Laterally with crescent shaped pockets. CO are situated in this pockets inside of which an additional orthogonal pocket originates. Epigynal teeth absent (indistinct denticles present in the holotypes of *T. marinae* and *T. baronii*). Vulva consists of combined ducts (CBD), no distinct RC recognisable. First half (CD) of CBD convoluted around second half, both parts strongly sclerotised. FD only represented by small leaf shaped appendages distally of the CBD. Ducts separated by 1.5 x their diameter.

**Other important characters**

Cheliceral promargin with 4, retromargin with 4–7 teeth (!). Colulus developed as trapezoidal plate with the distal margin medi ally notched. Same pattern of distal spigots on PMS (in females) as described for the type species. PLS with distal segment as long as basal segment. Tarsal trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 6–9. Denticles at paired claw of leg I 19–11. Leg spination: male palp (2–0–0–0 or 3–0–0–0, 2–0–0, 1–2–0–0), female palp (3–0–0–0, 2–0–0, 2–2–0–0), leg femora (2–2–2–0 or 2–3–1–0 or 2–3–2–0 or 2–4–3–0 or 2–5–3–0 or 2–5–4–0, 2–2–1–0 or 2–2–2–0 or 2–3–2–0 or 2–3–3–0 or 2–4–2–0, 1–1–1–0 or 1–1–2–0 or 2–1–1–0 or 2–2–2–0 or 2–3–2–0, 1–1–1–0 or 2–1–1–0), patellae (all 2–0–0), tibiae (0–2–0–2p or 0–2–0–2p+1 or 0–2–1–2p or 0–2–1–3p or 0–2–2–3p or 0–2–1–2p+1 (indistinct dorsal spines possible), 0–2–0–1p or 0–2–1–1p+1 or 0–2–2–1p+1 or 0–2–2–1p+1 or 0–2–2–1p+1 or 0–2–2–3p (indistinct dorsal spines possible), 2–2–1–1 or 2–2–2–1p+1 or 2–2–2–1+1p+1 or 0–2–2–3p, metatarsi (0–0–0–3p+1, 0–1–0–3p+1 or 0–1–1–3p+1 or 0–2–1–3p+1, 0–3–2–3p+1 or 0–3–3–3p+1), tarsi (all 0).

**Colouration**

Margin of carapace indistinctly narrow continuously darkened, dorsally with indistinct 2 symmetric longitudinal bands, head region stronger darkened. Sternum with distinct pale median band and 3 symmetric pairs of pale dots laterally, the last pair strongly fused with the median band. Opisthosoma brown-yellowish, anterior with pale median band, continuing in broad chevrons posteriad, laterally with dark band or moderately mottled. Legs moderately annulated (in the type specimens of *T. baronii* and *T. marinae* not visible, may be due to alcohol preservation). ALS indistinctly darkened or pale, PLS with basal segment darkened, distal segment pale.

**Distribution**

*T. pagana* is known in southern, central and western Europe. Also it is known from most Mediterranean countries and has probably been introduced into several countries around the globe.
Discussion
As in other *Tegenaria* species, *T. pagana* shows a large variation in somatic and genital characters (e. g. Figs. 35 C–J) which is reflected in the long list of synonyms. This phenomenon was well illustrated by Levy (1996: p. 97–98, figs. 45–48). He mentioned there that the *pagana*-complex of Brignoli (1971a, 1977a) may represent this variation. The small posterior denticles on the epigyne of *T. marinae* are also found in some specimens of "typical" *T. pagana* and may be part of this variation. Here, we follow Levy’s considerations and regard *Tegenaria cerrutii* Brignoli, 1971, *T. marinae* Brignoli, 1971 and *T. barronii* Brignoli, 1977, as junior synonyms of *Tegenaria pagana* C.L.Koch, 1940.

*Tegenaria parietina* (Fourcroy, 1785)
Fig. 1 E–F, 33 E–I

*Aranea parietina* Fourcroy (1785): 533.
*Aranea phalangiodes* Fourcroy (1785): 535.
*Tegenaria domestica* Walckenaer (1805): 49, pl. 6, figs. 53–54 (uncertain); Blackwall (1861): 163–165, pl. 11, fig. 105 (misidentification).
*Tegenaria murina* Walckenaer (1805): 50 (uncertain); Walckenaer (1842): 6, male.
*Tegenaria domestica* Audouin (1826): publication not available to the authors.
*Tegenaria saxatilis* C. L. Koch (1834): 125, pl. 20, male.
*Tegenaria guyonii* Guérin-Méneville (1829-1844): pl. 2, fig. 1 (pl. 2 is missing in the publication available to the authors); Walckenaer (1842): 5, male; Lucas (1846): 241–242.
*Tegenaria parietina* Simon (1875): 59–61, pl. 5, fig. 4.

No type material available.

Other material examined

**Albania:** Skutari, 1 $ (NHMW), 1894.
**Bulgaria:** Plovdiv: Bachkovo, Bachkovski Monastery, 3 $ (NMB, AB244), 8.VIII.2005, Bolzern.
**Croatia:** Rovinj, 2 $ (SMF, 10499/1 and 10527/1), 1955, Braun; Pola, 1 $, 3 £ (NHMW), Schletterer; Split (Spalato), 1 £ (NHMW), 1862, Mann.
**Greece:** “Tetala”, 1 £ (sub *T. pagana*, det. Roever, SMF, 13888), Roever; 9.V.1985, Hauser; Chios: 1 $ (SMF, 4899), Pauli; Corfu: 1 £ (NHMW), I.1925, Paganetti; Crete:


**Malta:** Gozo: Calypso's cave, 1 £ (MHNG), 1.V.1976, Strinati & Aellen.

**Portugal:** 1 £ (NMB, AB282), 11.VI.1999, Cardoso.

**Spain:** Basque country: Vizcaya, Urkiola, 2 £ (NMB, AB666, 766), 27.IV.2007, Huber; Vizcaya, Zubialde, Ermitabarri, 1 £ (NMB, AB665), 29.IV.2007, Huber; **Canary Islands:** Gran Canaria, Palma, 1 £ (MNHN, 1975), Simon; 5 £ (NMB, 392 a), 1895, Stehlin; Tenerife, Icod, 1 £ (SMF, 25852/1), X.1961, Schmidt; Tenerife, 5 $, 1 £ (NHMW), 1888, Simony (?); **Catalonia:** Gerona, Bañolas, 1 £ (SMF, 4825), 15.IX.1914, Haas; Tarragona, Flix, 1 £ (SMF, 4826), 1915, Haas.

**Switzerland:** Ticino: Arogno, 1 $, 2 £ (SMF, 21938/3), VIII.1930, Wiehle; Ascona, 1 $ (SMF, RII-13396).

**Africa**

**Algeria:** 1 $, 2 £ (MNHN), Lucas.

**Egypt:** Alexandria, 1 $, 2 £ (MNHN, 1976), Simon.

**South Africa:** Cape Town, 1 $ (MNHN, 1974).

**Tunisia:** Ben Gardane, 1 $ (AMNH), 7.10.1948, Malkin, B.

**Asia**

**Israel:** Jerusalem, 4 $, 2 £ (NHMW), Reiter.

**Lebanon:** Beirut, 5 £ (NHMW), Leuthner.

**Syria:** Latakia (?), 1 £ (MNHN, 1975).

**Turkey:** „Nisib, Anatoliens“, 1 $ (SMF, 4823), 1840, Fischer; „Kleinasien: Jum Burnu (E vom Bosporus)“, 1 $ (NHMW), 1909, Fahringer; **Istanbul:** Üsküdar, Vaniköy, 1 £ (coll. Ulasoglu, 213), XI.2005, Ulasoglu; **Nevsehir:** Göreme, 1 $, 1 £ (SMF, 21880/2 and 21881/1), 16.9.1962, Dobat.

**North America**

**Caribbean Islands:** „Westindien“, 1 $ (NHMW).

**South America**

**Paraguay:** Netopil (?), 1 $ (SMF), 30.X.1996, Hagen.

**Diagnosis**

See the diagnosis section at *T. ferruginea*. See also Oxford & Merrett (2000).

**Description**

Information about the variation is provided by Oxford & Merrett (2000). Good drawings of male and female are also provided by Locket & Millidge (1953), Roberts (1985) and Levy (1996). Some additional information is provided here.

**Measurements**

Female (n=1): CL 5.32, CW 3.92, STL 2.44, STW 2.29, OL 5.92, OW 4.01. Leg I (7.30, 2.11, 6.90, 7.58, 3.06), II (6.59, 1.93, 6.07, 6.75, 2.76), III (5.62, 1.59, 4.61, 5.70, 2.17), IV (7.09, 1.99, 6.28, 8.45, 2.61). Pedipalp (2.28, 0.89, 1.39, 2.22). EPL 0.56, EPW 1.29, ATL 0.30, ATW 0.73.
Eyes: PME 0.20, PLE 0.22, AME 0.18, ALE 0.23. Eye distances: PME-PME 1 x PME, PME-AME 1 x PME, PME-PLE 1 x PME, PME-ALE 1 x PME, AME-AME 0.5–1 x AME, AME-ALE <0.5 x AME. CLY1 2.5–3 x AME, CLY2 1.5 x ALE.

Male palp
RTA with 3 branches, ventral branch broad lobe like, distally moderately protruding, distinct ridge. Lateral branch broad and flat protruding, distally oblique truncated. Dorsal branch strongly sclerotised, protruding, as long as wide, distally obtusely and oblique pointed, anteriorly with a stepped small point. Embolus filiform, originating at 8 o'clock. Embolus about 2.5 CB with terminal tip at 3 o'clock. Conductor with distal portion strongly elongated and moderately curved or straight, lateral margin completely folded. Terminal end bifid, ventral part short, simple rounded plate, dorsal part plate like, shorter than ventral part. Connection between conductor and tegulum moderately sclerotised. MA strongly protruding with hook like distal sclerite, membranously connected to tegulum and originating at 6 o'clock. Basal part of tegulum good visible and with undulated margin.

Epigyne and vulva
Epigyne medially with a small pale, membranous area. Posterior sclerite expressed as an extensive sclerotised bar with anterior margin concave (semi-circle). CO between and laterally of the membranous median area and the posterior sclerite. Epigynal „pseudo teeth“ absent. Vulva consists of combined ducts (CBD), no distinct RC recognisable. Only very first part (CD) of CBD moderately sclerotised, largest part strongly sclerotised and convoluted, forming connected smaller anterior (not really a spiral) and a larger posterior spiral regions. Ducts are separated by more than 3 duct diameters. FD only represented by small leaf shaped appendages distally of the CBD.

Other important characters
Cheliceral pro- and retromargin with 4 teeth. Colulus developed as trapezoidal plate with the distal margin medially notched. Same pattern of distal spigots on PMS (in females) as described for the type species. PLS with distal segment as long as basal segment. Tarsal trichobothria at cymbium and palpal tarsus present. Tarsal trichobothria 8–10. Denticles at paired claw of leg I 13–14. Leg spination: leg femora (1–3–2–0 or 1–3–3–0, 1–3–2–0, 1–3–2–0, 1–1–2–0), patellae (all 2–0–0), tibiae (0, 0–1–0–1 or 0–2–0–1, 2–2–1–2, 2–1–1–2 or 2–2–2–2), tarsi (I–IV 0, sometimes IV 0–0–1–0).

Colouration
Margin of carapace with 3 crescent shaped darkened spots, dorsally with 2 symmetric longitudinal dark bands, strongly serrated, sometimes not continuous. Sternum with distinct pale median band, posteriorly very narrow or fused (sometimes with small dark spot in the middle of the posterior half of the pale median band), and 3 symmetric pairs of pale dots laterally. Opisthosoma dark brownish, laterally moderately yellowish mottled, dorsally with a redish median band, in some specimens strongly expressed, in others absent. Anteriolaterally of red median band short black bands and more laterally yellowish. More posterial dorsally with 1 or 2 symmetrical white spots and 4–5 indistinct chevrons more posterior. Legs annulated, very differently strong expressed. Colulus partly darkened, ALS moderately darkened, PLS with basal segment darkened, distal segment pale.

Distribution
Similar distribution pattern as for *T. ferruginea*. The species is very common and abundant in southern Europe and has been introduced into many other countries around the world.

Discussion
*T. parietina* is the largest spider of the group. It is very abundant in southern Europe and can be found at the entrances of caves (never deep inside of the caves) or in buildings. Specimens
of this species show a high variation in size and in the intensity of the colour pattern (from almost grey and without annulations to very distinct patterns and annulations).

_Tegenaria parmenidis_ Brignoli, 1971
Figs. 27 C–K, 28 d–e, j–k

_Tegenaria parmenidis_ Brignoli (1977a): 52, fig. 34.

**new male.**

Type material examined

Other material examined

**Italy:** _Calabria:_ Cosenza, close to Paola, 1 $, 1 £ (MHNG, AB725), 29.V.2007, Bolzern; same data as previous, 1 $, 2 £ (£ were juv. until X.2007, NMB, AB750, 838), 29.V.2007, Bolzern; Cosenza, between Belvedere Marittimo and Sant'Agate di Esaro, 4 $, 2 £ (2 £ were juv. until IX.2007, NMB, AB718, 724, 732, 820, 836), 30.V.2007, Bolzern & Mühlethaler; same location as previous, 2 £ (NMB, AB452), 15.VII.2006, Ramseyer; Cosenza, Parco Naz. del Pollino, 2 £ (1 £ was juv. until VIII.2008, NMB, AB727, 941), 30.V.2007, Bolzern & Mühlethaler; Cosenza, Montagna, 1 £ (was juv. until IX.2007, NMB, AB837), 30.V.2007, Bolzern & Mühlethaler; Cosenza, Praia a Mare, Isola di Dino, 6 £ (NMB, AB450), 15.VII.2006, Bolzern & Ramseyer; _Campania:_ Salerno, Grotta d. Bussento close to Morigerati, 4 $, 4 £ (3 £ were juv. until X.2007, NMB, AB751, 787), 1.VI.2007, Bolzern; Salerno, Novi Vélia, 3 $, 8 £ ($ and one 1 £ were juv. until IX–XII.2007, NMB, AB811, 828, 834, 900, 914), 2.VI.2007, Bolzern & Mühlethaler; Salerno, street between Morigerati and Caselte in Pittari, 2 £ (was juv. until IX.–XII.2007, NMB, AB899, 903), 1.VI.2007, Bolzern & Mühlethaler; Salerno, Sanza, Monte Cervati, 7 £ (NMB, AB723, 736), 31.V.2007, Bolzern & Mühlethaler; _Sicily:_ Catania, street to Grotta dei Ladroni, 1 £ (NMB, AB709), 28.V.2007, Bolzern & Mühlethaler; Catania, street after Grotta dei Ladroni, 2 £ (NMB, AB690, 693), 28.V.2007, Bolzern & Mühlethaler; Palermo, Monastery close to Piano Zucchi, 1 $, 1 £ ($ was juv. until VII.2008, NMB, AB716, 940), 24.V.2007, Bolzern & Mühlethaler; Catania, Randazzo, N-slope of Mte. Etna, 1 £ (NMB, AB759), 26.V.2007, Bolzern & Mühlethaler.

**Diagnosis**

*T. parmenidis* belongs to a species group together with *T. circeoensis n. sp., T. capolongoi* and *T. sbordonii*. Most useful characters for separating these species are the shape of the RTA, the bifid terminal end of the conductor, the presence/absence of pockets at the median plate of the epigyne and the location of the copulatory openings.

**Description**

*Measurements*

**Male (n=1):** CL 3.75, CW 3.05, STL 1.84, STW 1.81, OL 4.39, OW 2.91. Leg I (5.54, 1.40, 5.04, 5.98, 2.67), II (5.05, 1.33, 4.21, 5.33, 2.34), III (4.56, 1.31, 3.76, 5.10, 2.38), IV (5.44, 1.25, 4.98, 6.60, 2.46), Pedipalp (2.29, 0.74, 1.15, 1.60), bulbL 1.34.  
**Female (n=1):** CL 3.16, CW 2.53, STL 1.59, STW 1.54, OL 5.13, OW 3.60. Leg I (4.10, 1.26, 3.83, 3.94, 2.27), II (3.80, 1.17, 3.24, 3.62, 1.93), III (3.47, 1.12, 2.72, 3.53, 1.64), IV (4.31, 1.28, 3.85, 4.73, 1.87). Pedipalp (1.59, 0.62, 0.95, 1.37). EPL 0.56, EPW 1.11, ATL 0.26, ATW 0.44.
Eyes: PME 0.17–0.19, PLE 0.18–0.20, AME 0.13–0.20, ALE 0.18–0.21. Eye distances: PME-PME 0.5–1 x PME, PME-AME 0.5–1 x PME, PME-PLE 0.5–1 x PME, PME-ALE 0.5–1 x PME, AME-AME <0.5 x AME, AME-ALE <0.5 x AME. CLY1 1.5–2 x AME, CLY2 1 x ALE.

**Male palp**

RTA with 3 branches, lateral and dorsal branch basally fused, distally lobe or bulge like, ventral branch indistinct but with a distinct ventral ridge, distally moderately pointed. Embolus filiform, terminal part stronger bent, originating at 8 o'clock. Embolus equal CB with terminal tip at 2 o'clock. Conductor very distinct and complex with distal portion elongated and moderately curved, lateral margin completely folded, with a bulge like structure at the origin of the conductor. Terminal end strongly bifid, ventral part (functional) distally simple and sharp pointed, dorsal part ventrally with a massive claw like appendage and dorsally broadly flattened. Connection between conductor and tegulum membranous. MA strongly protruding with distal hook like sclerite, membranously connected to tegulum and originating at 6 o'clock. Basal part of tegulum good visible and with undulated margin.

**Epigyne and vulva**

Epigyne with distinct trapezoidal atrial region, clearly separated from the epigynal plate by a sclerotised ridge. Medially of this atrium a distinct pocket, opening anteriad. Posterior sclerite absent. CO expressed as distinct holes, directly anteriorly of the pocket, opening anteriad. Epigynal „pseudo teeth“ absent. Vulva consists of distinguishable CD, RC and FD. CD short and straight, leading into globular, smoothly sclerotised RC, separated by about their diameter. FD only represented by small leave shaped appendages distally of the RC.

**Other important characters**

Cheliceral promargin with 3, retromargin with 4 teeth. Colulus developed as trapezoidal plate with the distal margin medially notched. Same pattern of distal spigots on PMS (in females) as described for the type species. PLS with distal segment as long as basal segment. Tarsal trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 7–8. Denticles at paired claw of leg I 11–12. Leg spination: male palp (2–0–0–0 or 3–0–0–0, 2–0–0, 1–2–0–0 or 2–2–0–0), female palp (2–0–0–0 or 3–0–0–0, 2–0–0, 2–2–0–0), leg femora (2–3–2–0, 2–3–3–0 or 3–2–1–0, 2–2–2–0, 1–1–1–0), patellae (all 2–0–0), tibiae (0 or 0–0–0–1p or 2–0–0–0 or 2–0–0–1p (dorsal spines indistinct), 0, 2–1–1–1, 2–1–1–1.), metatarsi (0–0–0–3p+1, 0–1–0–3p+1, 0–2–2–3p+1, 0–2–2–1p+1+2p+1 or 0–3–2–1p+1+2p+1), tarsi (I & II 0, III & IV 0–0–1–0).

**Colouration**

Margin of carapace with 3 broad crescent shaped darkened spots, dorsally with 2 symmetric longitudinal dark bands, serrated and continuous. Chelicerae medially with darkened spot. Sternum anteriorly with distinct pale median band, reaching only the middle, 4 symmetric pairs of pale dots laterally and posteriorly, moderately fused. Opisthosoma brownish-yellowish mottled, dorsally with a distinct yellowish median band (most anteriorly darkened) with 2 pairs of white spots laterally, 4 indistinct chevrons more posteriad. Legs annulated. Colulus partly darkened, ALS ventrally and dorsally darkened, PLS with basal segment black, distal segment pale.

**Distribution**

This species is endemic to Italy. Previously *T. parmenidis* was only mentioned from the type locality in Campania. The data presented here expand the known range southwards to Calabria and Sicily.

**Discussion**

*T. parmenidis* together with *T. capolongoi, T. sbordonii* and *T. circeoensis n. sp.* form a morphologically well-defined species group, endemic to southern Italy.
**Tegenaria parvula** Thorell, 1875 stat. rev.
Figs. 36 E–F, K–L

*Tegenaria parvula* Thorell (1875b): 94, female.
*Tegenaria parvula* Thorell (1875a): 78, female.
*Tegenaria velox* Chyzer & Kuzczynski (1897): 168–169, pl. 6, fig. 28, female, **new synonym**.
*Tetrilus strandi* Caporiacco (1936): 355–356, fig. 5, male.
*Tetrilus strandi* Caporiacco (1938): 39, fig. 2, female.
*Malthonica parvula* Guseinov et al. (2005): 164.

Type material examined
No type material examined. Female type had been examined and drawn by Brignoli (1971a).


Other material examined

Diagnosis
*T. parvula* is very closely related to *T. silvestris*. Females can easily be separated by the distinctly different epigyne. Males are more difficult to separate but most useful characters are the dorsal branch of RTA, the median protrusion of tegulum and the distal portion of conductor.

Description
**Measurements**
Male (n=2): CL 3.31–3.90, CW 2.54–3.07, STL 1.57–1.89, STW 1.58–1.92. Leg I (3.51–4.47, 1.29–1.45, 3.35–4.18, 3.53–4.57, 2.15–2.40), II (3.17–4.00, 1.17–1.38, 2.79–3.54, 3.13–3.53, 1.80–1.84), III (2.50–2.90, 0.86–1.05, 2.21–2.26, 2.21–2.84, 1.12–1.47), IV (3.78–4.55, 1.21–1.38, 3.21–3.91, 3.98–4.97, 1.82–2.21). Pedipalp (1.72, 0.55–0.63, 0.49–0.51, 2.20–2.25), bulbL 1.90–1.96.
Female (n=1): CL 3.46, CW 2.70, STL 1.74, STW 1.75. Leg I (3.76, 1.24, 3.32, 3.66, 2.04), II (3.22, 1.18, 2.96, 1.63), III (3.14, 1.19, 2.37, 3.07, 1.55), IV (3.99, 1.27, 3.36, 4.28, 1.84). Pedipalp (1.49, 0.63, 0.91, 1.48). EPL 0.51, EPW 0.85, ATL 0.24, ATW 0.26.

Eyes: PME 0.18, PLE 0.19–0.20, AME 0.14–0.19, ALE 0.19–0.21. Eye distances: PME-PME 0.5–1 x PME, PME-AME 0.5–1 x PME, PME-PLE <0.5–0.5 x PME, PME-ALE 1 x PME, AME-AME <0.5 x AME, AME-ALE <<0.5 x AME. CLY1 1.5 x AME, CLY2 0.5–1 x ALE.

Other morphological characters
All other morphological characters (except some details in genital morphology) examined do lie within the variation presented for T. silvestris.

Distribution
Italy (central Italy to the north), Romania.

Discussion
Brignoli (1971a) suggested that most citations of T. silvestris L. Koch from Italy may refer to T. parvula. The present study does not support this as both forms occur in different parts of Italy.

The synonymy of T. velox Chyzer is based on the examination of the female holotype of T. velox. No additional material and in particular no males are presently known of this taxon from Romania. No differences could be found between the holotype of T. velox and Italian material of T. parvula and the two are, therefore, synonymised here. Males from Romania will be necessary to confirm this synonymy.

**Tegenaria percuriosa Brignoli, 1972**
Fig. 30 J (holotype of T. bithyniae)

*Tegenaria percuriosa* Brignoli (1972): 176–177, figs. 18, 21, female.
*Tegenaria percuriosa* Brignoli (1978b): 44, fig. 11 (grouping information).
*Tegenaria bithyniae* Brignoli (1978c): 515, fig. 97, female, new synonym.

Type material examined

Other material examined

Description
A redescription with all relevant information is provided by Gasparo (2007).
Distribution
This species is known from Turkey (Bolu, Isparta, Konya, Sinop and Tokat). It is also listed for Bulgaria (Blagoev et al., 2002; Deltashev, 1993; see also Gasparo, 2007), but without detailed locality data.

Discussion
The taxonomy of *T. percuriosa*, *T. boitanii* and *T. bithyniae* is confused. Based on recently collected specimens from the type locality of *T. percuriosa*, Gasparo (2007) assigned the male holotype of *T. boitanii* to *T. percuriosa*. The examination of the type material of *T. percuriosa* and *T. bithyniae* further showed that the latter species is a junior synonym of *T. percuriosa*. The drawings of *T. bithyniae* in the literature (Brignoli, 1978c: p. 517, fig. 97; Deltashev, 1993: p. 169, fig. 1) show the transparent epigynes in an antero-ventral view. Applying an exact dorsal or ventral view these structures will resemble the drawings of Brignoli (1972: p. 172, fig. 18) and Gasparo (2007: p. 101, figs. 7–8).

*Tegenaria pieperi* Brignoli, 1979
Figs. 30 F–G

*Tegenaria pieperi* Brignoli (1979b): 194, fig. 27, female.

Type material examined

Other material examined

Description
Description, including measurements, is provided by Brignoli (1979b). Additional Drawings also provided by Brignoli (1984: 308, fig. 29).

Distribution
Only known from the type locality on Crete, Greece.

*Tegenaria pindosiensis* new species
Figs. 38 K–N, 39 a–b

Male unknown.

Type material examined

Etymology
The species epithet is derived from the name of the mountain range in northern Greece and southern Albania where the only known specimen of this species had been collected.
Diagnosis
*T. pindosiensis n. sp.* is most similar to *T. regispyrrhi* but differs by the epigyne with a uniformly shaped median plate without transversal rim (strongly sclerotised transversal rim present in *T. regispyrrhi*), the distally pointed projections of lateral margin of median region (“pseudo teeth”) and the run of the first part of the CD strongly convoluted.

**Description**

**Measurements**

Female (n=1): CL 1.86, CW 1.36, STL 0.99, STW 0.95, OL 3.33, OW 2.19. Leg I (1.69, 0.67, 1.45, 1.49, 1.03), II (1.53, 0.67, 1.18, 1.35, 0.84), III (1.47, 0.55, 1.07, 1.30, 0.74), IV (2.38, 0.87, 2.10, 2.42, 1.02). Pedipalp (0.73, 0.33, 0.46, 0.78). EPL 0.36, EPW 0.48, ATL 0.14, ATW 0.35.

Eyes: PME 0.10, PLE 0.11, AME 0.07, ALE 0.13. Eye distances: PME-PME 0.5–1 x PME, PME-AME 0.5–1 x PME, PME-PLE 0.5 x PME, PME-AME <=0.5 x AME, AME-AME <=0.5 x AME. CLY1 2–2.5 x AME, CLY2 0.5–1 x ALE.

**Epigyne and vulva**

Epigyne medially with a paler area, all strongly sclerotised, only laterally separated from epigynal plate. “Pseudo teeth” present. Posterior sclerite absent. GO lateral of atrial area. Vulva consists of distinguishable CD, RC and FD. CD very hard detectable, only slightly sclerotised. RC globular and together with FD enclosed in a sclerotised structure. RC separated by 0.5 x their diameter anteriorly. RC and FD distinctly and conspicuously visible trough epigynal plate.

**Other important characters**

Cheliceral promargin with 3 teeth, retromargin with 4 equally sized teeth. Colulus developed as trapezoidal plate with the distal margin medially notched. Same pattern of distal spigots on PMS (in females) as described for the type species. PLS with distal segment shorter than basal segment. Tarsal trichobothria at palpal tarsus and cymbium absent. Tarsal trichobothria 5–6. Denticles at paired claw of leg I 9. Leg spination: female palp (2–0–0–0, 2–0–0, 2–2–0–0), leg femora (2–2–0–0, 2–1–1–0, 2–1–1–0, 1–1–1–0), patellae (all 2–0–0), tibiae (1–0–0–1+1p, 2–1–0–1, 2–2–1–1 or 2–2–2–1, 2–2–2–2p+1 or 2–2–2–3+1p), metatarsi (0–0–0–3p+1, 0–1–0–3p+1, 0–2–2–3p+1, 0–3–3–3p+1), tarsi (all 0).

**Colouration**

Margin of carapace narrowly darkened with 3 crescent shaped spots, dorsally with 2 longitudinal symmetric dark bands, moderately serrated. Sternum with distinct pale median band and lateral 3 symmetric pale dots, most posterior pair moderately fused with median band. Opisthosoma dark brownish with yellowish median band and dots (mottled, partly may be caused by alcohol preservation) forming chevrons more posterior. Legs annulated. Colulus darkened. ALS darkened, PLS with dark basal and pale distal segment.

**Distribution**

Only known from the type locality.

*Tegenaria podopryorai* (Kovblyuk, 2006) new combination

No material examined

**Description**

A detailed description is provided by Kovblyuk (2006).
Distribution
Only know from Ukraine.

Discussion
The presence of a colulus, the number of cheliceral teeth and the genital characters place this species clearly into Tegenaria.

_Tegenaria racovitzai_ Simon, 1907

_Figs. 26 H–L_

_Tegenaria racovitzai_ Simon (1907): 548–549, fig. 3b, male.
_Tegenaria antrorum_ Simon (1916): 211, female, **new synonym**.

Type material examined

Other material examined
**Spain: Aragon:** Huesca, Hoya de Huesca, „Cueva del Paco de Naya“, 1 $ (MNHN, Bispéologica 459), 28.VI.1911; **Catalonia:** Barcelona, Montserrat, Collbató, „Cv. Freda“, 1 $ (UB), 16.IV.1972; Barcelona, Montserrat, „Avec dels Pouetons“ (?), 1 $ (MNHN), 21.II.1971, Sirera.

Diagnosis
_T. racovitzai_ can easily be recognised by the very special reduced conductor and the distinct epigyne with sharply pointed “pseudo-teeth” and with a posterior sclerite having a convex anterior margin.

Description
_Measurements_
A description of female, including some measurements, is provided by Ribera & Barrientos (1986).
Male (n=1): CL 4.22, CW 2.98, STL 2.16, STW 1.81, OL 4.70, OW 2.78. Leg I (5.24, 1.66, 5.26, 5.55, 3.01), II (5.05, 1.60, 4.82, 5.56, 2.78), III (4.79, 1.49, 4.40, 5.75, 2.60), IV (6.01, 1.84, 5.38, 7.00, 3.40), Pedipalp (1.84, 0.66, 0.92, 1.77), bulbL 1.01.
Female (n=1): CL 3.66, CW 2.65, STL 1.92, STW 1.68. Leg I (4.41, 1.28, 3.90, 4.40, 2.36), II (4.25, 1.35, 3.79, 4.27, 2.24), III (3.86, 1.23, 3.36, 4.31, 1.85), IV (4.83, 1.26, 4.39, 5.76, 1.78). Pedipalp (1.51, 0.60, 0.98, 1.61). EPL 0.72, EPW 1.11, ATL 0.22, ATW 0.39.
Eyes: PME 0.14–0.15, PLE 0.15–0.16, AME 0.10–0.11, ALE 0.16–0.17. Eye distances:
PME-PME 1–1.5 x PME, PME-AME 1 x PME, PME-PLE 1–1.5 x PME, PME-AME 0.5–1 x PME, AME-AME 0.5–1 x AME, AME-AME 0.5–1 x AME. CLY1 2.5 x AME, CLY2 1–1.5 x ALE.
_Male palp_
RTA with 3 branches, dorsal branch strongly sclerotised, broad protruding, moderately longer than wide, distally broad truncated, lateral branch much smaller, protruding and distally pointed, ventral branch long drawn-out bulge with distinct ventral rim. Embolus filiform, originating at 8–9 o’clock. Embolus approximately 1.5 CB with terminal tip at 2 o’clock.
Conductor reduced to transparent lamelliform appendage with lateral margin moderately folded. Terminal simple and moderately pointed. Connection between conductor and tegulum membranous or moderately sclerotised. MA moderately protruding with distal plate like sclerite forming a spoon like structure, membranously connected to tegulum and originating at 4–5 o’clock. Basal part of tegulum good visible and with a continuous margin.

**Epigyne and vulva**

Epigyne medially with a pale, membranous area. Posterior sclerite expressed as a sclerotised bulge with anterior margin convex, limiting atrial area posteriorly. CO between and laterally of the membranous median area and the posterior sclerit. Epignyal „pseudo teeth“ present and sharp pointed. Vulva consists of distinguishable CD, RC and FD. CD very short leading into globular, smoothly sclerotised RC, almost touching each other. An additional small globular structure (second pair of RC) attached to the large RC, which are distinctly visible through the epigynal plate. FD only represented by small leave shaped appendages distally of the RC.

**Other important characters**

Cheliceral promargin with 3, retromargin with 4–5 teeth. Colulus developed as trapezoidal plate with the distal margin medially notched. Same pattern of distal spigots on PMS (in females) as described for the type species. Tarsal trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 7–9. Leg spination: male palp (2–0–0–0 or 3–0–0, 2–0–0, 1–0–2–0), female palp (2–1–0–0 or 3–0–0–0, 2–0–0, 2–2–0–0), leg femora (2–2–2–0 or 2–3–2–0, 2–2–2–0, 2–2–2–0, 2–1–1–0 or 2–2–1–0), patellae (all 2–0–0), tibiae (1–2–0–2p+1 or 1–2–2–2p+1 or 1–2–0–3p, 1–2–2–1+2p or 1–2–2–3p, 1–2–2–2+1p or 1–2–2–3p, 1–2–2–2+1p or 1–2–2–3p, metatarsi (0–2–2–3p+1, 0–3–2–3p+1, 2–3–3–3p+1, 2–3–3–3p+1), tarsi (I & II 0, III & IV 0–0–1–0).

**Colouration**

No colouration pattern visible at the specimens examined.

**Distribution**

Records are known from northeast Spain and southwest France (regions around the Pyrenees).

**Discussion**

Simon (1907) assigned *T. racovitzai* to his *domestica*-group. Later he described *T. antrorum* (Simon, 1916) which he placed near *T. racovitzai*, and the two into his *armigera*-group. Fage (1931) agreed with this placement, in contrast to Brignoli (1977c) who mention that *T. racovitzai* does not show close affinities to the *domestica, atrica or armigera/oribata*-group.


Figs. 25 E–H


*Tegenaria ramblae* Barrientos & Ribera (1992): 122–127, figs. 1, 2a–b, male.


No typematerial examined

Other material examined


**Portugal: Aveiro**: Esmoriz, Lisbon (?), 2 £ (sub *Tegenaria*, det. Simon, MNHN, 1977, 14174), Seguera; **Coimbra**: Coimbra, Botânico, 3 £ (NMB, AB928), 15.IV.2008, Crespo; **Leira**: Porto de Mós, Serro Ventoso, 2 S, 1 £ (NMB, AB271, 275), 4.VI.2002 and
16.VII.2005, Cardoso; **Lisbon:** 20 km west of Lisbon, Sintra, 1 $ (NMB, AB589), 23.X.2006, Huber; **Porto:** Porto, 2 $, 10 £ (sub *Tegenaria*, det. Simon, MNHN, 1977, 14173), Seguera; **Santarém:** Albergaria, 6 $, 2£ (ZMUC, 00012611–17), 4.VI.2005 and 15.VI.2005, Cardoso.

**Description**

Detailed descriptions, including measurements, are provided by Barrientos (1978, female) and Barrientos & Ribera (1992, male).

**Distribution**

Portugal, Spain (central to west).

*Tegenaria regispyrrhi* Brignoli, 1976 sensu lato

Among material referred to *T. regispyrrhi* four female morphotypes can be recognised. Only for one morphotype males are available which include the holotype of *T. regispyrrhi*. Here the three morphotypes are distinguished but not formally described as males are wanting.

*Tegenaria regispyrrhi* Brignoli (1976b): 569–571, figs. 54, 56, 58.

Figs. 38 A–D

Type material examined


Other material examined

**Greece:** Ioannina: “Passo Katava”, 1 $ (MSNB), 4.VI.1991, Giachino; “E Ioannina, near E92“, 1 £ (SMF), 2.IV.2006, Schönhofer; Kefallonia: 1 £ (SMF, coll. Roewer, 5972);


*Tegenaria aff. regispyrrhi* (1)

Figs. 38 E–F


Comments

Moderately smaller than the examined *T. regispyrrhi* specimens (CL 1.73, CW 1.29). Colouration pattern not examinable (very pale specimen, may be due to alcohol preservation). Differs from *T. regispyrrhi* by moderately different spination patterns (e.g. no spines at tarsi) and the epigyne and vulva.

*Tegenaria aff. regispyrrhi* (2)

Figs. 38 G–H


Comments

Lies in the same size range (CL 2.83, CW 2.16) as the examined *T. regispyrrhi* specimens. Colouration pattern similar. Differs from *T. regispyrrhi* by moderately different spination patterns (e.g. no spines at tarsi) and the epigyne and vulva.
Tegenaria aff. regispyrrhi (3)

Figs. 38 I–J


**Description (T. regispyrrhi sensu stricto)**

**Measurements**

**Male (n=1):** CL 2.84, CW 2.14, STL 1.45, STW 1.37. Leg I (2.87, 1.08, 2.67, 2.74, 1.81), II (2.74, 0.99, 2.27, 2.50, 1.62), III (2.59, 0.93, 1.98, 2.54, 1.38), IV (3.21, 1.03, 2.78, 3.46, 1.74), Pedipalp (1.58, 0.58, 0.56, 1.35), bulbL 0.98.

**Female (n=2):** CL 2.11–3.20, CW 1.54–2.22, STL 1.17–1.59, STW 1.08–1.45. Leg I (2.07–2.75, 0.83–1.01, 1.80–2.41, 1.75–2.47, 1.24–1.48), II (1.92–2.67, 0.76–1.08, 1.49–2.11, 1.61–2.34, 1.02–1.45), III (1.82–2.44, 0.68–1.01, 1.31–1.89, 1.57–2.35, 0.97–1.26), IV (2.23–3.22, 0.71–1.11, 1.80–2.78, 2.28–3.31, 1.13–1.51). Pedipalp (0.87–1.30, 0.41–0.56, 0.58–0.78, 0.88–1.21). EPL 0.32–0.45, EPW 0.52–0.70, ATL 0.14–0.25, ATW 0.36–0.51.

**Eyes:** PME 0.11–0.14, PLE 0.11–0.17, AME 0.07–0.09, ALE 0.12–0.14. Eye distances: PME-PME 0.5–1 x PME, PME-AME 0.5–1 x PME, PME-PLE <0.5–0.5 x PME, PME-ALE 0.5–1 x PME, AME-AME <0.5–0.5 x AME, AME-ALE <=0.5 x AME. CLY1 2.5–3 x AME, CLY2 1 x AME.

**Male palp**

RTA with 3 branches, dorsal branch large, leave shaped and strongly protruding, bent and distally pointed, lateral branch strong and straight protruding, thorn like, ventral branch indistinct flat long drawn-out bulge with distinct ventral rim. Embolus filiform, originating at 8–9 o'clock. Embolus approximately 1.5 CB with terminal tip at 4 o'clock. Conductor irregularly shaped with distal portion strongly elongated and moderately bent, lateral margin completely folded. Terminal end not bifid, indistinctly pointed. Connection between conductor and tegulum membranous. MA strongly protruding with bifid plate like distal sclerite, one part hook like elongated and the other part broadly pointed, membranously connected to tegulum, originating at 5–6 o'clock. Basal part of tegulum good visible and moderately undulated.

