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## A Revision of Western Palaearctic *Medon*: the Species of the Atlantic Islands, the Western Mediterranean, and Europe, Except for the Southeast (Insecta: Coleoptera: Staphylinidae: Paederinae)

Volker ASSING  
Hannover, Germany

**Abstract.** Types and additional material of *Medon* Stephens are revised. 29 valid species and subspecies, including three doubtful species, are recognized in the region comprising the Western Mediterranean (including Italy and Tunisia), the Atlantic Islands, as well as Western, Central, and Northern Europe. *Medon oromii* sp. n. (Canary Islands: Gran Canaria), *M. antricola* sp. n. (Canary Islands: El Hierro), and *M. kabylicus* sp. n. (Algeria) are described. Twenty-three synonymies, two of them pertaining to the previously revised species of the Eastern Mediterranean region, are established: *Medon apicalis* (Kraatz, 1857) = *Medon orgianus* Bordoni, 1980 syn. n.; *Medon perniger* Coiffait, 1978 = *Medon perniger fraudulentus* Coiffait, 1978 syn. n.; *Medon dilutus* (Erichson, 1839) = *M. dilutus meridionalis* Bordoni, 1980 syn. n.; *M. dilutus cephalus* Koch, 1938 = *M. dilutus boeticus* Jeannel & Jarrige, 1949 syn. n.; *Medon dilutus quadriceps* (Wollaston, 1864) = *Medon vitaliei* Bernhauer, 1936 syn. n. = *M. dilutus eremicus* Koch, 1939 syn. n. = *M. marocanus* Coiffait, 1970 syn. n. = *M. mateui* Coiffait, 1973 syn. n.; *Medon rufiventris* (Nordmann, 1837) = *M. burdigalensis* Coiffait, 1970 syn. n. = *M. aquitanicus* Coiffait, 1970 syn. n. = *M. siculus* Coiffait, 1970 syn. n. = *M. sicilianus* Coiffait, 1970 syn. n.; *Medon africanus* (Fauvel, 1872) = *M. bodemeyeri* Bernhauer, 1915 syn. n.; *Medon piceus* (Kraatz, 1858) = *M. murciensis* Coiffait, 1970 syn. n.; *Medon cauchoisi* Jarrige, 1949 = *M. oculator* Peyerimhoff, 1949 syn. n. = *M. lusitanicus* Coiffait, 1970 syn. n. = *M. parvipallus* Coiffait, 1973 syn. n. = *M. mazices* Coiffait, 1973 syn. n. = *M. fongondi* Coiffait, 1980 syn. n. = *M. perraulti* Coiffait, 1980 syn. n.; *Medon mirei* Coiffait, 1980 = *M. giachinoi* Bordoni, 1988 syn. n.; *Medon semiobscurus* (Fauvel, 1875) = *M. ruber* Sahlberg, 1908 syn. n. = *M. sahlbergi* Scheerpeltz, 1933 syn. n. *Medon procerus* (Perez Arcas, 1874) and *M. sericellus* (Fairmaire, 1860), previously regarded as synonyms of *M. castaneus* (Gravenhorst, 1802) and *M. apicalis*, respectively, are revalidated. A neotype is designated for *Lithocharis sericella* Fairmaire, 1860. Lectotypes are designated for *Lithocharis oppidana* Kraatz, 1857, *L. picea* Kraatz, 1858, *Paederus castaneus* Gravenhorst, 1802, *Lithocharis africanus* Fauvel, 1872, *Medon bodemeyeri* Bernhauer, 1915, *M. bucharicus* Bernhauer, 1902, and *M. ruber* Sahlberg, 1908. *Medon pythonissa* (Saulcy, 1864) is regarded as a subspecies of *M. dilutus*. All the species not treated in the first part of the revision are described and illustrated. Bionomic and zoogeographic data are compiled, and the distributions of most species are mapped. A key to the *Medon* species of the Western Mediterranean region and the Atlantic Islands is provided. *Medon bucharicus* Bernhauer, 1902 (Middle Asia) is redescribed and moved to *Medon* again (from *Sunius* Curtis). Some additional records of species from other regions are presented. The previously published revision of Eastern Mediterranean *Medon* contains several errors, which are corrected in a separate section. These corrigenda include the following synonymies: *M. lydicus* Bordoni, 1980 = *M. minimus* Fagel, 1970, syn. n. = *M. rhodicus* Franz, 1987, syn. n. = *M. choparti* Coiffait, 1987, syn. n.

**Key words.** Taxonomy, revision, new species, new synonyms, lectotype designations, neotype designation

### 1. INTRODUCTION

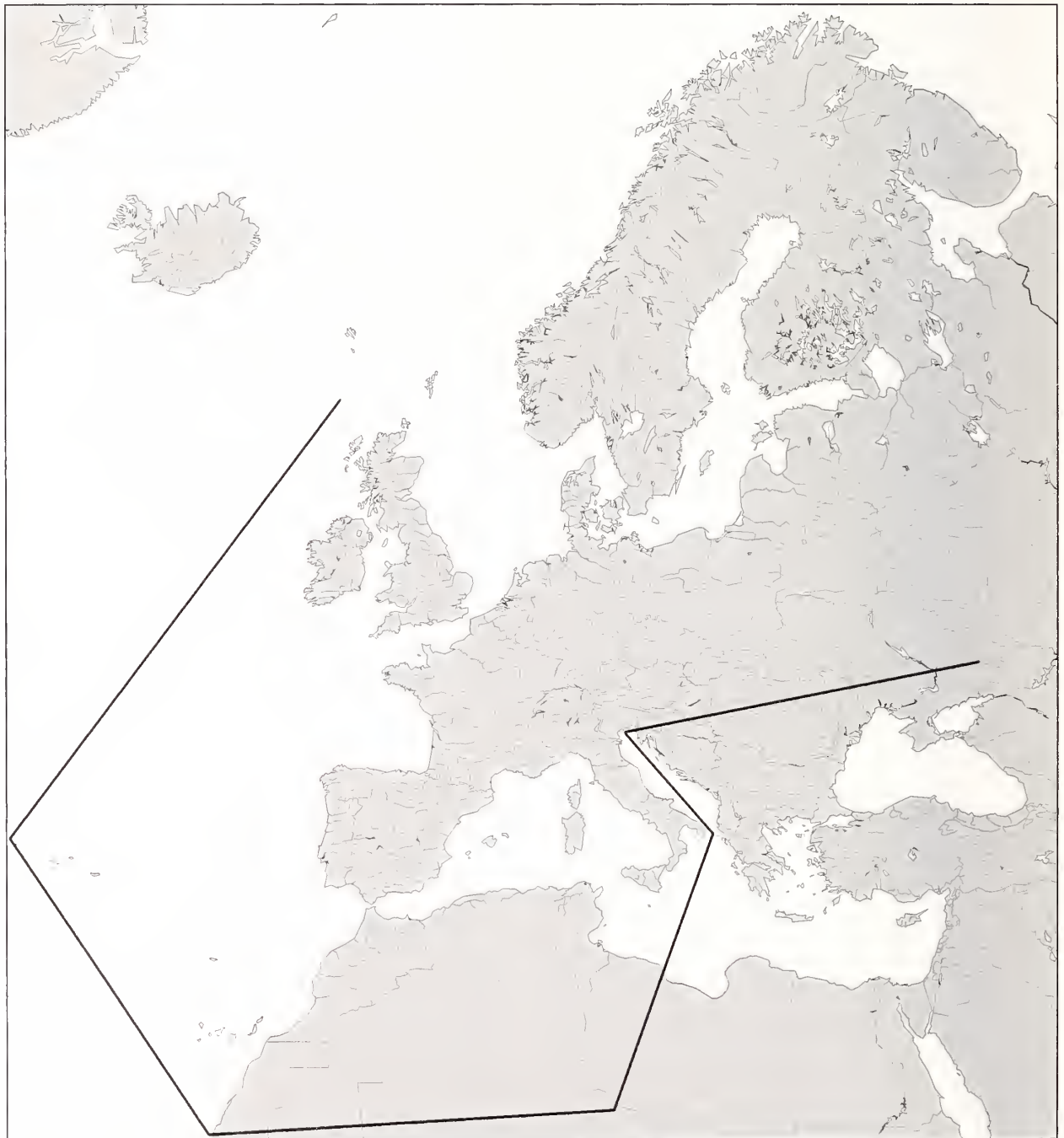
In the recently published first part of the revision of Western Palaearctic *Medon* and a subsequent supplement (ASSING 2004a, 2004b), the species of the Eastern Mediterranean and adjacent regions were treated. This project had been initiated especially by the difficulties encountered when trying to identify specimens from this area; attributing names to them was often little more than a good guess. This observation gave rise to the suspicion that many names were synonymous and/or misinterpreted, and, as was expected, one of the main results of this study was a significant reduction of the number of valid names.