**Epigyne and vulva**

Epigyne with a distinct atrium (eventhough the CO are not placed in this atrium), anteriorly separated from the epigynal plate by a prominent triangularly or trapezoidally shaped ridge. Posterior sclerite absent. CO anterolaterally of the prominent rige distinctly visible as gaps. Epigynal ,,pseudo teeth“ absent. Vulva consists of distinguishable CD, RC and FD, all structures are fused together into a strongly sclerotised structure. CD long and straight (difficult to observe), leading into globular RC, separated by about their diameter. FD long and convoluted, terminally leading into small leave shaped appendages.

**Other important characters**

Cheliceral promargin with 3, retromargin with 3–4 teeth. Colulus developed as trapezoidal plate with the distal margin medially notched. Same pattern of distal spigots on PMS (in females) as described for the type species. PLS with distal segment shorter than basal segment. Tarsal trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 5–7. Denticles at paired claw of leg I 9–10. Leg spination: male palp (2–0–0–0, 2–0–0, 0–2–0–0 (not clear if those are dorsal or prolateral spines), female palp (2–0–0–0, 0–2–0–0, 2–1–1–0 or 2–2–0–0), leg femora (2–2–0–0 or 2–3–1–0, 2–1–2–0 or 2–2–0–0, 2–1–1–0 or 2–2–2–0, 1–1–1–0 or 2–2–1–0 or 2–3–1–0), patellae (all 2–0–0), tibiae (0 or 2–0–0–1p or 2–0–0–3p or 2–1–0–3p or 2–2–0–3p, 2–1–0–2+1p or 2–1–0–3p or 2–2–0–1+1p or 2–2–0–2+1p, 2–2–2–2+1p.
or 2–2–2–3p, 2–2–2–2+1p or 2–2–2–3p), metatarsi (0–0–0–3p+1, 0–1–0–3p+1, 0–3–3–3p+1 or 1–3–3–3p+1, 1–3–3–3p+1), tarsi (I & II 0, III & IV 0–0–1–0).

**Colouration**
Margin of carapace with 3 narrow crescent shaped darkened spots, sometimes connected, dorsally with 2 symmetric longitudinal dark bands, serrated. Sternum with distinct pale median band and 3 symmetric pairs of pale spots laterally. Opisthosoma dark brownish, laterally with yellowish spots, dorsally with indistinct yellowish chevrons. Legs annulated. Colulus partly darkened, ALS darkened, PLS with basal segment darkened (pale in other specimens, may be due to alcohol preservation), distal segment pale.

**Distribution**
Only known from Greece.

**Discussion**
The four morphotypes of *T. regispyrrhi* s. l. differ in size, spination patterns and genital structures (e.g. shape of the prominent rim on the epigynal plate, the length of the FD). The four morphotypes are also geographically separated (Map 1), except for one specimen collected by Roewer in Kefallonia, which matches the description of *T. regispyrrhi* s. str.

*Tegenaria rhodiensis* Caporiacco, 1948
*Tegenaria rhodiensis* Caporiacco (1948): 40–41, fig. 2, male.

No type material available.

**Other material examined**

**Description**
Based on the mentioned specimens, Brignoli provided a redescription of this species (1978c).

**Distribution**
Originally, Di Caporiacco collected one male of this species on Rhodes (Greece). Brignoli (1978c) found “his” *Tegenaria rhodiensis* in two provinces in central Turkey (Isparta, Konya).

**Discussion**
Type material is not traceable and Di Caporiacco's (1948) description is not diagnostic. For this reason Brignoli's concept (Brignoli, 1978c: sub *Tegenaria (?) rhodiensis*) has to be adopted here.

*Tegenaria rilaensis* Deltshev, 1993 stat. rev.
*Malthonica rilaensis* Guseinov et al. (2005): 164.

**Type material examined**
Other material examined

**Bulgaria: Sofiya:** Rila Mountains, Rila Monastery, 1 £ (NMB, AB243), 6.VIII.2005, Jäger & Kunz.

**Diagnosis**

*T. rilaensis* belongs, together with *T. campestris*, *T. montana*, and *T. bozhkovi* to the “super species” described by Deltshev (2008b).

**Description**

Several details and measurements are provided by Deltshev (1993). All examined characters mentioned for *T. campestris* were identical with this species except slight differences in genital morphology.

**Distribution**

Endemic to the Rila Mountains in Bulgaria (Deltshev, 1993).

**Discussion**

Deltshev (1993: 170–171; 2008b) mentioned, that *T. bozhkovi*, *T. montana* and *T. rilaensis* are closely related to *T. campestris*. As characters separating them, he used 1) the size of the palpal organ, the smallest being that of *T. montana*; 2) the shape of the “tegular apophysis” (conductor); 3) the shape of the epigyne and vulva. Based on the material at hand it is difficult to relate to this grouping. For this reason, the identification of the female from the Rila Monastery is tentative. In the genetic analyses, the genetic distance between *T. campestris* and *T. rilaensis* are distinct and the species are clearly separable. Additional material and analyses are necessary to clarify this problem.

**Tegenaria sbordonii** Brignoli, 1971 stat. rev.

*Fig. 28 f–g*

*Tegenaria sbordonii* Brignoli (1971a): 112–115, figs. 70–73.
*Tegenaria sbordonii* Brignoli (1977a): 52, fig. 35.

**Type material examined**


**Diagnosis**

*T. sbordonii* belongs to a species group together with *T. circeoensis* n. sp., *T. capolongoi* and *T. parmenidis*. Most useful characters for separating these species are the shape of the RTA, the bifid terminal end of the conductor, the presence/absence of pockets at the median plate of the epigyne and the location of the copulatory openings.

**Description**

The description, including measurements, is provided by Brignoli (1971a). Some additional information is provided here.

*Other important characters*
Cheliceral promargin with 3, retromargin with 4 teeth. Colulus developed as trapezoidal plate with the distal margin medially notched. Same pattern of distal spigots on PMS (in females) as described for the type species. PLS with distal segment as long as basal segment. Tarsal trichobothria at cymbium and palpal tarsus absent.

Distribution
*T. sbordonii* is only known from the type serie collected in the “Grotta dei Serini” in Lazio, Italy.

Discussion
During the field work conducted during May and June 2007, A. Bolzern and R. Mühlethaler did not find the “Grotta dei Serini” nor any specimens of *T. sbordonii* in the region of Esperia. The species may be entirely restricted to caves.

*Tegenaria schmalfussi* Brignoli, 1976
Figs. 30 G–H

*Tegenaria schmalfussi* Brignoli (1976b): 571–572, fig. 57, female.

Type material examined

Diagnosis
*T. schmalfussi* does have moderately reduced eyes, distal segment of PMS almost 2 x longer than the basal segment and the very distinctly formed epigyne and vulva (Figs. 30 G–H).

Description
Description of the only specimen known is provided by Brignoli (1976b).

Distribution
Only known by one specimen from the type locality (Milatos cave, Crete, Greece).

Discussion
In 2007, A. Bolzern visited the type locality of this species. Unfortunately, only specimens belonging to *T. parietina* could be found. At present this species remains represented only by one female specimen.

*Tegenaria schoenhoferi* new species
Figs. 23 F–J

Female unknown.

Type material
Holotype. Greece: Corfu, between Acharavi and Portes, 1 $ (SMF), 25.III.2006, Schönhofer. 3 subadult £ and 1 subadult $ are preserved in the same tube.

Etymology
The species is named in honour of the arachnologist Axel Schönhofer (Germany) who has collected many spiders and provided them for this study; genitive singular case.

**Diagnosis**

*T. schoenhoferi* can be separated from all other known species by the distinctive RTA and the very strongly elongated, hook like MA and the special shaped conductor.

**Description**

**Measurements**

Male (n=2): CL 2.79, CW 2.13, STL 1.46, STW 1.37, OL 2.93, OW 1.89. Leg I (3.32, 1.11, 3.19, 3.08, 1.58), II (2.85, 0.99, 2.61, 2.68, 1.45), III (2.74, 0.85, 2.09, 2.55, 1.23), IV (3.33, 0.98, 3.00, 3.54, 1.55). Pedipalp (1.38, 0.53, 0.43, 1.14), bulbL 0.91.

Eyes: PME 0.13, PLE 0.14, AME 0.08, ALE 0.14. Eye distances: PME-PME 0.5–1 x PME, PME-AME 0.5–1 x PME, PME-PLE 0.5–1 x PME, PME-ALE 0.5–1 x PME, AME-AME 0.5 x AME, AME-ALE <0.5 x AME. CLY1 2.5–3 x AME, CLY2 1–1.5 x AME.

**Male palp**

RTA with 2 distinct branches, lateral branch broad and strongly protruding, distally with a straight, truncated ventral part and a strongly elongated, finger shaped dorsal protuberance, ventral branch forming a longitudinal ridge reaching three-fourth of tibia length. Embolus filiform, originating at 8–9 o'clock, about 2–2.5 x CB, with terminal end at 4–5 o'clock. Distal portion of conductor distinctly elongated, longer than wide, distally strongly bent and moderately acuminate, lateral margin completely folded. Terminal end distinctly elongated, strongly sclerotised and narrowly pointed. Connection of conductor to tegulum only partly sclerotised. MA very strongly protruding with distal plate forming an elongated, narrow hook like sclerite, membranously connected to tegulum, originating at 5 o'clock.

**Other important characters**

Cheliceral promargin with 3 teeth, retromargin with 6 equally sized teeth. Colulus developed as trapezoidal plate with the distal margin medially notched. PLS with distal segment as long as basal segment. Tarsal trichobothria at palpal tarsus and cymbium absent. Distinctly long trichobothria dorsally on palp tibia. Tarsal trichobothria 6–8. Denticles at paired claw of leg I 7–8. Leg spination: male palp (2–0–0–0, 2–0–0, 1–0–2–0), leg femora (2–2–0–0, 2–1–1–0 or 2–2–0–0, 2–2–0–0, 2–1–1–0), patellae (all 2–0–0), tibiae (2–0–0–2p, 0–0–0–2 or 2–1–0–3, 2–2–1–1p+1+1p or 2–2–1–3p, 2–2–2–1p+1+1p or 2–2–3–3p), metatarsi (0–0–0–1p or 0–0–0–3p+1, 0–1–0–3p+1 (one leg with a chaotic pattern of several spines), 0–3–3–3p+1, 1–3–3–3p+1), tarsi (I and II 0, III and IV 0–0–1–0).

**Colouration**

Margin of carapace 4 narrow symmetric dark spots, dorsally with 2 longitudinal symmetric serrated dark bands, head region with narrow dark median strip. Chelicerae with extensive dark spots. Sternum with distinct pale median band and with 3 symmetric pale dots laterally. Opisthosoma dark brownish with pale median band and 7–8 chevrons posteriad. Legs annulated. Colulus darkened. ALS darkened (ventrally more pronounced), PLS with basal segment darkened (dorsally more pronounced), distal segment pale. The subadult females do show the same colour patterns.

**Distribution**

Only known from the type location: Greece, Corfu.

*Tegenaria scopifera* Barrientos, Ribera & Pons, 2002

*Tegenaria scopifera* Barrientos, Ribera & Pons (2002): 86–90, figs. 1A–B, 2A–B, 3A–B.
No material examined

Description
A detailed description, including measurements and good drawings, is provided by Barrientos et al. (2002).

Distribution
*T. scopifera* is endemic to the Balearic Islands. There, it is known from three islands (Mallorca, Cabrera, Tagomago).

*Tegenaria silvestris* L. Koch, 1872 stat. rev.
Figs. 36 A–B, G–H, variation C–D, I–J; 37 a, d–e, j, variation b–c, f–i

*Tegenaria silvestris* L. Koch (1872): 288–292.
*Tegenaria sylvestris* Müller & Schenkel (1895): 753, pl. 13, fig. 3.
*Tegenaria silvestris* Chyzer & Kulczynski (1897): 167, pl. 6, figs. 24, 27a–b.
*Malthonica silvestris* Guseinov et al. (2005): 164.

Type material examined
Probably syntypes. Italy: Trentino-Alto Adige: Schlern, 2 $, 1 £ (ex. coll. L.Koch, NHMW);

Other material examined

**Austria:** Carinthia: „Lienzer Dolomiten“, 1 £ (SMF, 1826); „Linzer Dolomiten“, Tristach-See, 1 £ (ex. coll. Roewer, 3788, SMF, 24682/1), 8.1927; Tyrol: „Ahrnkopf bei Innsbruck“, 1 $ (NHMW), 1984, Steinberger; St. Jodok, 1 £ (SMF, 21902/1), 4.VIII.1941; Brixlegg, 2 $, 2 £ (SMF, 2579, 2582); “Innsbruck Umgebung”, Sillschlucht, 1 $, 2 £ (SMF, 29919), 13.VI.1963, Thaler; Upper Austria: Sauwald, 2 £ (NHMW), 25.VIII. and 24.IX 1957, Gruber.

**Bulgaria:** Lovech: Balkan Range, Shipka, Sokolsky Monast., ca. 9 km N Shipka, 1 £ (NMB, AB247), 9.VIII.2005, Bolzern.

**France:** Alpes-Maritimes: Menton, 4 £ (MNHN, 1975), 22.V.1915, Dalmas, Cagnes, 1 £ (MNHN, 1976); Dry valley between Villars-sur-Var and tunnel of Mescla, 3 £ (NMB, AB984), 2.IX.2008, Schönhofer; Grotte de Maima, 1 $ (NMB, AB985), 4.IX.2008, Schönhofer & Tordjman; Castérine, 1 £ (NMB, 814), 15.VII.1986, Maurer & Thaler; Sospel, „N Col de Tü rini“, 1 $, 1 £ (SMF, coll. Wunderlich, AB980), V.2008, Wunderlich; Foret de Peira Cava, 3 £ (MCSN, 537), 12.VIII.1972, Vigna; Aube: Chamoy, 1 £ (MFN, 3.IV.1972).

Tegenaria cf. silvestris (all sub T. silvestris, det. Gruber)


Description

Measurements

Male (n=1): CL 3.79, CW 3.08, STL 2.01, STW 1.91, OL 4.56, OW 2.84. Leg I (4.71, 1.57, 4.59, 4.87, 2.69), II (4.40, 1.50, 3.91, 4.29, 2.34), III (4.06, 1.37, 3.16, 4.11, 2.11), IV (5.02, 1.48, 4.42, 5.39, 2.17). Pedipalp (2.16, 0.68, 0.60, 2.32), bulbL 1.79.

Female (n=1): CL 3.66, CW 2.75, STL 1.91, STW 1.79. Leg I (4.15, 1.42, 3.98, 4.17, 2.41), II (3.83, 1.37, 3.30, 3.73, 2.12), III (3.51, 1.25, 2.77, 3.70, 1.78), IV (4.51, 1.40, 3.96, 4.70, 1.99). Pedipalp (1.55, 0.68, 0.86, 1.80). EPL 0.56, EPW 0.92, ATL 0.40, ATW 0.42.

Eyes: PME 0.17–0.19, PLE 0.18, AME 0.15–0.17, ALE 0.18–0.20. Eye distances: PME-PME 0.5–1 x PME, PME-AME 0.5–1 x AME, AME-AME <0.5 x AME, AME-ALE <<0.5 x AME, CLY1 1.5–2 x AME, CLY2 1 x AME.

Male palp

RTA with 3 branches, ventral branch extensive lobe like with distinct ridge, distally moderately protruding. Lateral and dorsal branch strongly sclerotised and robust apophyses, basally fused together, dorsal branch larger than lateral one and distally moderately pointed. Embolus filiform, originating at 7–8 o'clock, about 3.5–4 x CB long with distal tip at 4 o'clock. Conductor strongly sclerotised, lamelliform, distal portion strongly elongated and arcuated, lateral margin completely folded. Terminal end bifid, ventral part short and with a rounded plate like structure (or hook like in aff. silvestris), dorsal part small bulge like. Connection of conductor to tegulum distinctly stepped, forming a protruding bulge like tegular apophysis. MA strongly protruding with claw like shaped distal sclerite, membranously connected to tegulum, originating at 5–6 o'clock. Basal part of tegulum good visible and with discontinuous margin.

Epigyne and vulva

Epigyne with distinct median plate, anteriomedially continuously connected to strongly sclerotised epigynal plate. Posterior sclerite absent. CO anterior of median plate, distinct gaps. Epigynal „pseudo teeth” absent. Vulva consists of combined ducts (CBD), no distinct RC recognisable. First part (CD) of CBD less sclerotised and moderately convoluted, proximate part strongly convoluted (strong variation in length and convolution, e.g. cf. silvestris). FD only represented by small leave shaped appendages termianlly of CBD.

Other important characters
Cheliceral promargin with 4, retromargin with 4–5 teeth. Colulus developed as trapezoidal plate with the distal margin medially slightly notched. Same pattern of distal spigots on PMS (in females) as described for the type species. PLS with distal segment shorter than basal segment. Tarsal trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 7–8. Denticles at paired claw of leg I 11. Leg spination: male palp (2–0–0–0, 2–0–0, 1–2–0–0 or 2–2–0–0), female palp (2–0–0–0, 2–0–0, 2–1p+1–0 or 2–2–0–0), leg femora (2–2–1–0 or 2–2–2–0, 2–2–1–0 or 2–2–2–0, 1–1–1–0), patellae (all 2–0–0), tibiae (0–0–0–1+1p or 0–0–0–3p (2 small dorsal spines possible), 2–1–0–1+2p or 2–1–0–2 or 2–1–0–3 or 2–2–0–2 or 2–2–0–3, 2–2–2–1p+1+1p or 2–2–2–2+1p or 2–2–2–3p, 2–2–2–1p+1+1p or 2–2–2–2+1p or 2–2–2–3p), metatarsi (0–0–0–3p+1, 0–1–0–3p+1, 0–3–3–3p+1, 0–3–3–1+3p+1 or 0–3–3–1p+1+2p+1, tarsi (I–II 0, III–IV 0–0–1–0).

**Colouration**

Margin of carapace narrowly darkened (3 indistinct crescent shaped spots), dorsally with 2 symmetrical longitudinal dark band, moderately reduced to triangular dots. Sternum with distinct pattern of narrow pale median band and 3 pairs of symmetric pale dots laterally. Opisthosoma dark brownish, anteriorly with 3 pale bands, continuing in narrow chevrons posteriad. Legs annulated. ALS basally darkened, basal segment of PLS darkened, distal segment pale.

**Distribution**

Nearly whole Europe (Blick et al., 2004; van Helsdingen, 2009).

**Discussion**

In the collection of the NHMW several specimens collected around Vienna and one specimen from Italy differ slightly in genital morphology. Most conspicuous differences are the length and convolution of the CBD and the hook like shaped dorsal part of the terminal end of the conductor (Figs. 36 C–D, I–J; 37 b–c, f–i). More material and analyses are required to decide whether these specimens represent aberrant specimens of *T. silvestris* or a seperate species.

*Tegenaria taurica* Charitinov, 1947

*Charitonov* (1947): 47, figs. 4–5.


No material examined.

**Description**

A detailed description, including measurements and spination patterns, is provided by Esyunin & Farzalieva (2001). Information concerning the relationship of this species with *T. lapicidinarum* is provided by Kovblyuk (2004).

**Distribution**

Only known from five caves, all mentioned by Esyunin & Farzalieva (2001), in the Ukraine (Autonomous Republic of Crimea).

*Tegenaria tridentina* L. Koch, 1872

Figs. 34 A–B, E–F

*Tegenaria cubicularis* C. L. Koch, 1834: 125, pl. 12; nomen oblitum (Simon, 1897–1903: 251).
Tegenaria bremii Pavesi (1875): 269–270, male.
Tegenaria tridentina L. Koch (1876): 301–302, female.
Tegenaria australiaca Kulczynski (1898): 100, pl. 2, fig. 78, female; synonymized by Kulczynski (1914) and recognized by Thaler (1963).

Type material examined
Syntypes. Italy: Trentino-Alto Adige: „Trient.”, 1 $, 1 £ (NHMW, ex. coll. L. Koch).

Other material examined

Description
Measurements
Male (n=1): CL 3.48, CW 2.49, STL 1.64, STW 1.65. Leg I (4.85, 1.45, 5.02, 5.27, 2.40), II (4.54, 1.41, 4.36, 4.82, 2.15), III (3.95, 1.20, 3.53, 4.32, 1.89), IV (4.90, -, -, -, -), Pedipalp (1.72, 0.59, 0.75, 1.46), bulbL 1.04.
Female (n=1): CL 3.78, CW 2.94, STL 2.00, STW 1.86. Leg I (4.72, 1.61, 4.59, 4.80, 2.34), II (4.51, 1.55, 4.02, 4.35, 2.08), III (4.10, 1.29, 3.34, 3.83, 1.49), IV (5.05, 1.50, 4.51, 5.50, 1.99). Pedipalp (1.71, 0.68, 1.15, 1.61). EPL 0.53, EPW 0.85, ATL 0.27, ATW 0.39.

Eyes: PME 0.15–0.17, PLE 0.14–0.19, AME 0.11–0.12, ALE 0.15–0.20. Eye distances: PME-PME 1 x PME, PME-AME 1 x PME, PME-AME 0.5–1 x PME, AME-AME 0.5–1 x AME, AME-ALE <0.5–0.5 x AME. CLY1 2.5 x AME, CLY2 1–1.5 x AME.

**Male palp**

RTA with 3 branches, ventral branch leave like shaped, distally and ventrally with distinctly protruding ridge, distally moderately bent retrolaterad, lateral branch strongly sclerotised, as long as wide, distally broad pointed or rounded, dorsal branch broad and strongly sclerotised, distally with strongly posteriad bent point. Embolus filiform, originating at 8 o'clock, about 1.5–1.75 CB with conspicuously formed terminal tip at 4 o'clock. Conductor with distal portion distinctly elongated, lateral margin completely folded. Terminal end bifid, ventral part simple, pointed, dorsal part obtuse (retrolateral view) and with a bent point (ventral view). Connection between conductor and tegulum moderately sclerotised. MA strongly protruding with distal hook or claw like sclerite, distally pointed, membranously connected to tegulum and originating at 5–6 o'clock. Basal part of tegulum good visible and with undulated margin.

**Epigyne and vulva**

Epigyne medially with a small pale, membranous area. Posterior sclerite expressed as an extensive sclerotised bar or plate with anterior margin concave (semi-circled). CO between and laterally of the membranous median area and the posterior sclerite. Epigynal „pseudo teeth“ absent. Vulva consists of combined ducts (CBD), no distinct RC recognisable. First half (CD) of CBD only moderately sclerotised and convoluted, second half is strongly sclerotised and moderately convoluted. Ducts are well separated. FD only represented by small leave shaped appendages distally of the CBD.

**Other important characters**

Cheliceral promargin with 4, retromargin with 5 teeth. Colulus developed as trapezoidal plate with the distal margin medially moderately notched. Same pattern of distal spigots on PMS (in females) as described for the type species. PLS with distal segment shorter than basal segment. Tarsal trichobothria at cymbium and palpal tarsus absent. Tarsal trichobothria 7–8. Denticles at paired claw of leg I 13. Leg spination: male palp (2–0–0–0 or 3–0–0–0, 2–0–0, 1–2–0–0), female palp (2–0–0–0, 2–0–0, 2–2–0–0), leg femora (1–2–2–0 or 1–3–2–0, 1–2–2–0 or 1–3–2–0, 1–2–2–0 or 1–3–2–0, 1–2–0–0, 1–1–0–0), patellae (all 2–0–0), tibiae (0 or 0–0–0–1 or 0–0–0–0–1 or 0–0–0–1 or 0–1–0–0, 0–1–0–0, 0–0–0–1), metatarsi (0–0–0–3p+1, 0–1–0–3p+1, 0–3–3–3p+1, 0–3–3–3p+1, tarsi (I & II 0, III & IV 0–0–1–0).

**Colouration**

Margin of carapace narrow continuously darkened, dorsally with 2 indistinct symmetric longitudinal dark bands, reduced to triangular dots. Sternum with distinct pale median band and 3 symmetric pairs of pale dots laterally or median band only reaching 2/3 of STL, posteriorly with indistinctly separated 4th pair of dots. Opisthosoma brownish, with indistinct yellowish median band, anteriolaterally with symmetric pale dots, posteriorly with chevrons. Legs annulated, more pronounced ventrally. Colulus basally darkened, ALS and basal segment of PLS darkened, distal segment also with dark pigments, but brighter.

**Distribution**

Endemic to the Alps. From all six countries, containing parts of this mountain massive (Austria, France, Germany, Italy, Slovenia and Switzerland), records of *T. tridentina* are known.

**Discussion**

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As mentioned in the discussion section of *T. ferruginea* Brignoli confused the females of *T. tridentina* with *T. ferruginea*. All female specimens of the species *T. ferruginea* examined in the collection of the natural history museum in Verona (including the Brignoli collection) were misidentified *T. tridentina* females. Therefore, all records of females published by Brignoli under *T. ferruginea* probably refer to *T. tridentina*. Brignoli’s drawing (Brignoli, 1971a: 92, fig. 40) shows the vulva of *T. tridentina* (see Wiehle, 1964) and not *T. ferruginea*. As mentioned by Thaler (1987: 394) Brignoli’s drawings referred to *T. campestris* (Brignoli, 1971a: 102, figs. 52, 54) concern most likely *T. tridentina*. As the corresponding specimen could not be traced in the MCSN, this cannot be confirmed. For all three specimens originally labelled as *T. campestris*, no further informations about locality or date are provided. In Brignoli’s collection, only one specimen could be found which was determined as *T. campestris* and in 1984 redetermined by Thaler to *T. tridentina*. Males were correctly determined by Brignoli.

*Tegenaria tyrhenica* Dalmas, 1922 stat. rev.

Figs. 32 E–I

*Tegenaria tyrhenica* Dalmas (1922): 94, without any figures.
*Malthonica tyrhenica* Guseinov et al. (2005): 164.

No type material available.

Other material examined


**Description**

A detailed redescription is provided by Dresco & Célérier (1976). In the same work, the authors presented interesting data about the variation in numbers of cheliceral teeth.

**Distribution**

Records of *T. tyrhenica* are known from two Italian regions; Liguria and Toscana.

**Discussion**

Dalmas placed this species into Simon’s *picta*-group. Due to the lack of a good description with drawings, some years later, this species was synonymised with *Aterigena ligurica* (sub *Tegenaria*) by Simon (1937). Later Brignoli (1971a: 68, figs. 5–7) highly doubted this synonymy and provided drawings of his interpretation of *T. tyrhenica*. Dresco & Célérier
(1976) agreed with Brignoli. They provided a very detailed redescription of this species and suggested a close affinity to Tegenaria henroti and T. decolorata (at least in the male palp). The type specimen examined by Dresco & Célérier (1976: 224, 1 $) could not be traced in the spider collection at the MNHN.

_Tegenaria vankeeri_ new species
Figs. 39 c–d, 40 A–F

female unknown

Type material

Etymology
The species is named in honour of Johan and Koen van Keer who are well known arachnologist from Belgium and who have collected the only known specimen of this species and provided it, also with many other specimens, for examination; genitive singular case.

Diagnosis
The RTA of _T. vankeeri_ n. sp. is morphologically similar to _Tegenaria lenkoranica_ Guseinov, Marusik & Koponen, 2005 n. comb. (Guseinov et al., 2005: 162, fig. 48). _T. vankeeri_ differs significantly from _T. lenkoranica_ n. comb. by a relatively short palp tibia (much longer in _T. lenkoranica_) and the shape of the embolus and conductor.

Description

_Measurements_
Male (n=1): CL 6.00, CW 4.15, STL 2.6, STW 2.3, OL 6.5, OW 3.9. Leg I (-), II (9.0, 2.2, 8.1, 9.9, 2.9), III (7.3, 2.0, 6.4, 9.1, 2.7), IV (8.7, 2.0, 8.2, 11.7, 3.1). Pedipalp (2.8, 0.9, 1.1, 2.3), bulbL 1.3.

Eyes: PME 0.22, PLE 0.24, AME 0.23, ALE 0.27. Eye distances: PME-PME 1 x PME, PME-AME 1 x PME, PME-PLE somewhat less than 1 x PME, PME-ALE 1–1.5 x PME, AME-AME <0.5 x AME, AME-ALE <0.5 x AME. CLY1 2 x AME, CLY2 1–1.5 x AME.

_Male palp_
RTA with 2 branches, ventral branch distally broad lobe like, strongly sclerotised, lateroventral ridge clearly visible, lateral branch very strongly protruding, originating in the middle of the palpal tibia, finger shaped and distally pointed, with an additional short spike originating at the dorsal side of the apophysis. Embolus filiform, originating at 10 o'clock, length about 0.75–1 x CB with distal tip at 1–2 o'clock. Conductor reversed drop-shaped, distal portion of conductor only moderately elongated, lateral margin almost completely folded. Terminal end of conductor strongly sclerotised and pointed, moderately elongated and bent ventrad. Connection of conductor to tegulum is sclerotised. MA protruding with distal plate like sclerite forming a spoon like structure, membranously connected to tegulum, originating at 4–5 o'clock. Basal portion of tegulum, in prolateral view, conspicuously bulky.

_Other important characters_
Cheliceral promargin with 4, retromargin with 5 teeth, second most proximal smaller and most proximal tooth bigger. Colulus developed as trapezoidal bulky plate with the distal margin mediadly notched. PLS with distal segment longer than basal segment. Tarsal trichobothria at cymbium absent. Tarsal trichobothria 9–10. Leg spination: male palp (3–0–0–0, 2–0–0, 2–2–0), leg femora (-, 1–3–2–0, 1–2–2–0, 1–2–1–0), patellae (-, III–IV with 2–0–
Colouration
The carapace doesn’t show a pattern of coloration (this may be due to the alcohol preservation). Sternum with distinct and very special pattern of darkened median area with a bright and narrow median band. Opisthosoma dark brownish with yellowish median band and 2–3 symmetric lateral spots of white pigmentation anteriorly, continuing in broad chevrons posteriorly. Legs not annulated, only coxa and proximal part of femora with darkened spots. ALS and PLS with basal and distal segment darkened.

Distribution
Only known by the mentioned specimen from Greece (Rhodos).

3.2.8. Taxa incertae sedis and nomen dubium

*Malthonica daedeli* Brignoli, 1980 incertae sedis
*Malthonica daedeli* Brignoli (1980): 80–81, fig. 13, female.

Type material examined
Holotype. Greece: Crete, 10 km south of Heraklion, 1 £ (MSNB), 27.V.1964, Valle & Bianchi.

Description
Detailed description is provided by Brignoli (1980).

Discussion
Brignoli (1980: 81) stated that „…. the generic position of this species is very puzzling; …“.
He assigned it to *Malthonica* for want of a better place: „…. The absence of „teeth“ on the
epigyne and the small number of cheliceral teeth would not suggest relations with
*Malthonica*, but a certain general similarity with *M. minoa* (Brignoli, 1976) and the
impossibility of placing it elsewhere make it preferable to place it provisionally in this
genus….“. The holotype remains the only known specimen to date. Based on the genera
definitions given, the generic affiliation of this species remains incerta sedis.

*Malthonica minoa* (Brignoli, 1976) incertae sedis
*Cicurina minoa* Brignoli (1976b): 565, fig. 44, female.

Type material examined

Other material examined
**Greece: Crete:** Chania, Georgiopouli, 1 £ (coll. van Keer: 2112), 11.IV.2002, van Keer &

Discussion
Malthonica minoa, together with *M. paraschiae* and *M. spinipalpis*, does not match the genus
definition of Malthonica provided by Barrientos & Cardoso (2007). Therefore these species
are not Malthonica species. All species are morphologically similar, and they do show an
affinity to Tegenaria. But the very distinct epigynal teeth, the vulva, the shape of several sclerites at the male palp and also the RTA are distinctively different. Therefore, they do not match the here published genera definition. Thus, these species can not be placed for the moment. A revision of this special group is needed to clarify this situation.

**Malthonica paraschiae** Brignoli, 1984 incertae sedis
*Malthonica paraschiae* Brignoli (1984): 303, fig. 27, female.

Type material examined

Other material examined

**Malthonica aff. paraschiae**
**Crete:** Meskla, 3 $ (SMF, neu / Europa ), 27.III.2007, Schönhofer.

Discussion
See relevant section at *M. minoa*.

**Malthonica spinipalpis** Deltshev, 1990 incertae sedis

No material examined.

Discussion
See relevant section at *M. minoa*.

**Tegenaria advena** (C. L. Koch, 1841)
*Philioica advena* C. L. Koch (1841): 57–58, pl. 268, fig. 633, female.
*Clubiona advena* Walckenaer (1847): 440.
*Tegenaria advena* Simon (1937): 1039.
**nomen dubium**

No material available.

Discussion
*T. advena* (C. L. Koch, 1841; sub *Philioica advena*) is almost exclusively described by the colouration patterns of different body parts. Additionally, this description is based on a specimen preserved in alcohol: “… Die hier gegebene Abbildung ist von einem in Weingeist aufbewahrten Exemplare entnommen. …“ (C. L. Koch, 1841: 58). Simon mentioned in a footnote (1937: 1039) that the relevant specimen may be a juvenile of *E. atrica* (C. L. Koch, 1843; sub *Tegenaria*). Trotta mentioned in a footnote (2005: 74), based on a personal communication of K. Thaler, that *T. advena* is a species inquirenda. No type material of this species could be traced in several important spider collections. The species *T. advena* (C. L. Koch, 1841) remains not sufficiently characterised and is therefore not diagnosable. Therefore we do regard the relevant taxon as nomen dubium.
**Tegenaria dentifera** Kulczynski, 1908 incertae sedis
*Tegenaria dentifera* Kulczynski (1908): 78–79, pl. 2, fig. 18, female.

No material available

Discussion
Kulczynski’s description of *T. dentifera* is detailed but does not provide enough information about the epigyne and no information about the vulva. The provided figure of the epigyne is not of good quality. Unfortunately, no type material could be found. This situation does not allow picturing this species clearly. It is needed to collect and examine *Tegenaria* specimen from the type locality, Cyprus, to clarify this problem. Therefore, for now, this species can not be placed.

3.2.9. Nomenclatural changes for related taxa outside Europe

All taxonomical changes are summarised in the Appendix 4. Most species are transferred back to or newly placed into *Tegenaria*. Species which are, based on published descriptions and figures, clearly not referable *Tegenaria* or *Malthonica* and/or lack diagnostic descriptions and type material are treated here as “incertae sedis”. In the last column of Appendix 4, the reasons for the changes are given. All species endemic to North America are not treated here and, therefore, no changes concerning these species are proposed here.

4. Discussion

**Phylogenetic relationship within Agelenidae**

The results of both, the morphological and molecular analyses strongly support the genera *Aterigena*, *Eratigena*, *Malthonoca* and *Tegenaria* but the relationships between the genera is not resolved. The four Ageleninae tribes proposed by Lehtinen (1967) are only partly supported. Textricini constitutes most probably a monophyletic clade, supported by several autapomorphies (e. g. eye arrangement, special hairs, cheliceral teeth and spination of metatarsi) in the morphological analysis and well-supported in the molecular analyses. The support of the tribe Agelenini is not as robust as that for Textricini. In the morphological analysis, including only *Agelena labyrinthica* and *Allagelena gracilens*, this clade is supported by three synapomorphies (e. g. the special spikes on the anal tubus). But, as shown in the tree based on 28S sequences (Fig. 7), *Agelena canariensis* is outside this clade. There, Agelenini is paraphyletic and can become monophyletic only when also including *Agelenopsis aperta* and *Hololena* sp. 2, two species belonging to Lehtinen’s tribe Agelenopsini. The last and for this study the most important tribe Tegenarinii is not probably not monophyletic. While the tree resulting from the single CO1 gene analysis (Bolzem et al., accepted) and the consensus tree of the morphological analysis (excluding *Malthonica*; two synapomorphies: spigots on the PLS and shape of colulus; clade with no jackknife support) supported the monophyly of Tegenarinii but all more inclusive analyses did not. E. g. the combined mitochondrial genes revealed a tree where *Tegenaria* forms the basic clade, sister to all other included taxa. Or the tree based on 28S sequences just showed a polytomy at the relevant node. The present analyses suggest that the Tegenarinii is not monophyletic.
Lehtinen (1967) placed the subfamily Coelotinae (currently referred to Amaurobiidae) into the family Agelenidae. This classification is supported by our analyses which are comparable to those of Spanga & Gillespie (2008).

**Nomenclatural consequences**

The redefinition of the four genera *Aterigena*, *Eratigena*, *Malthonica* and *Tegenaria* necessitates numerous nomenclatorial changes (Appendix 4). There are no rules for common namens but it may be useful to replace the name “European House Spider” which is used for a polyphyletic group with names denoting monophyletic taxa.

**Phylogenetic relationship within Malthonica, *Eratigena n. gen.* and *Tegenaria***

After the rearrangement of taxa, *Malthonica* does only comprise two species. Four other *Malthonica* species are considered “incertae sedis” (see section 3.2.8) and one species *Malthonica africana* Simon & Fage, 1922 (from Africa) is not treated here. In all our analyses, this genus is well supported though with uncertain relationships to the others. *Eratigena n. gen.* comprises a group of spider supported by two morphological synapomorphies (cheliceral teeth and sclerotised connection of the MA to the tegulum, reduced in some species) and recovered in all molecular analyses. Within *Eratigena n. gen.* three species groups are detectable: 1) *E. vomeroi* and *E. inermis* are closely related and form a clade of two geographically isolated species; 2) five species, several of which originally described as *Malthonica* with elongate MA and particularly shaped female genitalia; 3) the species complex around the well-known *E. atrica* together with *E. agrestis* and *E. fusslini*. These groups are morphologically and molecularly supported. The phylogenetic relationships between the remaining species and the species groups are not resolved. *E. atrica* may be closest related to *E. agrestis* which is important in the context of the medical importance of the latter. The most problematic genus is *Tegenaria*. Even though the morphological and the molecular results suggest the monophyly of this clade, it is not supported by a single morphological autapomorphy. At present the genus is diagnosed by the unique combination of characters. Characters used for the definition of *Tegenaria* and *Malthonica* by Guseinov et al. (2005), e. g. the short and thick embolus originating at the subapical part of the tegulum for *Tegenaria*, are highly homoplastic and therefore not useful for phylogenetic reconstructions. Another character, the presence of trichobothria on the cymbium of the female palp tarsus proved to be informative, at least for the taxonomy. The phylogenetic information of this character remains unclear. *Tegenaria* includes numerous species with a very high variability in character expression, also in genital structures. For this variability and the lack of other characters, the relationships between *Tegenaria* species remain largely unresolved. For a better resolution, more characters are needed in the morphological analysis and more taxa should be included in the molecular analyses. In this study, we could detect five species groups: 1) four species endemic to Italy, *T. capolongoi*, *T. circeoensis n. sp.*, *T. parmenidis* and *T. sbordonii*. Members of this group show a very unusual genital morphology. 2) *T. campestris* and three Bulgarian species constitute a group defined by Deltshev (2008b). 3) *T. annulata* and four species. The reason why Lehtinen (1967) transferred four of them to *Pseudotegenaria* is not understandable. 4) *Tegenaria ferruginea* and *T. parietina*. 5) *T. silvestis* and *T. parvula*. Groupings formed on the basis of the resemblance of a particular genital character in only one sex may be often contradicted by the characters in the other sex and thus leading to artificial classifications. Further investigations are necessary to elucidate the phylogenetic relationships within the genus *Tegenaria*. This is particularly true for many Asiatican or Turkish species.

**Biogeography**
Eratigena n. gen. and Tegenaria have different centres of distribution. Whereas most Eratigena n. gen. species occur in south-western to central Europe, the species diversity of Tegenaria is much higher in south-eastern Europe. This observation is supported by the findings outside of Europe, e. g. in Turkey (Brignoli, 1978b, 1978c), Azerbaijan (Guseinov et al., 2005) or the West Caucasus region (Kovblyuk & Ponomarev, 2008). This difference in geographical distribution of the two genera is an additional observation supporting the hypothesis of two distinct evolutionary origins of the two genera.