For several reasons, the situation was hypothesized to be similar for the species of the Western Mediterranean.

The species had never been thoroughly revised and numerous species have been described especially from France, the Iberian Peninsula, and from Northwest Africa. COIFFAIT (1984) lists 36 species and subspecies for the Western Mediterranean (including Italy, the Atlantic Islands, and Northwest Africa eastwards to Tunisia); three additional species were later described by SERRANO (1993), BORDONI (1988), and ASSING (1998). However, a preliminary examination of abundant material, which had been accumulated during various field trips in the past decades, suggested a significantly lower species diversity in this region. Many *Medon* species are inhabitants of the leaf litter and occur at relatively high densities, so that it seemed rather unlikely that a considerable number of species had just not been found. Moreover, the revision of the Eastern Mediterranean representa-

tives of the genus had shown that the extent of the distributions and the range of intraspecific variation had generally been underestimated by previous authors. Also, some species, like *Medon burdigalensis* Coiffait and *M. aquitanicus* Coiffait, had never been recorded again after their description, although they had been described from regions where the presence of local endemics is unlikely; consequently, the absence of records

could not be put down to extremely restricted distributions. These considerations, as well as the difficulty encountered when trying to identify *Medon* material from the study area suggested that the previous taxonomic concept of the *Medon* fauna of the Western Mediterranean was at least in part inadequate and eventually initiated the present revision.



Map 1: The study region.

The revision focuses on the species of the Atlantic islands and the western parts of the Mediterranean eastwards to Tunisia and Italy. However, since the ranges of several widespread species also extend into Western, Central, Northern, and even Eastern Europe, these regions are included, too (Map 1).

The recently published revision of Eastern Mediterranean *Medon* is based on an old manuscript version and contains some nomenclatural errors. I use the opportunity to correct them in a separate section at the end of this paper.

## 2. MATERIAL AND MEASUREMENTS

Types and additional material from the following institutions and private collections were examined:

|       |                                                                                    |
|-------|------------------------------------------------------------------------------------|
| DEI   | Deutsches Entomologisches Institut, Eberswalde (L. Zerche)                         |
| DZUL  | Departamento de Biología Animal – Zoología, Universidad de La Laguna (P. Oromí)    |
| IRSNB | Institut Royal des Sciences Naturelles de Belgique, Bruxelles (D. Drugmand)        |
| FMNH  | Field Museum of Natural History, Chicago (via L. H. Herman)                        |
| MCNT  | Museo de Ciencias Naturales de Tenerife                                            |
| MHNG  | Muséum d'Histoire Naturelle, Genève (G. Cuccodoro)                                 |
| MNHNP | Muséum National d'Histoire Naturelle, Paris (N. Berti)                             |
| MNHUB | Museum für Naturkunde der Humboldt-Universität, Berlin (J. Frisch, J. Willers)     |
| MRSNT | Museo Regionale di Scienze Naturali, Torino (M. Daccordi)                          |
| NHMB  | Naturhistorisches Museum Basel (E. Sprecher)                                       |
| NHMW  | Naturhistorisches Museum Wien (H. Schilhammer)                                     |
| SMNS  | Staatliches Museum für Naturkunde, Stuttgart (W. Schawaller, K. Wolf-Schwenninger) |
| UCBA  | Università di Catania, Dip. di Biologia Animale (A. Adorno, G. Longo)              |
| ZMH   | Zoological Museum Helsinki (J. Muona)                                              |
| cAss  | author's private collection                                                        |
| cBor  | private collection A. Bordoni, Firenze                                             |
| cErb  | private collection D. Erber, Giessen                                               |
| cEss  | private collection J. Esser, Berlin                                                |
| cFel  | private collection B. Feldmann, Münster                                            |

|      |                                                  |
|------|--------------------------------------------------|
| cGil | private collection G. Gillerfors, Varberg        |
| cGon | private collection A. Gontarenko, Odessa         |
| cKap | private collection A. Kapp, Rankweil             |
| cKöh | private collection F. Köhler, Bornheim           |
| cOro | private collection P. Oromí, La Laguna           |
| cOwe | private collection J. A. Owen, Epsom             |
| cRou | private collection G. de Rougemont, Londinieres  |
| cSch | private collection M. Schülke, Berlin            |
| cTro | private collection M. Tronquet, Molitg-les-Bains |
| cWun | private collection P. Wunderle, Mönchengladbach  |
| cZan | private collection A. Zanetti, Verona            |

Head length was measured from the anterior margin of the clypeus to the posterior margin of the head, elytral length along suture from the apex of the scutellum to the elytral hind margin.

## 3. THE *MEDON* FAUNA OF THE WESTERN MEDITERRANEAN

Based on an examination of 5600 specimens of *Medon*, including the accessible types, 26 valid species and subspecies are recognized, among them two revalidated and three previously undescribed species. The identities (and validity) of three additional species, *M. augur* Fauvel, *M. subterraneus* Coiffait, and *M. spelaeus* (Scriba), remain doubtful; *M. augur* is represented only by a female type specimen, and neither types nor non-type material of *M. subterraneus* and *M. spelaeus* were available. As expected, the true diversity of the *Medon* fauna in the Western Mediterranean was found to be distinctly lower than indicated by COIFFAIT (1984). Altogether 21 new synonymies were established for the *Medon* fauna of the study area. This enormous degree of synonymy – involving ten now valid species and subspecies, one of them with as many as six new synonyms – explains the difficulties previously encountered when trying to identify and interpret *Medon* species.

In the Western Mediterranean, as defined above, the genus is represented by at least four species groups. Since a phylogenetic analysis, which would require an inclusion also of Eastern Palaearctic species, has not yet been attempted, the species groups as outlined below must be considered tentative. The *Medon apicalis* group includes four species (*M. apicalis*, *M. perniger*, *M. sericellus*, *M. oromii*) and is characterized by a head with relatively ill-defined puncturation, more or less pronounced microsculpture, and without distinct shine, a microsculptured pronotum with fine puncturation, rather long elytra, a male sternite VII with weakly modified



marginal setae (no palisade setae), and either by an apically more or less incised or bifid ventral process (usual condition) or by an apically elongated apex (apomorphic in *M. oromii* and *M. sericellus*) of the aedeagus. In the Eastern Mediterranean and Middle Asia, this species group is represented by the widespread *M. maronitus* (Saulcy), by *M. beydaghiensis* Fagel (southwestern Anatolia), and *M. bucharicus* Bernhauer (Middle Asia). The only Western Mediterranean species of the group whose range extends into the west of the Eastern Mediterranean is *M. apicalis*.

The species group previously referred to as the *M. ferrugineus* group (ASSING 2004a) is represented in the Western Mediterranean by ten species, all of which are characterized by more or less dilated protarsi (at least in the male), the presence of two combs of palisade setae at the posterior margin of the male sternite VII, by an angled (ventral view) or a more or less deeply incised (ventral view) apex of the aedeagus. This species group includes *Medon dilutus*, *M. subcoriaceus*, *M. antricola*, *M. castaneus*, *M. procerus*, *M. pocofer*, *M. rufiventris*, *M. africanus*, *M. vicentensis*, and *M. augur*. Of these species, only the distributions of *M. dilutus* (only the subspecies *M. dilutus pythionissa*), *M. pocofer*, and *M. rufiventris* extend into the Eastern Mediterranean region.

Five species of the *M. brunneus* group occur in the Western Mediterranean: *M. brunneus*, *M. piceus*, *M. cauchoisi*, *M. despectus*, and *M. mirei*. Only one of them, *M. brunneus*, also occurs in the Eastern Mediterranean. The species of this group are characterized by a usually well-defined puncturation of the head and pronotum, unmodified protarsi, the presence of two combs of palisade setae, and by an apically truncate or rounded, unincised aedeagus (ventral view).

The *M. fuscus* group, the species group with the highest diversity in the Eastern Mediterranean, is represented in the Western Mediterranean by only four species, the widespread Ponto-Mediterranean *M. fuscus*, the widespread Atlanto-Mediterranean *M. ripicola*, *M. sardous* from Sardinia, and *M. kabylicus* from Algeria. The systematic position of *M. ripicola* was previously unclear (ASSING, 2004a), but the respective character states in the evidently closely related *M. sardous* and *M. kabylicus* suggest that the distinctive morphology of the aedeagus represents a derived state of the condition usually found in the *M. fuscus* group and the absence of additional long marginal setae at the posterior margin of the male sternite VII is a secondary reduction. Consequently, *M. ripicola* is here attributed to the *M. fuscus* group. SERRANO (1993) erroneously attributed also *M. vicentensis* to this group, which is characterized especially by the shape and chaetotaxy of the male sternite VII, the broad semicircular excision of the male sternite

VIII, as well as by the morphology of the aedeagus; for details see ASSING (2004a).

Two endemic species of the Atlantic Islands – *M. indigena* and *M. feloi* – may be monophyletic, both of them sharing the absence of palisade setae on the male sternite VII. This hypothesis would be supported also by a similar morphology of the aedeagus. Moreover, *Medon indigena* and *M. feloi* share a very similar shape of the male sternite VII, as well as a head and pronotum with sparse fine puncturation and with distinct microsculpture.

Eleven species have very restricted distributions. These include the endemics of the Canary Islands and Madeira – *M. indigena*, *M. subcoriaceus*, *M. antricola*, *M. vicentensis*, *M. feloi*, and possibly also *M. oromii* –, *M. sardous* from Sardinia, the microphthalmous *M. mirei* from northern Algeria, the troglobiont *M. procerus* from central Spain, possibly also *M. kabylicus* and *M. sericellus* from Algeria. The question whether or not *M. subterraneus*, *M. spelaeus*, and *M. augur* are valid endemic species will remain unanswered until material of these species becomes available for study and their taxonomic status is clarified. Of the remaining species, two are confined to Tunisia and Algeria: *M. africanus* and *M. despectus*, with the latter also occurring in the Italian island Pantelleria.

As was to be expected, most of the more widespread (sub-)species of the Western Mediterranean are Atlanto-Mediterranean elements sensu LATTIN (1967): *M. cauchoisi*, *M. ripicola*, *M. apicalis*, *M. ripicola*, *M. dilutus cephalus*, *M. piceus*, and *M. castaneus*. Three (sub-)species are Adriatic-Mediterranean elements (*M. perniger*, *M. brunneus*, and *M. dilutus dilutus*), and two have a Ponto-Mediterranean distribution (*M. fuscus*, *M. rufiventris*). More data are needed to decide if *M. pocofer* represents an Atlanto- or an Adriatic-Mediterranean element.

Ecologically, the *Medon* fauna of the study area is highly diverse. Several species – all the species of the *M. brunneus* group, plus *M. subcoriaceus*, *M. sardous*, *M. fuscus*, and *M. perniger* – apparently inhabit the litter layer and are only occasionally encountered also in other habitats; the same may be true of several other species, but too little is known about their ecology. Some species such as *M. castaneus* and *M. ripicola* are evidently associated with subterranean mammal nests. *Medon rufiventris* is usually found in or under dead wood, though its real habitat is unknown. Others – *M. procerus*, *M. feloi*, *M. antricola*, *M. vicentensis* – are doubtlessly troglobionts. The habitats of several species, among them the widespread *M. apicalis*, which is usually collected on the wing, are subterranean, but their exact nature is unknown.

Below, only those species that have not already been treated by ASSING (2004a) are redescribed and illustrated. Additional material of *Medon* species exclusively occurring in the region treated in the first part of the revision is compiled in a separate section at the end of the paper. In order to avoid redundancy, specimens already listed by ASSING (1998, 1999a, 2000, 2004a, 2004b) and ASSING & WUNDERLE (1999) are omitted from the material sections. In the references to the original descriptions, the original combination is given in the original spelling even when the gender of an adjectival name is incorrect (e. g. *Medon pernigrum* instead of *M. perniger*).

### 3.1. *Medon apicalis* (Kraatz, 1857) (Map 2)

*Lithocharis apicalis* Kraatz, 1857 (KRAATZ 1857: 715f).

*Medon orgianum* Bordoni, 1980 (BORDONI 1980: 83) syn. n.

**Types examined:** *L. apicalis*: see ASSING (2004a).

*M. orgianus*: Holotype ♂: ITALIA CENTR. To: Orgia (Si.) f. Merse, leg. Bordoni, IX.1974 / HOLOTYPUS / *Medon orgianum* n. sp. Det. A. Bordoni 1975 / *Medon apicalis* (Kraatz) det. V. Assing 2003 (cBor). Paratype ♀: mounted on same pin as holotype with extra label "Allotype ..." (cBor).

**Comments:** The holotype of *M. orgianus* is doubtlessly conspecific with *M. apicalis*. The synonymy of both names was independently recognized also by A. BORDONI (Firenze, pers. comm.) and A. ZANETTI (Verona, pers. comm.).

**Additional material examined** (total: 461 exs.; for additional material see ASSING (2004a)):

**Morocco:** 2 exs., Haut Atlas, NE Tizi-n-Test, 30°54N, 08°19W, 1710 m, edge of stream, 29.XII.2002, leg. Assing, Wunderle (cAss, cWun); 1 ex., NE Tizi-n-Test, 30°55N, 08°17W, 1150 m, 29.XII.2002, leg. Wunderle (cWun); 1 ex., 40 km N Oulmès, 27.II.1983, leg. Ledoux (cTro).

**Portugal:** 1 ex., Lisboa, Serra do Sintra, 24.V.1992, leg. Wunderle (cWun); 1 ex., Algarve, N Tavira, Alcaria do Cume, 37°15N, 07°44W, 440 m, 12.IV.2002, leg. Meybohm (cAss); 1 ex., Algarve, Serra de Monchique, NW Foia, 37°19N, 08°36W, 780 m, 15.IV.2002, leg. Meybohm (cAss); 3 exs., Algarve, Caldas de Monchique, V.-VI.1960, leg. Fagel (IRSNB). **Ma-deira:** 1 ex., Canico de Baixo, window, 20.-27.IX.1990, leg. Pieper (cAss); 5 exs., same data, but 7.-20.V.1992 (cAss); 1 ex., same data, but 14.-20.IX.1989 (cAss); 3 exs., Santo da Serra, 2.VIII.1975, leg. Vit (MHNG); 2 exs., Camacha, Lavada da Serra, 13.VIII.1975, leg. Vit (MHNG).