5. Acknowledgments

We are very grateful to our colleagues mentioned in the “Material and Methods” section for the loan or gift of specimens. Especially we would like to thank Axel Schönhofer and Sigfried Huber for collecting agelenids for us from many places in Europe. For useful comments and stimulating discussions we thank Bernhard Koller (ecogenics GmbH), Bruno Baur, Hans-Peter Rusterholz, Sylvain Ursenbacher (NLU), Norman Platnick, Theo Blick, Jeremy Miller and Holger Frick. For guidance and support concerning the SEM we are deeply grateful to Marcel Düggelin and Daniel Mathys from the ZMB (Zentrum Mikroskopie der Universität Basel). For moral and practical support and many constructive discussions we are deeply grateful to Daniel Gloer, Roland Mühlethaler, Denise Kretschmar, Urs Wüest and Sarah Bolzern-Ramseyer. The molecular work was done in the laboratories of the Department of Environmental Sciences, Section of Conservation Biology (NLU), and the Institute of Botany, Section Plant Ecology, University of Basel, for which we are grateful. We are indebted to Georg F. J. Armbruster for the great support in the molecular laboratory. The field work was financially supported by the Swiss Academy of Sciences (ScNat) and by the “Stiftung zur Förderung des Naturhistorischen Museums” which is gratefully acknowledged. Laboratory costs for the molecular analyses were funded by the “Kugler-Werdenberg-Stiftung”, the “Stiftung Emilia-Guggenheim-Schnurr der NGiB” and the “Basler Stiftung für Biologische Forschung”. The first author received grants from the SYNTHESYS Project (http://www.synthesys.info/), financed by the European Community Research Infrastructure Action under the FP6 "Structuring the European Research Area" Programme, as well as by the “Freiwillige Akademische Gesellschaft Basel”. 

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6. References


Blackwall, J. (1841a) The difference in the number of eyes with which spiders are provided as the basis of their distribution into tribes; with descriptions of newly discovered species and the characters of a new family and three new genera of spiders. Transactions of the Linnean Society of London, 18, 601–670.


"C. M." (1834) An illustration of the structure of some of the organs of a spider deemed to be the type of a new genus, and proposed to be called *Trichopus libratus*. *Mag. nat. Hist.*, 7, 10–13 (publication not seen).


Appendix 1: Specimens used for molecular analysis with GenBank Accession number and storing information. (COMMENT: The Accession # for NADH1 are already transmitted, the numbers for 28S is in work; Accession # have to be available at the time of publication)

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<th>NADH1</th>
<th>CO1</th>
<th>Specimen origin</th>
<th>Voucher specimen</th>
<th>Comments / Reference</th>
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<td>FN554804</td>
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<td>(Bolzern et al., accepted); CO1 identical haplotype as a specimen from CZ; 28S identical haplotype as specimen from DE (Schleswig-Holstein); NADH1 identical haplotypes as specimens from DE (Schleswig-Holstein), CZ and US</td>
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<td>Female variation (Fig. XX)</td>
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<td>NMB: AB 770</td>
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<td>28S haplotype identical within all other specimens of the same species and also with aff. circeoensis</td>
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<td>FN554808</td>
<td>CH: Basel</td>
<td>NMB: AB 217</td>
<td>(Bolzern et al., accepted); identical haplotype as specimens from CN, PT and US</td>
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<td><em>Tegenaria ferruginea</em></td>
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<td>FN554802</td>
<td>FR: Alsace</td>
<td>NMB: AB 293</td>
<td>(Bolzern et al., accepted); 28S identical haplotype as specimens from CN and PT</td>
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<td>BG: Sofia</td>
<td>NMB: AB 242</td>
<td>(Bolzern et al., accepted)</td>
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<td>NMB: AB 367</td>
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<td>(Bolzern et al., accepted)</td>
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<td>NMB: AB 834</td>
<td>(Bolzern et al., accepted)</td>
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<td>(Bolzern et al., accepted)</td>
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<td>(Bolzern et al., accepted)</td>
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Appendix 2: Branch support of large clades under different methods and weighting scheme (posterior probability in % for Bayesian analyses (Bay), jackknife support values for parsimony analyses (Pars), K value applied during traditional tree search in TNT (0=equal weight of all characters), Bremer support (BS)).
| 28S Bay | Pars | NADH Bay | Morph Bay | BS | 100 | 97 | 99 | ? | 100 | ? | ? | ? | 96 | ? | 78 | - | - | 64 | - | - | 57 | - | - | - | - |
| 5      | 100  | 97       | 100       | 99 | ?   | ?   | 100 | ? | ? | 100 | ? | ? | 96 | 78 | - | - | 64 | - | - | 57 | - | - | - | - |
| 6      | 100  | 97       | 100       | 98 | ?   | ?   | 100 | ? | ? | 100 | ? | ? | 97 | 78 | - | - | 64 | - | - | 69 | - | - | - | - |
| 10     | 100  | 97       | 100       | 97 | ?   | ?   | 100 | ? | ? | 100 | ? | ? | 97 | 78 | - | - | 64 | - | - | 74 | - | - | - | - |
| 15     | 100  | 97       | 100       | 96 | ?   | ?   | 100 | ? | ? | 100 | ? | ? | 96 | 78 | - | - | 64 | - | - | 72 | - | - | - | - |
| 20     | 100  | 96       | 100       | 97 | ?   | ?   | 100 | ? | ? | 100 | ? | ? | 96 | 78 | - | - | 64 | - | - | 72 | - | - | - | - |
| 50     | 100  | 92       | 100       | 95 | ?   | ?   | 100 | ? | ? | 100 | ? | ? | 94 | 78 | - | - | 64 | - | - | 72 | - | - | - | - |

*Agelenidae incl. Tamgrinia, and Coelotinae, ** with A. canariensis*
Appendix 3: Branch support of sub-clades within *Eratigena* and *Tegenaria* under different methods and few selected weighting scheme (posterior probability in % for Bayesian analyses (Bay), jackknife support values for parsimony analyses (Pars), K value applied during traditional tree search in TNT (0=equal weight of all characters), Bremer support (BS)).

Appendix 4: All described *Tegenaria* and *Malthonica* species listed in the catalogue of Platnick (2010, V. 10.5) and the proposed nomenclatural changes resulting from this work, including new genera and species. Taxa are arranged based on their geographic distribution and then in alphabetic order, new species are given at the end of the table.

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<th>New name</th>
<th>Comments</th>
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<td><em>Tegenaria annulata</em> Kulczynski, 1913</td>
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<td><em>Tegenaria campestris</em> (C. L. Koch, 1834)</td>
<td>only female described; holotype £ examined</td>
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<td><em>Malthonica daedali</em> Brignoli, 1980</td>
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<td><em>Malthonica lusitanica</em> Simon, 1898</td>
<td>only female described; holotype £ and 3 £ examined; affiliation highly doubtful; may belong to an separate group (see also <em>M. paraschiae</em> Brignoli, 1984 and <em>M. spinipalipis</em> Deltshev &amp; Panschi, 1990)</td>
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<td>-</td>
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<td>several specimens examined</td>
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<td><em>Tegenaria pagana</em> C. L. Koch, 1840</td>
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<td><em>Malthonica pagana urbana</em> (Simon, 1875)</td>
<td>n. syn.</td>
<td><em>Tegenaria pagana</em> C. L. Koch, 1840</td>
<td>only female described; holotype £ and 1 $, 1 £ examined; affiliation highly doubtful; may belong to an separate group (see also <em>M. minoa</em> (Brignoli, 1976) and <em>M. spinipalipis</em> Deltshev &amp; Panschi, 1990)</td>
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<td><em>Malthonica parvula</em> (Thorell, 1875)</td>
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<td><em>Tegenaria parvula</em> Thorell, 1875</td>
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<td><em>Malthonica picta</em> (Simon, 1870)</td>
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<td><em>Eratigena picta</em> (Simon, 1870)</td>
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<tr>
<th>Species</th>
<th>Synonym</th>
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<tr>
<td><em>Malthonica silvestris</em> (L. Koch, 1872)</td>
<td><em>Tegenaria silvestris</em> L. Koch, 1872</td>
<td><em>Aterigena soriculata</em> (Simon, 1873)</td>
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<td><em>Malthonica soriculata</em> (Simon, 1873)</td>
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<tr>
<td><em>Malthonica spinopalpis</em> Deltshev, 1990</td>
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<tr>
<td><em>Malthonica tyrrhenica</em> (Dalmas, 1922)</td>
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<td><em>Malthonica vomeroi</em> (Brignoli, 1977)</td>
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<td><em>Pseudotegenaria animata</em> (Kratochvíl &amp; Miller, 1940)</td>
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<td><em>Pseudotegenaria bayeri</em> (Kratochvíl, 1934)</td>
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<td><em>Pseudotegenaria bosnica</em> (Kratochvíl &amp; Miller, 1940)</td>
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<td><em>Pseudotegenaria decolorata</em> (Kratochvíl &amp; Miller, 1940)</td>
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<td><em>Tegenaria achenz Brignoli, 1977</em></td>
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<td><em>Tegenaria advena</em> (C. L. Koch, 1841)</td>
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<td><em>Tegenaria agrestis</em> (Walckenaer, 1802)</td>
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<tr>
<td><em>Tegenaria antrorum</em> Simon, 1916</td>
<td>n. syn.</td>
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<tr>
<td><em>Tegenaria ariadnae</em> Brignoli, 1984</td>
<td>-</td>
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<tr>
<td><em>Tegenaria armigera</em> Simon, 1873</td>
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<td><em>Tegenaria atrica</em> C. L. Koch, 1843</td>
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<td><em>Tegenaria barionii</em> Brignoli, 1977</td>
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<tr>
<td><em>Tegenaria barrientosi</em> Bolzern et al., 2009</td>
<td>n. comb.</td>
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<td><em>Tegenaria bithyniae</em> Brignoli, 1978</td>
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<td><em>Tegenaria bucculenta</em> (L. Koch, 1868)</td>
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<td><em>Tegenaria capolongoi</em> Brignoli, 1977</td>
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<td><em>Tegenaria carensis</em> Barrientos, 1981</td>
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<td><em>Tegenariacerrutii</em> Roewer, 1960</td>
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<td><em>Tegenaria chumachenkoi</em> Kovblyuk &amp; Ponomarev, 2008</td>
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<td><em>Tegenaria dentifera</em> Kulczyński, 1908</td>
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<td><em>Tegenaria domestica</em> (Clerck, 1757)</td>
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<td><em>Tegenaria domesticoides</em> Schmidt &amp; Piepho, 1994</td>
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<td><em>Tegenaria duellica</em> Simon, 1875</td>
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<td><em>Tegenaria faniapollinis</em> Brignoli, 1978</td>
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<td><em>Tegenaria feminea</em> Simon, 1870</td>
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<td><em>Tegenaria femoralis</em> Simon, 1873</td>
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<td><em>Tegenaria fusslini</em> Pavesi, 1873</td>
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(Bolzern, et al., accepted)

no specimen examined; affiliation highly doubtful; may belong to an separate group (see also *M. minoa* (Brignoli, 1976) and *M. paraschiae* Brignoli, 1984)

(Bolzern, et al., accepted)

(Bolzern, et al., accepted)

(Bolzern, et al., accepted)

only female described

only female described

new male

problematic group (see at other place sub *T. aff. bucculenta*)

only female described

new male

no specimen examined

only female described

problematic group (see at other place sub *Eratigena atrica*-complex)

new to Europe (Bulgaria, sub *Tegenaria paragamiani* Deltshev, 2008)
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<th>Species</th>
<th>Synonyms</th>
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<tr>
<td><strong>Tegenaria hasperi</strong> Chyzer, 1897</td>
<td>- Tegenaria hasperi Chyzer, 1897</td>
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<tr>
<td><strong>Tegenaria hauseri</strong> Brignoli, 1979</td>
<td>- Tegenaria hauseri Brignoli, 1979</td>
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<td><strong>Tegenaria henroti</strong> Dresco, 1956</td>
<td>- Tegenaria henroti Dresco, 1956</td>
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<td><strong>Tegenaria herculea</strong> Fage, 1931</td>
<td>n. comb. Eratigena herculea (Fage, 1931)</td>
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<td><strong>Tegenaria hispanica</strong> Fage, 1931</td>
<td>n. comb. Eratigena hispanica (Fage, 1931)</td>
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<td><strong>Tegenaria incognita</strong> Bolzem et al., 2009</td>
<td>n. comb. Eratigena incognita (Bolzem et al., 2009)</td>
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<td><strong>Tegenaria inermis</strong> Simon, 1870</td>
<td>n. comb. Eratigena inermis (Simon, 1870)</td>
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<td><strong>Tegenaria labyrinthi</strong> Brignoli, 1984</td>
<td>n. syn. Tegenaria ariadnae Brignoli, 1979</td>
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<td><strong>Tegenaria lapicidinarum</strong> Spasky, 1934</td>
<td>- Tegenaria lapicidinarum Spasky, 1934</td>
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<td><strong>Tegenaria levantina</strong> Barrientos, 1981</td>
<td>- Tegenaria levantina Barrientos, 1981</td>
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<td><strong>Tegenaria ligurica</strong> Simon, 1916</td>
<td>n. syn. Aterigena ligurica (Simon, 1916)     (Bolzem, et al., accepted)</td>
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<td><strong>Tegenaria madriana</strong> Thorell, 1875</td>
<td>n. syn. Eratigena feminea (Simon, 1870)</td>
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<td><strong>Tegenaria marinae</strong> Brignoli, 1971</td>
<td>n. syn. Tegenaria pagana C. L. Koch, 1840</td>
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<td><strong>Tegenaria mirifica</strong> Thaler, 1987</td>
<td>- Tegenaria mirifica Thaler, 1987</td>
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<td><strong>Tegenaria montigena</strong> Simon, 1937</td>
<td>n. comb. Eratigena montigena (Simon, 1937)</td>
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<td><strong>Tegenaria nervosa</strong> Simon, 1870</td>
<td>n. syn. Eratigena atrica (C. L. Koch, 1843)</td>
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<td><strong>Tegenaria oribata</strong> Simon, 1916</td>
<td>- Tegenaria oribata Simon, 1916</td>
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<tr>
<td><strong>Tegenaria osellae</strong> Brignoli, 1971</td>
<td>n. syn. Eratigena agrestis (Walckenaer, 1802)</td>
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<td><strong>Tegenaria paragamiani</strong> Deltshev, 2008</td>
<td>n. syn. Tegenaria faniapollinis Brignoli, 1978</td>
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<td><strong>Tegenaria parietina</strong> Fourcroy, 1785</td>
<td>- Tegenaria parietina (Fourcroy, 1785)</td>
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<td><strong>Tegenaria parmenidis</strong> Brignoli, 1971</td>
<td>- Tegenaria parmenidis Brignoli, 1971</td>
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<td><strong>Tegenaria percuriosa</strong> Brignoli, 1972</td>
<td>- Tegenaria percuriosa Brignoli, 1972</td>
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<td><strong>Tegenaria pieperi</strong> Brignoli, 1979</td>
<td>- Tegenaria pieperi Brignoli, 1979</td>
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<td><strong>Tegenaria racovitzai</strong> Simon, 1907</td>
<td>- Tegenaria racovitzai Simon, 1907</td>
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<td><strong>Tegenaria regispyrrhi</strong> Brignoli, 1976</td>
<td>- Tegenaria regispyrrhi Brignoli, 1976</td>
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<td><strong>Tegenaria rhodensis</strong> Capontaeaco, 1948</td>
<td>- Tegenaria rhodensis Capontaeaco, 1948</td>
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<td><strong>Tegenaria saeva</strong> Blackwall, 1844</td>
<td>- Eratigena saeva (Blackwall, 1844)</td>
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<td><strong>Tegenaria schmalfussi</strong> Brignoli, 1976</td>
<td>- Tegenaria schmalfussi Brignoli, 1976</td>
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<td><strong>Tegenaria scopifera</strong> Barrientos, Ribera &amp; Pons, 2002</td>
<td>- Tegenaria scopifera Barrientos, Ribera &amp; Pons, 2002</td>
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<td><strong>Tegenaria taurica</strong> Charitonov, 1947</td>
<td>- Tegenaria taurica Charitonov, 1947</td>
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<tr>
<td><strong>Tegenaria tridentina</strong> L. Koch, 1872</td>
<td>- Tegenaria tridentina L. Koch, 1872</td>
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<tr>
<td><strong>Tegenaria trinacrae</strong> Brignoli, 1971</td>
<td>n. syn. Eratigena agrestis (Walckenaer, 1802)</td>
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<tr>
<td><strong>Tegenaria velox</strong> Chyzer, 1897</td>
<td>n. syn. Tegenaria hasperi Chyzer, 1897</td>
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**Asian taxa (incl. Turkey and Cyprus)**

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<tr>
<th>Species</th>
<th>Synonyms</th>
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<tr>
<td><strong>Malthonica anhela</strong> (Brignoli, 1972)</td>
<td>rev. stat. Tegenaria anhela Brignoli, 1972</td>
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<td><strong>Malthonica lehtineni</strong> Guseinov et al., 2005</td>
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<tr>
<th>Species</th>
<th>Author</th>
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<td><em>Malthonica lenkoranica</em> Guseinov et al., 2005</td>
<td>n. comb.</td>
<td><em>Tegenaria lenkoranica</em> (Guseinov et al., 2005) revision based on published figures</td>
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<td><em>Malthonica maronita</em> (Simon, 1873)</td>
<td>rev. stat.</td>
<td><em>Tegenaria maronita</em> Simon, 1873 holotype $ and 1 $, 2 £ examined, new record for Cyprus</td>
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<td><em>Malthonica mediterranea</em> (Levy, 1996)</td>
<td>rev. stat.</td>
<td><em>Tegenaria mediterranea</em> Levy, 1996 2 $ from Syria (MNHN); the affiliation of male and female is doubted since these 2 $ were together with 10 £ belonging most probably to <em>T. angustipalpis</em> Levy, 1996 revision based on published figures</td>
</tr>
<tr>
<td><em>Malthonica nakchivanica</em> Guseinov et al., 2005</td>
<td>n. comb.</td>
<td><em>Tegenaria nakchivanica</em> Guseinov et al., 2005 revision based on published figures</td>
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<td><em>Malthonica pseudolyncea</em> Guseinov et al., 2005</td>
<td>n. comb.</td>
<td><em>Tegenaria pseudolyncea</em> Guseinov et al., 2005 revision based on published figures</td>
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<td><em>Tegenaria abchasica</em> Charitonov, 1941</td>
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<td>no specimen examined</td>
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<td><em>Tegenaria aculeata</em> Wang, 1992</td>
<td>-</td>
<td><em>Tegenaria aculeata</em> Wang, 1992 holotype £ and paratypes (1 £) examined (Bolzern, et al., accepted)</td>
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<td><em>Tegenaria adomestica</em> Guseinov et al., 2005</td>
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<td><em>Tegenaria adomestica</em> Guseinov et al., 2005 revision based on published figures</td>
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<td><em>Tegenaria agnolettii</em> Brignoli, 1978</td>
<td>-</td>
<td><em>Tegenaria agnolettii</em> Brignoli, 1978 only female described; revision based on published figures</td>
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<tr>
<td><em>Tegenaria angustipalpis</em> Levy, 1996</td>
<td>-</td>
<td><em>Tegenaria angustipalpis</em> Levy, 1996 10 £ from Syria (MNHN); the affiliation of male and female is doubted (see <em>T. mediterranea</em> Levy, 1996); 1 £ aff. <em>angustipalpis</em> from Spain (!) (MNHN, 467) only female described; holotype £ and 1 £ (NMB, AB793) examined</td>
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<td><em>Tegenaria averni</em> Brignoli, 1978</td>
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<td><em>Tegenaria averni</em> Brignoli, 1978 only female described; typ material not available; no published figures; species is not sufficiently characterised</td>
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<td>no specimen examined</td>
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<td><em>Tegenaria comnena</em> Brignoli, 1978</td>
<td>-</td>
<td><em>Tegenaria comnena</em> Brignoli, 1978 only female described; holotype £ and paratypes (3 £) examined based on the provided drawings (Gajbe, 2004) this species does not belong to <em>Tegenaria</em> or <em>Malthonica</em> 1 £ examined (MNHN, 478A) only female described; holotype £ and paratypes (2 £) examined only female described; holotype £ and paratypes (10 £) examined only female described; holotype £ and paratypes (3 £) examined no specimen examined only female described; holotype £ examined; very problematic since the specimen is a subadult female (eventhough the vulva is developed) based on the published drawings (Reddy &amp; Patel, 1992), this species does not belong to <em>Tegenaria</em> or <em>Malthonica</em>. They stated that this species is similar to <em>Tamgrinia chhanguensis</em> Tikader, 1970 (sub <em>Tegenaria</em>) only female described; no specimen examined only female described; holotype £ examined holotype $ and 2 $, 4 £ examined (MCSN, MHNG) only female described; the description provided by Tikader is not diagnostic. The relevant specimens have to be revised. only female described; holotype £ examined</td>
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<tr>
<td><em>Tegenaria ismaillensis</em> Guseinov et al., 2005</td>
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<td><em>Tegenaria ismaillensis</em> Guseinov et al., 2005 only female described; no specimen examined</td>
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<td><em>Tegenaria karaman</em> Brignoli, 1978 only female described; holotype £ examined</td>
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<td><em>Tegenaria longimana</em> Simon, 1898</td>
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<td>inc. sed.</td>
<td><em>Tegenaria lunakensis</em> Tikader, 1964 only female described; the description provided by Tikader is not diagnostic. The relevant specimens have to be revised. only female described; holotype £ examined</td>
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<td><em>Tegenaria mamikonian</em> Brignoli, 1978 only female described; holotype £ examined</td>
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<td>Description</td>
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<td>Tegenaria melbae Brignoli, 1972 only female described; holotype £ and probably new £ and 1 £ examined (unpublished)</td>
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<td><em>Tegenaria michae</em> Brignoli, 1978</td>
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<td>Tegenaria michae Brignoli, 1978 only female described; holotype £ and paratypes (2 £) examined</td>
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<td><em>Tegenaria pontica</em> Chantitonov, 1947</td>
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<td>Tegenaria pontica Chantitonov, 1947 only female described; no specimen examined</td>
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<td><em>Tegenaria shittongensis</em> Barman, 1979</td>
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<td>Tegenaria pontica Chantitonov, 1947 based on the published drawings (Barman, 1979), this species does not belong to Tegenaria or Malthonica</td>
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<td><em>Tegenaria talyschica</em> Guseinov et al., 2005</td>
<td>-</td>
<td>Tegenaria talyschica Guseinov et al., 2005 only female described; no specimen examined</td>
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<td><em>Tegenaria teprobanica</em> Strand, 1907</td>
<td>n. syn.</td>
<td>Tegenaria parietina (Fourcroy, 1785) type specimen probably lost; based on the very short description without figures (Strand, 1907), the described specimen would match to a very large T. parietina specimen.</td>
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<td><em>Tegenaria tekke</em> Brignoli, 1978</td>
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<td>Tegenaria tekke Brignoli, 1978 only female described; holotype £ examined</td>
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<tr>
<td><em>Tegenaria vignai</em> Brignoli, 1978</td>
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<td>Tegenaria vignai Brignoli, 1978 holotype $ and paratype £ examined; very close to T. longimana Simon, 1898</td>
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<td><em>Tegenaria xenophontis</em> Brignoli, 1978</td>
<td>n. syn.</td>
<td>Tegenariacottarelli Brignoli, 1978 only female described; holotype £ and paratypes (5 £) examined</td>
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<td><em>Malthonica africana</em> Simon &amp; Fage, 1922</td>
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<td>Malthonica africana Simon &amp; Fage, 1922 only female described; no specimen examined</td>
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<td><em>Tegenaria africana</em> Lucas, 1846</td>
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<td>Tegenaria africana Lucas, 1846 only female described; 1 £ examined (MNHN)</td>
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<td><em>Tegenaria maroccana</em> Denis, 1956</td>
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<td>Tegenaria maroccana Denis, 1956 only female described; types not traceable in the collection of the MNHN</td>
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<td><em>Malthonica vallei</em> (Brignoli, 1972)</td>
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<td>Tegenaria vallei Brignoli, 1972 holotype $ and paratypes (1 $, 1 £) examined</td>
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<td>Tegenaria wittmeri Brignoli, 1978 holotype and paratypes (1 $, 1 £) examined; species does not belong to Tegenaria or Malthonica.</td>
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<td><strong>North American taxa</strong></td>
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<td><em>Tegenaria blanda</em> Gertsch, 1971</td>
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<td>Tegenaria blanda Gertsch, 1971 only female described; no specimens examined; no published figures</td>
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<tr>
<td><em>Tegenaria caverna</em> Gertsch, 1971</td>
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<td>Tegenaria caverna Gertsch, 1971 no specimens examined</td>
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<td><em>Tegenaria chiricalauae</em> Roth, 1968</td>
<td>not treated</td>
<td>Tegenaria chiricalauae Roth, 1968 no specimens examined</td>
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<td><em>Tegenaria decora</em> Gertsch, 1971</td>
<td>not treated</td>
<td>Tegenaria decora Gertsch, 1971 several £ examined</td>
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<td><em>Tegenaria flexuosa</em> F. O. P.-Cambridge, 1902</td>
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<td>Tegenaria flexuosa F. O. P.-Cambridge, 1902 only male described; no specimens examined</td>
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<td>Tegenaria mexicana Roth, 1968 paratypes (4 $) and 7 £ examined</td>
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<td><em>Tegenaria rothi</em> Gertsch, 1971</td>
<td>not treated</td>
<td>Tegenaria rothi Gertsch, 1971 3 $, 3 £ examined (AMNH)</td>
</tr>
<tr>
<td><em>Tegenaria selva</em> Roth, 1968</td>
<td>not treated</td>
<td>Tegenaria selva Roth, 1968 1 $, 3 £ examined (AMNH)</td>
</tr>
<tr>
<td><em>Tegenaria tlaccola</em> Roth, 1968</td>
<td>not treated</td>
<td>Tegenaria tlaccola Roth, 1968 paratypes (1 $, 3 £) examined</td>
</tr>
</tbody>
</table>

**Taxa not in the catalogue of Platnick (2010)**
<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Aterigena aspromontensis</em> Bolzern et al., 2010</td>
<td>n. sp.</td>
<td>(Bolzern, et al., accepted)</td>
</tr>
<tr>
<td><em>Tegenaria argaeica</em> Nosek, 1905</td>
<td>n. syn.</td>
<td>(Bolzern &amp; Hervé, 2010)</td>
</tr>
<tr>
<td><em>Tegenaria mercanturensis</em> Bolzern &amp; Hervé, 2010</td>
<td>n. sp.</td>
<td></td>
</tr>
<tr>
<td><em>Tegenaria annae</em></td>
<td>n. sp.</td>
<td></td>
</tr>
<tr>
<td><em>Tegenaria circeoensis</em></td>
<td>n. sp.</td>
<td></td>
</tr>
<tr>
<td><em>Tegenaria croatica</em></td>
<td>n. sp.</td>
<td>only female described</td>
</tr>
<tr>
<td><em>Tegenaria montiszasensis</em></td>
<td>n. sp.</td>
<td>only female described</td>
</tr>
<tr>
<td><em>Tegenaria pindosiensis</em></td>
<td>n. sp.</td>
<td>only female described</td>
</tr>
<tr>
<td><em>Tegenaria schoenhoferi</em></td>
<td>n. sp.</td>
<td>only male described</td>
</tr>
<tr>
<td><em>Tegenaria vankeeri</em></td>
<td>n. sp.</td>
<td>only male described</td>
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# Appendix 5: Scoring list of morphological characters for included species.

<table>
<thead>
<tr>
<th>Character</th>
<th>Score</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Character 1</td>
<td>1</td>
<td>Description 1</td>
</tr>
<tr>
<td>Character 2</td>
<td>2</td>
<td>Description 2</td>
</tr>
<tr>
<td>Character 3</td>
<td>3</td>
<td>Description 3</td>
</tr>
<tr>
<td>Character 4</td>
<td>4</td>
<td>Description 4</td>
</tr>
<tr>
<td>Character 5</td>
<td>5</td>
<td>Description 5</td>
</tr>
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</table>

... (Continues with more characters and descriptions)
Table 1: Important values used and observed during phylogenetic analyses.

<table>
<thead>
<tr>
<th>Locus</th>
<th># taxa</th>
<th># characters</th>
<th>partitions</th>
<th># pars. inf. characters</th>
<th>Generations (millions)</th>
<th>temperature</th>
<th>temperature dropping &amp; remaining under 0.01</th>
<th>sampling</th>
<th>burnin</th>
<th># trees retained</th>
</tr>
</thead>
<tbody>
<tr>
<td>28S</td>
<td>52</td>
<td>913</td>
<td>2</td>
<td>257</td>
<td>5</td>
<td>0.15</td>
<td>3.424</td>
<td>1000</td>
<td>750 (15%)</td>
<td>8502</td>
</tr>
<tr>
<td>CO1</td>
<td>62</td>
<td>471</td>
<td>3</td>
<td>191</td>
<td>see Bolzern et al. (accepted)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NADH1</td>
<td>75</td>
<td>591</td>
<td>3</td>
<td>331</td>
<td>7</td>
<td>0.15</td>
<td>4.948</td>
<td>1000</td>
<td>700 (10%)</td>
<td>12602</td>
</tr>
<tr>
<td>Mitochondrial</td>
<td>41</td>
<td>1063</td>
<td>6</td>
<td>483</td>
<td>7</td>
<td>0.20</td>
<td>5.486</td>
<td>1000</td>
<td>700 (10%)</td>
<td>12602</td>
</tr>
<tr>
<td>DNA</td>
<td>26</td>
<td>1940</td>
<td>8</td>
<td>646</td>
<td>1</td>
<td>0.20</td>
<td>0.502</td>
<td>1000</td>
<td>100 (10%)</td>
<td>1802</td>
</tr>
<tr>
<td>Morph</td>
<td>69</td>
<td>88</td>
<td>1</td>
<td>88</td>
<td>10</td>
<td>0.15</td>
<td>6.798</td>
<td>1000</td>
<td>1000 (10%)</td>
<td>18002</td>
</tr>
<tr>
<td>DNA &amp; Morph</td>
<td>20</td>
<td>2028</td>
<td>9</td>
<td>605</td>
<td>3</td>
<td>0.20</td>
<td>1.140</td>
<td>1000</td>
<td>300 (10%)</td>
<td>5402</td>
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Table 2: Important values and statistics from the selected parsimony trees.