**Spain: Galicia:** 1 ex., Lugo, Sierra de Ancares, Tres Obispos, VI.1997 (cFel). **Asturias:** 12 exs., W Puerto de Pajares, Puerto de la Cubilla – Sotiello, 500 - 1400 m, car-net, 8.VI.1991, leg. Wunderle (cWun). **Cantabria:** 1 ex., Espinama, 27.VII.1972, leg. Lohse (cBor). **Cataluña:** 1 ex., Girona, leg. Franz (NHMW); 1 ex., Girona, Playa de Aro, 25.V.-5.VI.1971 (cBor); 12 exs., Seo de Urgel, Arfa, V.-VI.1962, leg. Fagel (IRSNB); 3 exs., Seo de Urgel, Sierra del Cadi, 1000 m, V.-VI.1962, leg. Fagel (IRSNB). **Aragón:** 1 ex., WNW Tuel, Sierra de Albarracín, NE Noguera, 40°30N, 01°35W, 1625 m, 11.IV.2003, leg. Assing (cAss). **Madrid:** 1 ex., Sierra de Guadarrama, El Escorial, leg. Franz (NHMW). **Valencia:** 10 exs., Alicante, Rio Sella, 25.III.1978 (cAss); 1 ex., Alicante, El Penon, leg. Franz (NHMW); 2 exs., Castellón, Cáliz near Benicarlo, 6.V.1966, leg. Besuchet (MHNG). **Castilla-La Mancha:** 12 exs., SE Manzanares, Alhambra, 2.V.1925, leg. Scheerpeltz (NHMW); 1 ex., Albacete, Villaverde, 13.IV.1959, leg. Besuchet (MHNG). **Andalucía:** 1 ex., Sierra Nevada, Rio Genil, 37°08N, 03°24W, 1000 m, 24.II.2000, leg. Lompe (cAss); 2 exs., Sierra Nevada, Lanjaron, 26.IV.-18.V.1961, leg. Fagel (IRSNB); 1 ex., Puerto de Galis, 36°32N, 05°38W, 400 m, 20.II.2000, leg. Meybohm (cAss); 1 ex., Granada, Cenes near Granada, 24.V.1966, leg. Besuchet (MHNG); 1 ex., Algeciras env., Rio Guadarranque, 36°15N, 05°26W, flood plain forest, 21.II.2000, leg. Meybohm (cAss); 1 ex., Algeciras env., Sierra de Luna, 350 m, 28.III.1994, leg. Assing (cAss); 6 exs., Algeciras env., Sierra de Fates, 350 m, 28.III.1994, leg. Assing, Wunderle (cAss, cWun); 2 exs., Sierra de Bermeja (CA), Jubrique, 500 m, 26.III.1994, leg. Assing, Wunderle (cAss, cWun); 1 ex., Sierra de Bermeja (MA), Puerto de Peñas Blancas, 1200 m, 26.III.1994, leg. Wunderle (cWun); 1 ex., Cerro de la Novia, barranco at km 6 A-375, 36°37N, 05°30W, 700 m, 19.II.2000, leg. Lompe (cAss); 1 ex., Algeciras, Cerro de Mirador, leg. Franz (NHMW); 1 ex., Vejer de la Frontera (CA), 27.III.1987, leg. Zoia (cZan); 2 exs., Cordoba, Villaviciosa, 29.VI.1969, leg. Comellini (MHNG); 1 ex., Andújar, V.1959, leg. Comellini (cAss); 1 ex., E Jaén, SE Mancha Real, Sierra Almadén, ca. 37°45N, 03°33W, 1450-1850 m, *Q. ilex* litter, 26.XII.2003, leg. Assing (cAss). **Baleares:** 2 exs., Ibiza, Sierra Grosa, leg. Franz (NHMW, cAss); 1 ex., Ibiza, locality not specified, leg. Franz (NHMW). **Islas Canarias: Gran Canaria:** 1 ex., Bco. de la Miña, 1200 m, 21.XII.1997, leg. Assing (cAss); 1 ex., Bco. de la Virgen, 500 m, 20.XII.1997, leg. Wunderle (cWun); 2 exs., N Teror, Osorio, 600 m, 20.XII.1997, leg. Wunderle (cWun). **Tenerife:** 3 exs., Teno, Las Portelas, 700 m, 30.XI.1996, leg. Schülke (cSch, cAss).

**France: Aquitaine:** 1 ex., Landes, Saint-Sever-sur-l'Adour, 11.IX.1915 (cSch); 1 ex., Gironde, Léognan, VIII.1943, leg. Tempère (MHNG); 8 exs., Cap-Ferret,



17.IX.1928, leg. Tempère (MHNG); 4 exs., Gironde, Cambes, 17.III.1939, leg. Tempère (MHNG); 4 exs., Cambes, 10.IV.1939, leg. Giraud (MHNG); 1 ex., Gironde, Pessac, 5.VI.1928, leg. Tempère (MHNG). **Midi-Pyrénées:** 1 ex., Ariège, Foix, 3.IV.1953, leg. Tempère (MHNG); 4 exs., Hautes-Pyrénées, locality not specified, leg. Pandellé (NHMW). **Picardie:** 1 ex., Laigneville (Oise), VII.1908 (MHNG). **Île-de-France:** 2 exs., Cheptainville, 5.VIII.1945, leg. Levasseur (MHNG). **Centre:** 1 ex., Orléans (cBor); 1 ex., Perrusson, V.1905, leg. Mequignon (MHNG); 8 exs., Perrusson, XII.1903 (MHNG); 1 ex., same data, but III.1906 (MHNG); 11 exs., Perrusson, leg. Mequignon (MHNG); 2 exs., Loches (MHNG). **Rhône-Alpes:** 1 ex., Vaugneray (MHNG). **Provence:** 9 exs., Var, Tanneron, Auribeaux – Lac de S. Cassien, car-net, 30.-31.V.1991, leg. Wunderle (cWun); 1 ex., Var, Tanneron, car-net, VI.1988, leg. Wunderle (cWun); 5 exs., Var, Plan du Var [43°52N, 7°12E] (MHNG); 4 exs., Plan du Var, I.1954 (MHNG); 1 ex. [teneral], Ollioules, 15.X.1973 (MHNG); 1 ex., Var inundation (W Nice), III.1951 (MHNG); 1 ex., Alpes Maritimes, Sophia Antipolis near Antibes, haystack, 16.X.1991, leg. Schülke (cSch); 1 ex., Alpes Maritimes, Breil-sur-Roya, 1.VI.1955 (MHNG); 1 ex., Alpes Maritimes, “Gr. Dozol”, X.1937 (MHNG); 1 ex., Alpes Maritimes, St.-Vallier-de-Thiery, V.1975, leg. Toumayeff (MHNG); 4 exs., Var, Bras, IV.1971, leg. Tronquet (cTro); 7 exs., Var, Gonfaron, chestnut litter, IV.1971, leg. Tronquet (cTro); 1 ex., Var, Vésubie inundation [near Lantosque], V.1961 (MHNG); 4 exs., Vaucluse, Mont Ventoux, 17.VI.1977, leg. Tronquet (cTro). **Cor-sica:** 1 ex., SE Corte, 200 - 900 m, car-net, 8.IV.1990, leg. Assing (cAss); 3 exs., Cursegliente-Pietroserana-Corte, 8.IV.1990, leg. Wunderle (cWun); 1 ex., Erbajolo-Bastinaco-Curtisi, car-net, 12.IV.1990, leg. Wunderle (cWun); 1 ex., Valle di Restonica, 800 - 1000 m, 6.-13.IV.1990, leg. Wunderle (cWun); 2 exs., NW St. Florent, Désert des Agriates, car-net, 21.IV.2001, leg. Zanetti (cZan); 1 ex., Casta, Campu Castingu, 300m, 18.VII.1976, leg. Sette (cZan); 1 ex., San Nicolao, 270 m, leaf litter, 18.VII.1994, leg. Zerche (DEI); 4 exs., Porto Vecchio, caught flying, V.1971, leg. Tronquet (cTro); 12 exs., Bocognano, caught flying, 28.V.1972, leg. Tronquet (cTro); 1 ex., Bocognano, caught flying, 26.V.1987, leg. Tronquet (cTro); 1 ex., Bocognano, 1905, leg. Leonhard (DEI); 2 exs., Cateraggio, caught flying, 1.VI.1987, leg. Tronquet (cTro); 1 ex., Francardo, VII.1954 (MHNG); 1 ex., Porto, V.1966 (MHNG); 1 ex., E Col de Vergio, Ft. Valdo-Niello [42°17N, 08°54E], caught flying, 25.V.1972, leg. Tronquet (cTro); 2 exs., locality not specified (DEI). **Locality ambiguous or not specified:** 1 ex., Prunelli, V.1960 (MHNG); 1 ex., “France”, leg. Mulsant (MHNG).

**England:** 1 ex., Norwich, Norfolk, reed litter, 12.IV.1989, leg. Owen (cOwe).

**Sweden: Gotland:** 1 ex., Mästerby, 21.VI.1965, leg. Gillerfors (cGil); 1 ex., Vall, 8.VIII.1976, leg. Gillerfors (cGil); 3 exs., Buttle, 7.VIII.1976, leg. Gillerfors (cGil); 4 exs., Fide, 1.VIII.1975, leg. Gillerfors (cGil). **Skåne:** 4 exs., Stenshuvud, 19.III.1977, leg. Gillerfors (cGil). **Jämtland:** 1 ex., Svenstavik, 22.VI.1989, leg. Gillerfors (cGil). **Halland:** 1 ex., Hunnestad, 5.V.1978, leg. Gillerfors (cGil); 2 exs., Hunnestad, 4.VI.1988, leg. Gillerfors (cGil); 1 ex., Dagsås, 6.VI.1971, leg. Gillerfors (cGil); 1 ex., Dagsås, 9.IX.1977, leg. Gillerfors (cGil); 2 exs., Dagsås, 1.VI.1979, leg. Gillerfors (cGil). **Småland:** 1 ex., Ruggstorp, 11.VIII.1978, leg. Gillerfors (Gil). **Pite Lappmark:** 3 exs., Moskosel, 13.VI.1976, leg. Gillerfors (cGil). **Lule Lappmark:** 1 ex., Messaure, 23.VII.1978, leg. Gillerfors (cGil).

**Germany: Nordrhein-Westfalen:** 1 ex., Kreis Steinfurt, NSG Heiliges Meer, car-net, 8.V.1998, leg. Feldmann (cFel); 1 ex., Kreis Steinfurt, NSG Emsdettener Venn, car-net, 7.VI.1996, leg. Terlutter (cFel); 2 exs., Brüggen, Holter Heide, car-net, 19.VI.1995, leg. Wunderle (cWun); 3 exs., Düren, Gürzenich-Schevenhütte, car-net, 26.V.1989, leg. Wunderle (cWun); 3 exs., Jülich, Hambach, Lindenberger Wald, 2.VII.1991, leg. Köhler (cKöh); 4 exs., Bonn, Röttgen, Kottenforst, 3.VII.1991, leg. Köhler (cKöh); 2 exs., Brühl, Staatsforst Ville, 30.IV.1991, leg. Köhler (cKöh); 2 exs., Eifel, Gemünd, Der Kermeter, 6.V.1990, leg. Köhler (cKöh). **Rheinland-Pfalz:** 2 exs., Ulmen-Vollmerath, car-net, 9.VI.1983, leg. Wunderle (cWun); 1 ex., Staudernheim, 24.I.1995, leg. Köhler (cKöh); 2 exs., Monzingen, 18.-19.V.1991, leg. Köhler (cKöh); 1 ex., Schaidt, Bienwald, NWR Stuttperch, 30.V.1996, leg. Köhler (cKöh); 2 exs., Bacharach, Steeg, 5.VI.1991, leg. Köhler (cKöh); 2 exs., Schloßböckelheim, 31.V.1996, leg. Köhler (cKöh); 1 ex., Taben/Saar, car-net, 6.-8.VI.1996, leg. Köhler (cKöh). **Schleswig-Holstein:** 1 ex., Eutin, 1.VI.1982, leg. Lohse (MHNG); 1 ex., Eutin, 1.VIII.1984, leg. Lohse (MHNG); 1 ex., Tensfeld, leg. Lohse (MHNG); 1 ex., Güster, 24.V.1958, leg. Lohse (MHNG); 1 ex., Güster, 7.VII.1977, leg. Lohse (MHNG); 2 exs., “Farchau” (?), 13.V.1981, leg. Lohse (MHNG); 1 ex., Hornbek, 21.VI.1979, leg. Lohse (MHNG); 1 ex., Koberg, 14.V.1979, leg. Lohse (MHNG); 6 exs., Sachsenwald, 23.VI.1977, leg. Lohse (MHNG); 2 exs., Sachsenwald, 30.VII.1961, leg. Lohse (MHNG). **Hamburg:** 1 ex., Ohlstedt, 3.VI.1961, leg. Lohse (MHNG). **Niedersachsen:** 1 ex., Neustadt/Rbg., Himmelreich, window trap, 7.VII.1989, leg. Schmidt (cAss); 5 exs., Hannover, Eilenriede, car-net, 28.-29.V.1991, leg. Assing (cAss); 1 ex., same data, but 8.VII.1991 (cAss); 1 ex., Lüneburger Heide, Schneverdingen, Tütsberg, pitfall trap, 17.VI.1997 (cAss); 2 exs., Kreis Lüneburg, Amt Neuhaus/Elbe, car-net, 6.VII.1995, leg. Renner (cFel); 5 exs., Lüchow-Dannenberg, car-net, 1.VI.1983, leg. Renner (cWun); 1 ex., Lüchow-Dannenberg, Gar-

tower Forst, 13.VI.1987, leg. Wunderle (cWun); 1 ex., Göhrde, 15.V.1983, leg. Lohse (MHNG); 4 exs., Göhrde, 8.VI.1977, leg. Lohse (MHNG); 2 exs., Göhrde, 21.V.1981, leg. Lohse (MHNG); 4 exs., Forst Göhrde, 1.VI.1983, leg. Lohse (MHNG); 4 exs., Forst Göhrde, 26.VII.1980, leg. Lohse (MHNG); 8 exs., Forst Göhrde, 6.VI.1980, leg. Lohse (MHNG); 1 ex., Wirl near Gartow, 6.VII.1983, leg. Lohse (MHNG); 1 ex., Lüchow-Dannenberg, Hühbeck, 1.V.1978, leg. Lohse (MHNG); 1 ex., same data, but 26.V.1979, leg. Lohse (MHNG); 1 ex., Lüchow-Dannenberg (cKöh); 2 exs., Uelzen, Brambostel, 2.VI.1991, leg. Lohse (MHNG). **Hessen:** 2 exs., Vogelsberg, Ehringhausen, car-net, V.1987, leg. Wunderle (cWun); 1 ex., Dautphe-Buchenau, Katzenbachtal, car-net, 26.IV.1987, leg. Wunderle (cAss). **Berlin/Brandenburg:** 19 exs., Berlin, Hohen Neuendorf (DEI). **Sachsen:** 3 exs., Gutttau, car-net, 25.V.1985, leg. Schülke & Heinig (cSch); 3 exs., Oberlausitz, Daubitz, haystack, 23.IV.1994, leg. Schülke (cSch, cAss); 1 ex., Weißwasser, car-net, 17.V.1984, leg. Apel (DEI).

**Austria: Niederösterreich/Wien:** 11 exs., several localities in the surroundings of Wien (NHMW); 7 exs., Wienerwald, Hadersdorf, leg. Skalitzky (MHNG, NHMW); 5 exs., Wien, Pötzleinsdorfer Park (MHNG). **Kärnten:** 1 ex., Gurktaler Alpen, Falkert, car-net, 24.VII.1991, leg. Assing (cAss); 4 exs., Eisenkappel, car-net, 26.VI.-4.VII.1987, leg. Siede & Wunderle (cWun). **Steiermark:** 1 ex., Pleschkogel near Rein, 590 m, sifted forest litter, 20.VI.1995, leg. Zerche & Behne (DEI).

**Italy: Liguria:** 1 ex., San Remo, leg. Schneider (DEI); 2 exs., Genova, Premanico, 17.XII.1972, leg. Bartoli (UCBA); 2 exs., Casanova di St. Olcese (GE), 26.III.1972, leg. Bartoli (UCBA). **Friuli-Venezia Giulia:** 1 ex., Rupin Grande (TS), car-net, 15.V.1994, leg. Zanetti (cZan). **Veneto:** 1 ex., Tregnago – Vestenavечchia, car-net, 20.IV.1996, leg. Zanetti (cZan). **Toscana:** 8 exs., E Arezzo, Lippiano near Padonchia, XI.1924, leg. Andreini (UCBA, cBor); 1 ex., San Rossore (Pisa), 30.I.1969, leg. Santini (cBor); 1 ex., Padule di Fucecchio, leg. Castellini (cTro). **Elba:** 3 exs., leg. Paganetti (DEI, cAss). **Sardegna:** 1 ex., NE Lula (NU), 600 m, 23.IV.1992, leg. Scheuern (cWun); 1 ex., NE Lula, 600 m, 23.IV.1992, leg. Schawaller (cSch); 1 ex., 10 km NNW Nuoro, Grotta Cuccu, Monte Tiria, 27.VIII.1994 (cBor); 3 exs., 5 km SW Galtelli (NU), light source, 16.VII.1999, leg. Zanetti (cZan); 1 ex., Galtelli, car-net, 17.VII.1999, leg. Zanetti (cZan); 1 ex., locality not spe-

cified (DEI). **Sicilia:** 1 ex., M. Iblei, Cava Gissara, Mellilli (SR), 300 m, 6.VI.1991, leg. Sabella (UCBA); 2 exs., Taormina (ME), Isola Bella, 8.X.2002 (UCBA); 4 exs. same locality, 7.XI.2002 (UCBA, cAss).