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<th>Character matrix</th>
<th>Weighting</th>
<th>Length of shortest tree(s)</th>
<th># of shortest trees</th>
<th># of hits of shortest trees (1000 replications)</th>
<th>Consistency index of strict consensus tree</th>
<th>Retention index of strict consensus tree</th>
</tr>
</thead>
<tbody>
<tr>
<td>All data</td>
<td>0</td>
<td>2923</td>
<td>1</td>
<td>783</td>
<td>0.449</td>
<td>0.411</td>
</tr>
<tr>
<td>All data</td>
<td>K=6</td>
<td>2925</td>
<td>1</td>
<td>839</td>
<td>0.448</td>
<td>0.410</td>
</tr>
<tr>
<td>DNA</td>
<td>K=3</td>
<td>3234</td>
<td>1</td>
<td>712</td>
<td>0.396</td>
<td>0.451</td>
</tr>
<tr>
<td>DNA</td>
<td>K=6</td>
<td>3233</td>
<td>1</td>
<td>367</td>
<td>0.397</td>
<td>0.451</td>
</tr>
<tr>
<td>Mito</td>
<td>Equal</td>
<td>3433</td>
<td>1</td>
<td>110</td>
<td>0.273</td>
<td>0.476</td>
</tr>
<tr>
<td>Mito</td>
<td>K=5</td>
<td>3443</td>
<td>1</td>
<td>374</td>
<td>0.272</td>
<td>0.474</td>
</tr>
<tr>
<td>Mito</td>
<td>K=20</td>
<td>3435</td>
<td>1</td>
<td>464</td>
<td>0.273</td>
<td>0.475</td>
</tr>
<tr>
<td>28S</td>
<td>0; collapsing rule 1</td>
<td>1033</td>
<td>40</td>
<td>538</td>
<td>0.533</td>
<td>0.719</td>
</tr>
<tr>
<td>28S</td>
<td>K=5</td>
<td>1040</td>
<td>10</td>
<td>239</td>
<td>0.533</td>
<td>0.719</td>
</tr>
<tr>
<td>28S</td>
<td>K=6</td>
<td>1038</td>
<td>20</td>
<td>60</td>
<td>0.533</td>
<td>0.719</td>
</tr>
<tr>
<td>28S</td>
<td>K=20</td>
<td>1033</td>
<td>200</td>
<td>43</td>
<td>0.535</td>
<td>0.722</td>
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<tr>
<td>NADH1</td>
<td>0</td>
<td>3349</td>
<td>21</td>
<td>88</td>
<td>0.191</td>
<td>0.565</td>
</tr>
<tr>
<td>NADH1</td>
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<td>164</td>
<td>0.192</td>
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<tr>
<td>NADH1</td>
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<td>1</td>
<td>345</td>
<td>0.193</td>
<td>0.569</td>
</tr>
<tr>
<td>NADH1</td>
<td>K=50</td>
<td>3353</td>
<td>1</td>
<td>32</td>
<td>0.194</td>
<td>0.572</td>
</tr>
<tr>
<td>Morph</td>
<td>0</td>
<td>561</td>
<td>8</td>
<td>510</td>
<td>0.320</td>
<td>0.744</td>
</tr>
</tbody>
</table>
Figure 1: SEM pictures of spinnerets of female Tegenaria domestica (A-D), T. parietina (E-F) and T. dalmatica (G-H). Overview (A); PMS (B, D, F); ALS (E, H); colulus (C, G). CGS: cylindrical gland spigot; COL: colulus; mAS: minor ampullate gland spigot; MAS: major ampullate gland spigot; N: nubbin; PGS: piriform gland spigots; T: tartipore; TS: tracheal stigma.
Figure 2: SEM pictures of the spinnerets (from females) and other structures. PMS of *Eratigena agrestis* (A), *Aterigena ligurica* (C) and *Malthonica lusithanica* (F); ALS of *E. atrica* (B); distal segment of PLS (E) and overview of spinnerets of *Malthonica lusithanica* (D); tarsal trichobothrium of *Allagelela gracilens* (G); plumose hairs on tarsus I of *Tegenaria dalmatica* (H). CGS: cylindrical gland spigot; mAS: minor ampullate gland spigot; MAS: major ampullate gland spigot; N: nubbin; PGS: piriform gland spigots; T: tartipore; TS: tracheal stigma.
Figure 3: Microscope and SEM pictures of character details. Special spikes at the anal tubus of Agelena labyrinthica (A); three claws of tarsus I of Tegenaria dalmatica (B); RTA in retrolateral view of Tegenaria ferruginea (C); male palp of Tegenaria dalmatica in ventroretrolateral view (D); embolus tip of Tegenaria ferruginea (E); epigyne in ventral view of Tegenaria domestica (F). bT: basal portion of tegulum; C: conductor; CO: copulatory opening; con: connection of tegulum and conductor; DB: dorsal branch; dC: distal portion of conductor; dp: dorsal part of terminal end of conductor; E: embolus; EP: epigynal plate; LB: lateral branch; LM: lateral margin of median region; MA: median apophysis; mC: lateral margin of conductor (here entirely folded); MP: median plate; MR: median region; PS: posterior sclerite (here bar- or band like); PT: “pseudo teeth”; tEC: terminal end of conductor (here bifid); VB: ventral branch; vp: ventral part of terminal end of conductor. Scale for A and F = 0.5 mm.
Figure 4: Most parsimonious strict consensus tree based on morphological data with equal character weights. Branch support is indicated by jackknife values (1000 pseudoreplicates) / Bremer support. Analysis with implied weight (k=6) resulted in additional supported clades (jackknife support): *T. mercanturensis* + *T. mirifica* (68), *T. eleonorae* + (*T. tyrrenica* + *T. armigeraj) (57), *T. rilaensis* + *T. montana* (57), *T. sbordonii* + (*T. parmenidis* + *T. circeoensis*) (50).
Figure 5: Combined DNA data (CO1, NADH1 and 28S) Bayesian tree. Posterior probability of clades expressed in percentage and written above branches. Clade support (>50) from resampling method (jacknife, 1000 replications) based on parsimony analysis with implied weighting (K=5) is given below the branches.
Figure 6: Combined mitochondrial DNA data (CO1, NADH1) Bayesian tree. Posterior probability of clades expressed in percentage and written above branches. Clade support (>50) from resampling method (jackknife, 1000 replications) based on parsimony analysis with implied weighting (K=20) is given under the branches. * this clades do not exist in the most parsimonious tree. Instead: (((T. ariadnae + T. ariadnae) 100, + T. domestica) 71, + T. vankeeri n. sp.) 69, + (T. dalmatica + T. dalmatica) 100).
Figure 7: Bayesian tree of single analysis of 28S. Posterior probability as clade support is expressed in percentage and written above branches.
Fig. 8: Combined DNA and morphological data (CO1, NADH1, 28S and morphological data) most parsimonious tree (implied weighting, K=6). Clade support (>50) from resampling method (jackknife, 1000 replications) is given above branches, Bremer support (>4) is given below branches.
Figure 9: *Eratigena atrica* (a-b), *Eratigena agrestis* (c-f), *Eratigena fueslini* (g-i). Male palp in ventral (a, c, g) and retrolateral view (b, d, h-i); epigyne, ventral (e); vulva, dorsal (f).
Figure 10: *Eratigena agrestis* (A - H). Male palp in ventral (A) and retrolateral view (B); epigyne in ventral (C, white arrow pointing to a epigynal teeth) and vulva in dorsal view (D); variation of epigyne in ventral (E) and vulva in dorsal view (F); sternum, ventral (G); spinnerets, ventral (H). Scale = 0.5 mm.
Figure 11: Males of the *Eratigena atrica* complex. *Eratigena atrica* (A -D), *Eratigena saeva* (E -F) and *Eratigena duellica* (G -H). Left male palps in ventral (A, E, G) and retrolateral view (B, F, H); tibia in dorsal view (C) with short dorsal spike (white arrow); spinnerets, ventral view (D). ALS: anterior lateral spinnerets; BS: basal segment of PLS; COL: colulus; DS: distal segments of PLS; PLS: posterior lateral spinnerets; PMS: posterior median spinnerets. Scale = 0.5 mm.
Figure 12: Females of the *Eratigena atrica* - complex. *Eratigena atrica* (A -B, G -H), *Eratigena saeva* (C -D, I) and *Eratigena duellica* (E -F). Epigynes in ventral view (A, C, E) with “pseudo teeth” (white arrows); vulvae, dorsal view (B, D, F); face and chelicerae, frontal view (G); cheliceral margins with teeth, ventral view (H); sternum, ventral view (I). Scale = 0.5 mm.
Figure 13: *Eratigena fuesslini* (A-D) and *Eratigena montigena* (E-H). Male left palp in ventral (A, E) and retrolateral view (B, F); epigyne in ventral (C, G) and vulva in dorsal view (D, H). Scale = 0.5 mm.
Figure 14: *Eratigene feminea* (A -B, G -H) and *Eratigene bucculenta sensu lato* (C -F, I -P). Left male palps in ventral (A, C, E) and retrolateral view (B, D, F); epigynes in ventral (G, I, K, N) and posterior view (O); vulvae in ventral (J, L) or dorsal view (H, M, P). Scale = 0.5 mm (scale for I is missing).
Figure 15: *Eratigena feminea* (a - b, g - h) and *Eratigena bucculenta sensu lato* (c - f, i - l). Left male palps in ventral (a, c, e) and retrolateral view (b, d, f); epigynes, ventral view (g, i, k); vulvae, dorsal view (h, j, l). Scale = 0.5 mm.
Figure 16: *Eratigena herculea* (A -B), *E. hispanica* (F -G, L -M), *E. arganoi* (C -D, H, N -O), *E. sardoa* (I -J, P -Q) and *E. sicana* (E, K). Female epigyne in ventral (A, C, F, I) and vulva in dorsal view (B, D -E, G, J); male left palp in ventral (L, N, P) and retrolateral view (M, O, Q); frontal face of male *E. arganoi* (H); habitus of female *E. sicana* (K). Scale = 0.5 mm.
Figure 17: *Eratigena picta* (A -B, E -F, I) and *E. balearica* (C -D, G -H). Male left palp in ventral (A, C) and retrolateral view (B, D); epigyne in ventral (E, G) and vulva in dorsal view (F, H); habitus of two male of *E. picta* (size variation!). Scale = 0.5 mm.
Figure 18: *Eratigena inermis* (A - B, E - G) and *Eratigena vomeroi* (C - D, H - L). Left male palps in ventral (A, C) and retrolateral view (B, D); epigynes, ventral view (E, H); cleared vulvae, dorsal view (F, I); sterna, ventral view (G, K); carapace (J) and opisthosoma (L), dorsal view. Scale = 0.5 mm.
Figure 19: *Eratigena inermis* (a-b, e-f) and *Eratigena vomeroi* (c-d, g-h). Left male palps in ventral (a, c) and retrolateral view (b, d); vulvae in ventral (e, g) and lateral view (f, h). E: embolus; C: conductor; CD: copulatory duct; DA: dorsal appendages on CD; FD: fertilisation duct; MA: median apophysis; RC: receptaculum; RTA d: dorsal branch of retrolateral tibia apophysis; RTA l: lateral branch of retrolateral tibia apophysis; TR: transversal ridge; Scale = 1 mm (a-d) or 0.5 mm (e-h).
Figure 20: Tegenaria achaea (A-B), T. argaeica (C-F), T. armigera (G-J), T. hasperi (K-L) and T. montiszasensis n. sp. (M-O); T. dalmatica (P-T). Male left palp in lateral (C, J, S), and ventral view (D, I, T); epigyne in ventral (A, E, G, K, M, P) and vulva in dorsal view (B, F, H, L, N, Q); comparison of vulvae of small and large “forms” of T. armigera (H); schematic drawing of vulva of T. montiszasensis n. sp. Scale = 0.5 mm (epigyne and vulva of T. argaeica, E-F) without scale, photos from syntype taken with digital camera through the oculars.)
Figure 21: *Tegenaria annae* n. sp. (a-d) and *Tegenaria ariadnae* (e-h). Male left palp in ventral (a, c) and retrolateral view (b, f); epigyne in ventral (c, g), vulva in dorsal view (d, h). Scale = 0.5 mm (b -c, g -h), 1 mm (a -b,
Figure 22: *Tegenaria annae* n. sp. (A-G) and *Tegenaria ariadnae* (H-L). Male left palp in ventral (A, H) and retrolateral view (B, I); RTA in retrolateral view (C); epigyne in ventral (D-J), vulva in dorsal view (E-K); cephalothorax (F) and opisthosoma (G) in dorsal view; face of male in frontal view (L). Scale = 0.5 mm.
Figure 23: *Tegenaria annulata* (A-E) and *Tegenaria schoenhoferi* n. sp. (F-J). Male left palp in ventral (A, G, I) and retrolateral view (B, F, H); epigyne in ventral (C), vulva in dorsal (D) and schematic view (E); opisthosoma, dorsal view (J). Scale = 0.5 mm.
Figure 24: *Tegenaria argaeica* (female paratype, a-b), *Tegenaria carensis* (c-e) and *Tegenaria domestica* (f-h); epigyne in ventral (a, g), vulva in dorsal view (b-c, h); left male palp in ventral (d, f) and retrolateral view (e).
Figure 25: *Tegenaria carensis* (A–D) *Tegenaria ramblae* (E–H) and *Tegenaria domestica* (I–L). Male left palp in ventral (A, F, I) and retrolateral view (B, G, J); epigyne in ventral (C, E) and vulva in dorsal view (D, H); face (K), frontal, and chelicerae (L), ventral, of *Tegenaria domestica* male. Scale = 0.5 mm.
Figure 26: *Tegenaria bozhkovi* (A-C) and *Tegenaria campestris* (D-G), *Tegenaria racovitzai* (H-L). Male left palp in ventral (F, I) and retrolateral view (G, J); epigyne in ventral (A, D, K), vulva in dorsal (B, E, L) and lateral view (C); face of female *T. racovitzai* (H). Scale = 0.5 mm.
Figure 27: *Tegenaria capolongoi* (A-B) and *Tegenaria parmenidis* (C-K). Male left palp in ventral (E), retrolateral (F) and dorsal (only tibia with RTA, G) view; epigyne in ventral (A, C), vulva in dorsal view (B, D); face of male *T. parmenidis*, frontal (H); spinnerets, ventral view (I); habitus (J) of male *T. parmenidis*, dorsal view, and sternum (K), ventral view. Scale = 0.5 mm, except for J scale = 1 mm.
Figure 28: *Tegenaria circeoensis* n. sp. (a - c, h - i), *Tegenaria parmenidis* (d - e, j - k) and *Tegenaria sbordonii* (f - g). Male left palp in ventral (a, d, f), lateral (b, e, g), and dorsal (c) view; epigyne in ventral (h, j), vulva in dorsal view (i, k).
Figure 29: *Tegenaria circeoensis* n. sp. (A-H). Male cephalothorax (A) and opisthosoma (B); male palp in ventral (C), retrolateral (D) and dorsal view (E); epigyne in ventral (F) and vulva in dorsal view (G); variation of epigyne in ventral view (H). Scale = 0.5 mm.
Figure 30: *Tegenaria hauseri* (A-D), *Tegenaria faniapollinis* (E), *Tegenaria pieperi* (F-G), *Tegenaria schmalfussi* (H-I), *Tegenaria percuriosa* (holotype of *T. bithyniae*, J), *Tegenaria croatica* n. sp. (K-O). Male left palp in ventral (A) and retrolateral view (B); female epigyne in ventral (C, E, F, H, J, L) or ventroposterior (G), vulva in dorsal view (D, I, M); habitus, dorsal view (K); schematic drawings of the vulva of *T. croatica* n. sp. in ventral (N) and dorsal view (O). CD: copulatory duct; CO: copulatory opening; FD: fertilisation duct; RC: receptaculum. Scale = 0.5 mm (no scale for *T. faniapollinis*, E, and *T. schmalfussi*, H-I) if not differently indicated.
Figure 31: *Tegenaria eleonorae* (A -B, H -I) and *Tegenaria henroti* (C -G). Male left palp in ventral (A, C) and retrolateral view (B, D); female epigyne in ventral (E, H), vulva in dorsal view (I, F); habitus of female *T. henroti* (G). Scale = 0.5 mm (A -F, H -I) and 1 mm (G).
Figure 32: *Tegenaria femoralis* (A-D), *Tegenaria tyrrhenica* (E-I). Male left palp in ventral (A, E) and retrolateral view (B, F); female epigyne in ventral (C, G), vulva in dorsal (D, H) and anterior view (I). Scale = 0.5 mm.
Figure 33: *Tegenaria ferruginea* (A-D) and *Tegenaria parietina* (E-I). Male left palp in ventral (A, E) and retrolateral view (B, F); epigyne in ventral (C, G) and vulva in dorsal (D, H) or lateral view (I). Scale = 0.5 mm.
Figure 34: *Tegenaria tridentina* (A - B, E - F), *Tegenaria mirifica* (C - D, G - H) and *Tegenaria levantina* (I - J). Male left palp in ventral (A, C) and retrolateral view (B, D); female epigyne in ventral (E, G, I), vulvae in dorsal view (F, H, J). Scale = 0.5 mm.
Figure 35: *Tegenaria pagana* (A -N), including the type specimens of *T. cerrutii* (D, G), *T. baronii* (I -J) and *T. marinae* (E, H). Male left palp in ventral (A) and retrolateral view (B); female epigyne in ventral (C -E, I), vulva in dorsal view (F -H, J); chelicerae, ventral view (K); habitus of female in dorsal (L), face in frontal (M) and sternum in ventral view (N). Scale = 0.5 mm (E, H, I -J without scale).
Figure 36: *Tegenaria silvestris* (A - B, G - H, variation, C - D, I - J), *Tegenaria parvula* (E - F, K - L). Male left palp in ventral (A, C, E) and retrolateral view (B, D, F); female epigyne in ventral (G, I, K), vulva in dorsal (H, J, L). Scale = 0.5 mm.
Figure 37: *Tegenaria silvestris* (a, d -e, j), variation in males and females (b -c, f -i). Male left palp in ventral (a) and retrolateral view (b, c), with detailed drawing of variation of the terminal end of conductor (tEC); female epigyne, ventral view (d); vulvae in dorsal (e -f, h) and lateral view (g, i -j). Scale for j = 0.5 mm.
Figure 38: Tegenaria regispyrrhi (A -D), Tegenaria aff. regispyrrhi 1 (E -F), Tegenaria aff. regispyrrhi 2 (G -H), Tegenaria aff. regispyrrhi 3 (I -J), Tegenaria pindosiensis n. sp. (K -N). Male left palp in ventral (A) and retrolateral view (B); female epigyne in ventral (C, E, G, I, K), vulvae in dorsal view (D, F, H, J, L); sternum, ventral view (M) and opisthosoma, dorsal view (N) of T. pindosiensis n. sp.. Scale = 0.5 mm.
Figure 39: *Tegenaria pindosiensis* n. sp. (a -b), *Tegenaria vankeeri* n. sp. (c -d). Male left palp in ventral (c) and retrolateral view (d); female epigyne in ventral (a), vulvae in dorsal view (b). CD: copulatory duct; CO: copulatory opening; FD: fertilisation duct; RC: receptaculum.
Figure 40: *Tegenaria vankeeri n. sp.* (A -F). Male left palp in ventral (A) and retrolateral view (B); RTA of left male palp in dorsal view (C); face, frontal view (D); spinnerets, ventral view (E); sternum, ventral view (F). Scale = 0.5 mm.
Aterigena, a new genus of funnel-web spider, shedding some light on the Tegenaria-Malthonica problem (Araneae, Agelenidae)

Angelo Bolzern: Naturhistorisches Museum Basel, Augustinergasse 2, CH-4001 Basel and Department of Environmental Sciences, Section of Conservation Biology, University of Basel, St. Johannis-Vorstadt 10, CH-4056 Basel, Switzerland. e-mail: angelo.bolzern@arachnodet.com, Telephone: ++41 61 266 55 57

Ambros Hänggi: Naturhistorisches Museum Basel, Augustinergasse 2, CH-4001 Basel, Switzerland

Daniel Burckhardt: Naturhistorisches Museum Basel, Augustinergasse 2, CH-4001 Basel, Switzerland

Running head: BOLZERN ET AL. — NEW GENUS OF PALEARCTIC AGELENIDAE

Replace everywhere:
$ by male and £ by female symbols
Abstract. *Aterigena* n. gen. is erected for four Palearctic species of funnel-web spiders previously associated with *Tegenaria* Latreille, 1804 or *Malthonica* Simon, 1898 (Agelenidae, Tegenarini) and *A. aspromontensis* n. sp., an Italian species described here. The following new combinations are proposed: *Aterigena aculeata* (Wang, 1992), *A. ligurica* (Simon, 1916), n. comb. (from *Tegenaria*), as well as *A. aliquoi* (Brignoli, 1971) and *A. soriculata* (Simon, 1873), n. comb. (from *Malthonica*). The latter two species have been originally described in *Tegenaria*. The new genus is diagnosed by the unique combination of several morphological character states (e.g. notched trochanters III and IV, lateral spines on patellae, shape of vulvae). The monophyly of the new genus is also supported by a molecular analysis based on CO1 sequences of several taxa. Keys are provided for the identification of the recognized genera of Tegenarini and the species of *Aterigena* n. gen.. Several species of *Pseudotegenaria* Caporiacco, 1934, originally described in *Tegenaria*, are morphologically close to *Tegenaria tridentina* L. Koch, 1872, a species which is grouped in the cladistic analysis using CO1 in the monophyletic taxon “*Tegenaria clade 1*”. The species are therefore transferred back to *Tegenaria* as *Tegenaria animata* Kratochvíl & Miller, 1940, stat. rev., *T. bayeri* Kratochvíl, 1934, stat. rev., *T. bosnica* Kratochvíl & Miller, 1940, stat. rev. and *T. decolorata* Kratochvíl & Miller, 1940, stat. rev. (*Aterigena* n. gen. has an interesting geographical distribution: it is widely disjunct in the Palearctic. Four species occur in the Mediterranean and one in China respectively. *A. ligurica* is relatively widely distributed in mainland Italy and adjacent Southern France with a single specimen known each from Spain and Egypt (Alexandria), respectively. The latter may be the result of accidental introduction. The other three European species are endemic to Sicily, Corsica (perhaps also Sardinia) and Calabria, respectively.

**Keywords:** *Tegenaria*, *Malthonica*, taxonomy, new taxa, biogeography, Palearctic, disjunct distribution, endemism.

Some representatives of the araneomorph funnel-web spiders (Agelenidae) are well-known even to the general public: i.e. the very large and longlegged European House Spiders (*Tegenaria atrica* C. L. Koch, 1843, *T. duellica* Simon, 1875 and *T. domestica* (Clerck, 1757)) or the notorious hobo spider (*T. agrestis* (Walckenaer, 1802)). The last has been introduced into North America where it is blamed for biting humans and causing necrotic wounds (Akre & Myhre, 1991; Baird & Stoltz, 2002; Binford, 2001; Vest, 1987; Vetter et al., 2003; Vetter & Swanson, 2004). Despite this publicity the taxonomic and phylogenetic relationships within the Agelenidae are still poorly understood (see e. g. Zhang et al., 2006).

Currently the Agelenidae consists of 42 genera and 514 described species (Platnick, 2010). There is an ongoing discussion about the definition of Agelenidae and, in particular, whether the subfamily Coelotinae belongs to the Agelenidae or the Amaurobiidae (Bi et al., 2005; Griswold et al., 1999; Lehtinen, 1967; Spagna & Gillespie, 2008; Wunderlich, 1986) and whether the Australian genera currently affiliated with Agelenidae are phylogenetically closely related with it (Spagna & Gillespie, 2008; Miller, pers. comm.). Within the subfamily Ageleninae Lehtinen (1967) recognizes four tribes: Agelenopsini (Nearctic and Neotropical), Agelenini (Holarctic and Afrotropical), Textricini and Tegenariini (mainly Palearctic). The European tribes Agelenini, Textricini and Tegenariini, of relevance here, can be recognised with the table published by Lehtinen (1967: p. 344, Table 23; but see also Table 2).

According to Lehtinen (1967) the Tegenariini comprises following nominal genera: *Hadites* Keyserling, 1862, *Histopona* Thorell, 1869, *Malthonica* Simon, 1898, *Pseudotegenaria* Caporiacco, 1934 and *Tegenaria* Laterille, 1804. Most species have been associated with *Tegenaria* and *Malthonica*. The original definitions of the two genera are vague. In its present composition, *Tegenaria* is probably not monophyletic (e.g. Levy, 1996).
The transfer of many *Tegenaria* species to *Malthonica* by Guseinov et al. (2005) did not render the genera more natural but rather added more taxonomic confusion: apparently closely related species based on morphological and molecular characters do now belong to two different genera (e.g. *Tegenaria parietina*, (Fourcroy, 1785) and *Malthonica ferruginea*, (Panzer, 1804) or *Tegenaria henroti* Dresco, 1956 and *Malthonica eleonorae*, (Brignoli, 1974), see Bolzern et al., 2008). Guseinov et al. (2005) erected a new genus, *Azerithonica*, which seems to be closely related to *Tegenaria* and *Malthonica*, also belonging to the tribe Tegenariini. Barrientos & Cardoso (2007) redefined *Malthonica*, but this was not followed by Deltshev (2008) and Seyyar et al. (2008).

Dankittipakul & Zhang (2008) erected the genus *Acutipetala* which they compared to *Agelena* and *Tegenaria*. They did not assign it to a particular tribe. The strongly procurred eye-rows (in frontal and dorsal view), the spination of the patellae in combination with the devided colulus, mentioned in their description, suggest that it is a member of Agelenini.

The aim of the present work is to improve the taxonomy of *Tegenaria*, *Malthonica* and relatives.

**MATERIAL AND METHODS**

The specimens examined in this work are preserved in 75 % ethanol at the Naturhistorisches Museum Basel (NMB), the Muséum d'histoire naturelle Genève (MHNG), the Senckenberg Forschungsinstitut und Naturmuseum Frankfurt a. M. (SMF), the Naturhistorisches Museum Wien (NHMW), the Muséum national d'Histoire naturelle Paris (MNHN), the Museo Civico di Storia Naturale Verona, (MCSN), the Brignoli Collection housed in the Museo Civico di Storia Naturale Verona (PMBC), the Museo Civico di Scienze Naturli “E. Caffi” Bergamo (MSNB) and the private collections of Z. Zhang, China (ZZ) and K. van Keer, Belgium (KK).

For the morphological examination and the preparation of drawings a Leica stereomicroscope MZ12 (up to 110 x magnification) and MZ Apo with drawing tube were used. Most measurements were taken from digital pictures made with a Leica DFC320 camera and calculated with the program ImageJ 1.38x (http://rsb.info.nih.gov/ij/). Photographs were stacked using the program CombineZM (http://hadleyweb.pwp.blueyonder.co.uk/CZM/News.htm) and processed with Adobe Photoshop and Illustrator. For clearing the vulva, the removed epigynum was placed into clove oil for several minutes. The descriptions of the bulb are given from a ventral view. The spines on the male palp are not illustrated as they are considered of minor taxonomic significance. Leg measurements were taken from the dorsal side. All measurements are given in millimetres. The color description is based on ethanol preserved specimens. The nomenclature of morphological structures follows Jocqué & Dippenaar-Schoeman (2006) and Bolzern et al. (2008). The following abbreviations are used: AER = anterior eye row; ALE = anterior lateral eyes; AME = anterior median eyes; ALS = anterior lateral spinnerets; PMS = posterior median spinnerets; PER = posterior eye row; PLA = posterior lateral eyes; PME = posterior median eyes; PLS = posterior lateral spinnerets; RTA = retrolateral tibial apophysis (used here as the sum of all structures in retrolateral position of the tibia of the male pedipalp).

For the DNA extraction, 1 leg from freshly sampled specimens was removed and stored in pure ethanol. For removing the ethanol, the legs were then placed into a vacuum centrifuge for 30 min by 40 °C. Then the legs were processed according the protocol for the purification of total DNA from animal tissues (Spin-Column Protocol) of the “DNeasy Blood & Tissue Kit” (Qiagen). The DNA concentration of the resulting solution was measured by using a NanoDrop equipment. A 471-bp sequence of the cytochrome oxidase 1 gene (CO1) was amplified using primers C1-J-1718 and C1-N-2191 (Simon et al., 1994). For the PCR illustra
PuReTaq Ready-To-Go PCR Beads (GE Healthcare) were used. The following thermocycling conditions were applied: initial denaturation step of 93 °C for 3 min, followed by 35 cycles of 95 °C for 30 sec, an annealing temperature of 55 °C for 30 sec, and an extension temperature of 72 °C for 45 sec. This was then followed by an additional extension of 72 °C for 7 min. To eliminate incorporated dNTP and primers, the PCR products were treated with ExoSAP-IT® (GE-Healthcare). Then, the fragments were sequenced in both directions using ABI PRISM® BigDye™ Terminator Cycle Sequencing Ready Reaction Kit (Applied Biosystems). Sequences were then analysed using an ABI Prism 3100 Genetic Analyzer and edited with the software Sequence Navigator (Applied Biosystems).

The complementary sequences (5’ and 3’ directions) of each specimen were aligned using ClustalW2 (Larkin et al., 2007) and checked manually. All processed sequences and additional sequences from the GenBank (Table 5) were aligned using ClustalW2. The aligned sequences were then translated into amino acids to check for any inappropriately placed stop codons and the triplet positions.

Bayesian analysis was applied using MrBayes 3.1.2 (Huelsenbeck & Ronquist, 2001; Ronquist & Huelsenbeck, 2003). For the selection of best-fit models of nucleotide substitution for the present alignment the software jModelTest 0.1.1 (Psoda, 2008; Guindon & Gascuel, 2003) was used. Since the underlying sequences are coding for a protein, the analyses were performed with respect to the codon-position, allowing MrBayes to use different substitution models with independent rates for each partition (one partition for each codon position). The statistically chosen models under the Akaike information criterion with correction for small samples (AICc) were: K80+G (1st), JC+I (2nd) and HKY+G (3rd). Two parallel and independent analyses, each with four chains (three heated, one cold MCMC chains) were run for 5 million generations, sampling trees every 1000 generations. At the end of the analysis, the first quarter of the collected trees was discarded as “burnin”. Of the remaining trees, a consensus tree was calculated (50% majority rule).

Maximum parsimony analysis was performed using PAUP* (Swofford, 2003). Transversions were weighted twice transitions. Additionally, the 1st, 2nd and 3rd positions of the codons were weighted 3:6:1, an approximation of the inversed observed relative frequency of substitution. Full heuristic search was performed with random addition of sequences (1000 replications). The branch-swapping algorithm tree-bisection-reconnection (TBR) on best trees was applied to escape local optima. Bootstrap support values were calculated in PAUP* based on 1000 replicate searches each with 1000 replications of random taxon addition. The analyses were carried out on the freely available Bioportal (www.bioportal.uio.no).

Trees were drawn using FigTree v1.2.2 (Freeware from Andrew Rambaut, Institute of Evolutionary Biology, University of Edinburgh; available at: http://tree.bio.ed.ac.uk/software/figtree/) and edited in Adobe Illustrator.

RESULTS

PHYLOGENY

The Bayesian analysis reached convergence after 2'936'000 generations and after that the deviation of split frequencies remained below 0.01. The tree presented in Fig. 57 was calculated using the last 7'502 trees (5’001 were sampled from each run and the first 25% discarded as “burnin”). The tree was rooted with the Amaurobius spp. clade. The topology and the posterior probability values suggest that Aterigena n. gen. is the sister clade of Malthonica+Histopona which together form the clade of the two monophyletic Tegenaria–clades. In this tree: 1) the only possibility for a monophyletic Agelenidae is to include the subfamily Coelotinae, 2) the relationships between most genera and the tribes Tegenariini,
Agelenini, Agelenopsini are not completely resolved, and 3) the genera Agelena and Textrix are not monophyletic.

The Maximum Parsimony Analysis resulted in two shortest trees. In the strict consensus tree, most clades at genus rank were identical to those from the Bayesian analysis (indicated in Fig. 57 with a +). However, the relationship between the genera and/or the subgenera could not be resolved and shows a polytomy (Fig. 57). The bootstrap values, are generally very low. Relative to the support of the other genera, that of the genus Aterigena n. gen. is with 83% comparatively high.

TAXONOMY

Family Agelenidae C. L. Koch 1837
Tribe Tegenariini Lehtinen, 1967

The tribe Tegenariini comprises the genera Azerithonica Guseinov et al., 2005, Hadites, Histopona and the taxonomically problematic Malthonica-Tegenaria complex, including Pseudotegenaria. Guseinov et al. (2005) transferred several species from Tegenaria to Malthonica using characters of doubtful phylogenetic significance (Jäger, 2006, see also Bolzern et al., 2008; Bolzern et al., 2009). These transfers are not followed here, instead we adopt the narrow definition of Malthonica by Barrientos & Cardoso (2007) which includes only the type species, Malthonica lusitanica Simon, 1898, along with M. oceanica Barrientos & Cardoso, 2007.

Pseudotegenaria was established by Caporiacco (1934). His description is not diagnostic. Pseudotegenaria allegedly differs from Tegenaria in the anterior eye row which is strongly, and the posterior row which is weakly recurved (Caporiacco, 1934: p. 140). This character is variable in Tegenaria sensu lato. In the original description, the drawing of the vulva of the type species, Pseudotegenaria parva Caporiacco, 1934 (only female known) is uninformative. We follow here, therefore, Brignoli (1971a: pp. 60–61) rather than Lehtinen (1967) who added 4 species to Pseudotegenaria. Apart from P. parva, for which no material was available for examination and whose original description is not diagnostic, all species currently included in Pseudotegenaria show a striking morphological similarity to Tegenaria annulata Kulczyński, 1913 and T. tridentina L. Koch, 1872 (Brignoli, 1971a; Kratochvíl & Miller, 1940). Here we transfer these species from Pseudotegenaria back to Tegenaria: T. animata Kratochvíl & Miller, 1940, stat. rev., T. bayeri Kratochvíl, 1934, stat. rev., T. bosnica Kratochvíl & Miller, 1940, stat. rev. and T. decolorata Kratochvíl & Miller, 1940, stat. rev.

Based on the examination of extensive material a monophyletic group of species, described here as new genus, is recognised within Tegenaria s.l. which is supported by morphological and molecular characters (Fig. 57, Table 4; see also following key). The remainder of Tegenaria species studied (mostly European species) form two monophyletic clades (Fig. 57, Tegenaria Clade 1 and Tegenaria Clade 2). Apart from Azerithonica, for which no specimens were available for examination, the genera of Tegenariini, can be recognized by following key:

KEY TO THE GENERA OF TEGENARIINI

1 Trochanters III and IV notched ................................................................. 2
   - All trochanters straight or only slightly curved ........................................ 5
2 Dorsal and lateral spines present on patellae III and IV, 1–2 ventral spines present on tarsus IV ................................................................. Aterigena n. gen.
   - Only dorsal spines present on all patellae, tarsus IV ventrally lacking spine ....... 3
3 Colulus reduced, only hairs present, patellar apophysis on male palps absent, median apophysis present ................................................................. 4
- Colulus developed as two separated plates, patellar apophysis on male palps sometimes present, median apophysis absent ........................................ Histopona
4 Eyes fully developed, tarsi with less than 7 dorsal trichobothria............... Malthonica
- Eyes very small or lacking, tarsi with 7 or more dorsal trichobothria ........ Hadites
5 Conductor lamelliform, terminal end often bifid, distal apex of conductor longer than its width, median apophysis strongly protruding, RTA mostly with three branches, vulva forming only convoluted duct or with more or less evenly sclerotized, globular receptacula............................ Tegenaria-Clade 1
- Conductor massive, terminal end of conductor simple or ending in several points, distal apex of conductor smaller than its width (exceptions possible), RTA mostly with two branches, vulva irregularly sclerotized enclosing convoluted ducts, and/or with diverticulae attached to the copulatory duct.......................... Tegenaria-Clade 2

Genus Aterigena new genus

Type species.— Tegenaria ligurica Simon, 1916, by present designation.

Diagnosis.— Agelenid spiders bearing the combination of following characters: presence of notched trochanter on legs III and IV (present also in Hadites, Histopona and Malthonica but absent in other European agelenids) (Fig. 3); presence of lateral spines on patellae I–IV (absent in other Tegenariini but present in Agelenini and Textricini) (Fig. 1); presence of ventral spines on tarsus IV (absent in other Tegenariini but present in several genera of other tribes); both eye rows straight in dorsal view (anterior row can be slightly recurved) and straight or slightly procurred in frontal view (Figs. 5, 7, 9, 11, 48); most proximal teeth at the retromargin of chelicerae biggest (Fig. 2); colulus distinctly trapezoidal or rectangular (present also in Tegenaria sensu lato, other genera with reduced or divided colulus) (Fig. 4); male palp with lamelliform and laterally folded conductor, terminal end simply pointed (Figs. 13–20); median apophysis with membranous base and distally with thin and curved plate-like sclerite; vulva consisting of a straight and short copulatory duct, smoothly sclerotized globular receptacula and convoluted fertilization ducts (Figs. 30, 32, 34, 36, 38–39).

Etymology.— Anagram of Tegenaria, gender feminine.

Description.— Body size medium to large (carapace length between 3 and 7 mm). Margin of carapace narrowly and continuously darkened; two symmetric longitudinal dark bands dorsally on carapace present (sometimes intensified by white and black plumose hairs). Sternum longer than wide with an indistinct pattern of bright median band; plumose hairs present on carapace, legs and opisthosoma. Four promarginal teeth, second from proximal is biggest; 4–6 retromarginal teeth, most proximal tooth biggest. Trochanter III and IV notched. Colulus developed as rectangular plate, distal margin more or less straight. PLS longer than all others with distal segment as long as or slightly longer than basal segment. In dorsal view both eye rows straight or slightly recurved; in frontal view PER procurred and AER straight or slightly procurred. Smallest eyes are AME or PME. Male palp without femoral and patellar apophyses; RTA with big dorsal branch, distally more or less obtuse and strongly sclerotized; lateral branch expressed as sclerotized, elongate process; ventrally with weakly developed rounded ridge. Embolus filiform, getting thinner to apex. Conductor elongate distally (parallel to cymbium) and folded along the whole length laterally, terminal end (proximal) forming sclerotized peak; median apophysis consisting of membranous base and thin and broad sclerotized distal plate, base as broad as or slightly smaller than length of median apophysis. Other tegular apophyses absent. Epigynal plate strongly sclerotised with distinct atrium; receptacula visible through plate; copulatory duct short and straight; one pair of smooth, sclerotized receptacula, medium to large in size, oval to globular; fertilization
ducts long and mostly strongly convoluted. Constructing horizontal funnel web in which they live (characteristic for family).

**Distribution.**— Disjunct in the Palearctic with four species in the Mediterranean Basin and one species in China.

**Phylogenetic relationships.**— The eye arrangement, the pattern of cheliceral teeth, the notched trochanter on legs III–IV and the distinct trapezoidal colulus place *Aterigena* n. gen. in the tribe Tegenarini. However, *Aterigena* n. gen. bears lateral spines on patellae III and IV and ventral tarsal spines, which are absent in other Tegenarini but usually present in the other tribes (Tab. 2). This shows that the last two characters are not diagnostic for agelenid tribes. In removing *Aterigena* n. gen. from *Tegenaria* s.l. the latter becomes morphologically more homogeneous. In addition to the morphological characters the monophyly of *Aterigena* n. gen. is also supported by molecular characters (Fig. 57). Three apomorphic amino acid substitutions are present in a very short sequence section of the mitochondrial CO1 gene (Tab. 4).

**Comments.**— *Aterigena* n. gen. comprises five species (Tab. 1), four transferred from *Tegenaria* and one described here as new.

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**KEY TO THE SPECIES OF *ATERIGENA***

1 Carapace longer than 5.2, cymbium longer than 2.0, dorsal branch of RTA more or less conical (in retrolateral view), embolus longer than twice cymbium width, epigynal plate wider than 0.8; atrium of epigynum rectangular or trapezoidal; if transversally divided, posterior part much shorter than anterior part ................................................................. 2

- Carapace smaller than 5.2, cymbium shorter than 2.0 mm, tip of dorsal branch of RTA skewed ventrad (in retrolateral view), embolus shorter than twice cymbium width, epigynal plate smaller than 0.8; atrium of the epigynum oval; transversally subdivided into subequal parts ........................................................................................................... 4

2 Lateral branch of RTA relatively long, distal apex of conductor only weakly bent, ratio bulb length to cymbium length smaller than 0.7, atrium of the epigynum transversally divided, forming membranous oval part anteriorly, and sclerotized semicircular bar posteriorly.................................................................................................................. *aliquis*

- Combination of characters different ................................................................................ 3

3 Ratio of palpal tibia length to cymbium length smaller than 0.43, dorsal branch of RTA originating approximately in the middle of tibia, copulatory openings well visible, lateral margins of epigynal atrium converging posteriad, each vertex forming strongly elongated process .................................................................................................................. *ligurica*

- Ratio of palpal tibia length to cymbium length larger than 0.43, dorsal branch of RTA originating in distal half of tibia, lateral margin of epigynal atrium diverging posteriad, each vertex froming at most blunt tubercle ........................................................................................................... *aculeata*

4 Ratio bulb length (laterally from cymbium base to conductor tip) to cymbium length smaller than 0.7; ratio tibia length to cymbium length smaller than 0.6; distal apex of conductor longer than wide; transverse separation of epigynal atrium more or less straight; receptacula globular, round; fertilization ducts strongly convoluted .................................................................................................................. *soriculata*

- Ratio bulb length to cymbium length larger than 0.7; ratio tibia length to cymbium length larger 0.6; distal apex of conductor as long as or shorter than wide; transverse separation of epigynal atrium in the middle slightly curved posteriad; receptacula oval; fertilization ducts weakly convoluted .................................................................................................................. *aspromontensis* n. sp.

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*Aterigena ligurica* (Simon, 1916) new combination

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Figs. 5–6, 13–14, 23–24, 29–30, 40–41


**Type material.**— FRANCE: Alpes-Maritimes: Menton, le Moulinet: lectotype £, paralecotype $, 1915, Dalmas (MNHN), present designation.

**Other material examined.**— FRANCE: _Alpes-Maritimes_: 1 £, 4 £, April 1905, E. Simon (MNHN, Nr. 614); Lantosque, NE exp. slope close to village (43.97416 N / 7.31104 E, 484 m): 1 £, 3 September 2008, Schönhofer (NMB); dry valley between Villars-sur-Var and tunnel of Mescia (43.93119 N / 7.13273 E, 231 m): 3 £, 1 juvenile, 2 September 2008, Schönhofer (NMB); Vallon de Cervagne at Roquebillière (44.01562 N / 7.29831 E, 685 m): 1 £, 2 September 2008, Schönhofer (NMB); Mercantour National Park, Paganin Gorge (44.02833 N / 7.57712 E, 500 m): 1 £, 4 September 2008, Schönhofer (NMB); Les Mèces, Mercantour National Park: 2 £, 2 £, 16 July 1986, Maurer & Thaler (NMB, MHNG). — ITALY: _Liguria_: Savona, Bormida, km 17 on provincial road 15: 1 £, 11 October 2001, Pantini (MSNB); Savona, Calizzano, Colla Melogno (920 m): 1 £, 1 juv., 17 July 2001, Mus. Bergamo (MSN); _Piemonte_: Cuneo, Val Pesio, Pian delle Gorre: 1 £, 15 August 1983, Giachino (MSNB); Cuneo, Garessio: 1 £, 2 £, 3 October 2004, Isaia & Beikes (MSNB); Cuneo, National Park Alpi Marittime, Bousset-Valley, Ponte di Porcera (44.20097 N / 7.44126 E, 1117 m): 1 £, 11 September 2008, Schönhofer (NMB); Cuneo, Nava (44.1 N / 7.87 E, 890 m): 1 £, 8 September 2008, Schönhofer (NMB); _Marche_: Ascoli Piceno, Montemonaco, Isola S. Biagio (990 m): 1 £, 1 September 2004, Rismondo & Fabbri (MSNB); _Abruzzo_: Teramo, Isola del Gran Sasso d'Italia, Gran Sasso, towards lake Pagliara (900 m): 5 £, 2 £, 3 October 2002, 1 £, 28 August 2003, 3 £, 7 October 2003, Marotta & Carissimi (MSNB); Teramo, Monti della Laga, Valle Castellana, 1 km next to Ceraso (750 m): 1 £, 7 August 2003, Marotta (MSNB); Teramo, Monti della Laga, towards valley Castellana, 2 km next to Ceraso (655 m): 1 £, 1 £, 28 October 2001, Marotta (MSNB); Teramo, Tossicia, Tozzanella, towards Colle Petato, Gran Sasso (1050 m): 1 £, 18 November 2001, 1 £, 27 August 2002, 5 £, 2 £, 3 October 2002, 1 £, 26 October 2002, Marotta, Matin, Di Marco & Carissimi (MSNB); _Basilicata_: Potenza, Viggianello, Torno (650 m): 2 £, June 1989, Valle (MSNB); Potenza, San Severino Lucano, close to Santuario (1500 m): 1 £, June-August 1989, Valle (MSNB); Potenza, San Severino Lucano, below Santuario Madonna del Pollino: 1 £, 27 August 2008, Valle (MSNB); _Campania_: Avellino, Pietrastornina, M. Parteni, Acqua Vene (1200 m): 3 £, 12 August 1981, Boffa, Giachino & Verna (MSNB); _Calabria_: Cosenza, SE of Paola (39.33306 N / 16.06083 E, 564 m): 1 £, 29 May 2007, Bolzern & Mühlethaler (NMB, was juvenile till end of August). — SPAIN: 1 £, no further information (MNHN, Nr. 12602). — EGYPT: Alexandria: 1 £, E. Simon (sub _T. domestica_) (MNHN, Nr. 1976, 5960).

**Description.**— _Measurements and ratios of male (n=1):_ carapace 6.82 long, 4.52 wide. Head region 2.65 wide; PER 1.4 wide. Chelicerae 2.94 long, 1.31 wide. Labium as long as wide. Gnathocoxa ratio width to length: 0.6. Sternum 3.11 long, 2.53 wide. Opisthosoma 6.37 long, 3.8 wide. Ratio bulb length (laterally from cymbium base to conductor tip) to cymbium length: 0.72. Leg measurements:

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_Measurements of females (n=3):_ carapace 5.63–6.58 long, 3.77–4.49 wide. Head region 2.43–2.9 wide; PER 1.25–1.44 wide. Chelicerae 2.28–3.04 long, 1.17–1.54 wide. Labium as long as wide. Gnathocoxa ratio width to length: 0.6–0.7. Sternum 2.65–3.40 long, 2.20–2.79
wide. Opisthosoma 6.47–9.43 long, 4.10–6.62 wide. Epigynal plate 1.12 long, 1.3 wide; atrium 0.27–0.29 long, 0.37–0.41 wide. Receptacula 0.50–0.62 wide. Leg measurements:

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**Eyes:** in dorsal view both eyerows straight or slightly recurved; in frontal view PER procurved and AER straight or slightly procurved (Fig. 5). Diameters: PME: 0.21–0.23; PLE: 0.20–0.24; AME: 0.18–0.21; ALE: 0.21–0.24. Distances: PME–PME less or equal diameter of PME; PME–AME less than diameter of PME; PME–PLE about diameter of PME; PME–ALE about diameter of PME or slightly more; AME–AME 0.5–1.0 times diameter of AME; AME–ALE about half diameter of AME. Clypeus height (measured under AME) less than or equal to 3 times diameter of AME; (measured under ALE) about twice diameter of ALE or slightly more.

**Coloration:** carapace with narrow, continuous dark margin; two longitudinal symmetrical darkened bands present on carapace, interrupted and sometimes reduced to triangular dots. Sternum with brighter median band, sometimes very weak. Opisthosoma with red-brown median band, anterolaterally with two bright bands, continuing posteriorly as dots (Fig. 6). Legs weakly annulated best expressed ventrally on femora.

**Additional somatic characters:** distal margin of labium weakly concave. Plumose hairs present on carapace, legs and opisthosoma. Four promarginal teeth, the second one from proximal biggest; 4–5 retromarginal teeth, most proximal tooth biggest. Trochanter III and IV notched. Tarsi I and II with 7–8 dorsal trichobothria and 8–9 on tarsi III and IV. Colulus forming rectangular plate, distal margin straight, only partly colored. PLS longer than all others with distal segment as long as or slightly longer than basal segment, both darkened. PMS as long as ALS. ALS slightly darkened. The formulae of leg spination are listed in Table 3.