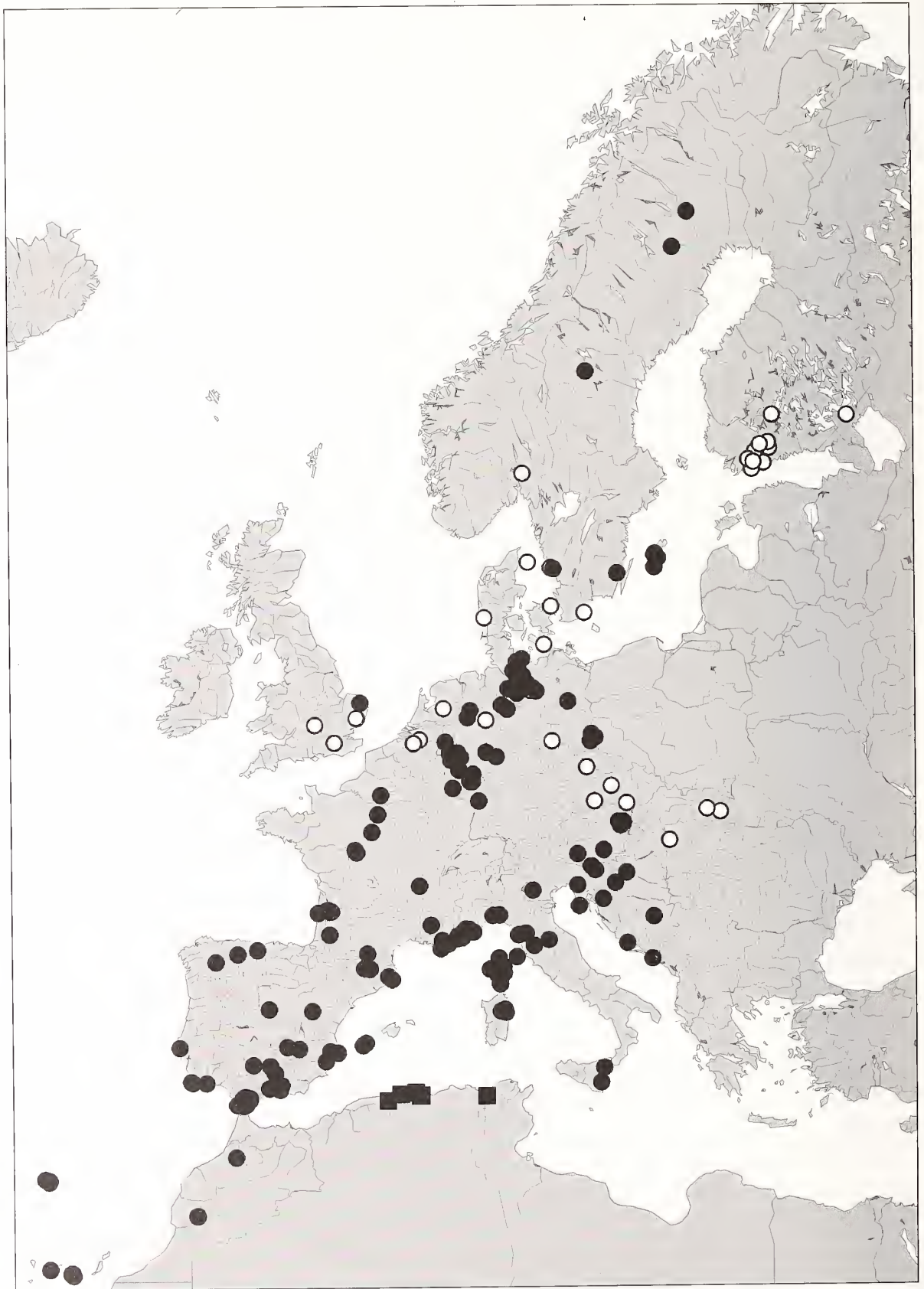
**Slovenia:** 1 ex., Savina, leg. Paganetti (MHNG).

**Locality not indicated:** 3 exs. (MHNG).

**Diagnosis:** See ASSING (2004a) and the key in section 4.

**Distribution and bionomics:** *Medon apicalis* is widespread in the western parts of the Western Palaearctic region (Map 2). It occurs in the Canaries (Tenerife and Gran Canaria), Madeira, and Morocco; in continental Europe, its distribution ranges from the Iberian Peninsula in the southwest to England and Scandinavia in the north, and to the northern Balkans in the southeast (material examined). It has also been reported from the Azores (BERNHAEUER 1940; GILLERFORS 1988; LUNDBLAD 1958; SMETANA 1970). In Scandinavia it is the most widespread and least rare species of the genus; in Sweden it has been recorded as far north as Lule Lappmark and Norrbotten (material examined; LUNDBERG 1995). *Medon apicalis* is, however, unknown from the Baltic countries (SILFVERBERG 1992). In the British Isles, only few localities are known from southern England (FOWLER 1888; JOY 1932). NORMAND (1935) records *M. apicalis* also from Tunisia, but these records may refer to similar species (*M. ripicola*, *M. kabylicus*, *M. sericellus*); I have seen no material from there. For a selection of additional literature records see BOHÁČ (1985), BRUGE et al. (2001), DRUGMAND (1989), FOWLER (1888), M. HANSEN (1996), HANSEN et al. (1994, 1995), V. HANSEN (1964), HORION (1965), HUGENTHOBLE (1966), KOCH (1968), KÖHLER (2000), KÖHLER & KLAUSNITZER (1998), LUNDBERG (1995), SILFVERBERG (1992), TERLUTTER (1995), and TRONQUET (2001). In the southern Balkans, Anatolia, and the Caucasus region, *M. apicalis* is replaced by *M. maronitus* (Saulcy) (ASSING 2004a). In Italy, where the closely related *M. perniger* is much more abundant, *M. apicalis* has been found in the north, in Toscana, and in the islands Elba, Sardegna, and Sicilia. In some Italian localities and in the Alpes Maritimes, *M. apicalis* and *M. perniger* were apparently collected together: Toscana (Lippiano, San Rossore), Liguria (Premanico, Casanova di St. Olcese (GE)), Sicilia (Isola Bella), Alpes Maritimes (Antibes). All previous literature records of *M. apicalis* from Italy must be considered doubtful due to probable confusion with *M. perniger*.





**Map 2:** Distributions of *Medon apicalis* (Kraatz) (filled circles: revised records; open circles: selected unexamined records) and *M. sericellus* (Fairmaire) (filled squares, examined records).



The species has been collected in various biotopes and habitats. In the material examined, the vast majority of specimens collected in spring and early summer (April through July) were taken on the wing (mostly by car-net, but also by flight interception traps). Ilpo RUTANEN (Hyvinkää, pers. comm. 2003) communicated to me 22 records from southern Finland, 21 of which were made with a car-net (June through August). The remainder of the specimens examined were found in various types of woodland, at the edge of streams, under haystacks, or at light sources. Some of the records from early spring are apparently from flood debris. The reproduction habitat of *M. apicalis* is cryptic and unknown. According to HORION (1965) and KOCH (1968), the species is possibly associated with nests and burrows of voles and mice. NOWOSAD (2000), however, examined 7000 nests of various small mammals and birds, but found *M. apicalis* only occasionally. All the records of *M. apicalis* from mole nests by OSELLA & ZANETTI (1974) refer to *M. perniger*. Adult beetles have been recorded throughout the year; teneral specimens were observed in autumn (October). DRUGMAND (1989) states that the species is bivoltine, but there is no evidence supporting this. Based on the material examined here, *M. apicalis* is univoltine.

### 3.2. *Medon perniger* Coiffait, 1978 (Figs. 1-7, Map 3)

*Medon apicalis* var. *pernigrum* Coiffait, 1970a (COIFFAIT 1970a: 717); unavailable name (infrasubspecific).

*Medon pernigrum* Coiffait, 1978 (COIFFAIT 1978: 268f).

*Medon pernigrum fraudulentum* Coiffait, 1978 (COIFFAIT 1978: 269f) **syn. n.**

**Types examined:** *M. perniger*: Holotype ♂: Emilie, Parme / MUSEUM PARIS COLL. H. COIFFAIT / HOLOTYPE / *Medon pernigrum* H. COIFFAIT 1963 / Holotypus *Medon perniger* Coiffait rev. V. Assing 2003 (MNHN).

*M. perniger fraudulentus*: Paratype ♂: ♂ / Sicilien, Messina, April 43. / leg. Wolfrum / *Medon apicalis* det. E. Ulbrich 1966 / MUSEUM PARIS COLL. H. COIFFAIT / PARATYPE / Edeage casse / *Medon pernigrum fraudulentum* H. COIFFAIT 1978 [?] / *Medon perniger* det. V. Assing 2003 (MNHN).

**Comments:** The holotype of *M. perniger* is a relatively dark specimen. The main difference between *M. perniger* and *M. p. fraudulentus* indicated by COIFFAIT (1978) is the lighter coloration of the latter. This coloration, however, is clearly within the range of intraspecific variation throughout the range of the species. No significant differences could be found in the male sexual characters, so that *M. p. fraudulentus* is here placed in the synonymy of *M. perniger*.

### Additional material examined (total: 298 exs.):

**France:** 1 ex., Alpes Maritimes, Sophia Antipolis near Antibes, haystack, 18.X.1991, leg. Schülke (cSch); 1 ex., Var, Argens inundation [43°27'N, 06°30'E], 17.I.1955 (MHNG); 1 ex., Var, Vésubie inundation [near Lantosque], V.1961 (MHNG); 1 ex., Alpes Maritimes, "St. Pons", VI.1956 (MHNG); 1 ex., Alpes Maritimes, Menton, inundation, V.1952 (MHNG).

**Switzerland:** 2 exs., Ticino, Locarno, VIII.1944 ["*Typus Medon linderi* O. Scheerpeltz"; manuscript name] (NHMW).

**Italy: Trentino-Alto Adige:** 1 ex., Trento, Villa Lagarina, 950 m, 29.IV.1962, leg. Petrolli (cBor). **Piemonte:** 2 exs., Cuneo, Colle San Bernardo, N Erli, 600 m, 12.X.1997, leg. Wolf (cSch); 1 ex., locality not specified, leg. Baudi (DEI). **Lombardia:** 1 ex., Alpi Orobi, Morbegno, 350 m, deciduous forest, 18.VIII.1994, leg. Assing (cAss); 1 ex., Zecchone near Pavia, 17.X.1977, leg. Kanaar (cSch); 2 exs., Rivolta d'Adda, 23.X.1959, leg. Rosa (NHMW, cAss); 1 ex., Ostiglia (MN), Palude del Busatello, 7.III.1982, leg. Zanetti (cZan); 10 exs., Mantova, Bosco Fontana, 27.I.1980 (5 exs.), 7.V.1989 (1 ex.), 11.VI.1989 (1 ex.), 12.X.1989 (3 exs.), leg. Zanetti (cZan); 1 ex., Torbiere d'Isèo (BS), 28.III.1982, leg. Zanetti (cZan); 4 exs., Castellaro Lagusello (MN), 2.XII.1990, leg. Zanetti (cZan); 1 ex., Pozzolo (MN), 1.IV.1990, leg. Zanetti (cZan); 1 ex., Oltre il Colle, 18.VII.1914 (DEI); 1 ex., Corana (PV), 12.IV.1970, leg. Briganti (UCBA); 1 ex., Bereguardo, 2.V.1943, leg. Paganetti (MHNG). **Veneto:** 1 ex., Arcole (VR), 12.III.1971, leg. Pace (cBor); 3 exs., Sona (VR), 1.III.1970, leg. Zanetti (cZan); 1 ex., Valli Grandi Veronesi, La Torretta [45°06'N, 11°16'E], leg. Zanetti (cZan); 14 exs., San Giovanni Lupatoto (VR), mole nests, 28.IX.1973, leg. Zanetti (cZan, cAss); 3 exs., same data, but 16.XI.1973 (UCBA, cZan); 1 ex., same locality, "base di *Salix*", 2.II.1975, leg. Zanetti (cZan); 4 exs., NW Villafranca di Verona, Custoza, mole nests, 10.II.1974, leg. Zanetti (cZan); 1 ex., Custoza, 24.XI.1974, leg. Zanetti (cZan); 1 ex., Bussolengo – Sommacampagna (VR), car-net, 24.VI.1989, leg. Zanetti (cZan); 2 exs., Verona, P.te Saval, 26.II.1974, leg. Zanetti (cZan); 3 exs., Montecchia di Crosara (VR), mole nest, 22.II.1976, leg. Zanetti (cZan); 2 exs., Soave – Montecchia d. C., car-net, 20.IV.1996, leg. Zanetti (cZan); 1 ex., San Martino Buon Albergo (VR), Musella Ferrazzetta, mole nest, 28.II.1991, leg. Zanetti (cZan); 1 ex., Pastrengo (VR), 20.IV.1984, leg. Zanetti (cZan); 1 ex., Pellegrina (VR), mole nest, 3.II.1980, leg. Zanetti (cZan); 1 ex., Tregnago (VR), 26.XII.1976, leg. Zanetti (cZan); 2 exs., Tregnago – Vestenavecchia, car-net, 20.IV.1996, leg. Zanetti (cZan); 1 ex., Negrar (VR), Montericco, light source, IV.2002, leg. Zanetti (cZan). **Emilia-Romagna:** 4 exs., Sant'Agostino (FE), Bosco