**Male palp (Figs. 13–14, 23–24):** RTA with a big dorsal branch, distally pointed and strongly sclerotized; lateral branch forming sclerotized finger-shaped appendix; ventrally bearing a weakly developed rounded ridge. Embolus originating (free apex) at 7 o'clock position; length (only the free apex) slightly more than twice cymbium width; distal tip between 3 and 4 o'clock position. Conductor lamella-like, distally elongated (parallel to cymbium), arcuated and laterally folded along the whole length; as long as alveolus, distally reaching beyond alveolus margin; terminal end forming sclerotized peak, pointing ventrally (in lateral view). Connection of conductor and tegulum membranous. Median apophysis consisting of membranous base and thin and broad sclerotized distal plate, pocket-like; originating at 5 o'clock position; protruding ventrally; basis as wide as median apophysis length. Tegular apophysis absent.

**Epigynum and vulva (Figs. 29–30, 40–41):** epigynal plate strongly sclerotized, trapezoidal, with distinct atrium; atrium posteriorly reaching epigastral furrow. Ground plate of atrium strongly sclerotized, anterior distinctly connected with epigynal plate, undivided reversed trapezoidal shaped. Lateral margins of atrium converging posteriad, strongly elongated vertices present. Receptacula visible through plate. Copulatory openings well-visible as holes, located at anterior border of atrium. Copulatory duct short and straight. Receptacula big, oval to globular, almost touching each other; fertilization ducts long and strongly convoluted.

**Comparison to other species.**— The description of the male of *A. aculeata* provided by Wang (1992: 287, figs 1–3) suggests that it is closely related to *A. ligurica*. No male material of *A. aculeata* was available for study and our conclusions are based on the literature only.
Based on the original description (Wang, 1992) the female holotype and the male allotype of *A. aculeata* are similar in size to *A. ligurica*. In contrast, the relative height of the clypeus is larger in *A. ligurica* than in *A. aculeata* (Figs. 5, 7). The male of *A. ligurica* apparently has a relatively smaller ratio of palpal tibia length to cymbium length than *A. aculeata* (Figs. 13–14, 21–22). Furthermore, the RTA originates approximately in the middle on the tibia in *A. ligurica* but more distally in *A. aculeata*. From the other *Aterigena* n. gen. species the male of *A. ligurica* can be separated by the conical shape of the dorsal RTA branch (distally skewed ventrad in *A. soriculata* and *A. aspromontensis* n. sp.), the relatively short lateral branch of the RTA (in relation to the dorsal branch, this lateral branch is longer in *A. aliquoi*) and the size of the cymbium (much larger than in *A. soriculata* and *A. aspromontensis* n. sp.) (Figs. 13–14, 23–25). The female of *A. ligurica* can be separated from all other species of the genus by the presence of the well-visible copulatory openings anteriorly on the epigynal atrium (absent in *A. aliquoi*, *A. soriculata* and *A. aspromontensis* n. sp.), the undivided and anteriorly connected ground plate of the atrium with diverging lateral margins (converging in *A. aculeata*) and the strongly developed and elongated vertices (tubercular in *A. aculeata*, Figs. 29, 40–41).

Additionally, the vulva is distinct in shape and larger than in all other species of the genus (Fig. 30).

**Natural history.**— Specimens of *Aterigena ligurica* were found in different types of Mediterranean forests with rocky or stony ground layer. There the spiders live in funnel webs, characteristic for the whole family Agelenidae. The spiders, collected by A. Bolzern, had been caught on and under stones and on the bark of pine trees. Maurer & Thaler (1988) caught many specimens in pitfall traps. The available data are insufficient for drawing any conclusions on the phenology of *A. ligurica*. The specimens listed here have been caught from April to October.

**Distribution.**— *Aterigena ligurica* was previously known only from the Maritime Alps and questionably from southern Italy (Brignoli, 1971b; Dresco & Célérier, 1976; Maurer & Thaler, 1988; Pesarini, 1994). The revision of the MSNB collection yielded many additional stations from Italy (Fig. 56). Two samples from the MNHN containing a single female each are from outside this range: they are labeled “Hispania” and “Alexandria”, respectively. The latter specimens may have been accidentally introduced; the data for the former are too vague for any interpretation. Additional field work is required to solve this puzzle.

**Comment.**— In accordance to article 74.1 of the Code (ICZN, 1999) the female syntype is designated here as lectotype for stabilizing the nomenclature. As the morphology of the epigyne is a good distinctive character for separating the species from its closest relatives, the female has been chosen as lectotype. The male syntype becomes paralectotype.

**Aterigena aculeata** (Wang, 1992) new combination

Figs. 7–8, 21–22, 31–32, 42–43


**Description.**— As *A. ligurica* but differing in the following characters.

**Measurements of females** (n=3): carapace 5.50–6.10 long, 3.70–4.25 wide. Head region 2.0 wide; PER 1.15 wide. Chelicerae 2.40–2.75 long, 1.00–1.30 wide. Gnathocoxa ratio width to length: 0.6. Sternum 2.60–3.10 long, 2.15–2.35 wide. Opisthosoma length: 7.25–7.75 long, 4.00–4.90 wide. Epigynal plate 0.7–0.9 long, 0.9–1.0 wide; atrium 0.22 long, 0.33 wide. Receptacula 0.38 wide. Leg measurements:

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Eyes: in dorsal view both eye rows straight (frontal view: Fig. 7). Diameters: PME: 0.26; PLE: 0.28; AME: 0.25; ALE: 0.29. Distances: PME–PME equal diameter of PME; PME–AME less than or equal diameter of PME; PME–PLE about diameter of PME or slightly more. Clypeus height (measured under AME) less than or equal to twice diameter of AME; (measured under ALE) about 1.5 times diameter of ALE or less.

Coloration: two longitudinal symmetrical darkened bands present on carapace, interrupted and sometimes reduced to only triangular dots, intensified by white and black plumose hairs. Anterolateral bright bands on opithosoma smaller than in *A. ligurica* (Fig. 8).

Additional somatic characters: chelicerae with five to six retromarginal teeth, all equal or most proximal tooth biggest. Tarsi I–III with 7–8 dorsal trichobothria, tarsus IV with 8. The formulae of leg spination are listed in Table 3.

Male palp (Figs. 21–22): no males were available for examination; for description see Wang (1992: 286–290, figs. 1–3).

Epigynum and vulva (Figs. 31–32, 42–43): ground plate of atrium strongly sclerotized, undivided and trapezoidal. Lateral margin of atrium without elongate vertices. Copulatory openings indistinctly visible as gaps, located at anterior border of atrium. Receptacula big, globular.

Comparison to other species.— Based on the original description *A. aculeata* is probably closest related to *A. ligurica* but males are required to confirm this. The characters separating males of *A. aculeata* and *A. ligurica* are detailed under the latter. Female *A. aculeata* can be separated from *A. ligurica* by the much smaller and less visible copulatory opening (very distinct in *A. ligurica*), the trapezoidal shape of the atrium (rectangular in *A. ligurica*), the outline of the lateral margin of the atrium (vertices not elongated in *A. aculeata* but in *A. ligurica*) (Fig. 31), the dimensions of the vulva and the shape of the fertilization ducts (Fig. 32).

Natural history.— No information is available on the habitat of *A. aculeata*. All known specimens were collected in summer (August).

Distribution.— Known from southern China (provinces Hunan, Guangxi and Guizhou) (Wang, 1992).

Comment.— The type material of *A. aculeata* is probably lost (Xiang Xu, Hunan Normal University, China, pers. comm.) and no males were available for this study.

*Aterigena aliquoi* (Brignoli, 1971) new combination

Figs. 9–10, 15–16, 25–26, 33–34, 44–45


*Malthonica aliquoi* (Brignoli); Guseinov et al., 2005: 164; Platnick, 2009.


The males collected in May 2007 were juvenile and reached maturity in July 2007 and July 2008.
Description.— As *A. ligurica* but differing in the following characters.

**Measurements of male:** carapace 6.78 long, 5.0 wide. Head region 2.62 wide; PER 1.58 wide. Chelicerae 2.82 long, 1.27 wide. Labium as long as wide or slightly longer than wide. Sternum 3.27 long, 2.61 wide. Opisthosoma 5.82 long, 3.54 wide. Ratio bulb length (laterally from cymbium base to conductor tip) to cymbium length: 0.66. Leg measurements:

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**Measurements of female:** carapace 5.3 long, 3.65 wide. Head region 2.25 wide; PER 1.30 wide. Chelicerae 2.24 long, 1.10 wide. Labium as long as wide or somewhat longer than wide. Gnathocoxa ratio width to length: 0.6. Sternum 2.61 long, 2.12 wide. Opisthosoma 6.0 long, 3.6 wide. Epigynal plate 0.84 long, 1.05 wide; atrium 0.26 long, 0.22 wide. Receptacula 0.33 wide. Leg measurements:

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Eyes: in frontal view PER procurred and AER slightly procurred (Fig. 9). Diameters: PME: 0.19–0.23; PLE: 0.21–0.31; AME: 0.19–0.29; ALE: 0.29. Distances: PME–PME equal to diameter of PME; PME–PLE more than diameter of PME; PME–ALE about 1.5 diameter of PME. Clypeus height (measured under AME) less than 2.5 times diameter of AME; (measured under ALE) about 1.5 times diameter of ALE.

**Coloration:** two longitudinal symmetric darkened bands on carapace, interrupted and sometimes reduced to triangular dots, intensified by white and black plumose hairs. Opisthosoma with red-brown median band, slightly paler than in *A. ligurica* (Fig. 10).

**Additional somatic characters:** distal segment of PLS slightly longer than basal segment, both very weakly darkened. The formulae of leg spination are listed in Table 3.

**Male palp** (Figs. 15–16, 25–26): embolus originating (free apex) between 7 and 8 o’clock position. Conductor as long as the alveolus. Median apophysis originating between 4 and 5 o’clock position.

**Epigynum and vulva** (Figs. 33–34, 44–45): epigynal plate sclerotized with a distinct atrium, reversed trapezoid in shape; anterior margin of atrium continuous change from sclerotized epigynal plate to membranous white skin. Ground plate of the atrium transversally divided: anterior part membranous and oval; posterior part forming strongly sclerotized semicircular bar. Receptacula visible through plate. Copulatory openings barely visible as gaps, located medial of atrium. Receptacula big, globular, touching each other; fertilization ducts very long and strongly convoluted.

**Comparison to other species.**— The male of *A. aliquoi* can be separated from *A. ligurica* by the relation of bulb length to cymbium length (cymbium tip from alveolus to distal end is relatively shorter in *A. ligurica*), the relatively straight distal apex of conductor (distinctly bent in *A. ligurica*), the more slender dorsal branch of the RTA (broader in *A. ligurica*) and the slightly longer lateral branch of RTA (Figs. 15–16, 25–26). The female can easily be separated from all other species by the divided ground plate of the atrium in a pale larger oval anterior part and a semicircular posterior bar (not divided in *A. ligurica* and *A. aculeata*; anterior part semicircular in *A. soriculata* and *A. aspromontensis* n. sp.) and the shape of the fertilization ducts (Fig. 33–34, 44–45).
Natural history.— The specimens collected by A. Bolzern were caught out of their typical funnel webs attached to stones in a beech forest and a mixed deciduous forest. Adult specimens were collected during summertime (end of May until August).

Distribution.— Only known from Sicily, Italy (Fig. 56).

Remarks.— In the original description, Brignoli (1971a) placed this species close to *Tegenaria atrica* C. L. Koch, 1843 and *Tegenaria nervosa* Simon, 1870. Later, Brignoli (1977) mentioned that this species, or at least the epigynum, shows morphological similarities to *Aterigena soriculata* (Simon, 1937) (sub *Tegenaria soriculata*). The holotype is much smaller than the measured male caught in 2007.

*Aterigena soriculata* (Simon, 1873) new combination

Figs. 11–12, 17–18, 27–28, 35–36, 46–47

*Tegenaria soriculata* Simon, 1873: 144–146, pl. 1, fig. 20, male and female.


Type material.— In the collection of the MNHN several specimens could be found in the jar labeled “1967” containing several unlabeled vials. According to Dresco & Célérier (1979) these represent Simon’s syntypes. The samples contain 1 $ and several females with dissected and removed epigynes which were not traceable. Sub *Tegenaria cyrnea* Brignoli: FRANCE: Corsica: Poggiolo: Holotype $, summer 1922 (MHNG); 1 $, 2 £, paratypes, same locality and collecting data as holotype (MHNG).

Other material.— FRANCE: *Corsica*: Forêt de Valdo Niello: 5 £, 7 juv., 22 May 1974 (NHMW); Haute-Corse, Corte, Gorge de la Restonica (42.3 N / 9.1333 E): 1 £, 1 June 1999, van Keer (KK, Nr. 1917); Col de Vizzavona: 1 £, 2 September 1953, Kahman (SMF, Nr. 8937/1-135); Mt. S. Pietro at Morosaglia: 1 £, 22 September 1953, Kahman (SMF, Nr. 8938/1-135); Mt. d’Oro: 2 £, 3 September 1953, Kahman (SMF, Nr. 8936/2-135); Vizzavona: 1 $, 1 £, 29 April 1928, Wiehle (SMF, Nr. 20668/2-135).

Description.— As *A. ligurica* but differing in the following characters.

Measurements of male: carapace 4.47 long, 3.23 wide. Head region 1.91 wide; PER 1.0 wide. Chelicerae 2.06 long, 0.91 wide. Labium wider than long. Sternum 2.24 long, 1.86 wide. Opisthosoma 3.42 long, 1.88 wide. Ratio bulb length (laterally from cymbium base to conductor tip) to cymbium length: 0.64. Leg measurements:

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Measurements of females (n=2): carapace 4.14–5.07 long, 2.93–3.48 wide. Head region 1.56–2.16 wide; PER 0.93–1.0 wide. Chelicerae 2.02–2.22 long, 0.97–1.05 wide. Gnathocoxa ratio width to length: 0.6. Sternum 2.29–2.57 long, 1.81–2.02 wide. Opisthosoma 5.99 long, 3.71 wide. Epigynal plate 0.36–0.39 long, 0.56–0.59 wide; atrium 0.16–0.18 long, 0.23–0.27 wide. Receptacula 0.17 wide. Leg measurements:

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Eyes (Fig. 11): diameters: PME: 0.17–0.18; PLE: 0.18–0.21; AME: 0.13–0.18; ALE: 0.19–0.21. Distances: PME–PME less than diameter of PME; PME–AME less than or equal to diameter of PME; PME–PLE less than or equal to diameter of PME; PME–ALE less than 1.5 diameter of PME; AME–AME about 0.5 diameter of AME. Clypeus height (measured under AME) less than 2.5 times diameter of AME; (measured under ALE) about 1.5 times diameter of ALE.

Coloration: two longitudinal symmetrical dark bands present on carapace, interrupted, sometimes reduced to triangular dots, intensified by white and black plumose hairs. Opisthosoma dark green-brownish, at the cardiac mark yellowish with dots on the sides, continuing in broad chevrons (~5) posteriorly (Fig. 12). Legs not annulated.

Additional somatic characters: tarsus I with 7–8 dorsal trichobothria, tarsi II–IV with 7. Colulus dark, sometimes only partially. Both segments of PLS very weakly darkened. PMS slightly smaller than ALS. The formulae of leg spination are listed in Table 3.

Male palp (Figs. 17–18, 27–28): RTA with big dorsal branch, distally truncated and strongly sclerotized; lateral branch developed as a weakly sclerotized point. Embolus originating (free apex) between 7 and 8 o’clock position; length (only free apex) less than 1.75 times cymbium width; distal tip between 2 and 3 o’clock position. Median apophysis originating between 4 and 5 o’clock position.

Epigynum and vulva (Figs. 35–36, 46–47): epigynal plate sclerotized with distinct atrium, transversely oval in shape; anterior margin of atrium sclerotized at epigynal plate gradually becoming membranous. Ground plate of atrium transversally subdivided by straight groove: anterior part membranous or weakly sclerotized, semicircular in shape; posterior part sclerotized, forming semicircular bar. Copulatory openings barely visible, located medially of atrium. Receptaculata small, globular.

Comparison to other species.— A. soriculata differs from the other congeners in the smaller dimensions of carapace and cymbium, in the ventral margin of dorsal branch of RTA which is slightly bent ventrally (straight in A. ligurica, A. aculeata and A. aliquoi), in the distal plate of median apophysis (simpler and relatively narrower than in A. ligurica and A. aliquoi), in the embolus which is shorter than twice cymbium width (more than twice cymbium width in A. ligurica, A. aculeata and A. aliquoi), in the relatively short male palpal tibia (much longer in A. aspromontensis n. sp.) (Figs. 17–18, 27–28), in the transversally divided atrium (by straight groove, but curved in A. aspromontensis n. sp.) with semicircular anterior part and relatively small and globular receptaculata (relatively large in A. ligurica, A. aculeata and A. aliquoi, also small but oval in A. aspromontensis n. sp.) (Figs. 35–36, 46–47).

Natural history.— Adult specimens were collected from May to October. Little information is available on habitat requirements. One specimen was collected under stones in a pine forest.

Distribution (Fig. 56).— Corsica (France) (Dresco & Célérier, 1979; Simon, 1873). The species was also reported from Sardinia (Italy) (Garneri, 1902; Kraus, 1955). The record by Garneri (1902: 72) was unavailable for study. Material by Kraus (1955: 379, SMF-Nr. 9110) concerns T. parietina (cf. Bolzern et al., 2008).

Aterigena aspromontensis new species

Type material.— ITALY: Calabria: Reggio Calabria, Santo Stefano d'Aspromonte, above Gambarie (1600 m): holotype $, 5 £ paratypes, 18 August 1978, Bianchi (MSNB).

**Etymology.**— The new species is named after the mountain massif Aspromonte in the province of Reggio Calabria where the known specimens have been found.

**Description.**— Measurements of male holotype: carapace 3.27 long, 2.27 wide. Head region 1.45 wide; PER 0.75 wide. Chelicerae 1.69 long, 0.71 wide. Labium as wide as long. Gnathocoxa ratio width to length: 0.6. Sternum 1.65 long, 1.44 wide. Opisthosoma 3.03 long, 1.91 wide. Ratio bulb length (laterally from cymbium base to conductor tip) to cymbium length: 0.73. Leg measurements:

<table>
<thead>
<tr>
<th></th>
<th>fe</th>
<th>pa</th>
<th>ti</th>
<th>Mt</th>
<th>ta</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>palp</td>
<td>1.63</td>
<td>0.67</td>
<td>0.92</td>
<td>-</td>
<td>1.06</td>
<td>4.28</td>
</tr>
<tr>
<td>I</td>
<td>2.52</td>
<td>1.15</td>
<td>2.12</td>
<td>2.48</td>
<td>1.64</td>
<td>9.91</td>
</tr>
<tr>
<td>II</td>
<td>2.48</td>
<td>1.09</td>
<td>1.91</td>
<td>2.42</td>
<td>1.51</td>
<td>9.41</td>
</tr>
<tr>
<td>III</td>
<td>2.52</td>
<td>1.03</td>
<td>1.94</td>
<td>2.73</td>
<td>1.49</td>
<td>9.71</td>
</tr>
<tr>
<td>IV</td>
<td>3.03</td>
<td>1.09</td>
<td>2.64</td>
<td>3.64</td>
<td>1.82</td>
<td>12.22</td>
</tr>
</tbody>
</table>

Measurements of female paratypes (n=5): carapace 3.13–4.26 long, 2.10–2.76 wide. Head region 1.50–1.95 wide; PER 0.75–0.95 wide. Chelicerae 1.6–2.0 long, 0.7–1.0 wide. Labium as long as wide. Gnathocoxa ratio width to length: 0.6–0.7. Sternum 1.75–2.20 long, 1.55–1.95 wide. Opisthosoma 4.75–5.00 long, 3.1–3.4 wide. Epigynal plate 0.49–0.57 long, 0.61–0.73 wide; atrium 0.16–0.17 long, 0.18–0.19 wide. Receptacula 0.24 wide. Leg measurements:

<table>
<thead>
<tr>
<th></th>
<th>fe</th>
<th>pa</th>
<th>ti</th>
<th>Mt</th>
<th>ta</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>palp</td>
<td>1.27–1.51</td>
<td>0.60–0.70</td>
<td>0.77–1.00</td>
<td>-</td>
<td>1.33–1.52</td>
<td>3.97–4.73</td>
</tr>
<tr>
<td>I</td>
<td>2.50–2.94</td>
<td>1.13–1.40</td>
<td>1.88–2.33</td>
<td>2.00–2.58</td>
<td>1.42–1.76</td>
<td>6.93–8.43</td>
</tr>
<tr>
<td>II</td>
<td>2.27–2.85</td>
<td>1.06–1.24</td>
<td>1.61–2.06</td>
<td>1.82–2.49</td>
<td>1.45–1.58</td>
<td>6.39–7.73</td>
</tr>
<tr>
<td>III</td>
<td>2.21–2.76</td>
<td>1.00–1.27</td>
<td>1.58–1.91</td>
<td>2.24–2.72</td>
<td>1.30–1.55</td>
<td>6.09–7.49</td>
</tr>
<tr>
<td>IV</td>
<td>2.79–3.48</td>
<td>1.12–1.39</td>
<td>2.33–2.91</td>
<td>3.12–3.88</td>
<td>1.64–1.91</td>
<td>7.88–9.69</td>
</tr>
</tbody>
</table>

**Eyes:** in dorsal view both eye rows straight or slightly recurved; in frontal view PER procurred and AER straight or slightly procurred (Fig. 48). Diameters: PME: 0.124–0.143; PLE: 0.143–0.162; AME: 0.095–0.133; ALE: 0.143–0.162. Distances: PME–PME less than diameter of PME; PME–AME less than diameter of PME; PME–PLE equal to diameter of PME; PME–ALE less than 1.5 diameter of PME; AME–AME about 0.5 times diameter of AME or slightly more; AME–ALE about 0.5 times diameter of AME. Clypeus height (measured under AME) less than 2.5 times diameter of AME; (measured under ALE) less than 1.5 times diameter of ALE.

**Coloration:** margin of carapace narrowly and continuously dark; two longitudinal symmetrical dark bands on carapace, interrupted and sometimes reduced to triangular dots. Sternum with indistinct light median band (Fig. 50). Opisthosoma dark green-greyish, anteriorly with two light and partially fused bands, continuing in fused chevrons posteriorly (Fig. 49). Legs weakly annulated, hardly visible on femora ventrally.

**Additional somatic characters:** distal margin of labium weakly concave. Plumose hairs present on carapace, legs and opisthosoma. Promargin with 4 teeth, second one from proximal biggest; retromargin with 4–5, most proximal tooth biggest. Trochanter III and IV notched. Tarsus I with 5–8 dorsal trichobothria, tarsi II–IV with 6–8. Colulus forming rectangular plate, pale, distal margin straight. PLS longer than all others with distal segment shorter than or as long as basal segment, both darkened. PMS as long as ALS. ALS not darkened. The formulae of leg spination are listed in Table 3.

**Male palp (Figs. 19–20, 51–52):** RTA with big dorsal branch, distally truncated and strongly sclerotized; lateral branch developed as weakly sclerotized digitiform appendix; ventral branch forming weakly developed rounded ridge. Embolus originating (free apex) between 8 and 9 o’clock position; length (only free apex) less than 1.75 times width of cymbium; distal tip at 2 o’clock position. Conductor lamella-like, distally only weakly elongate (parallel to cymbium), very weakly arched and laterally folded along entire length;
shorter than alveolus; distally not reaching beyond distal margin of alveolus; terminal end forming sclerotized peak, pointing ventrally (in retrolateral view). Connection of conductor and tegulum membranous. Median apophysis consisting of membranous base and thin, broad sclerotized distal plate, spoon-like, originating between 4 and 5 o'clock position; protruding ventrodistally (the MA on left palp of holotype slightly retracted, probably due to desiccation, see Figs. 19–20); basi slightly smaller than median apophysis long.

**Epigynum and vulva** (Figs. 37–39, 53–54): epigynal plate sclerotized with distinct atrium, transversely oval in shape; anterior margin of atrium gradually changing from sclerotized epigynal plate to membranous structure; atrium reaching posteriorly epigastral furrow. Ground plate of atrium transversally subdivided (slightly concave medially): anterior part membranous or weakly sclerotized, semicircular in shape; posterior part stronger sclerotized forming semicircular band. Lateral margin of atrium with elongated vertices. Receptacula visible through plate. Copulatory openings indistinct, located medially of atrium. Copulatory duct short, straight; receptacula small, oval or globular; fertilization ducts short, weakly convoluted.

**Comparison to other species.**— *A. aspromontensis* differs from other *A.* spp. as indicated in the key (see also discussion of *A. soriculata*). Male *A. aspromontensis* n. sp. can be separated from those of *A. soriculata* by the shorter and smaller distal apex of the conductor and the relatively long palpal tibia (much shorter in *A. soriculata*) (Figs. 19–20, 51–52). The females can be separated from *A. soriculata* by the transverse dividing groove of atrium being slightly concave (straight in *A. soriculata*), the oval-shaped receptacula and the only weakly convoluted and short fertilization ducts (stronger convoluted and longer in *A. soriculata*) (Figs. 37–39, 53–54).

**Natural history.**— No information available.

**Distribution.**— Calabria (Italy) (Fig. 56).

**DISCUSSION**

The tribe Tegenariini currently comprises six nominal genera in addition to *Aterigena* n. gen., which is described here. *Aterigena* n. gen. resembles *Hadites*, *Histopona* and *Malthonica* in the notched trochanters III and IV. It differs from them in the presence of dorsal and lateral spines on patellae III and IV as well as 1–2 ventral spines on tarsus IV. In erecting *Aterigena* n. gen. and hereby removing some species from *Tegenaria*, the latter becomes morphologically more homogeneous. In addition, the narrow definition of *Malthonica* by Barrientos & Cardoso (2007) and the concept of *Pseudotegenaria* by Brignoli (1971a) rather than that of Lehtinen (1967) are adopted here. With these actions the genera become morphologically compact and, above all, diagnosable. Morphological and molecular data support the monophyly of these taxa (see also key to genera and Fig. 57).

The phylogenetic relationships between the genera of Tegenariini, in contrast, remain unclear. For resolving the intrageneric relationships additional morphological characters and genes should be analyzed (Bolzern et al., in prep.).

*Aterigena* n. gen. includes five species which have a widely disjunct distribution in the Palearctic region (4 spp. in the Mediterranean Basin and 1 sp. in China). *A. ligurica* is relatively widely distributed in continental Italy and adjacent areas of Southern France, possibly also in Spain, *A. aliquoi* is endemic to Sicily, *A. soriculata* to Corsica (maybe also Sardinia) and *A. aspromontensis* n. sp. to Calabria (Fig. 56). Two female specimens of *A. ligurica* are reported from outside Italy and France. One specimen is recorded from Spain without further information. Additional collecting is necessary to confirm its occurrence in Spain. The second specimen is reported from Alexandria (Egypt) which may be the result of inadvertent human introduction.
ACKNOWLEDGMENTS

We are very grateful to the following colleagues for the loan or gift of specimens: Peter Schwendinger (MHNG), Peter Jäger (SMF), Christoph Hörweg (NHW), Christine Rollard (MNHN), Leonardo Latella (MCSN), Paolo Pantini (MSNB), Axel Schönhofer (Mainz), Koen van Keer (Antwerp), Luis Crespo (Coimbra), Martin Lemke (Lübeck), Melissa M. Gaver (Pullman), Miquel A. Arnedo (Barcelona), Nayra Txasko (Barcelona), Pierre Paquin (Austin), Sandra Öberg (Uppsala), Siegfried Huber (Oberhuldingen), Walter Kirchner (Aachen) and Zhi-Sheng Zhang (Chongquing). For useful comments and stimulating discussions we thank Jeremy Miller and Xinag Xu. For moral support and many constructive discussions we are deeply grateful to Daniel Gloor, Roland Mühlethaler, Georg F. J. Armbruster, Bernhard Koller and Sarah Bolzern-Ramseyer. The molecular work was done in the laboratories of the Department of Environmental Sciences, Section of Conservation Biology, and the Institute of Botany, Section Plant Ecology, University of Basel, for which we are grateful. The field work was financially supported by the Swiss Academy of Sciences (ScNat) and by the “Stiftung zur Förderung des Naturhistorischen Museums” which is gratefully acknowledged. Laboratory costs for the molecular analyses were funded by the “Kugler-Werdenberg-Stiftung”, the “Stiftung Emilia-Guggenheim-Schnurr der NGiB” and the “Basler Stiftung für Biologische Forschung”. The first author received grants from the SYNTHESYS Project (http://www.synthesys.info/), financed by the European Community Research Infrastructure Action under the FP6 "Structuring the European Research Area" Programme, as well as by the “Freiwillige Akademische Gesellschaft Basel”.

LITERATURE CITED


Table 1.— Checklist of *Aterigena* n. gen. species with known geographic distributions.

<table>
<thead>
<tr>
<th>Taxon name</th>
<th>Original genus</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Aterigena aculeata</em> (Wang, 1992)</td>
<td><em>Tegenaria</em></td>
<td>southern China</td>
</tr>
<tr>
<td><em>Aterigena aliquoi</em> (Brignoli, 1971)</td>
<td><em>Tegenaria</em></td>
<td>Sicily</td>
</tr>
<tr>
<td><em>Aterigena aspromontensis</em> n. sp.</td>
<td><em>Tegenaria</em></td>
<td>Calabria (Italy)</td>
</tr>
<tr>
<td><em>Aterigena ligurica</em> (Simon, 1916)</td>
<td><em>Tegenaria</em></td>
<td>Italy, southern France, Spain, Egypt (possibly introduced)</td>
</tr>
<tr>
<td><em>Aterigena soriculata</em> (Simon, 1873)</td>
<td><em>Tegenaria</em></td>
<td>Corsica, Sardinia?</td>
</tr>
</tbody>
</table>
Table 2.— Character table based on Lehtinen (1967) supplemented with additional characters. <: smaller than; >: bigger than; =: equal. Characters supporting the tribe are shaded.

<table>
<thead>
<tr>
<th>Character</th>
<th>Agelenini</th>
<th>Tegenariini</th>
<th>Tectricini</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye-rows (frontal)</td>
<td>strongly procurved</td>
<td>straight or procurved</td>
<td>straight of recurved</td>
</tr>
<tr>
<td></td>
<td>procured</td>
<td>straight or procurved</td>
<td>strongly recurved</td>
</tr>
<tr>
<td>Eye-rows (dorsal)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biggest Eyes</td>
<td>not PME</td>
<td>not PME</td>
<td>PME</td>
</tr>
<tr>
<td>Cheliceral teeth (pro-/retromargin)</td>
<td>3–4/2–4</td>
<td>3–5/3–12</td>
<td>3/2–4</td>
</tr>
<tr>
<td>Sternal pattern</td>
<td>central bright area or</td>
<td>distinct or none</td>
<td>central bright area or</td>
</tr>
<tr>
<td></td>
<td>none</td>
<td></td>
<td>none</td>
</tr>
<tr>
<td>Special feathery hairs at legs and carapace</td>
<td>present</td>
<td>present</td>
<td>absent or different</td>
</tr>
<tr>
<td>Patellar apophysis</td>
<td>present</td>
<td>present or none</td>
<td>present or none</td>
</tr>
<tr>
<td>Embolus shape</td>
<td>broad, membranous or filiform</td>
<td>present or none</td>
<td>broad, membranous or filiform</td>
</tr>
<tr>
<td></td>
<td>strong or spiral helical</td>
<td>lamelliform or massive</td>
<td>lamelliform or massive</td>
</tr>
<tr>
<td>Conductor shape</td>
<td>present</td>
<td>present or absent</td>
<td>present or absent</td>
</tr>
<tr>
<td>Median apophysis</td>
<td>absent</td>
<td>present of absent</td>
<td>present of absent</td>
</tr>
<tr>
<td>Trochanter IV notched</td>
<td>2 separated plates</td>
<td>absent or trapezoidal</td>
<td>2 separated plates</td>
</tr>
<tr>
<td>Colulus</td>
<td>(=) &gt;</td>
<td>&lt;= &gt;</td>
<td></td>
</tr>
<tr>
<td>PLS, distal to basal segment length</td>
<td>present</td>
<td>absent</td>
<td>absent</td>
</tr>
<tr>
<td>Special dark and strong hairs at analtubus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lateral patellar spines</td>
<td>present</td>
<td>absent (present*)</td>
<td>present</td>
</tr>
<tr>
<td>Ventral tarsal spines (IV)</td>
<td>present / absent</td>
<td>absent (present*)</td>
<td>present</td>
</tr>
<tr>
<td>MA with sclerit</td>
<td>absent</td>
<td>present</td>
<td>present</td>
</tr>
</tbody>
</table>

*Present only in *Aterigena* n. gen.
Table 3.— Spination of legs of *Aterigena ligurica* (Simon, 1916), *A. aculeata* (Wang, 1992), *A. aliquoi* (Brignoli, 1971), *A. soriculata* (Simon, 1873) and *A. aspromontensis* n. sp.. The formula gives the number of spines as follows: dorsal - prolateral - retrolateral - ventral. A “p” indicates that at this position the spine is paired (1p = 2 spines at almost the same longitudinal position). A “(s)” indicates very short but strong spines. A superscript “-” or “+” indicates less or more spines than indicated have been observed at this position.

<table>
<thead>
<tr>
<th>Leg Species</th>
<th>Femur</th>
<th>Patella</th>
<th>Tibia</th>
<th>Metatarsus</th>
<th>Tarsus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. ligurica</strong></td>
<td>3-0-0</td>
<td>2-1-0</td>
<td>1-2p-0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A. aculeata</td>
<td>3-0-0</td>
<td>2-1-0</td>
<td>2-2p-0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A. aliquoi</td>
<td>3'-0-0</td>
<td>2-1-0</td>
<td>1-2p-0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A. soriculata</td>
<td>3-0-0</td>
<td>2-0’-0</td>
<td>1-2p-0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A. aspromontensis</td>
<td>3-0-0</td>
<td>2-0’-0</td>
<td>1-2p-0</td>
<td>-</td>
<td>-</td>
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</table>

I

<table>
<thead>
<tr>
<th>Leg Species</th>
<th>Femur</th>
<th>Patella</th>
<th>Tibia</th>
<th>Metatarsus</th>
<th>Tarsus</th>
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</thead>
<tbody>
<tr>
<td>A. ligurica</td>
<td>3'-3'-3' -3 0</td>
<td>2-1-0</td>
<td>2-2’-0'-3p</td>
<td>0</td>
<td>2-2-1+2p+1</td>
</tr>
<tr>
<td>A. aculeata</td>
<td>3'-4’-4’-3’-0</td>
<td>2-1-0</td>
<td>2-2-0-3+1p</td>
<td>0-2’-0-3p+1</td>
<td>0</td>
</tr>
<tr>
<td>A. aliquoi</td>
<td>3’-2’-2’-0</td>
<td>2-1-0</td>
<td>2-3’-0’-3p</td>
<td>0-2’-2’-3p+1</td>
<td>0</td>
</tr>
<tr>
<td>A. soriculata</td>
<td>3’-2’-1’-0</td>
<td>2-1-0</td>
<td>2-2’-2’-0’-3p</td>
<td>0-2’-2’-3p+1</td>
<td>0</td>
</tr>
<tr>
<td>A. aspromontensis</td>
<td>3’-1’-1’-0</td>
<td>2-1-0</td>
<td>2-2’-0’-3p</td>
<td>0-2’-1’-3p+1</td>
<td>0</td>
</tr>
</tbody>
</table>

II

<table>
<thead>
<tr>
<th>Leg Species</th>
<th>Femur</th>
<th>Patella</th>
<th>Tibia</th>
<th>Metatarsus</th>
<th>Tarsus</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. ligurica</td>
<td>3’-3’-3’-3’-0</td>
<td>2-1-0</td>
<td>2-2-0-1+2p</td>
<td>0-3’-2’-3p+1(s)+1</td>
<td>0</td>
</tr>
<tr>
<td>A. aculeata</td>
<td>3’-2’-2’-0’</td>
<td>2-1-0</td>
<td>2-2-0-1+2p</td>
<td>0-2’-1’-3p+1</td>
<td>0</td>
</tr>
<tr>
<td>A. aliquoi</td>
<td>3’-2’-2’-0</td>
<td>2-1-0</td>
<td>2-2-0-3p</td>
<td>0’-3’-2’-3p+1p(s)+1</td>
<td>0</td>
</tr>
<tr>
<td>A. soriculata</td>
<td>3’-2’-1’-0</td>
<td>2-1-0</td>
<td>2-2-0-1+2p</td>
<td>0-3’-2’-3p+1p(s)+1</td>
<td>0</td>
</tr>
<tr>
<td>A. aspromontensis</td>
<td>3-2-0-0</td>
<td>2-1-0</td>
<td>2-2-0-3p</td>
<td>0-3’-2’-3p+1p(s)+1</td>
<td>0</td>
</tr>
</tbody>
</table>

III

<table>
<thead>
<tr>
<th>Leg Species</th>
<th>Femur</th>
<th>Patella</th>
<th>Tibia</th>
<th>Metatarsus</th>
<th>Tarsus</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. ligurica</td>
<td>3’-3’-2’-1’-0</td>
<td>2-1-1</td>
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Table 4.—Apomorphic amino acid substitutions of *Aterigena* n. gen. detected within a small sequence of the mitochondrial CO1 gene. Numbers refer to the *Drosophila yakuba* gene presented by Clary & Wolsenholme (1985).

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*Amaurobius fenestralis* (Ström, 1768)  
Textrix denticulata (Olivier, 1789)  
*Tegenaria domestica* (Clerck, 1757)  
*Tegenaria atrica* C. L. Koch, 1843  
*Histopona torpida* (C. L. Koch, 1837)  
*Malthonica oceanica* Barrientos & Cardoso, 2007  
*Aterigena ligurica* (Simon, 1916)  
*Aterigena aliquoi* (Brignoli, 1971)  
*Aterigena aculeata* (Wang, 1992)  

synapomorphic amino acid subst.  
A  \(\Rightarrow\) S  
M, L, S  \(\Rightarrow\) F  
G, S  \(\Rightarrow\) D, N
Table 5.— Genbank Accession Numbers of all included CO1 sequences. Sequences which were already published have been aligned with the new ones to a length of 471 nucleotides.

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Spagna & Gillespie (2008)
Figures 1–4. -- Diagnostic characters of *Aterigena* n. gen. (schematic). 1, patella IV with dorsal and lateral spines; 2, left chelicera with dentition of pro- and retromargin; 3, trochanter of leg IV, ventral view; 4, colulus and spinnerets in ventral view.
Figures 48 -55. -- *Aterigena aspromontensis* n. sp. 48; habitus, male holotype; 49, face, male holotype; 50, opisthosoma, female paratype; 51, sternum, male holotype; 52, left male palp, retrolateral view; 53, left male palp, ventral view; 54, epigynum, ventral view; 55, vulva, dorsal view. Scales: 48 -53 = 1.0 mm, 54 -55 = 0.5 mm.
Figure 56. -- Known sites of *Aterigena* n. gen.. *A. ligurica* also mentioned from “Hispania”. Digital map provided by http://histgeo.ac-aix-marseille.fr.
Figure 57. -- Cladogram of Tegenarini from Bayesian analysis of CO1 sequences. Only clades supported by a posterior probability larger than 50% are shown (values given at each node). Clades present in maximum parsimony analysis are indicated by ‘++’. Values after slash indicate Bootstrap values higher than 50%. The nomenclature follows strictly Platnick (2010).
A new funnel-web spider species (Araneae: Agelenidae, Tegenaria) from Mercantour National Park, France

Angelo Bolzern
Naturhistorisches Museum Basel, Abteilung Biowissenschaften, Augustinergasse 2, CH-4001 Basel; and Department of Environmental Sciences, Section of Conservation Biology, University of Basel, St. Johanns-Vorstadt 10, CH-4056 Basel, Switzerland
e-mail: angelo.bolzern@arachnodet.com

and

Christophe Hervé
Muséum national d’Histoire naturelle, Département Systématique et Évolution, Unité Origine, Structure et Évolution de la Biodiversité (UMR 7205), Section Arthropodes terrestres, CP 53, 57 rue Cuvier, 75231 Paris CEDEX 05, France
e-mail: phil@mnhn.fr

Summary
During a survey of the spider fauna of the Mercantour National Park in the French Alps, several interesting and new taxa were found. One of these new taxa, Tegenaria mercanturensis n. sp. (Agelenidae) is described here. The new species shows distinct morphological characters which allow easy separation from all other Tegenaria or Malthonius species. The most important characters in males are the short, truncated embolus (a character shared with T. domestica, the type species of Tegenaria, and T. mirifica), the broad, curved hammerhead-shaped conductor and the RTA. Distinct characters in females are the atrium with wide spiral copulatory openings anterior to an anchor-shaped sclerotised ground plate, the strongly sclerotised and irregularly formed “shield” around the tubular-shaped spermathecae, and the conspicuous anterolateral lentiform areas of the spermathecae, covered only by membrane.

Introduction
The Mercantour National Park (MNP) is one of seven National Parks in France and was designated in 1979. The Park is situated in the most south-western part of the Alps along the Italian border (Map 1). The core area of the Park occupies 68,500 ha, mainly from 1,600 to 2,800 m a.s.l., entirely protected under a “Natura 2000” directive. This area is surrounded by a peripheral zone of about 146,300 ha from 490 to over 3,000 m a.s.l., not covered by specific legislation. Owing to its location, the Park is under Provencal, Alpine, Ligurian and Mediterranean climatic influences, providing a great variety of habitats. The Park is also characterised by the presence of over 200 lakes, as a result of the quaternary glaciation history of this part of the Alps. All these characteristics provide an exceptional biodiversity for plants and invertebrate fauna, including a large number of endemic species. While the flora and fauna of the MNP have been the subject of considerable taxonomic interest in several groups, until now no exhaustive work has been specifically devoted to spiders. Indeed, since the “Arachnides de France” of Simon (1937), only two works have provided some taxonomic information about spiders of this area. The first concerned a small annotated list of about 11 species collected at the “Col de la Cayolle” (Berland, 1935). The second was a taxonomic work about some interesting species, including endemics, occurring in this part of the Alps (Maurer & Thaler, 1988).

During a taxonomic survey between the years 2004 and 2006, C. Hervé and collaborators identified more than 300 spider species. As expected, several problematic taxonomic groups were encountered within this collection. For example, two species of Gnaphosidae had to be newly described: Drassodes thaleri Hervé (Hervé & Rollard, 2009) and Drassodex simoni (Hervé, Roberts & Murphy, 2009). Here, we describe another new species from the MNP, belonging to the family Agelenidae.

Material and methods
The specimens described here are deposited in the collections of the Muséum national d’Histoire naturelle, Paris (MNHN) and the Naturhistorisches Museum Basel (NMB). The newly collected specimens (in 2005) were caught by hand and transferred to 70% ethanol by C. Hervé.

Drawings were made using a Leica stereomicroscope MZ12 (up to 110× magnification) with a drawing tube. Measurements were taken from digital pictures made with a Leica DFC320 camera and calculated with the programme ImageJ 1.38 (freeware available on the internet at URL: http://rsb.info.nih.gov/ij/). All measurements are given in mm. The photographs were taken with the same camera and processed with Adobe Photoshop CS3. For clearing the vulva, the removed epigynum was placed in clove oil for several minutes. The descriptions of the palpal bulb are given from a ventral view. The spines on the male palp are not illustrated as they are of minor taxonomic significance.

Abbreviations used: AER=anterior eye row; ALE=anterior lateral eyes; AME=anterior median eyes;
Tegenaria mercanturensis new species

ALS = anterior lateral spinnerets; AT = atrium of epigynum; C = conductor; CD = copulatory duct; CO = copulatory opening; FD = fertilisation duct; MA = median apophysis; PMS = posterior median spinnerets; PA = patellar apophysis; PER = posterior eye row; PLA = posterior lateral eyes; PME = posterior median eyes; PL = posterior lateral spinnerets; RTA = retrolateral tibial apophysis (used here as the sum of all structures in retrolateral position on the male palp); ST = spermathecae.

Taxonomy

Family AGELENIDAE C. L. Koch, 1837
Genus TEGENARIA Latreille, 1804

Type species: Tegenaria domestica (Clerck, 1757), sub Araneus domesticus.

Remarks: Tegenaria Latreille represents a species-rich genus of agelenid spiders. It is predominantly Palaeartic in distribution. Currently 102 Tegenaria species are listed in the catalogue of Platnick (2009). The genus is notorious for its taxonomic problems: (1) lack of good diagnoses of the genus; (2) confusion with the closely related genus Malthonica Simon; (3) information available only for one sex in many species; and (4) unknown internal phylogenetic relationships. To some extent, these problems have been discussed in recent papers (Barrientos & Cardoso, 2007; Bolzern et al., 2008, 2009; Guseinov et al., 2005; Levy, 1996) and will be further investigated by the PhD thesis of the first author. After the examination of agelenids, in particular of the genus Tegenaria, in the collections of Simon and Dresco (MNHN), Roewer (Senckenberg Forschungsinstitut und Naturmuseum, Frankfurt am Main), Brignoli (Museo Civico di Storia Naturale, Verona) and various other collections (natural history museums of Basel, Bergamo, Bern, Geneva and Vienna), the present specimens to be considered as a new species. The generic affiliation of the new species is based on the original description of the genus by Latreille (1804) and that provided earlier by Walckenaer (1802). Additionally, several important works have been checked for the group affiliation of the new species (e.g. Brignoli, 1971; Lehtinen, 1967; Maurer, 1992a, b; Simon, 1937). Since the grouping of the Tegenaria-Malthonica complex is not based on a widely accepted phylogeny, a revision of this complex could result in a revised placement of the new species.

Tegenaria mercanturensis sp. n. (Figs. 1–11)

Types: Holotype ♂, 2♀ paratypes, 6 juv. (holotype MNHN, AR 14603, 1♀ paratype and all juv. MNHN, AR 14604, 1♀ paratype NMB), France, Mercantour National Park, Alpes-Maritimes, La Bollène-Vésubie, Malagratta (44°00′02″N, 7°22′16″E, 1030 m), leg. C. Hervé, 27 September 2005.

Other material examined: 1♂ (MNHN, AR 14605, Dalmas collection V333; sub T. pagana), France, Alpes-Maritimes, Menton, leg. R. Dalmas, 22 May 1915.

Etymology: The specific epithet is derived from “Mercantour”, the name of the National Park where the type specimens of the new species were found.

Diagnosis: The short, truncated embolus, the broad, curved hammerhead-shaped conductor and the RTA are the characters most useful for delimiting T. mercanturensis n. sp. from all other Tegenaria and Malthonica species (Figs. 7–8). The epigynum and vulva of T. mercanturensis (Figs. 9–10) are very distinct and not confusable with any other known Tegenaria or Malthonica species. Particularly remarkable is the irregularly sclerotised and anchor-shaped groundplate of the atrium, anteriorly with wide spiral copulatory openings (Fig. 9). Additionally, the strongly sclerotised and irregularly formed “shield” around the tubular-shaped spermathecae is very distinct (Figs. 10–11); these plates also show conspicuous anterolateral lentiform areas, covered only by membrane.

After Simon (1937), T. mercanturensis n. sp. would most likely belong to the ferruginea-group. Owing to several characteristics, in particular the female genitalia (Figs. 9–10), the new species cannot strictly be assigned to one group only. The similarly alpine-endemic species T. mirifica Thaler, 1987 is morphologically related to the new species. The male of T. mercanturensis can be differentiated from T. mirifica by the overall form and proximal end of the conductor, the shorter median apophysis, the clearly differently shaped and more pronounced RTA, as well as the length of the palpal tibia being much shorter than the cymbium (Figs. 7–8, cf. Thaler, 1987: 392, figs. 1–5). Additionally, the specimens of T. mercanturensis are larger than those of T. mirifica and the colour patterns of the sternum and opisthosoma are different (for T. mirifica see Bolzern, 2007: 26, figs. 2a–b). The RTA of T. mercanturensis also shows affinities to species from Corsica and Sardinia (T. femoralis Simon, 1873, T. henroti Dresco, 1956 and Malthonica eleonorae (Brignoli, 1971)) or some species of the campestris-complex (Bolzern et al., 2008; Brignoli, 1974, Dresco, 1956; Kraus, 1955; Simon, 1873; Wunderlich, 1995). However, none of these species has a short, truncated embolus as present in the male of the new species. Only T. domestica, T. mirifica and some species from Eastern Europe and Asia (T. longimana Simon, 1898, T. percuriosa Brignoli, 1978, T. vignai Brignoli, 1978, T. angustipalpis Levy, 1996 and T. halidi Guseinov et al., 2005) have a similarly short embolus comparable with that of T. mercanturensis, but they differ in the shape of the conductor (somewhat reduced in the Asian species, not broad, curved hammerhead-shaped in T. domestica and T. mirifica).

Description: Cephalothorax: Male (holotype): 4.31 long, 3.17 wide; head-region 1.58 wide; PER 0.99 wide. Female (paratypes, n=2): 3.28–3.95 long, 2.22–3.02 wide; head-region 1.14–1.59 wide; PER 0.79–0.95 wide. Plumose hairs present on carapace. Border of carapace not darkened, dorsally with two longitudinal darkened bands, reduced to triangular dots, continuing to head-region as symmetrical darkened stripes (Fig. 1). Eyes and chypeus: Dorsal view: AER recurved, PER straight. Frontal view: both rows slightly procurred (Fig. 4).
Measurements and ratios of holotype and paratypes: PME 0.15–0.17, PLE 0.15–0.21, AME 0.12–0.16, ALE 0.15–0.18; PME–PME, PME–AME and PME–PLE=diameter of PME; PME–ALE=1.5 × diameter of PME or slightly less; AME–AME c. 0.5 × diameter of AME; AME–ALE <0.5 × diameter of AME. Clypeus height (measured under AME) 2–2.5 × diameter of AME; clypeus height (measured under ALE) 1–1.5 × diameter of ALE (Fig. 4).

Chelicerae and mouth parts: Male (holotype): chelicerae 1.91 long, 0.76 wide. Female (paratypes): chelicerae 1.44–1.81 long, 0.65–0.76 wide. Labium wider than long; gnathocoxa 2 × longer than wide. Promargin of chelicerae with 3 teeth, most proximal one smaller than others; retromargin of chelicerae with 3–4 teeth, almost equal in size (surprisingly, in all 4 specimens there were 4 on right and 3 on left chelicerae) (Fig. 5). Chelicerae uniform brown without pattern, fangs normally developed. Sternum: Male (holotype): 2.1 long, 1.95 wide. Female (paratypes): 1.59–2.11 long, 1.43–1.85 wide. Distinct but weakly expressed pattern: irregular pale median band and symmetrical spots laterally, somewhat fused together (Fig. 3). Legs: Annulated. Plumose hairs present. Trochanters straight or slightly concave. Tarsal trichobothria on legs I–III: 6–8, on leg IV: 6–9. Number of teeth on paired claw of leg I: 13, on unpaired claw: 3. Leg and palp measurements and all observed spination-formulae in Table 1. Opisthosoma: Male (holotype): 4.88 long, 3.09 wide. Female: 3.62–5.54 long, 2.37–3.31 wide. Plumose hairs present. Ground colour ash-grey. Anteriorly 1–3 pairs of white pigmented spots. Dorsolaterally on anterior half two light bands, continuing posteriorly as weakly pronounced chevrons and more posteriorly as dots (Fig. 2). Spinnerets: Colulus a trapezoidal plate with deep median notch on
posterior margin (Fig. 6), basally darkened. PLS longer than all others, two-segmented; distal segment shorter than basal; both segments darkened (especially dorsally); PLS separated by 1–2 diameters. PMS as long as ALS. ALS somewhat darkened, separated by less than their diameter (Fig. 6). Male palp (holotype) (Figs. 7–8): Without pigmentation. Patellar apophysis absent. RTA with 3 branches; dorsal branch ending in 2 acute, strongly sclerotised points, more proximal one more robust and double width of distal one; lateral branch forms transverse ridge on distal part of tibia; ventral branch forms long extended bulge. Additionally, tibia with large broad dorso-prolateral swelling distally. Cymbial modifications absent. Ratio bulb length to cymbium length 0.63. Embolus strong and broad, truncated at end (in both palps; since no fracture was detectable, it is unlikely that the end was broken off), shorter than cymbium width and coiling approximately.
135°. Embolus base of left palp at 9 o’clock position, distal tip between 2–3 o’clock position, somewhat arrowhead-shaped (in lateral view). Median apophysis consists of membranous base, elongated at 5 o’clock position, and finger-shaped, strongly sclerotised distal part. Connection between median apophysis and tegulum membranous, smaller than length of apophysis. Conductor broad, curved hammerhead-shaped, parallel to cymbium, shorter than alveolus and laterally folded along its entire length. Proximal end consists of two strongly sclerotised plates. Connection between conductor and tegulum membranous with narrow longitudinal, somewhat sclerotised ridge. Distal apex of conductor longer than wide and visible dorsally. Other tegular apophysis absent. *Epigynum and vulva* (Figs. 9–11): Epigynal plate 0.58–0.64 long, 0.98–1.21 wide; atrium 0.38–0.44 long, 0.64–0.81 wide. Epigynal plate and groundplate of atrium strongly sclerotised. Groundplate of atrium with well delimited, more sclerotised and anchor-shaped plate-like area, anteriorly limited by strongly sclerotised margin, posteriorly almost reaching epicagastic furrow. Copulatory openings clearly visible as holes, entrances large and spiral-shaped, located at anterior margin of atrium. Pair of posterior epigynal teeth absent. Ducts and spermathecae not visible through plate. Vulva consists of distinguishable copulatory ducts, spermathecae and fertilisation ducts. Copulatory ducts very short. Spermathecae covered by strongly and irregularly sclerotised shield, antero-laterally with conspicuous lentiform areas, covered only by membrane. Shield of spermatheca 0.24 wide. Spermathecae tubular. Distance between shields of spermathecae smaller than their diameter. Fertilisation ducts short and broad.

**Natural history:** All the specimens collected in the MNP were caught by hand from their small funnelwebs, along the artificial rock face created by the gravel road crossing the deciduous forest (dominated by hornbeam *Carpinus betulus* Linneaus) of the Malagratta valley (Plate 1). It is interesting to note that the

<table>
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<td><strong>5.20</strong></td>
<td><strong>3.96–5.35</strong></td>
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| I    |                |                         |           |
| Coxa | 1.33           | 0.91–1.21               | 0         |
| Femur| 5.58           | 3.76–5.20               | 1–2–1–0, 1–2–2–0, 1–3–1–0, 1–3–2–0 |
| Patella| 1.76          | 1.29–1.69               | 2–0–0–0   |
| Tibia| 5.46           | 3.58–5.17               | 0, 0–0–0–1, 0–0–0–1p, 0–0–0–1+1p |
| Metatarsus| 5.70        | 3.66–5.24               | 0–0–0–3p+1 |
| Tarsus| 2.56           | 1.77–2.28               | 0         |
| Total | **22.39**      | **14.97–20.79**         | –         |

| II   |                |                         |           |
| Coxa | 1.23           | 0.87–1.07               | 0         |
| Femur| 5.13           | 3.40–4.68               | 1–2–2–0, 1–3–2–0 |
| Patella| 1.66          | 1.17–1.53               | 2–0–0–0   |
| Tibia| 4.68           | 2.90–4.18               | 0–1–0–1, 0–1–0–2 |
| Metatarsus| 5.04        | 3.08–4.50               | 0–1–0–3p+1 |
| Tarsus| 2.14           | 1.37–1.94               | 0         |
| Total | **19.88**      | **12.79–17.90**         | –         |

| III  |                |                         |           |
| Coxa | 1.18           | 0.84–1.14               | 0         |
| Femur| 4.65           | 3.01–4.13               | 1–2–2–0, 1–3–2–0 |
| Patella| 1.46          | 1.05–1.41               | 2–0–0–0   |
| Tibia| 3.90           | 2.33–3.36               | 0–2–2–1–0 |
| Metatarsus| 4.77        | 2.89–4.09               | 0–2–2–3p+1 |
| Tarsus| 1.95           | 1.23–1.57               | 0         |
| Total | **17.91**      | **11.35–15.70**         | –         |

| IV   |                |                         |           |
| Coxa | 1.30           | 0.98–1.25               | 0         |
| Femur| 5.61           | 3.90–5.36               | 0–1–1–0, 1–1–1–0, 1–2–1–0 |
| Patella| 1.59          | 1.17–1.54               | 2–0–0–0   |
| Tibia| 5.20           | 3.33–4.80               | 0–2–2–1–3, 2–2–2–2, 2–2–2–3 |
| Metatarsus| 5.80       | 3.91–5.59               | 0–2–3–1p+1+2p+1, 0–3–3–1p+1+2p+1 |
| Tarsus| 2.26           | 1.53–1.99               | 0, 0–0–1–0 |
| Total | **21.76**      | **14.82–20.53**         | –         |

| Formula | I>IV>II>III | I=IV>II>III | – |

Table 1: Leg and palp measurements (range, in mm) and spination of male holotype and female paratypes of *Tegenaria mercanturiensis* n. sp. Number of spines given as follows: dorsal–prolateral–retrolateral–ventral. A ‘p’ indicates that at this position the spine is paired (1p=2 spines at almost the same longitudinal position). All observed formulae are presented. More than one entry indicates variation. Left tibia III and IV in holotype male are without spines.
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Two new *Tegenaria* species (Araneae: Agelenidae) from Portugal

ANGELO BOLZERN¹,², LUÍS CRESPO³ & PEDRO CARDOSO⁴,⁵

¹Naturhistorisches Museum Basel, Abteilung Biowissenschaften, Augustinergasse 2, CH-4001 Basel, Switzerland. E-mail: angelo.bolzern@stud.unibas.ch
²Department of Environmental Sciences, Section of Conservation Biology, University of Basel, St. Johanns-Vorstadt 10, CH-4056 Basel, Switzerland
³IMAR – Coimbra Interdisciplinary Center, Department of Zoology, University of Coimbra, Largo Marques de Pombal, 3004-517 Coimbra, Portugal
⁴Azorean Biodiversity Group (CITA-A), Universidade dos Açores, Terra-Chã, 9701-851 Angra do Heroísmo, Portugal
⁵Natural History Museum of Denmark, Zoological Museum and Centre for Macroecology, University of Copenhagen, DK-2100 Copenhagen, Denmark

Abstract

The genera complex *Tegenaria/Malthonica* is a problematic spider group of the family Agelenidae. Besides taxonomical problems, new European species are described on a regular basis. Here two species from Portugal, *Tegenaria barrientosi* sp. n. and *Tegenaria incognita* sp. n., are described. Both species show a significant similarity to *T. bucculenta*, *T. feminea* and *T. montigena*, a species group restricted to the Iberian Peninsula. *T. barrientosi* sp. n. can be separated by the pyramidal shaped ventral branch of the conductor, the shape and arrangement of the RTA and the proportion of the bulb-length to the cymbium-length, the run and shortness of the copulatory ducts with the diverticulae originating laterally and the irregularly sclerotized egg-shaped spermathecae, which are touching each other anteriorly. *T. incognita* sp. n. can be separated by the very broad lateral branch and the almost completely hidden lateroventral branch of the RTA, the shape of the conductor with the terminal end pointing towards posterior, the inwards directed epigynal teeth, the run and shortness of the copulatory ducts with the anteriorly originating diverticulae.

Key words: Iberian Peninsula, Malthonica, new species, Spain, taxonomy

Introduction

With a total of 83 described species, *Tegenaria* Latreille, 1804 and *Malthonica* Simon, 1898 are the most diverse genera of Agelenidae in Europe (Platnick, 2008). Currently there are 14 *Tegenaria* and 2 *Malthonica* species listed for Portugal (Cardoso, 2008). Of those species, *Tegenaria bucculenta* (L. Koch, 1868), *T. feminea* Simon, 1870, *T. montigena* Simon, 1937, *T. ramblae* Barrientos, 1978, *Malthonica lusitanica* Simon, 1898 and *M. oceanica* Barrientos & Cardoso, 2007 are endemic to the Iberian Peninsula. Both genera are well known for their taxonomical problems reflected by a long list of synonyms and rearrangements (Bolzern, et al., 2008; Gasparo, 2007; Guseinov, et al., 2005). Furthermore, many species are known by a single sex and several new species have been described recently (Barrientos & Cardoso, 2007; Deltchev, 2008). A major taxonomical problem in Agelenidae is that the genera delimitations are not sufficiently precise. This has caused problems in assigning species to the correct genus (see comments in Barrientos & Cardoso, 2007; Bolzern, et al., 2008). Due to this lack of agreement, the change in genus affiliation of the two newly described species is possible. A comprehensive revision of the European representatives of the genus *Tegenaria* based on monophyletic groups is in preparation by the first author. Nevertheless, it is important to describe newly detected forms. These forms do add new morphological information and, thus, enhance the understanding of the evolution of the taxon-group in focus.

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Material and methods

The specimens examined for this work were collected with standardized pitfall trap sampling by P. Cardoso (Cardoso, 2004) and by L. Crespo and colleagues by hand and also pitfall traps.

Drawings were made using a Leica MZ12 stereomicroscope (with up to 110 x magnification) with a drawing tube. Most measurements were taken from digital pictures made with a Leica DFC320 camera and processed with the programme ImageJ 1.38x (free software available on the internet at http://rsb.info.nih.gov/ij/). Some specimens were measured with an ocular scale bar. Measurements are taken from the dorsal side of the palps and legs. The measurements of the holotype are given in brackets. Eye rows are straight, pro- or recurved according to the definition given in Jocqué & Dippenaar-Schoeman (2006), Ubick et al. (2005) and Bolzern et al. (2008). In frontal view, the eye row is called “procurved” when the centres of the median eyes are situated more dorsally than the lateral eyes. The number and arrangement of spines on femur, tibia and tarsus are presented in a spine formula. For each leg segment this formula gives the number in the following order: Dorsal - prolateral - retrolateral - ventral. A “p” indicates that at this position a pair of spines is present. E.g., the formula 2-2-2-1p+1+1p+1 stands for 2 dorsal, 2 prolateral, 2 retrolateral and 1 pair (2 spines at the same level close together) plus 1 plus 1 pair plus 1 ventral spine/spines (from proximal to distal) (see Bolzern et al., 2008). For clearing the vulva, the dissected epigynum has been placed into clove oil for several minutes. The descriptions of the palpal bulbs refer to the ventral view. The spines on the male palp are not illustrated, as they are of minor taxonomical significance.

The following abbreviations are used: AER = anterior eye row; ALE = anterior lateral eyes; AME = anterior median eyes; ALS = anterior lateral spinnerets; C = conductor; CD = copulatory duct; CO = copulatory opening; DV = small diverticulum on the copulatory duct; E = embolus; EP = epigynum; ET = epigynal teeth; FD = fertilisation duct; MA = median apophysis; PMS = posterior median spinnerets; PER = posterior eye row; PLA = posterior lateral eyes; PME = posterior median eyes; PLS = posterior lateral spinnerets; RTA = retrolateral tibia apophyses (used here for all structures in a retrolateral position on the male palp, therefore consisting of one, two or three branches); ST = spermathecae; T = tegulum; VC = ventral branch of conductor.

Voucher specimens are deposited, as indicated, in the Natural History Museum of Basel (NMB) and the Zoological Museum, University of Copenhagen (ZMUC).

Taxonomy

Agelenidae C. L. Koch 1837

Tegenaria Latreille 1804

**Type species:** Tegenaria domestica (Clerck, 1757)

*Tegenaria barrientosi* sp. n.  
(Figs. 1–5, 11–14)

**Type material.** Holotype ♂ (deposited at NMB, Nr.: 2804a, Figs 11–14, collected by “modified Schoenly trap”); Portugal, Coimbra, Coimbra, “Jardim Botânico da Universidade de Coimbra” (40°12', 8°25’W); leg. C. Prado e Castro, 2004. 4 ♂, 1 ♀, paratypes (deposited at NMB, Nr.: 2804b and 2804c, Figs 3–5, collected by “modified Schoenly trap”); same locality and collecting details as holotype. 2 ♂, paratypes (deposited at the NMB, Nr.: 2804d, Figs 1–2); Portugal, Santarém, Ourém, Bairro (39°34’N, 8°37’W); leg. P. Cardoso, 18. June 2002. 1 ♂, paratype (ZMUC, Nr.: ZMUC00012596, collected by pitfall trap); Portugal, Santarém, Ourém, Bairro (39°34’.N, 8°37’W); leg. P. Cardoso, 23. April 2002.
FIGURES 1–5. Drawings of the reproductive organs of *Tegenaria barrientosi* sp. n. 1—left male palp in ventral view; 2—left male palp in retrolateral view; 3—epigynum in ventral view; 4—vulva in ventral view; 5—vulva in dorsal view.

*C = conductor; CD = copulatory duct; CO = copulatory opening; DV = DV = small diverticulum on the CD; E = embolus; ET = epigynal teeth; FD = fertilisation duct; MA = median apophysis; RTA = retrolateral tibia apophysis; S = spermathecae; T = tegulum; VC = ventral branch of conductor.*

**Further material examined.** 2 ♀ (deposition at NMB, Nr.: 2804e, collected by pitfall traps. Specimens are in very bad condition; only epigynum of one female determinable), same locality; leg. L. Crespo, 6. June 2005.

**Diagnosis.** *T. barrientosi* sp. n. is closely related to *T. incognita* sp. n., *T. bucculenta* (L. Koch, 1868), *T. feminea* (Simon, 1870) and *T. montigena* (Simon, 1937). It can be separated from the later three species by the absence of a patellar apophysis (present in *T. feminea*, Barrientos 1980: fig. 1A), the broad and flat lateral tibial apophysis (fig. 2; absent in *T. feminea*; much smaller in *T. bucculenta*, Barrientos 1991: fig. 3; protruding ventrodistally in *T. montigena*, Simon 1937: fig. 1541) and the presence of small diverticulae at the copulatory ducts (fig. 4). *T. barrientosi* sp. n. can be separated from *T. incognita* sp. n. by the pyramidal shaped ventral branch of the conductor (fig. 1; absent in *T. incognita* sp. n., fig. 6), the terminal end of the
conductor pointing orthogonally away from the cymbium (fig. 2; pointing towards dorsal in *T. incognita* sp. n., fig. 7), the small diverticulae originating laterally and the irregularly sclerotized egg-shaped spermathecae which are touching each other anteriorly (fig. 3–4; diverticulae originating dorsally and smoothly sclerotized globular spermathecae which are clearly separated in *T. incognita* sp. n., figs 9–10).

**TABLE 1.** Leg and pedipalp measurements of males of *Tegenaria barrientosi* sp. n.. The measurements are given as the range (in mm) of all examined specimens (*n=7*). The measurements of the holotype are given in parenthesis.

<table>
<thead>
<tr>
<th></th>
<th>femur</th>
<th>patella</th>
<th>tibia</th>
<th>metatarsus</th>
<th>tarsus</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedipalp</td>
<td>0.95–1.38</td>
<td>0.46–0.61</td>
<td>0.47–0.64</td>
<td></td>
<td>1.00–1.42</td>
<td>2.88–3.94</td>
</tr>
<tr>
<td></td>
<td>(1.27)</td>
<td>(0.61)</td>
<td>(0.64)</td>
<td></td>
<td>(1.42)</td>
<td>(3.94)</td>
</tr>
<tr>
<td>Leg I</td>
<td>2.39–3.55</td>
<td>0.87–1.3 (1.30)</td>
<td>2.15–3.37</td>
<td>2.11–3.27</td>
<td>1.36–2.09</td>
<td>8.88–13.58</td>
</tr>
<tr>
<td></td>
<td>(3.55)</td>
<td>(3.37)</td>
<td>(3.27)</td>
<td></td>
<td>(2.09)</td>
<td>(13.58)</td>
</tr>
<tr>
<td>Leg II</td>
<td>2.15–2.95</td>
<td>0.82–1.20</td>
<td>1.69–2.52</td>
<td>1.88–2.90</td>
<td>1.23–1.81</td>
<td>7.76–11.37</td>
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<tr>
<td></td>
<td>(2.95)</td>
<td>(2.52)</td>
<td>(2.90)</td>
<td></td>
<td>(1.81)</td>
<td>(11.37)</td>
</tr>
<tr>
<td>Leg III</td>
<td>1.95–2.91</td>
<td>0.76–1.09</td>
<td>1.45–2.17</td>
<td>2.05–3.08</td>
<td>1.16–1.73</td>
<td>7.37–10.97</td>
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<tr>
<td></td>
<td>(2.91)</td>
<td>(2.17)</td>
<td>(3.08)</td>
<td></td>
<td>(1.73)</td>
<td>(10.97)</td>
</tr>
<tr>
<td>Leg IV</td>
<td>2.57–3.79</td>
<td>0.83–1.34</td>
<td>2.25–3.36</td>
<td>2.92–4.49</td>
<td>1.28–2.04</td>
<td>9.84–14.76</td>
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<tr>
<td></td>
<td>(3.79)</td>
<td>(3.36)</td>
<td>(4.49)</td>
<td></td>
<td>(1.92)</td>
<td>(14.76)</td>
</tr>
</tbody>
</table>

**TABLE 2.** Leg and pedipalp measurements of females of *Tegenaria barrientosi* sp. n.. The measurements are given as the range (in mm) of all examined specimens (*n=2*). Leg II was only available from one specimen.

<table>
<thead>
<tr>
<th></th>
<th>femur</th>
<th>patella</th>
<th>tibia</th>
<th>metatarsus</th>
<th>tarsus</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedipalp</td>
<td>1.19–1.73</td>
<td>0.48–0.67</td>
<td>0.77–1.07</td>
<td></td>
<td>1.19–1.65</td>
<td>3.63–5.12</td>
</tr>
<tr>
<td>Leg I</td>
<td>2.49–3.65</td>
<td>1.02–1.42</td>
<td>2.15–3.15</td>
<td>2.02–3.04</td>
<td>1.34–1.77</td>
<td>9.02–13.03</td>
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<td></td>
<td>2.22</td>
<td>0.98</td>
<td>1.73</td>
<td>1.90</td>
<td>1.20</td>
<td>8.03</td>
</tr>
<tr>
<td></td>
<td>2.07–3.00</td>
<td>0.88–1.23</td>
<td>1.54–2.27</td>
<td>2.12–3.03</td>
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<td></td>
<td>2.76–4.00</td>
<td>1.00–1.42</td>
<td>2.42–3.42</td>
<td>3.06–4.38</td>
<td>1.24–1.98</td>
<td>10.48–15.20</td>
</tr>
</tbody>
</table>

**Etymology.** The species is named in honour of Dr. José Antonio Barrientos, who has been working on Agelenids of the Iberian Peninsula for the last 30 years; genitive case.

**Description.** **Prosoma:** carapace: 2.32–3.32 (3.06) mm long, 1.64–2.41 (2.41) mm wide in males (*n=7*); 2.82–3.85 mm long, 2.0–2.68 mm wide in females (*n=2*). Fovea length to carapace length: 0.146–0.20 (0.177). Yellowish brown coloured without longitudinal darkened bands, border not darkened (Fig. 11). Plumose hairs present. Head region: 0.96–1.39 (1.39) mm wide in males, 1.27–1.83 mm wide in females. Somewhat darker and separated from the thoracic region by a distinct sclerotized line. PER 0.49–0.66 (0.64) mm wide in males, 0.64–0.88 mm wide in females. Diameter of PME: 0.06–0.10 (0.09) mm; PLE: 0.08–0.13 (0.13) mm; AME: 0.06–0.08 (0.08) mm; ALE: 0.09–0.13 (0.13) mm. Eye formula (Fig. 13): ALE=PLE>PME>AME. PME separated by 1.5 times their diameter. PME and AME separated by the diameter of PME or slightly more. PME and PLE separated by the diameter of PME or slightly more. PME and ALE separated by the diameter of PME or slightly more. AME separated by their diameter or slightly more. AME and ALE separated by 0.5–1 diameter of AME. Clypeus height (measured under AME): about 2.5–3.5 times the diameter of AME; clypeus height (measured under ALE): about 1–1.5 times the diameter of ALE. Both eye rows straight, or AER slightly recurved in dorsal view (Fig. 11). AER slightly procurred or straight, PER strongly procurred in frontal view (Fig. 13). Chelicerae: 1.05–1.66 (1.66) mm long, 0.44–0.75 (0.71) mm wide in males; 1.38–2.12 mm long, 0.75–1.08 mm wide in females. 3 teeth at the pro-margin (on one chelicerae of male paratype 4 teeth present), median tooth biggest. 7–12 teeth at the retro-margin, the proximal ones smaller. Gnathocoxa width to length: 0.456–0.524 (0.471). Labium width to length: 0.86–1.10
(0.945). Distal margin of labium concave. Sternum (Fig. 12): 1.18–1.65 (1.63) mm long, 1.07–1.50 (1.48) mm wide in males; 1.40–2.15 mm long, 1.25–1.67 mm wide in females. Sternum with no colour pattern.

### TABLE 3. Spination of legs and pedipalps of *Tegenaria barrientosi* sp. n. and *T. incognita* sp. n.

The formula gives the number of spines in the following order: Dorsal - prolateral - retrolateral - ventral. A “p” indicates that at this position a pair of spines is present (1p = 2 spines at almost the same length). More than one spine formula per taxon and leg segment indicates variation. A “**” indicates the occurrence only in males, “***” only in females.

<table>
<thead>
<tr>
<th>species</th>
<th>femur</th>
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<th>metatarsus</th>
<th>tarsus</th>
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</thead>
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<tr>
<td><strong>Palp</strong></td>
<td></td>
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</tr>
<tr>
<td><em>T. barrientosi</em> sp. n.</td>
<td>2-0-0-0</td>
<td>2-0-0-0</td>
<td>2-2p-0-0</td>
<td>-</td>
<td>many</td>
</tr>
<tr>
<td><em>T. incognita</em> sp. n.</td>
<td>2-0-0-0</td>
<td>2-0-0-0</td>
<td>2-2p-0-0</td>
<td>-</td>
<td>many</td>
</tr>
<tr>
<td><strong>Leg I</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>T. barrientosi</em> sp. n.</td>
<td>2-2-0-0</td>
<td>2-0-0-0</td>
<td>0-0-0-3p**</td>
<td>0-0-0-4p+1</td>
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<tr>
<td></td>
<td>2-3-0-0</td>
<td></td>
<td>0-0-0-4p</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>T. incognita</em> sp. n.</td>
<td>2-1-0-0</td>
<td>2-0-0-0</td>
<td>0-0-0-1p+1*</td>
<td>0-0-0-1p+1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2-2-0-0</td>
<td></td>
<td>0-0-0-1p+1*</td>
<td>0-0-0-4p+1</td>
<td></td>
</tr>
<tr>
<td><strong>Leg II</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
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<td>2-2-0-0</td>
<td>2-0-0-0</td>
<td>0-2-0-2p**</td>
<td>0-1-0-3p+1**</td>
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<tr>
<td></td>
<td>2-2-1-0</td>
<td></td>
<td>0-2-0-4p</td>
<td>0-2-0-4p+1</td>
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<td>2-2-0-4p</td>
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<td><em>T. incognita</em> sp. n.</td>
<td>2-1-0-0</td>
<td>2-0-0-0</td>
<td>0-1-0-1p+1+2p</td>
<td>0-1-0-1p+1+1p+1</td>
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<td>0-1-0-2+2</td>
<td>0-1-0-3</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>2-2-0-1+1p</td>
<td>2-2-0-4</td>
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<tr>
<td><strong>Leg III</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
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<td>2-2-2-0</td>
<td>2-0-0-0</td>
<td>2-2-2-1p+1+2p</td>
<td>1+1p-3-2-4p+1</td>
<td>0-2-2-0**</td>
</tr>
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<td>2-2-3-0</td>
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<td>2-2-2-2p**</td>
<td>2p-3-2-4p+1</td>
<td>0-2-3-0</td>
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<td><em>T. incognita</em> sp. n.</td>
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<td>2-0-0-0</td>
<td>2-2-1-1p+1+1p</td>
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<td></td>
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<td>2-2-2-3p</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Leg IV</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
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<td>2-0-0-0</td>
<td>2-2-2-4p</td>
<td>2p-3-2-4p+1</td>
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<td></td>
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</tr>
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<td><em>T. incognita</em> sp. n.</td>
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<td>2-0-0-0</td>
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<td>1+2p-3-2-4p+1</td>
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<td>2-2-2-4p</td>
<td>2p-3-2-4p+1</td>
<td>0-2-4-0</td>
</tr>
</tbody>
</table>

*Legs and palps:* plumose hairs present. Yellowish-brown without pattern. Trochanter straight or slightly curved, not notched (Fig. 12). Number of dorsal trichobothria at tarsus I and IV: 7–8; at tarsus II and III: 6–7.
Leg measurements are listed in tables 1–2. For spine formulae see table 3.

*Opisthosoma:* 2.18–3.04 (3.04) mm long, 1.41–1.89 (1.89) mm width in males; 3.85–4.04 mm long, 2.27–2.5 mm width in females. Colour is light yellowish brown-gray, no distinct pattern expressed (Fig. 11). Plumose hairs present. Spinnerets (Fig. 14): colulus rectangular shaped plate, pale. PLS longer than all others. PMS as long as ALS. ALS not darkened. Both segments of PLS pale. Distal segment of PLS as long as basal. Distance between PLS 1–2 times their diameter. Distance between ALS smaller than 0.5 their diameter.

**Male palp** (Figs 1–2): femoral and patellar apophyses absent. RTA with 2 branches: lateral branch simple, robust and broad; lateroventral branch a long drawn-out lobe. Dorsally at palpal-tibia a short but robust spine present. Bulb length to cymbium length: 0.47–0.57. Embolus filiform, increasingly slender distally, less than ¼ of the cymbium width, curved through 90°. Embolus origin (free apex) on the left palp at 10½ o’clock position, terminal end at 3 o’clock position. Tegulum antero-laterally not constantly curved, angular curve expressed close to embolus origin. Median apophysis pocket-like, consisting of a membranous basal part and terminally of a thin and broad sclerotized plate. Origin of median apophysis proximal at tegulum (between 5 and 7 o’clock position). Connection of median apophysis to tegulum basally sclerotized and fixed, more distally membranous. Conductor rectangular shaped, almost parallel to cymbium margin and shorter than the alveolus. Conductor folded only at the terminal end which is strongly sclerotized and pointing away from cymbium orthogonally. Additional pyramidal apophysis present (ventral branch of conductor) at the connection of tegulum and conductor. Connection of conductor to tegulum is membranous.

**Epigynum and vulva** (Figs 3–5): whole epigynal plate 0.40–0.44 mm long, 0.71–0.72 mm wide, sclerotized. Atrium 0.16–0.22 mm long, 0.25–0.30 mm wide. Atrium only an indistinct, strongly sclerotized trapezoidal depression. Anterior margin of atrium visible as a continuous, little pronounced ridge. Posterior margin of the atrium reaches the epigastric furrow. Pair of posterior teeth present. Ducts and spermathecae barely visible through the plate. Copulatory openings visible as gaps, located at the anterior lateral margin of the atrium. Openings posterior and inwards directed. Copulatory duct short. Small laterally originating diverticula at the copulatory duct. Spermathecae strongly and irregularly sclerotized (some parts are stronger and bolder sclerotized than others) egg-shaped, touching each other anteriorly (Fig. 5). Fertilisation ducts small.

**Natural history.** The species seems to prefer closed canopy forests, with a damp microclimate. Several adult specimens were captured between April and September, when the species seems to be most active.

**Distribution.** Only known from the two mentioned sites in the provinces of Santarém and Coimbra, Portugal (Fig. 19).

*Tegenaria incognita* sp. n.

(Figs. 6–10, 15–18)

**Type material.** Holotype ♂ (deposited at the NMB, Nr.: 2805a, Figs 6–7, collected by pitfall trap); Portugal, Lisbon, “Parque Florestal de Monsanto” (38°43’N, 9°11’W); leg. A. Rebelo, 9. November 2004. 1 ♂, paratype (deposited at the NMB, Nr.: 2805b); same locality and collecting details as holotype. 2 ♀, paratypes (deposited at the NMB, Nr.: 2805c, Figs 8–10, 15–18, collected by hand), same locality as holotype; leg. L. Crespo, 13. April 2008.

**Further material examined.** 101 ♂, 5 ♀ same locality as holotype (deposited at the NMB, Nr.: 2805d and 2805e, collected by pitfall traps); leg. L. Crespo, 16. October - 1. November 2008. 2 ♂, 2 ♀ (deposited in the personal collection of Luis Crespo, Portugal); same locality and collecting details as previous.

**Diagnosis.** *T. incognita* sp. n. is closely related to *T. barrientosi* sp. n., *T. bucculenta* (L. Koch, 1868), *T. feminea* (Simon, 1870) and *T. montigena* (Simon, 1937). It can be separated from the later three species by the absence of a patellar apophysis (present in *T. feminea*, Barrientos 1980: fig. 1A), the broad and flat lateral tibial apophysis (fig. 7; absent in *T. feminea*; much smaller in *T. bucculenta*, Barrientos 1991: fig. 3; protruding ventrodistally in *T. montigena*, Simon 1937: fig. 1541) and the presence of small diverticulae at the
copulatory ducts (fig. 9). *T. incognita* sp. n. can be separated from *T. barrientosi* sp. n. by the characters mentioned in the diagnosis section of the description of *T. barrientosi* sp. n (see above).

**FIGURES 6–10.** Drawings of the reproductive organs of *Tegenaria incognita* sp. n. 6—left male palp in ventral view; 7—left male palp in retrolateral view; 8—epigynum in ventral view; 9—vulva in ventral view; 10—vulva in dorsal view. C = conductor; CD = copulatory duct; CO = copulatory opening; DV = DV = small diverticulum on the CD; E = embolus; ET = epigynal teeth; FD = fertilisation duct; MA = median apophysis; RTA = retrolateral tibia apophysis; S = spermathecae; T = tegulum; VC = ventral branch of conductor.

**Etymology.** The name refers to the fact that this species has not been described until now even though the only known finding site lies in a forest among the largest Portuguese city. The name is derived from the Latin adjective “incognitus” and is female in gender.

**Description.** Prosoma: carapace: 1.82–3.95 (2.04) mm long, 1.39–3.00 (1.46) mm wide in males (n=4); 2.83–3.16 mm long, 1.99–2.21 mm wide in females (n=2). Fovea-length to carapace-length: 0.147–0.209 (0.181). Yellowish brown coloured with two longitudinal bands of darkened triangular dots (in the male specimens pigmentation very weakly visible, probably due to alcohol preservation or pitfall solution). Border of carapace continuously darkened (Fig. 15). Plumose hairs present. Head-region: 0.86–1.95 mm wide in males, 1.43–1.52 mm wide in females. Head-region only somewhat darker. PER 0.47–0.88 (0.48) mm wide in males, 0.72–0.73 mm wide in females. Diameter of PME: 0.06–0.10 mm; PLE: 0.08–0.14 mm; AME: 0.05–0.10 mm; ALE: 0.08–0.15 mm. Eye-formula (Fig. 17): ALE>PLE>PME=AME in males, ALE=PLE>PME=AME in females. PME separated by 1.5 times their diameter. PME and AME separated by the diameter of PME. PME and PLE separated by 1.5 times the diameter of PME. PME and ALE separated by 1–1.5 times the diameter of PME. AME separated by slightly less or about their diameter. AME and ALE separated by 0.5 time the diameter of AME or slightly more. Clypeus height (measured under AME): about 1.5–2 times the diameter of AME; clypeus height (measured under ALE): about 0.5–1 time the diameter of ALE. AER slightly recurved, PER straight in dorsal view (Fig. 15). Both eye-rows slightly procurred or AER
straight in frontal view (Fig. 17). Chelicerae: 0.85–2.21 (0.97) mm long, 0.41–1.06 (0.48) mm wide in males; 1.46–1.56 mm long, 0.75–0.80 mm wide in females. Chelicerae protruding, visible in dorsal view. 3 teeth at the pro-margin, median tooth biggest. 8–10 teeth at the retro-margin, most proximal tooth very small. Gnathocoxa width to length: 0.510–0.543 (0.510). Labium width to length: 0.857–1.009 (1.009). Distal margin of labium concave. Sternum (Fig. 16): 1.12–2.18 (1.17) mm long, 0.92–1.67 (0.97) mm wide in males; 1.57–1.68 mm long, 1.23–1.35 mm wide in females. Somewhat lighter median band, but no other colour-pattern.

**Legs and palps:** plumose hairs present. Yellowish-brown without pattern. Trochanter straight or slightly curved, not notched (Fig. 16). Number of dorsal trichobothria at tarsus I and IV: 6–7; at tarsus II and III: 5–6. Leg measurements are listed in tables 4–5. For spine formulae see table 3.

**Opisthosoma:** 1.83–3.69 (1.98) mm long, 0.97–2.42 (0.97) mm wide in males; 3.70–4.59 mm long, 2.21–2.95 mm wide in females. Colour dark gray-green, dorsally in the anterior half a narrow bright median band, not very distinct; more posteriorly shading into 3–5 chevrons (in male specimens these patterns are not visible due to preservation or capture liquid) (Fig. 15). Plumose hairs present. Spinnerets (Fig. 18): colulus is a rectangular plate, pale (distally slightly more sclerotized), distal margin strongly concave. PLS longer than all others. PMS as long as ALS. ALS not darkened. Both segments of PLS pale or distal segment dorsally somewhat darkened. Distal segment of PLS as long as basal segment. PLS separated by more than 2 times their diameter. Distance between ALS smaller than 0.5 their diameter.

**Male palp** (Figs 6–7): femoral and patellar apophyses absent. RTA with 2 branches: lateral branch simple, very broad, lamella-like; lateroventral branch almost completely hidden by the lateral branch, a long drawn-out lobe. Dorsally at palpal-tibia short spine absent. Bulb length to cymbium length: 0.41–0.47. Embolus filiform, becoming more slender distally, shorter than cymbium width, curved through 90°. Embolus origin (free apex) on the left palp at 11½ o’clock position, terminal end at 4½ o’clock position. Tegulum anteriorterolaterally constantly curved. Median apophysis pocket-like, consisting of a membranous basal part and terminally of a thin and broad sclerotized plate. Origin of median apophysis proximal at tegulum (between 5 and 7 o’clock position). Connection of median apophysis to tegulum membranous. Conductor droplet-shaped, parallel to cymbium margin and shorter than the alveolus. Conductor folded only at the terminal half. Terminal end is a strongly sclerotized and pointed peak, pointing towards posterior. Membranous ridge present from terminal end of conductor towards connection of the conductor to the tegulum (ventral branch of conductor). Connection of conductor to tegulum is membranous.

**Table 4.** Leg and pedipalp measurements of males of *Tegenaria incognita* sp. n. The measurements are given as the range (in mm) of all examined specimens (n=4). The measurements of the holotype are given in parenthesis.

<table>
<thead>
<tr>
<th></th>
<th>femur</th>
<th>patella</th>
<th>tibia</th>
<th>metatarsus</th>
<th>tarsus</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedipalp</td>
<td>0.79–1.79 (0.87)</td>
<td>0.37–0.77 (0.39)</td>
<td>0.43–0.94 (0.45)</td>
<td>–</td>
<td>0.68–1.34 (0.75)</td>
<td>2.27–4.84 (2.46)</td>
</tr>
<tr>
<td>Leg I</td>
<td>1.75–3.6 (1.83)</td>
<td>0.71–1.58 (0.76)</td>
<td>1.60–3.12 (1.73)</td>
<td>1.44–3.06 (1.64)</td>
<td>0.91–1.64 (0.91)</td>
<td>6.46–13.00 (6.87)</td>
</tr>
<tr>
<td>Leg II</td>
<td>1.54–2.85 (1.60)</td>
<td>0.68–1.35 (0.76)</td>
<td>1.17–2.50 (1.31)</td>
<td>1.31–2.50 (1.46)</td>
<td>0.85–1.39 (0.92)</td>
<td>5.55–10.59 (6.04)</td>
</tr>
<tr>
<td>Leg III</td>
<td>1.43–2.76 (1.45)</td>
<td>0.62–1.33 (0.62)</td>
<td>1.03–2.09 (1.12)</td>
<td>1.40–2.79 (1.54)</td>
<td>0.82–1.36 (0.82)</td>
<td>5.30–10.33 (5.55)</td>
</tr>
<tr>
<td>Leg IV</td>
<td>1.83–3.54 (1.91)</td>
<td>0.71–1.50 (0.73)</td>
<td>1.69–3.38 (1.85)</td>
<td>2.00–4.12 (2.31)</td>
<td>1.02–1.76 (1.04)</td>
<td>7.25–14.30 (7.85)</td>
</tr>
</tbody>
</table>

**Epigynum and vulva** (Figs 8–10): whole epigynal plate 0.34 mm long, 0.58–0.67 mm wide, sclerotized. Atrium 0.22 mm long, 0.34–0.38 mm wide. Atrium only an indistinct, strongly sclerotized trapezoidal depression. Anterior margin of atrium indistinct. Posteriorly the atrium reaches the epigastric furrow. Pair of
posterior teeth present, pointing inwards. Ducts and spermathecae barely visible through the plate. Copulatory openings visible as gaps, outward directed (Figs 8–9). Copulatory ducts short. Small anteriorly originating diverticulae at the copulatory duct present (Fig. 9). Spermathecae expressed as smooth and strongly sclerotized globular structures, separated by less than their diameter (Fig. 10). Fertilisation ducts small.

**Natural history.** The specimens were captured in mixed woodland, with both pine and cork oak trees. Adult specimens were caught in spring and autumn.

**Distribution.** Only known from the mentioned forest in Lisbon, Portugal (Fig. 19).

**FIGURES 11–18.** Photographs of a male *Tegenaria barrientosi* (11–14) and a female *Tegenaria incognita* (15–18). 11, 15—habitus in dorsal view; 12, 16—prosoma in ventral view; 13, 17—eyes in frontal view; 14, 18—spinnerets in ventral view. Scale bars are 1.0 mm in 11–12, 15–16, and 0.5 mm in 13–14, 17–18.
FIGURE 19. Map of the collection localities of *Tegenaria barrientosi* sp. n. (black dots) and *Tegenaria incognita* sp. n. (black square) in Portugal.

TABLE 5. Leg and pedipalp measurements of females of *Tegenaria incognita* sp. n. The measurements are given as the range (in mm) of all examined specimens (n=2). Leg IV was only available from one specimen.

<table>
<thead>
<tr>
<th></th>
<th>femur</th>
<th>patella</th>
<th>tibia</th>
<th>metatarsus</th>
<th>tarsus</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedipalp</td>
<td>1.15–1.28</td>
<td>0.53–0.55</td>
<td>0.70–0.74</td>
<td>-</td>
<td>1.00–1.06</td>
<td>3.39–3.61</td>
</tr>
<tr>
<td>Leg I</td>
<td>2.18–2.29</td>
<td>1.00–1.02</td>
<td>1.82–1.99</td>
<td>1.74–1.83</td>
<td>1.10–1.17</td>
<td>7.85–8.29</td>
</tr>
<tr>
<td>Leg II</td>
<td>1.99–2.12</td>
<td>0.99–1.03</td>
<td>1.47–1.58</td>
<td>1.59–1.71</td>
<td>1.00–1.04</td>
<td>7.04–7.48</td>
</tr>
<tr>
<td>Leg III</td>
<td>1.91–2.05</td>
<td>0.90–0.96</td>
<td>1.29–1.37</td>
<td>1.74–1.87</td>
<td>0.93–1.00</td>
<td>6.77–7.24</td>
</tr>
<tr>
<td>Leg IV</td>
<td>2.52</td>
<td>1.05</td>
<td>2.21</td>
<td>2.56</td>
<td>1.12</td>
<td>9.46</td>
</tr>
</tbody>
</table>
Discussion

Based on morphological similarity, the two new species seem to be closely related to *Tegenaria bucculenta*, *T. feminea* and *T. montigena*, all endemic to the Iberian Peninsula. Especially the male of *T. barrientosi* sp. n. shows a striking similarity to *T. bucculenta* (see drawings in Barrientos, 1991; p. 230, Figs 2–3) but is clearly different by the characters mentioned above. As mentioned by Barrientos (1991), the relation between these three spider species is difficult and has caused confusion in the literature for several times (Brignoli, 1978; Machado, 1941). Here, we would like to correct a citation: the drawing of *T. feminea* in the work of Brignoli (1978; p. 272, Fig. 3) does refer to *T. montigena*. Brignoli mentioned that he was not very sure about his determination of the corresponding specimen (1 ♀, leg. Haymoz, VII. 1975, “Espagne, Zamora, env. Sandin de Carballeda”, at the collection of the Muséum d'histoire naturelle de la Ville de Genève). This specimen has been re-examined by the first author. It clearly belongs to *T. montigena*.

In addition to the *Tegenaria* species endemic to the Iberian Peninsula, there are several widely distributed species mentioned for Portugal: *Tegenaria inermis* Simon, 1870, *Tegenaria saeva* Blackwall, 1844 and *Tegenaria duellica* Simon, 1875 mainly show a West-European distribution; *Tegenaria agrestis* (Walckenaer, 1802), *Tegenaria atrica* C. L. Koch, 1843 and *Tegenaria picta* Simon, 1870 (newly listed under *Malthonica picta* by Guseinov et al., 2005) are predominantly distributed in Europe; *Tegenaria domestica* (Clerck, 1757), *Tegenaria parietina* (Fourcroy, 1785) and *Tegenaria pagana* C. L. Koch, 1840 (newly listed under *Malthonica pagana*) show an almost cosmopolitan distribution; *Tegenaria ferruginea* (Panzer, 1804) (newly listed under *Malthonica ferruginea*) shows a predominantly Central- to East-European distribution. The later species has been mentioned for Portugal by Vieira (1893; listed in Bonnet, 1959) and Bacelar (1928). As this species was not collected since then and no record could be found in several museum collections, its occurrence in Portugal is dubious.

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We would like to thank Ambros Hänggi, Jeremy A. Miller and an anonymous reviewer for comments on the manuscript. For fieldwork or the assistance and support in fieldwork we would like to thank Ana Rebelo, Catarina Castro, Israel Silva, Marta Bento and Nuno Oliveira. For granting to take samples in the restricted access area of Monsanto park we thank the DAEV - Division of Education and Environmental Sensibilization of the Lisbon City Hall. For the loan of specimens we would like to thank Nikolaj Scharff from the Zoological Museum, University of Copenhagen. The first-author has been supported financially by the “Freie Akademische Gesellschaft Basel”. P. Cardoso was supported by Fundação para a Ciência e Tecnologia (SFRH/BPD/17351/2004).

References


Funnel web spiders from Sardinia: Taxonomical notes on some *Tegenaria* and *Malthonica* spp. (Araneae: Agelenidae)

Angelo BOLZERN¹,², Ambros HÄNGGI¹ & Daniel BURCKHARDT¹
¹Naturhistorisches Museum Basel, Abteilung Biowissenschaften, Augustinergasse 2, CH-4001 Basel, Switzerland.
²Department of Environmental Sciences, Section of Conservation Biology, University of Basel, St. Johannis-Vorstadt 10, CH-4056 Basel, Switzerland.
E-mail: angelo.bolzern@stud.unibas.ch

Funnel web spiders from Sardinia: Taxonomical notes on some *Tegenaria* and *Malthonica* spp. (Araneae: Agelenidae). - Based on specimens collected by hand during several field trips to Sardinia and on specimens examined in several collections, the female of *Tegenaria henroti* Dresco and the male of *Malthonica sardo* Brignoli are described for the first time. *Malthonica eleonorae* (Brignoli) is redescribed. It can be distinguished from *T. henroti*, which we regard as its sister species without yet proposing a new combination, by the number of teeth on the upper margin of the cheliceral groove and by the spine formulae of all leg tibiae. Additionally, the rim of the atrium, the form of the spermathecae, as well as the shape of the tegular apophysis and the ridge on the male bulb are important characters for separating these species. The female described under *T. henroti* by Wunderlich actually belongs to *M. dalmatica* (Kulczynski). The latter species would be new to Sardinia but has been recorded before on this island under the name *T. drescoi* Brignoli, which we consider as a new junior synonym of *M. dalmatica*. In addition, *Malthonica sicana* Brignoli is recorded for the first time from Sardinia, and the species is redescribed here. Males of the three species, *M. sardo*, *M. sicana* and *M. arganoi* (Brignoli), can be distinguished by the shape of their retrolateral tibia apophysis, the shape of the terminal end of the conductor and the shape of the median apophysis.

**Keywords:** New male - new female - new synonym - taxonomy - species description.

**INTRODUCTION**

*Malthonica* Simon and *Tegenaria* Latreille represent two species-rich genera of agelenid spiders. They are predominantly Palaearctic in distribution. Currently 41 valid species and one subspecies are listed in *Malthonica* and 101 species in *Tegenaria* (Platnick, 2008). These two genera are notorious for causing taxonomic problems: Lack of diagnoses, doubtful generic assignment of species, information available only for one sex in many species, unknown internal phylogenetic relationships between the species.
Tegenaria was erected by Latreille (1804) to include the species listed by Walckenaer (1802) under “Tapiformes”: T. domestica (Clerck), T. civilis (Walckenaer) (= T. domestica), T. agrestis (Walckenaer) and T. murina (Walchenaer) (= T. parietina (Fourcroy)). The characters originally defining Tegenaria are the arrangement and size of the eyes, the almost square labium, the shape of the gnathocoxa, the leg formula, the elongated posterior spinnerets and the typical funnel web. Many species were added subsequently until Simon (1898) described Malthonica for a single species on the basis of procurred eye rows with small anterior median eyes, a narrow clypeus, a big tooth followed by several smaller teeth on the posterior margin of the cheliceral groove and segmented posterior spinnerets with the apical segment shorter than the basal (Simon, 1898; see also: Barrientos & Cardoso, 2007). Malthonica remained a genus with few species until Brignoli (1971, 1976a, b, 1978, 1980, 1984) added several species mostly on the basis of general similarity and small size, and hereby created taxonomic chaos. Guseinov et al. (2005) used the embolus length to separate Tegenaria from Malthonica. Apart from describing some new species from Azerbaijan they transferred several other species from Tegenaria to Malthonica. Jäger (2006) convincingly showed that this character, at least in Sparassidae, is unsuitable for phylogenetic evaluation. Furthermore Guseinov et al. (2005) omitted many described species from their list. In short, they added to the already existing confusion. Barrientos & Cardoso (2007) addressed this problem when describing a new species from Portugal. They redefined Malthonica for the Iberian species based on the original description of Simon (1898) and on a systematic evaluation by Lehtinen (1967). The current situation, presented in the catalogue of Platnick (2008), is extremely unsatisfactory as several pairs of apparently closely related species are assigned to different genera (e.g. Malthonica eleonorae and the supposed sister species Tegenaria henroti). Another problem in dealing with species of the Tegenaria-Malthonica-complex is the fact that many species are known from one sex only (59 species = 41%).

The purpose of the present paper is to improve the taxonomic knowledge of some species from Sardinia by providing descriptions of the previously unknown sex, one new synonymy and a new record. A phylogenetic analysis of the two genera is in progress (Bolzern in prep.) and is not the subject of the present paper. In order to avoid additional synonyms or new combinations, no generic rearrangements are made at this stage and the combinations used in the catalogue of Platnick (2008) are adopted here throughout.

MATERIAL AND METHODS

Material was examined from the Muséum d’histoire naturelle, Genèvre (MHNG), Muséum national d’Histoire naturelle, Paris (MNHN), Museo Civico di Storia Naturale, Verona (MSNV, holding P.M. Brignoli’s collection), Senckenberg Forschungsinstitut und Naturmuseum, Frankfurt am Main (SFM, holding the collection of J. Wunderlich (JW)). Additional hand collected material comes from M. A. Arnedo and colleagues (Universitat de Barcelona, Spain), as well as S. Ramseyer and A. Bolzern, and is deposited at the Naturhistorisches Museum Basel (NMB), the MHNG and MSNV.

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Drawings were made using a Leica MZ12 stereomicroscope (with up to 110 x magnification) with a drawing tube. Most measurements were taken from digital pictures made with a Leica DFC320 camera and calculated with the programme ImageJ 1.38x (free software available on the internet at http://rsb.info.nih.gov/ij/). A few specimens were measured with an ocular scale bar. Measurements are taken from the dorsal side of the palps and legs. Eye-rows are straight, pro- or recurved according to the definition given in Jocqué & Dippenaar-Schoeman (2006) and Ubick et al. (2005). In frontal view, the eye-row is called “procurved” when the median eyes are situated more dorsally than the lateral eyes (Fig. 2). The number and arrangement of spines on femur, tibia and tarsus are presented in a spine formula. For each leg segment this formula gives the number in the following order: Dorsal - prolateral - retrolateral - ventral. A “p” indicates that at this position a pair of spines is present. E.g., the formula 2-2-1p+1+1+1 stands for 2 dorsal, 2 prolateral, 2 retrolateral and 1 pair (2 spines at the same level close together) plus 1 plus 1 pair plus 1 ventral spine/spines (from proximal to distal; see Fig. 3). For clearing the vulva, the dissected epigynum has been placed into clove oil for several minutes. The descriptions of the palpal bulbs refer to the ventral view. The spines on the male palp (drawn in Fig. 13) are mostly not illustrated, as they are of no taxonomical significance.

The following abbreviations are used in the morphological sections (see also Figs 1-3): AER = anterior eye row; ALE = anterior lateral eyes; AME = anterior median eyes; AME-AME = distance between AME, expressed in eye diameters; AS = anterior spinnerets; AT = atrium of epigynum; BL/CL = ratio of bulb length / cymbium length; C = conductor; CD = copulatory duct; CHA = anterior (upper) margin of cheliceral groove; CHP = posterior (lower) margin of cheliceral groove; CLY1 = clypeus height measured below the AME; CLY2 = clypeus height measured below the ALE; CO = copulatory opening; DV = small diverticulum on the CD; E = length of apex of embolus; EP = epigynum; ET = epigynal teeth; FD = fertilisation duct; GNA = width/length ratio of gnathocoxa; MA = median apophysis; MS = median spinnerets; PA = patellar apophysis; PER = posterior eye row; PLA = posterior lateral eyes; PME = posterior median eyes; PME-AME = distance between PME and AME, expressed in eye diameters; PME-PME = distance between PME, expressed in eye diameters; PS = posterior spinnerets; R = distal ridge on tegulum of bulb; RTA = retrolateral tibia apophyses (used here for all structures in a retrolateral position on the male palp, therefore consisting of one, two or three branches); ST = spermathecae; TEA = tegular apophysis; TTN = tarsal trichobothria number (dorsally). Some measurements and characters, clypeus height and spine formula are illustrated in Figs 1-3.

TAXONOMY

Malthonica dalmatica (Kulczynski, 1906)

Tegenaria dalmatica Kulezynski, 1906: 162-164.


Tegenaria drescoi Brignoli, 1971: 110-112; syn. n.

TYPE MATERIAL EXAMINED: /H20038 holotype of T. drescoi (MSNV, vas. 543); Castelsardo, Sassari, Sardinia, IT; leg. A. Vigna, 28.4.1967; det. P. M. Brignoli.

OTHER MATERIAL EXAMINED: 1 /H20038 (JW, described under T. henroti by Wunderlich (1994)); “NSG oberhalb Baunei”, Ogliastra, Sardinia, IT; leg. J. Wunderlich, “in V”; det. J. Wunderlich. – 1 ♀, 3 ♂ (SFM, nr. 8939/4-135, published under T. pagana (C.L. Koch) by Kraus (1955)); “Höhle bei Sassari”, Sardinia, IT; leg. K. Schnellbäcker, 6.4.1952; det. A. Bolzern. – 14 ♀ (MNHN, nr. 1953, loc. 481, specimens were in a tube with specimens of T. pagana, det. E. Simon); “Gallia merid., Cors.”, FR; leg. E. Simon; det. A. Bolzern. – 1 ♀ (MNHN, nr. 1965, loc. 460, specimen was in the type series of T. armigera Simon); Corsica, FR; leg. E. Simon; det. A. Bolzern.


DISTRIBUTION: Reported from Montenegro (Kulczynski, 1906), Italy including Sardinia and Sicily (Dresco, 1959; Brignoli, 1971; Wunderlich, 1994, female under T. henroti), Greece and Cyprus (Brignoli, 1976b; 1979b), Bulgaria (Deltchev, 1995),
Israel (Levy, 1996), mainland France (department Var) (Leduc, 2004) and Corsica (Simon, 1873, one female under *T. armigera*). *M. dalmatica* was not previously known from Corsica. The species occurs also in Croatia, Lebanon and Tunisia (unpublished data, JW, NMB and MSNV under *T. zinzulusensis*).

**COMMENTS:** The examination of numerous specimens of *M. dalmatica*, including material from France, Greece, Lebanon and Italy, showed a high degree of variation in the arrangement of the ST and in the dimensions of the CT. The holotype of *T. drescoi* lies within this range of variation and the name is therefore synonymised with *T. dalmatica*. Brignoli (1971) mentioned that the holotype of *T. drescoi* is morphologically close to *T. zinzulusensis*, and the latter similar to *T. dalmatica* (see Brignoli, 1976b), which led Levy (1996) to synonymise *T. zinzulusensis* with *T. dalmatica*.

**Tegenaria henroti** Dresco, 1956

*Tegenaria henroti* Dresco, 1956: 115-118.

**MATERIAL EXAMINED:** 1 ♂ (MHNG); “Grotta di Gonone”, Cala Gonone, Nuoro, Sardinia, IT; leg. P. Strinati & V. Aellen, 20.3.1971; det. P. M. Brignoli (Brignoli, 1974). – 1 ♂ (JW); “NSG oberhalb Baunei”, Ogliastra, Sardinia, IT; leg. J. Wunderlich, “in V”; det. J. Wunderlich. – 1 ♂, 1 ♀ (SFM, nr. 11299-135, under *T. domestica*); “Höhle Buò Marino”, Sardinia, IT; leg. Patrizi; det. A. Bolzern. – 1 ♂ (Figs 4-5), 1 ♀ (Figs 6-7) (NMB, 2791a, b); Cave NNE of Cala Gonone, Cala Gonone, Nuoro, Sardinia, IT (40°17′39″N / 9°38′50″E, altitude: 3 m); leg. A. Bolzern & S. Ramseyer, 5.7.2006 (then juv.); det. A. Bolzern. – 1 ♀, 16 juv. (NMB, 2791c); Cave at Cala Luna, Cala Gonone, Nuoro, Sardinia, IT (40°13′37″N / 9°37′37″E, altitude: 5 m); leg. A. Bolzern & S. Ramseyer, 6.7.2006; det. A. Bolzern. – 4 ♀, 4 juv. (MHNG); small cave above “Grotte Sa Oche”, Valle di Lanaitho, Oliena, Nuoro, Sardinia, IT (40°15′23″N / 9°29′10″E); leg. A. Bolzern & S. Ramseyer, 7.7.2006; det. A. Bolzern.

The female from the “Cave NNE of Cala Gonone, 5.7.2006” was juvenile when collected and was reared in the laboratory at the NMB. It reached maturity in November 2006. The depository of the type material is unknown.

**DESCRIPTION OF FEMALE** (the ♀ described by Wunderlich (1994) under *T. henroti* actually belongs to *T. dalmatica*): Prosoma: Carapace: Plumose hairs present. 5.05 mm long, 4.01 mm wide in male (n=1); 3.66-5.91 mm long, 2.71-4.4 mm wide in females (n=4). Ratio fovea/carapace length: 0.115-0.167. Border not continuously darkened, two longitudinal darkened bands present, strongest pigmentation close to head region, sometimes very weakly pronounced. Head region without a pattern. AER slightly recurved and PER straight in dorsal view; AER slightly procurred and PER strongly procurred in frontal view. AME smallest, other eyes equal in size. PME-PME longer than half their diameter; PME-AME equal to the diameter of PME; AME-AME equal to half their diameter or slightly longer. CLY1 2-3 x the diameter of AME; CLY2 equal to or slightly higher than the diameter of ALE. Chelicerae: 2.22 mm long, 0.88 mm wide in male; 1.64-2.75 mm long, 0.78-1.15 mm wide in female. CHA: 4 teeth; CHP: 4-6 teeth. Chelicerae uniformly brownish. Labium: As long as wide or slightly wider than long. GNA: 0.497-0.576. Sternum: 2.56 mm long, 2.28 mm wide in male; 1.77-2.82 mm long, 1.71-2.58 mm wide in female. Pale median band and 3 pale dots on each side, not clearly delimited and sometimes fused together.

Legs: Plumose hairs present. Annulated, especially on femora and tibiae. Trochanter straight. TTN on legs I-IV: 8-9. For leg measurements see Tables 1 and 2.
**FIGS 4-7**

(one female from the "Grotte Sa Oche" was much bigger than the others and had only legs 1 and 2 left). For spine formulae see Table 3.

Opisthosoma: 6.71 mm long, 4.74 mm wide in male; 4.57-5.24 mm long, 3.34-3.52 mm wide in females. Plumose hairs present. Anterior part with pale median band and big pale dots on both sides, mottled; pale dots continuing to posterior part in chevrons, posterior part with dark ground colour. Spinnerets: PS longer than all others; distal segment as long as or longer than the basal one, basal segment slightly darkened or both segments pale. MS as long as AS. Colulus forming a more or less rectangular plate, wider than long.

Male palp (Figs 4-5): PA absent. RTA with lateral, dorsal and ventral branch; lateral branch lamella-like; dorsal branch strongly sclerotized, horn-like; ventral apophysis developed as a big not strongly sclerotized bulge. Cymbial modifications absent. BL/CL 0.7. Alveolus length 1.31 mm. Embolus filiform, becoming more

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Table 1: Leg measurements (in mm) and leg formula of males of Tegenaria henroti, Malthonica eleonorae, M. sardoa and M. sicana (*specimen from Sicily).

<table>
<thead>
<tr>
<th></th>
<th>T. henroti (n=1)</th>
<th>M. eleonorae (n=1)</th>
<th>M. sardoa (n=3)</th>
<th>M. sicana (n=1*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palp</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Femur</td>
<td>2.05</td>
<td>1.82</td>
<td>0.94-1.15</td>
<td>1.25</td>
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<tr>
<td>Patella</td>
<td>0.85</td>
<td>0.62</td>
<td>0.35-0.42</td>
<td>0.46</td>
</tr>
<tr>
<td>Tibia</td>
<td>1.07</td>
<td>0.80</td>
<td>0.38-0.46</td>
<td>0.66</td>
</tr>
<tr>
<td>Cymbium</td>
<td>2.40</td>
<td>1.83</td>
<td>0.93-1.12</td>
<td>0.91</td>
</tr>
<tr>
<td>(Bulb)</td>
<td>(1.67)</td>
<td>(1.29)</td>
<td>(0.67-0.92)</td>
<td>(0.42)</td>
</tr>
<tr>
<td>Total</td>
<td><strong>6.37</strong></td>
<td><strong>5.07</strong></td>
<td><strong>2.60-3.15</strong></td>
<td><strong>3.28</strong></td>
</tr>
<tr>
<td>Femur</td>
<td>8.00</td>
<td>5.94</td>
<td>2.43-3.22</td>
<td>3.92</td>
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<tr>
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<td>1.59</td>
<td>0.76-0.94</td>
<td>1.00</td>
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<tr>
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<td>5.76</td>
<td>2.16-3.24</td>
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<tr>
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<td>6.3</td>
<td>2.10-3.16</td>
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<tr>
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<td>3.07</td>
<td>1.33-1.58</td>
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<tr>
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<td><strong>8.78-12.14</strong></td>
<td><strong>14.14</strong></td>
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<tr>
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<td>0.74-0.77</td>
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<tr>
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<td>1.64-2.09</td>
<td>2.57</td>
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<tr>
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<td>2.77</td>
<td>1.16-1.36</td>
<td>1.53</td>
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<tr>
<td>Total</td>
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<td><strong>21.62</strong></td>
<td><strong>7.46-9.00</strong></td>
<td><strong>10.63</strong></td>
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<tr>
<td>Femur</td>
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<td>5.25</td>
<td>1.99-2.35</td>
<td>2.62</td>
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<tr>
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<td>0.71-0.82</td>
<td>0.94</td>
</tr>
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<td>1.86-2.38</td>
<td>2.66</td>
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<td>2.33</td>
<td>1.04-1.16</td>
<td>1.18</td>
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<td><strong>7.11-8.54</strong></td>
<td><strong>9.40</strong></td>
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<td><strong>23.44</strong></td>
<td><strong>9.91-11.84</strong></td>
<td><strong>9.58</strong></td>
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</tbody>
</table>

Formula: I > IV > II > III; IV > I > II > III; IV = I > II > III; I > II > IV > III

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slender distally, shorter than 2 x cymbium width, curved through approximately 180°. Embolus base on left palp at 7-8 o’clock position. Median apophysis thorn-like, spirally elongated at 5 o'clock position. Connection between median apophysis and tegulum membranous. Conductor as long as alveolus, triangular, parallel to cymbium and folded along its entire length. Terminal end of conductor developed as a strongly sclerotized peak. Sharp boundary present between conductor and tegulum, clearly visible as a ridge (R). Subtegulum mostly hidden by tegulum and conductor.

Table 2: Leg measurements (in mm) and leg formula of females of Tegenaria henroti, Malthonica eleonorae, M. sardoa and M. sicana. The values in parentheses for M. sicana are measurements of an extremely large paratype specimen (in MHNG) from Sicily. Leg I of one of the two M. sardoa females examined is missing.

<table>
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<th></th>
<th>T. henroti (n=4)</th>
<th>M. eleonorae (n=3)</th>
<th>M. sardoa (n=2)</th>
<th>M. sicana (n=4 + paratype)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palp Femur</td>
<td>1.79-2.86</td>
<td>1.54-1.90</td>
<td>0.81-0.96</td>
<td>0.90-0.99 (1.3)</td>
</tr>
<tr>
<td>Patella</td>
<td>0.70-1.02</td>
<td>0.66-0.79</td>
<td>0.35-0.38</td>
<td>0.40-0.44 (0.5)</td>
</tr>
<tr>
<td>Tibia</td>
<td>1.16-1.82</td>
<td>1.00-1.22</td>
<td>0.51-0.59</td>
<td>0.58-0.63 (1.0)</td>
</tr>
<tr>
<td>Tarsus</td>
<td>1.85-2.97</td>
<td>1.65-2.04</td>
<td>0.83-0.92</td>
<td>0.75-0.92 (1.2)</td>
</tr>
<tr>
<td>Total</td>
<td>5.50-8.67</td>
<td>4.85-5.95</td>
<td>2.50-2.85</td>
<td>2.63-2.98 (4.0)</td>
</tr>
<tr>
<td>Leg I Femur</td>
<td>5.52-9.02</td>
<td>4.79-5.96</td>
<td>1.85</td>
<td>2.03-2.22 (3.3)</td>
</tr>
<tr>
<td>Patella</td>
<td>1.51-2.35</td>
<td>1.54-1.67</td>
<td>0.70</td>
<td>0.72-0.84 (1.0)</td>
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<td>1.90-2.01 (3.3)</td>
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<td>4.89-6.44</td>
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<td>1.77-1.89 (3.0)</td>
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<td>1.09</td>
<td>1.13-1.24</td>
</tr>
<tr>
<td>Total</td>
<td>19.91-33.38</td>
<td>18.21-23.33</td>
<td>6.73</td>
<td>7.55-8.2</td>
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<tr>
<td>Leg II Femur</td>
<td>4.86-8.46</td>
<td>4.44-5.73</td>
<td>1.63-1.90</td>
<td>1.76-1.89 (2.8)</td>
</tr>
<tr>
<td>Patella</td>
<td>1.45-2.32</td>
<td>1.40-1.74</td>
<td>0.64-0.75</td>
<td>0.71-0.79 (1.1)</td>
</tr>
<tr>
<td>Tibia</td>
<td>4.31-7.76</td>
<td>3.96-5.22</td>
<td>1.26-1.47</td>
<td>1.33-1.41 (2.5)</td>
</tr>
<tr>
<td>Metatarsus</td>
<td>5.04-8.92</td>
<td>4.48-5.98</td>
<td>1.25-1.56</td>
<td>1.47-1.53 (2.4)</td>
</tr>
<tr>
<td>Tarsus</td>
<td>2.05-3.45</td>
<td>2.15-2.58</td>
<td>0.87-0.92</td>
<td>0.92-1.00 (1.5)</td>
</tr>
<tr>
<td>Leg III Femur</td>
<td>4.50-4.95</td>
<td>5.04-5.36</td>
<td>1.52-1.75</td>
<td>1.65-1.79 (2.7)</td>
</tr>
<tr>
<td>Patella</td>
<td>1.30-1.44</td>
<td>1.41-1.53</td>
<td>0.61-0.71</td>
<td>0.67-0.74 (0.9)</td>
</tr>
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<td>3.79-4.28</td>
<td>4.35-4.42</td>
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<td>1.22-1.29 (2.2)</td>
</tr>
<tr>
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<td>1.37-1.74</td>
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</tr>
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<td>0.80-0.93</td>
<td>0.86-0.91 (1.4)</td>
</tr>
<tr>
<td>Total</td>
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<td>5.46-6.52</td>
<td>5.96-6.41 (9.9)</td>
</tr>
<tr>
<td>Leg IV Femur</td>
<td>5.07-5.55</td>
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<td>2.06-2.46</td>
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</tr>
<tr>
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<td>1.59-1.71</td>
<td>0.66-0.73</td>
<td>0.68-0.83 (1.0)</td>
</tr>
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<td>Tarsus</td>
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<tr>
<td>Total</td>
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<td>23.15-23.96</td>
<td>7.40-9.23</td>
<td>8.45-9.21 (13.4)</td>
</tr>
</tbody>
</table>

Formula IV = I > II > III, IV > I > II > III, IV > I > II > III, IV > I > II > III
The formula gives the number of spines in the following order: Dorsal - prolateral - retro-lateral - ventral. A "p" indicates that at this position a pair of spines is present (1p = 2 spines at almost the same height). All observed spine formulas are presented; only obviously abnormal (teratological?) spinations were ignored. More than one spine formula per taxon and leg segment indicates variation.

<table>
<thead>
<tr>
<th>Species</th>
<th>Femur</th>
<th>Tibia</th>
<th>Tarsus</th>
</tr>
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<tbody>
<tr>
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<td>2-3-1-0</td>
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</tr>
<tr>
<td></td>
<td>2-3-2-0</td>
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</tr>
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<td>M. eleonorae</td>
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strongly sclerotized regions on both sides of atrium. Vulva (Fig. 7): Copulatory ducts narrow; spermathecae developed as tube-like ducts, in the anterior and posterior part slightly convoluted. Fertilisation ducts short.

**DISTRIBUTION:** This species is only known from the east coast of Sardinia. It has been found in caves of Nuoro Province (Brignoli, 1974; Dresco, 1956; present study) and in the province of Ogliastra (Wunderlich, 1994).

**COMMENTS:** The references to *T. henroti* by Brignoli (1971), including the drawings of epigynum and vulva (p. 72, Figs 11-12), refer to *M. eleonorae* (see Brignoli, 1974, 1977). One female described here (Figs 6-7) was collected in the same cave as a male of *T. henroti*. The conspecificity of male and female is supported by the teeth on the margins of the cheliceral groove, the leg spine formula and many other somatic characters. Additionally, the female from this location, though similar to females of *M. eleonorae*, clearly differs from them morphologically.

Wunderlich (1994) described a female, which he had found together with a male of *T. henroti*. This specimen was wrongly associated with *T. henroti*; our re-examination showed that it belongs to *Malthonica dalmatica* (see above).

*Malthonica eleonorae* (Brignoli, 1974)  

**TYPE MATERIAL EXAMINED:** ♂ holotype, 1 ♀ paratype (MSNV, vas. 543); “Grotta di S. Giovanni”, Domusnovas, Cagliari, Sardinia, IT; leg. R. Pilia & G. Usai, 6.10.1968; det. P. M. Brignoli. – 1 ♀ paratype (MSNV, vas. 543); from the type locality; leg. G. Pirodda, M. Latte & M. Pinna, 8.9.1968; det. P. M. Brignoli. – 1 ♀ paratype (MSNV, vas. 543); from the type locality; leg. A. Vigna, 28.2.1971; det. P. M. Brignoli. – 1 ♀ paratype (MHNG); from the type locality; leg. A. Vigna.

**OTHER MATERIAL EXAMINED:** 2 ♀ (MSNV, vas. 52); “Grotta di Monte Figu”, Iglesias, Cagliari, Sardinia, IT; leg. S. Puddu, 20.5.1973; det. P. M. Brignoli. – 1 ♂ (Figs 8-9, MSNV, vas. 52); “Grotta di S. Giovanni, M. Acque”, Domusnovas, Cagliari, Sardinia, IT; leg. S. Puddu, 5.3.1972; det. P. M. Brignoli. – 1 ♀ (MSNV, vas. 52); “Grotta sa Fossa e Su Fenutrainu”, Domusnovas, Cagliari, Sardinia, IT; leg. A. Lecis & M. Pote, 2.4.1972; det. P. M. Brignoli. – 2 ♀ (MSNV, vas. 52); “Grotta is Angurtidorgius, su Pranu (Perdasdegogu)”, Sardinia, IT; leg. S. Puddu, 4.11.1973; det. P. M. Brignoli. – 2 ♀ (Figs 10-11, NMB, 2792a); “Grotta di S. Giovanni”, Domusnovas, Sardinia, IT (39°19’56”N / 8°37’4”E); leg. A. Bolzern & S. Ramseyer, 9.7.2006; det. A. Bolzern.

**DESCRIPTION:** Prosoma: Carapace: Plumose hairs present. 3.8 mm long, 3.1 mm wide in male (n=1); 3.57-4.43 mm long, 2.7-3.39 mm wide in female (n=3). Ratio fovea/carapace length: 0.113-0.169. Colouration as in *T. henroti*. Eyes and clypeus same pattern as in *T. henroti*. Chelicerae: 1.6 mm long, 0.7 mm wide in male; 1.66-2.15 mm long, 0.75-0.93 mm wide in females. CHA: 3 teeth; CHP: 4-5 teeth. Colouration as in *T. henroti*. Labium as long as wide or slightly wider than long. GNA: 0.525-0.622. Sternum: 1.9 mm long, 1.8 mm wide in male; 1.78-2.15 mm long, 1.65-2.1 mm wide in female. Colouration as in *T. henroti*.

Legs: Plumose hairs present. Annulated, especially on femora and tibiae (in the paratypes probably bleached due to alcohol preservation). Trochanter straight. TTN on legs I-III: 8; leg IV: 8-9. For leg measurements see Tables 1 and 2. For spine formulas see Table 3.
Opisthosoma: 4.28-5.67 mm long, 3.05-4.32 mm wide in females. Plumose hairs present. Colouration as in *T. henroti*, but less pigmented. Spinnerets: PS longer than all others; pale distal segment as long as the darkened basal one. MS as long as or slightly shorter than AS. Colulus forming a more or less rectangular plate, wider than long.

Male palp (Figs 8-9): PA absent. RTA with lateral, dorsal and ventral branch; lateral branch lamella-like; dorsal branch strongly sclerotized, horn-like; ventral apophysis forming a big, weakly sclerotized bulge. Cymbial modifications absent. BL/CL: 0.7. Alveolus length 1.01 mm. Embolus filiform, becoming more slender distally, shorter than 2 x cymbium width, curved through approximately 200°. Embolus base on
left palp at 7 o’clock position. Median apophysis thorn-like and spirally elongated at 5 o’clock position. Connection between median apophysis and tegulum membranous. Conductor as long as alveolus, triangular, parallel to cymbium and folded along its entire length. Terminal end of conductor developed as a strongly sclerotized peak. Boundary between conductor and tegulum not continuous. Tegular apophysis flat, much more protruding than in *T. henroti*. Subtegulum mostly hidden by tegulum and conductor.

Epigynum and vulva (Figs 10-11): EP: 0.47-0.48 mm long, 0.82-0.97 mm wide. Atrium: 0.30-0.36 mm long, 0.38-0.46 mm wide, in the shape of a membranous triangular or trapezoidal plate (Fig. 10). Anterior and lateral margin of atrium forming strongly sclerotized rim, not continuous. EP not salient. Spermathecae and/or copulatory duct hardly visible through plate. Epigynal teeth absent. Copulatory openings only visible as more strongly sclerotized regions on both sides of atrium. Vulva (Fig. 11): Copulatory ducts broad. Spermathecae developed as tube-like ducts, anteriorly weakly spiral, posteriorly only moderately convoluted. Fertilisation ducts short. Due to a slightly different position of the two ducts, the vulva may not be perfectly symmetrical (Fig. 11).

**DISTRIBUTION:** This species is only known from the south of Sardinia. It has been found in two caves in Carbonia-Iglesias Province (Brignoli, 1974; Brignoli, 1977) and in one cave in the south of Ogliastra Province. Up to now, no overlap in the ranges of *M. eleonorae* and *T. henroti* were observed.

**COMMENTS:** The suggestion of Wunderlich (1994) that *M. eleonorae* may be a junior synonym of *T. femoralis* Simon is not supported here. The two species clearly differ in morphology and distribution (Brignoli, 1979a; Kraus, 1955).

*M. eleonorae* can be separated from *T. henroti* by the number of teeth on the upper margin of cheliceral groove and by the spine formula of all leg tibiae (Table 2). *M. eleonorae* always has ventral spines on tibiae I-III, which are absent in *T. henroti*. Females can be distinguished by the almost straight borders on both sides of the genital atrium in *T. henroti* (Fig. 6), whereas in *M. eleonorae* these borders are clearly invaginated (Fig. 10). Additionally, the vulva of *M. eleonorae* has broader copulatory ducts, anteriorly convoluted and posteriorly less twisted spermathecae (Fig. 11, cf. Fig. 7). The distinction of males is possible on the basis of two characters of the tegulum: The sclerotized lobe median of the conductor (TEA) is more protruding in *M. eleonorae* than in *T. henroti*, and the ridge (R), which is running from the terminal end of the conductor across the conductor, reaches in *M. eleonorae* only half (Figs 8-9), in *T. henroti* the whole width of the conductor (Figs 4-5). Additionally, the male palp is relatively smaller in *M. eleonorae* than in *T. henroti*.

**Malthonica sardoa** Brignoli, 1977

_Figs 12-14_  


**TYPE MATERIAL EXAMINED:** ♀ holotype (MSNV, vas. 62); “dintonri di Asuni”, Cagliari, Sardinia, IT; leg. A. Vigna, 20.2.1971; det. P. M. Brignoli. – 1 ♀ paratype (MSNV, vas. 62); “Grotta di S. Giovanni, M. Acque”, Domusnovas, Cagliari, Sardinia, IT; leg. S. Puddu, 5.3.1972; det. P. M. Brignoli. – 1 ♀ paratype (MSNV, vas. 62); “Cant. Gaddau, Limbara”, Sassari, Sardinia, IT; leg. P. M. Brignoli, 30.3.1971; det. P. M. Brignoli. – 1 ♀ paratype (MNHN, nr. 274
Fig. 12-14
1942); “M. d’Iscudo, vers. N”, Sardinia, IT (altitude: 1300 m); collector unknown; det. P. M. Brignoli. – 1 ♀ paratype (MNHN); “dint. Asumi”, Oristano, Sardinia, IT; leg. A. Vigna, 22.2.1971; det. P. M. Brignoli. – 1 ♀ paratype (MNHN); “Monte d’Iscudo”, Nuoro, Sardinia, IT (altitude: 1300 m); leg. G. Franzini, 6.9.1975; det. P. M. Brignoli.

OTHER MATERIAL EXAMINED: 1 ♂, 2 ♀ (Fig. 14; NMB, 2793a); “Morgongiori, Mt. Arci”, Oristano, Sardinia, IT (39°46’17’’N / 8°44’48’’E, altitude: 761 m); leg. M. A. Arnedo & M. Mejia, 15.10.2005, “open Quercus forest with mosses”; det. A. Bolzern. – 2 ♂ (Figs 12-13; MSNV); “Desulo, Mt. Gennargentu”, Nuoro, Sardinia, IT (altitude: 1146 m); leg. M. A. Arnedo, M. Mejia & G. Giribet, 17.10.2005, “Quercus pub”, humid”; det. A. Bolzern.

DESCRIPTION OF MALE: Prosoma: Carapace: Plumose hairs present. 1.97-2.36 mm long, 1.61-1.89 mm wide in males (n=3); 1.86-2.19 mm long, 1.33-1.56 mm wide in females (n=2). Ratio fovea/carapace length: 0.10-0.13. Border continuously darkened, two very broad dark longitudinal bands continuing to head region, broader than the pale median band. Both eye rows straight or AER slightly recurved in dorsal view; both rows strongly procurred in frontal view. AME smallest, all other eyes equal in size. PME-PME about their diameter; AME-AME less than the diameter of PME; AME-AME less than or about half their diameter. CLY1 about 1-2 x the diameter of AME; CLY2 less than or as high as the diameter of ALE. Chelicerae: 0.84-0.95 mm long, 0.36-0.42 mm wide in males; 0.84-0.96 mm long, 0.37-0.46 mm wide in females. CHA: 3 teeth; CHP: 8-9 (4-6 bigger and 3-5 smaller) teeth. Chelicerae uniformly brownish. Labium as long as wide or slightly wider than long. GNA: 0.517-0.538. Sternum: 1.15-1.27 mm long, 1.03-1.18 mm wide in males; 1.01-1.23 mm long, 0.96-1.02 mm wide in females. Only a pale median band present.

Legs: Plumose hairs present. No colour pattern. Trochanter straight. TTN on legs I-IV: 5-6. For leg measurements see Tables 1 and 2. For spine formulas see Table 3.

Opisthosoma: 2.1-2.63 mm long, 1.31-1.59 mm wide in males; 2.12-2.61 mm long, 1.53-1.7 mm in females. Plumose hairs present. Ground colour dark gray-green, anterior half with two symmetric bright longitudinal bands continuing to the back in chevrons and then in spots. Spinnerets: PS longer than all others; distal segment longer than basal one, both darkened or distal segment pale. Colulus forming a more or less rectangular plate, wider than long.

Male palp (Figs 12-13): PA absent. RTA with dorsolateral and lateral branches; dorsolateral branch simple, more or less pointed; lateral branch bigger than the dorsolateral branch, spoon-like. BL/CL: 0.678-0.819. Alveolus length 0.67-0.92 mm. Embolus filiform, becoming more slender distally, less than 1½ x cymbium widths, curved through 150°. Embolus origin on the left palp at approximately 9 o’clock position. Median apophysis a narrow oblong band, terminally spoon-like. Conductor longer than alveolus, continuously connected to the tegulum, parallel to margin of cymbium and folded along its entire length. Terminal end of conductor spine-like, big, strongly sclerotized. Subtegulum mostly hidden by tegulum and conductor.

Epigynum and vulva (Fig. 14): EP: 0.53-0.59 mm long, 0.53-0.62 mm wide. No delimited atrium visible. EP not salient. Posterior margin of the EP plate forming a rounded swelling with a circular depression reaching over the epigastric furrow. Spermathecae and/or copulatory ducts well visible through the plate. Epigynal teeth present, narrow but long. Copulatory openings well visible as holes, located in posterior half of EP. Vulva (Fig. 14): Copulatory ducts very long and winded; Small
diverticula on the copulatory ducts present. One pair of globular spermathecae present, separated by their diameter. Fertilisation ducts short.

**DISTRIBUTION:** This species can be found all over Sardinia (Brignoli, 1977). The known sites are all in higher altitudes (> ca. 700 m).

**COMMENTS:** Up to now, the male of *M. sardoa* was unknown. The finding of a male together with two females of *M. sardoa* strongly suggests that they are conspecific. The *M. sardoa* male is similar to those of *Malthonica arganoi* and *Malthonica sicana* from which it differs in the proportions of the cymbium and the bulb, and in the following three characters: 1) *M. arganoi* has an RTA with ventral, lateral and dorsal branches, whereas *M. sardoa* and *M. sicana* have an RTA with only dorsolateral and lateral branches; 2) the conductor of *M. sardoa* has a much longer, strongly sclerotized and more pointed tip compared to the corresponding structures in the other species; 3) the median apophysis of *M. sardoa* (Figs 12-13) is more slender and elongated, whereas in the other two species it is much shorter and broader (Figs 15-16, 19-20). The females can easily be distinguished from those of the other species by the morphology of the epigynum and vulva (Fig. 14; Brignoli, 1976a: 43, fig. 22). Furthermore, *M. arganoi* is, until now, only recorded from the Italian mainland regions Lazio, Umbria (Brignoli, 1971; Brignoli, 1977) and Calabria (not yet published).

*Malthonica sicana* Brignoli, 1976

**TYPE MATERIAL EXAMINED:** ♀ holotype (MSNV, vas. 62); “Piana degli Albanesi”, Palermo, Sicily, IT; leg. Aliquò, 20.11.1972; det. P. M. Brignoli. – 1 ♀ paratype (MSNV, vas. 62); “M. Maganoce”, Palermo, Sicily, IT; leg. A. Vigna, 2.5.1974; det. P. M. Brignoli. – 1 ♀ paratype (MSNV, vas. 62); “Bosco Ficuzza”, Palermo, Sicily, IT; leg. A. Vigna, 4.5.1974; det. P. M. Brignoli. – 1 δ, many ♀ paratypes (MSNV, vas. 62); “Carini, Grotta del Puntale”, Palermo, Sicily, IT; leg. A. Vigna, 30.4.1974; det. P. M. Brignoli. – 1 ♀ paratype (MHNG); “Grotta del Puntale”, Carini, Sicily, IT; leg. M. Bologna, 01.01.1976; det. P. M. Brignoli.

**OTHER MATERIAL EXAMINED:** 2 ♀ (Figs 17-18; NMB, 2794a); “Mt. Ferru, road Cuglieri - S. Leonardo”, Oristano, Sardinia, IT (40°9’47”N / 8°37’11”E); leg. M. A. Arnedo & M. Mejia, 14.10.2005, “open *Quercus* forest, rich leaf litter”; det. A. Bolzern. – 2 ♀, 1 juv. (MHNG); “Mt. Ferru, 7 Fuentes, road Cuglieri - S. Leonardo”, Oristano, Sardinia, IT (40°10’46”N / 8°35’8”E); leg. M. A. Arnedo & M. Mejia, 14.10.2005 “*Quercus* forest, open, not wet”; det. A. Bolzern. – 1 δ (Figs 15-16; NMB, 2794b); “Mt. Pelegrino, at the W-slope”, Palermo, Sicily, IT (38°11’14”N / 13°20’40”E, altitude: 114 m); leg. A. Bolzern & R. Mühlethaler, 23.5.2007 (juv.) “under stones”; det. A. Bolzern.

The male collected by Bolzern & Mühlethaler was reared to maturity in the laboratory at the NMB. It reached adulthood in October 2007.

**DESCRIPTION:** Prosoma: Carapace: Plumose hairs present. 2.60 mm long, 2.01 mm wide in male (n=1); 2.15-2.75 mm long, 1.56-2.00 mm wide in females (n=4). Ratio fovea/carapace length: 0.08-0.29. Border continuously darkened, two relatively indistinct, broad longitudinal dark bands and a pale median band (one paratype pale brownish only, without bands, head region slightly darker; probably due to preservation in alcohol). Both eye rows straight in dorsal view; both rows strongly procured in frontal view. AME smallest, other eyes equal in size. PME-PME 1-1 1/2 x their diameter; PME-AME 1/2-1 x the diameter of the PME; AME-AME 1/2-1 x their diameter. CLY1 2-3 x the diameter of AME; CLY2 smaller than or as high as the diameter of...
A. Chelicerae: 1.20 mm long, 0.55 mm wide in male; 0.92-1.46 mm long, 0.45-0.70 mm wide in female. CHA: 3 teeth; CHP: (5 in male) 8-9 teeth (5 bigger and 3-4 smaller ones). Chelicerae partly pigmented, sometimes very weakly so. Labium slightly wider than long. GNA: 0.480-0.589. Sternum: 1.40 mm long, 1.28 mm wide in male; 1.21-1.52 mm long, 1.02-1.30 mm wide in females. Only a pale median band present.

Legs and palps: Plumose hairs present. Female palps with dark pigmentation on patella and tibia, weakly pronounced. Legs annulated, in some paratypes no pattern visible (maybe due to alcohol preservation). Trochanter straight. TTN on legs I-II and IV: 5-6, leg III: 5. For leg measurements see Tables 1 and 2. For spine formulas see Table 3.

Opisthosoma: 2.79 mm long, 1.65 wide in male; 2.11-3.01 mm long, 1.61-2.03 mm wide in females. Plumose hairs present. Ground colour dark gray-green, with two symmetric bright longitudinal bands anteriorly, discontinuous, ending posteriorly in 3-4 chevrons. Spinnerets: PS longer than all others, distal segment longer than basal one, both darkened. Colulus forming a more or less rectangular plate, wider than long.

Male palp (Figs 15-16): PA absent. RTA with dorsolateral and lateral branches; dorsolateral branch simple, more or less pointed; lateral branch as long as the dorsolateral branch, lobe-like. BL/CL: 0.464. Alveolus length 0.41 mm. Embolus filiform, becoming more slender distally, less than 1 1/2 x cymbium widths, curved through 150°. Embolus origin on the left palp at 9 o’clock position. Median apophysis short, pocket-like, terminally spoon-like. Conductor as long as or longer than alveolus, continuously connected to the tegulum, parallel to the cymbium margin and folded along its entire length. Terminal end of conductor pointed, sclerotized. Subtegulum mostly hidden by tegulum and conductor.

Epigynum and vulva (Figs 17-18): EP: 0.17-0.23 mm long, 0.29-0.40 mm wide. Atrium visible as a cavity in posterior view, covered by a triangular, strongly sclerotized plate (Fig. 17). Anterior and posterior margins of EP not pronounced. EP strongly salient. Spermathecae and/or copulatory ducts weakly visible through EP plate. Epignyal teeth absent. Copulatory openings indistinct. Vulva (Fig. 18): Copulatory ducts short and straight. Two pairs of globular spermathecae present. Fertilisation ducts short.
DISTRIBUTION: Previously known only from Sicily (Brignoli, 1976a), *M. sicana* is reported here for the first time from Sardinia. The findings of four females at two localities (collected by hand) suggest that the species is fairly common there.

COMMENTS: The species is easily recognisable by the very distinct vulva shape (Fig. 18). Brignoli (1976a) mentioned a very high variability in body size, which is confirmed in the present study (Table 2). Except for a very large female paratype, the specimens from Sicily lie approximately in the same size range as those from Sardinia. This also holds true for the leg spine formulas (Table 3).

DISCUSSION

In his checklist of Italian spiders Pesarini (1994; see also www.faunaitalia.it) listed eleven *Malthonica* and *Tegenaria* species from Sardinia: *Malthonica campestris* (C.L. Koch) (under *T. campestris*), *M. eleonorae* (under *T. eleonorae*), *M. pagana* (C.L. Koch) (under *T. pagana*), *M. sardoa*, *M. soriculata* (Simon) (under *T. soriculata*), *Tegenaria agrestis* (Walckenaer), *T. armigera* Simon, *T. domestica* (Clerck), *T. drecoi*, *T. henroti* and *T. parietina* (Fourcroy). Here we replace the record of *T. drecoi* with that of *M. dalmatica* and add *M. sicana* to the spider list of Sardinia.

*M. eleonorae*, *M. sardoa* and *T. henroti* are endemic to Sardinia. *M. soriculata* and *M. armigera* are known from Sardinia and Corsica, *M. sicana* from Sardinia and Sicily only. This high rate of endemism may be explained by the fact that these spiders are troglophilous.

We know only about two publications recording *M. soriculata* from Sardinia (Kraus, 1955: 379, under *T. soriculata*, and Garneri, 1902: 72). Already Brignoli (1971: 67) expressed some doubts about the validity of these two records: “sarebbe interessante un controllo di questo materiale, date le somiglianze esistenti tra questa specie e *T. henroti* …”. The material treated by Kraus (1955) was checked in the spider collection of the Senckenberg Museum and proved to be a misidentification of *T. parietina*. The material treated by Garneri (1902) could not be traced. Since we could not confirm any specimens of *M. soriculata* from Sardinia, we question its presence there and assume that it only occurs on Corsica.

ACKNOWLEDGEMENTS

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DRESCO, E. 1959. *Tegenaria zinzulusensis*, araignée nouvelle d'Italie du sud (Araneae, Agele-


7. General Discussion

For a long time, the content of and the relationships within the family Agelenidae were subject of controversial discussions (see introduction in chapter two). The results of the present study improve the knowledge of the most species rich group of European agelenids, the *Tegenaria/Malthonica*-complex. The presented phylogenetic hypothesis in chapter two and two suggest that this complex contains four monophyletic clades, each representing one genus, two of them newly described in this thesis.

Meaningful results rely on the original data and the methods applied. To meet these prerequisites I have chosen to include morphological and molecular data. When the use of genetic methods for phylogenetic purposes became established, many taxonomists relied exclusively on molecular data, neglecting the more traditional morphology. Today, it is widely realised and accepted that molecular analyses are insufficient for getting the whole picture. It could be shown, that a combination of different data sources can improve the resolution and support of phylogenetic trees (see e. g. Arnedo, et al., 2009). Moreover, identification of specimens still is based mostly on morphology. In this thesis, it is obvious that morphology plays an important role in unravelling the taxonomic and phylogenetic relationships of agelenid spiders.

**Phylogenetic methods**

Different tree search methods are available for phylogenetic analyses. Addressing systematics, the most popular and therefore most comparable ones are maximum parsimony, Bayesian analysis and maximum likelihood. Of these three methods, only the first one does not rely on a priori assumptions, a model of evolution, estimated based on the given data. This is a strong advantage because estimations of models are always based on probabilities and assumptions and therefore afflicted with uncertainty. For morphological data, the estimation of evolutionary models does not make much sense (the order of characters in the list is arbitrary) and therefore, only parsimony analyses were conducted. For the molecular data, a model of evolution, based on the gene section, makes obviously sense. Mitochondrial genes are coding for amino acids and the genes are built up in a triplet code. The 3rd base of each triplet is known to have a higher mutation rate than the first two because of its exchangeability. Most changes of this base do not result in a change of the amino acid. Of the model based methods, I chose Bayesian analyses instead of maximum likelihood. The reason for that decision is that while maximum likelihood methods seek trees that maximise the probability of observing the data given those trees, Bayesian analysis seeks the tree that maximises the probability of the tree given the data and the model of evolution. This means that in Bayesian analysis “likelihoods” are rescaled to true probabilities (posterior probability) and that in Bayesian analysis a set of best trees is searched while maximum likelihood only seeks the single most likely tree.

**Morphological methods and analysis**

A very challenging problem was the search, selection and description of morphological characters. The difficulty lies in the recognition of true homologies of apparently differently expressed structures. Sometimes this is straight, e. g. the median apophysis can be differently developed, but is well distinguishable in very different taxa. In other cases the detection homologous structures is more difficult, e. g. the retrorateral tibia apophysis (RTA) with its three branches in some species and with only one branch in
others, how can one decide which of the three branches in the first group is homologous to the single branched RTA of the second group? Some authors address this issue by using topology. But looking at the RTA of Tegenaria circeoensis n. sp. and relatives I cannot objectively decide if this 1-branched RTA is homologous to a ventral, lateral or dorsal branch of an RTA of another species. This particular problem of the RTA is partly discussed in a recent publication on the phylogeny of Philodromidae (Muster, 2009). In the morphological section of chapter two, I tried to avoid such problems by scoring these character states indirectly, e. g. based on their complexity. The criterion for grouping species to higher taxa is synapomorphy, a shared derived character. To recognise syapomorphies it is necessary to know the polarity of characters, which is the “primitive” (plesiomorphic) state. This is done by outgroup comparison where the character state primitive. Outgroups are included in a cladistic analysis also for rooting the resulting trees. As can be seen in the trees presented in chapters two and three, I used several outgroups, some distantly and closely related to the ingroup. As the most distant taxa species of the genus Amaurobius (Amaurobiidae) are included which is, like agelenids, a member of the RTA clade (Coddington & Levi, 1991) even placed the two families into the same superfamily Amaurobioidea. Some of the characters which were previously used by some authors are phylogenetically not informative and thus not characterising monophyletic groups. This could be shown in chapter two for several characters. E. g. the position of the origin of the embolus on the male palp and the shape of the embolus itself, characters which were used by Guseinov et al. (2005) as key character to assign species to Tegenaria or Malthonica. In the morphological analyses, these characters turned out to be highly homoplastic. The use of such a character as grouping criterion results in taxonomic chaos. The many nomenclatural changes proposed in the present study are a result of this. This problem has been discussed for chapters two to six of this thesis and will be solved by the publication of the manuscript presented in chapter two. For the two genera newly described in this thesis, synapomorphic characters are e. g. the pattern and number of the cheliceral teeth and the shape and sclerotisation of the median apophysis for Eratigena n. gen., the spination patterns on the patellae or metatarsi and the arrangement of gland spigots on the posterior median spinnerets for Aterigena n. gen. (chapter three).

Molecular methods and analyses

If the most significant question in morphology is which characters should be included, the equivalent question in molecular systematics is which gene section should be chosen. It is safe to assume that the larger the number of analyses bases is, the larger is the number of phylogenetically informative characters (potential synapomorphies). I decided to choose three gene section, two mitochondrial and one nuclear gene. The CO1 gene was included, because this gene was in discussion for “DNA bar coding” (Kipling & Rubinoff, 2004; Meier, et al., 2006) and have been used in many studies (Arnedo, et al., 2009; Astrin, et al., 2006; Hedin, 2001; Hedin & Maddison, 2001; Paquin & Hedin, 2004) including one on agelenid spiders (Spagna & Gillespie, 2008). Since it is well known that this gene does not resolve higher taxa level relationships (mutation rate is high, and therefore homoplasies between distant clades are highly probable) I included also a more adequate gene for a better resolution at the genus level. J. Spagna (pers. comm.), the first author of the above mentioned paper, suggested the use of the 28S gene, which provided good results in his work. The last gene, the NADH1, has been chosen because it has successfully been applied in recent studies on spiders (Binford, et al., 2008; Murphy, et al., 2006) addressing similar questions as the present study. The
phylogenetic trees resulting from analyses of these genes (chapter two and three) or their combination show, that all genes resolve and support the genera very well. The 28S gene was less informative than expected and the relationships between the examined genera remain unresolved. As for morphological characters, in molecular sequences synapomorphic characters could be detected. This is presented in the chapter for *Aterigena* n. gen. where in a relatively short sequence of the mitochondrial CO1 gene three synapomorphic amino acid substitutions were detected.

It is well known that molecular methods are useful for revealing cryptic species, especially in groups where the morphology is very homogeneous and diagnostic characters are not available or not yet detected (e. g. see Duncan, et al., 2010; Schaffer, et al., 2009). In such cases analyses based solely on morphology would result in an underestimation of species diversity (e. g. see Schonhofer & Martens) because not morphology but spatial segregation (Griffiths, et al., 2010) or behaviour are the elements separating the species (Töpfer-Hofmann, et al., 2000). In *Tegenaria* the species group around *T. campestris* is a promising candidate for further investigations of this topic. Delschev (2008) named the group, composed of four species from Bulgaria, a “super species”. As I showed in the first chapter, distinct morphological characters to separate these species are lacking. However, the molecular analyses revealed that at least *T. rilaensis* distinctly differs from *T. campestris* in the genetic distance (chapter two, Fig. 7, NADH supports this observation, tree not shown).

**Comparison and combined analysis**

The direct comparison of the phylogenetic trees, presented in chapter two, based on morphological, molecular and combined data is not possible in this study because the taxa included are only partly the same. I preferred to involve all species available for each analysis instead of reducing them to the least common denominator for all analyses. Too many species would have had to be excluded from the analyses (this is due to the fact that it is beyond the possibilities of such a study to get fresh material of all known species). By the way, such a comparison is partly implied by the combination of all available data within one analysis (which required the exclusion of many taxa) which was conducted and presented in chapter two. By including as many taxa as possible, the gain of information is regarded much higher than the benefit of a direct comparability of the presented trees. The outcome that all analyses with all the different methods and characters recover and strongly support the four clades (representing the genera *Tegenaria, Malthonica, Eratigena* n. gen. and *Aterigena* n. gen.) is regarded as sufficient support of the proposed phylogeny. The fact that the analyses of the molecular data resulted in similar tree topologies as the one in the morphological analysis is probably the strongest indicator for the reliability of the proposed phylogenetic hypothesis.

**Comments to variation and species groups**

The variation of characters within a species is extensively discussed in this thesis. The examination of a high number of specimens revealed that in the spider group in focus the intraspecific variation is very high. Such a variation can only be detected as variation, if one can find a continuum of “form A” to “form B”. This is obviously not possible in species where only one or very few specimens are known. I decided to describe a “morphotype” only as new species, if it was clearly diagnosable from all other described taxa known in the relevant group. The species described in the chapters four and five could be described in detail, also addressing variation (e. g. in the size or
the spination patterns of the legs). For some species described in chapter two, the description of variation was not possible since only one or a few specimens were available, but the observed structures were distinctive to such an extend, that the formal naming as new species is justified. An example where I did not formally describe a new species is that of the group around T. regispyrrhi (chapter two). This group could not be divided into different species because the relevant structures (epigyne, vulva) are similar to one another and there was not enough material and therefore not enough information available to propose any hypothesis. The studied specimens can be separated morphologically and geographically. But because there are only females available and the variation within these species is unknown, a conservative strategy is more appropriate than the description of the forms as new species. Within Eratigena several species groups could be detected (see chapter two). For Tegenaria this is only possible in a few cases (e. g. the species of T. parmenidis, T. sbordonii, T. capolongoi and T. circeoensis n. sp. form a morphologically homogeneous group which is probably monophyletic). This genus is the most heterogenous group with a wide range of states in some characters. The relationships between the species of Tegenaria could only partly be resolved in this study. The narrow definition of Tegenaria presented here constitutes a solid base for future investigations focusing on the phylogenetic relationships within Tegenaria.

Impact to science

The results of this thesis can serve as base for future studies concerning the taxonomy and systematics of related spider groups. The proposed phylogenetic hypothesis is essential for understanding and interpreting characters and their polarity. Mistakes in polarising of character states and rooting trees which can lead to wrong conclusions as in the work of Král (2007) can be avoided. The characters assessment and the character matrix of the morphological cladistic analysis will serve as basis for future investigations concerning the whole family Agelenidae. A thorough investigation of the relationships between the genera within this family is highly desirable. Especially the questions if the cribellate Australian clade and the Coelotinae belong to this family are important questions which have to be answered in the near future.

In a more practical point of view, the present thesis is very valuable for the identification of spider species. First of all, I was able to “clean up” the taxa in focus by the detection of many synonyms and taxonomical problems in the recent and older literature (e. g. the confusion about T. ferruginea triggered by Brignoli due misidentifications). Of course, not all problems could be solved but remaining problems are at least discussed (e. g. the bucculenta problem, see chapter two). Furthermore several new descriptions, redescriptions, new descriptions of the missing sex of several species and additional information usable for the identification of the relevant species are provided (chapters two to six). The provided identification keys with numerous figures to the European agelenid genera and the species of Aterigena n. gen., Eratigena n. gen., and Tegenaria are important tools for all researchers and taxonomists confronted with species determination.

Proposed future investigations

Some future investigations are already proposed in previous paragraphs. A further promising field for future investigations, based on this thesis, is the biogeography of the taxa in focus including the relationships of the North American endemics of Tegenaria.
to the European taxa. Until now, it is not known if these endemics are related to *Tegenaria* or to one of the newly described genera. The knowledge of this affiliation would be of high interest for the biogeography and the evolution of the whole group. It was not the aim of this thesis to investigate the biogeography of the *Tegenaria/Malthonica*-complex. But during this work an obvious pattern could be observed: the species of *Eratigena* n. gen. are significantly more diverse in western Europe (higher number of species) whereas *Tegenaria* is much more diverse in southeastern Europe. The knowledge of species distribution is still poor and several species from Greece or from Turkey are only known by one specimen (and therefore from one locality).
8. Acknowledgements

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During this study, I visited several spider collections for the examination of valuable material. For this possibility and the very agreeable professional support I’m indebted to Christoph Hörweg (Naturhistorisches Museum Wien), Peter Jäger (Senckenberg Forschungsinstitut und Naturmuseum, Frankfurt am Main), Christian Kropf (Naturhistorisches Museum der Burgergemeinde Bern), Leonardo Latella (Museo Civico di Storia Naturale, Verona), Paulo Pantini (Museo civico di Scienze Naturali "E. Caffi", Bergamo), Norman Platnick (American Museum of Natural History), Carles Ribera (Universitat de Barcelona), Christine Rollard (Muséum National d'Histoire Naturelle, Paris) and Peter Schwendinger (Muséum d'histoire naturelle de la Ville de Genève). Specimens received from other institutions are gratefully acknowledged (see corresponding sections in chapter two to three).

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9. References


Curriculum Vitae
Angelo Bolzern

Personal data

Marital status: married
Nationality: Switzerland, Kriens, LU
Date of birth: 28.01.1978
Place of birth: Cham
Parents: Bruno and Judith Bolzern-Kunz

Education

1997  School leaving exam “Typus M”
1998  University of Basel, Phil.-Nat. Department, Integrative Biology
2002–2003  Degree in plant ecology, neurobiology, medical parasitology and elective course environmental sciences, University of Basel
2005–2010  PhD at the University of Basel and the Natural History Museum Basel: “Taxonomy and phylogeny of the European Tegenaria/Malthonica-complex (Araneae, Agelenidae): a revision using morphological and molecular data”. Supervisors: PD Dr D. Burckhardt, Dr A. Hänggi, Prof. Dr B. Baur

Scientific work and Teaching experience

- Planning, founding and realization of the PhD project.
- Talks and posters presentations at national and international meetings and congresses.
- Several scientific stays at different natural history museums and universities.
- Planning, founding and realization of field excursions to Southern Europe.
- Guidance of field trips at several “Days of Biodiversity”, at the “Scientific days at Alp Flix in Grisons” and for the University of Basel.
- Guidance and teaching assistant at several biodiversity field courses, Institute of Environmental Sciences, University of Basel.
- Teaching assistant at the lecture “Determination of Animals” at the University of Basel.
Scientific skills

- Identification of different arthropod groups (especially Araneae) and using them for quantitative and qualitative analyses.
- Search, describe, collect, and process morphological data for phylogenetic analyses by using different computer programs (DELTA, PAUP, WinClada, TNT, etc.).
- Describe new taxa according to modern scientific standards.
- Applying molecular methods (DNA extraction, PCR, sequence processing) for phylogenetic purposes.
- Application of different phylogenetic methods (based on molecular and morphological data) using a wide range of computer programs (PAUP, WinClada, MrBayes, PhyML, MEGA, TNT, etc.).
- Build up and support different databases (MS Access, File Maker).
- Prepare and maintain a collection of Arthropods.

Fundraising, Grants and Awards

- Fundraising for the expenditures for the molecular analyses of the PhD project from different private foundations.
- Research grants of the foundations of the University of Basel and the Swiss Academy of Sciences for field excursions and international congress attendances.
- Grant from SYNTHESYS (EU founded project) for research stay at the „Muséum national d’histoire naturelle Paris“.
- Grant for finishing the PhD thesis trough a private foundation (Freiwillige Akademischen Gesellschaft Basel (FAG)).
- First price winners of the “Young scientist award for outstanding posters” at the 24th European Congress of Arachnology, Bern 2008.

Working experience among studies

1998 Three month employee at an engineer office at the F. Hoffmann-La Roche AG, Basel
2001 Two weeks work experience at the “Vivarium” of the “Zoologischen Garten Basel”
2002 Three weeks work experience at the Natural History Museum Basel, entomology
2001–2003 Employee at the “Präparatesammlung” at the F. Hoffmann-La Roche AG, Basel
2004 Six month work experience at the Swiss federal veterinary office SFVO, Bern
2004–2009  Guided tours in the special exhibition at the Natural History Museum Basel

2005  GBIF project: registration of the Psyllid-collections from the Natural History Museums of Basel and Geneva

2005–2007  Support of the website of the Natural History Museum Basel

2005–2007  Employee of the CSCF for a two year project (50%) regarding the Red-List of ground living Arthropods

Languages

German: Oral and written with very high proficiency, Swiss-German is the native language.

English: 1999 twelve weeks language-learning stay in San Diego, CA, USA. I speak fluently and read/write with good proficiency.

French: Read with good proficiency, speak and write with basic competence.

Memberships

- Arachnologische Gesellschaft (ARAGES)
- European Society of Arachnology (ESA)
- British Arachnological Society (BAS)
- The American Arachnological Society (AAS)
- International Society of Arachnology (ISA)
- Schweizerische Entomologische Gesellschaft (SEG)
- Entomologische Gesellschaft Basel (EGB)
- Swiss Systematic Society (SSS)

Military service

I was Sergeant at the “Panzerjägerkompanie 4/2, Aufkl Bat 4, Infanteriebrigade 4” of the Swiss Army.


I declare that I have written this thesis “Taxonomy and phylogeny of the *Tegenaria-Malthonica*-complex (Araneae, Agelenidae), using morphological and molecular data” with the help indicated and that I have only submitted it to the Faculty of Science of the University of Basel and to no other faculty or university.