Panfilia, 20 m, nest of *Apodemus*, 23.III.1997, leg. Tagliapietra & Zanetti (cZan); 2 exs., Valle Scoltenna (N Sestola) (MO), car-net, 1.VI.1996, leg. Zanetti (cZan). **Friuli-Venezia Giulia**: 1 ex., Udine, Chiarpenna, 200 m, 20.X.2001, leg. Kahlen (cAss). **Liguria**: 1 ex., ca. 30 km NW La Spezia, Zignago, VII.1962 (cBor); 3 exs., La Spezia, Le Grazie, 5.XII.1982, leg. Zoia (cZan); 5 exs., Genova, Ruta, leg. Dodero (NHMW, cAss); 1 ex., Genova, Premanico, 17.XII.1972, leg. Bartoli (UCBA); 1 ex., Neirone (GE), S. Marco d'Ursi, 30.XII.1982, leg. Zoia (cZan); 1 ex., Bordighera (DEI); 1 ex., La Spezia, Déiva Marina near Piazza, 5.IV.1970, leg. Briganti (UCBA); 2 ex., Graveglia (GE), Pian di Fieno, 19.III.1976, leg. Zoia (UCBA); 6 exs., Casanova di St. Olcese (GE), 18.IV.1973, leg. Bartoli (UCBA); 1 ex., same data, but 26.III.1972 (UCBA); 34 exs., Genova (città), Villetta Di Negra, 1.&8.X.1972, leg. Bartoli (UCBA); 2 exs., same data, but 7.V.1975 (UCBA); 1 ex., 10 km NE Genova, Creto, 2.V.1977, leg. Parodi (UCBA); 1 ex., Genova, V.1920, leg. Mancini (UCBA); 1 ex., Genova, leg. Natterer (MHNG); 3 exs., Arenzano (GE), 6.XI.1977, leg. Gardini (UCBA); 1 ex., Ameglia, IX.1913, leg. Mancini (UCBA). **Toscana**: 1 ex., Livorno, Tenuta di Tombola, 11.IV.1992, leg. Schawaller (SMNS); 1 ex., SW Firenze, Figline d'Arno, 200 m, 14.VI.1992, leg. Assing (cAss); 1 ex., Vallombrosa, Regelle, 750 m, 28.IV.1991, leg. Wunderle (cWun); 7 exs., Grassina (FI), 350 m, flood debris, 3.V.1991, leg. Wunderle (cWun, cAss); 2 exs., Mt. di Calvani (FI), Mungona, 650 m, 1.V.1991, leg. Wunderle (cWun); 1 ex., Cecina, 4.IX.1972, leg. Pace (cBor); 3 exs., San Rossore (PI), 22.&30.I.1969, leg. Santini (cBor); 2 exs., Tana Termini (?) (Lucca), VI.1930, leg. Andreini (cBor); 5 exs., Arezzo, inundation of Arno river, XI.1926, leg. Andreini (cBor, cAss); 1 ex., Arezzo, Palazzo del Pero, 9.IV.1961 (cBor); 5 exs., E Arezzo, Lippiano near Padonchia, XI.1924, leg. Andreini (UCBA, cBor); 4 exs., Firenze, 21.I.1962, leg. Castellini (cBor); 7 exs., 15 km ESE Massa, Volegno, V.1967, leg. Bordoni (cBor); 1 ex., Piteccio, 21.IV.1969, leg. Failla (cBor); 1 ex., N Borgo San Lorenzo, Grezzano, 27.X.1974, leg. Rocchi (cBor); 2 exs., Ponteginori (SI), 4.IV.1994, leg. Gardini (cZan); 1 ex., Uccellina, Collelungo [42°37'N, 11°05'E], light-source, 12.VI.1977, leg. Zanetti (cZan); 4 exs., Antona, IV.1911, leg. Mancini (UCBA); 1 ex., Rignano sull'Arno, V.1974, leg. Castellini (cTro). **Umbria**: 1 ex., Sigillo (PE), M. Cucco, 20.IV.1975, leg. Rossi (cZan). **Lazio**: 2 exs., Mte. Circeo, 300 - 450 m, *Quercus ilex* forest, 27.XII.1994, leg. Assing (cAss); 4 exs., Mte. Circeo, mixed forest, 29.XII.1994, leg. Assing (cAss); 1 ex., Itri, 400m, 25.IV.1977, leg. Zampetti (cZan). **Abruzzo**: 1 ex., Capelle sul Tavo (PE), 13.VII.1974, leg. Zanetti (cZan); 1 ex., Fiume Sinello (CH), Bosco di Don Venanzo [41°55'N, 14°26'E], car-net, 23.VII.1998, leg. Zanetti (cZan); 1 ex., Maiella, Madonna della Mazza, 1020 m, 28.V.2003, leg. Kapp (cKap). **Puglia**: 1 ex., Gargano,

Forest Umbra, 600 m, beech forest, 30.XII.1994, leg. Assing (cAss); 2 exs., Foresta Umbra (FG), 800m, 6.V.1982, leg. Angelini (cZan). **Campania**: 10 exs., Napoli, Sorrent, S. Agata su due Golfi, 40°37'N, 14°23'E, 430 m, chestnut forest, 12.V.2002, leg. Wunderle (cAss); 2 exs., 5 km NE Salerno, Mte. Stella, leg. Liebmann (cBor). **Basilicata**: 2 exs., Lucania, Nova Siri (MT), 500m, 29.IV.1979, leg. Angelini (cRou); 1 ex., E Lagonegro, Mt. Sirino, 40°06'N, 15°51'E, 7.V.2002, leg. Wunderle (cWun); 4 exs., Maratea, 40°01'N, 15°44'E, 485 m, 12.V.2002, leg. Wunderle (cWun); 1 ex., Rivello, 400 m, oak forest, 6.V.2002, leg. Wunderle (cWun); 1 ex., Taranto, Policoro near Scanzano/Jonico, 22.X.2000, leg. Wolf (cSch); 1 ex., Policoro (MT), 1.VII.1982, leg. Angelini (cZan). **Calabria**: 10 exs., Aspromonte, dint. San Luca, 300 m, 24.VI.1987, leg. Angelini (cAss); 1 ex., S. Eufemia d'Aspromonte, 31.VII.1975, leg. Pace (cBor); 1 ex., S. Eufemia, 10.VII.1997, leg. Adorno (UCBA); 2 exs., S. Eufemia, 31.VI.1993 (UCBA); 1 ex., S. Cittanova, Zómaro, 12.VII.1988 (cZan); 2 exs., Antonimina, 1.VI.1993 (UCBA); 2 exs., Antonimina, mixed forest, 3.V.1993 (UCBA). **Sardegna**: 1 ex., Siniscola, light source, 19.IX.1987 (cAss); 2 exs., Salto di Quirra, 400 m, 9.X.1989, leg. Wunderle (cWun); 2 exs., Iglésias, Grotta del Torpedo (?), 18.XI.1970 (cBor). **Sicilia**: 8 exs., San Fratello, 750 m, oakwood, 30.VI.1978, leg. Pace (cZan, cAss); 2 exs., Lascari - Gratteri (PA), car-net, 7.VII.2000, leg. Zanetti (cZan); 1 ex., Noto Antica, 16.-17.VII.1991, leg. Zanetti (cZan); 1 ex., Macchia (CT) (UCBA); 1 ex., Aci Sant'Antonio (CT), 14.V.1992 (UCBA); 1 ex., Peloritani, Foresta di Ferra, Santa Lucia del Mela (ME), 570 m, 6.VI.1996, leg. Adorno (UCBA); 3 exs., Messina, leg. Vitale (UCBA); 3 exs., Messina, 6.III.1943 (NHMW); 1 ex., locality illegible, leg. Ragusa (UCBA); 1 ex., N Mongiuffi Melia, Límia, 14.V.1993 (UCBA); 1 ex., Gerace, Zomino, 15.XI.1993 (UCBA); 1 ex., Taormina (ME), Isola Bella, 8.X.2002 (UCBA); 3 exs., same locality, 7.XI.2002 (UCBA, cAss); 1 ex., M. Iblei, Cassaro (SR), bank of Anapo river, 5.III.1997 (UCBA); 1 ex., Buccheri (SR), Bosco di Accoro, Valle Cupa, 1.XI.1996 (UCBA).

**Locality doubtful, illegible, or not indicated**: 4 exs., "Alta Valle Tosco-Umbra", inundation of Tevere river, 18.XI.1935, leg. Andreini (cBor); 1 ex., leg. Parodi (UCBA); 2 exs., without locality (UCBA); 2 exs. [confusion of locality labels?], Turkmenistan, Lojfabād ["Ljufabad"] (MNHUB, cAss).

**Diagnosis**: In general appearance highly similar to *M. apicalis* (Fig. 1), distinguished as follows:

Coloration on average (!) slightly darker. Punctuation of head and pronotum on average slightly coarser and slightly more well defined.



♂: posterior margin of sternite VII in the middle with distinct convex projection (Figs. 2-3) (in *M. apicalis* weakly convex) and, especially in the middle, with darker, stouter, and longer modified setae; sternite VIII as in Fig. 4; aedeagus with ventral process of distinctive morphology: deeply bifid, apices widely separated, and subapically dentate (best visible in lateral aspect) (Figs. 5-7).

**Intraspecific variation and comparative notes:** Apart from the coloration, intraspecific variation is not pronounced. From all its congeners, *M. perniger* is readily distinguished by the distinctive morphology of the aedeagus, which is most similar to that of *M. maronitus* (Saulcy) from the Eastern Mediterranean and *M. bucharicus* Bernhauer from Middle Asia. For separation from the similar *M. apicalis*, whose distribution partly overlaps with that of *M. perniger* see diagnosis above.

**Distribution and bionomics:** *Medon perniger* is evidently an Adriato-Mediterranean element, whose distribution is confined to Italy, including Sicily and Sardinia, to southeastern France (Provence) and southern Switzerland (Map 3). It is here recorded from France and Switzerland for the first time. An occurrence in Turkmenistan (see material examined) would be far outside this range and the record should be considered doubtful until it is confirmed; quite possibly, the specimens were mislabelled. Apparently, the species is absent from Corsica and Elba, where *M. apicalis* has been collected frequently; however, both species have been found in the same locality on various occasions (see the distribution section below *M. apicalis*).



**Map 3:** Distribution of *Medon perniger* Coiffait in Italy and adjacent regions, based on revised records.

Unlike *M. apicalis*, most of the specimens listed above were not caught on the wing, but found in the leaf litter of various kinds of forests (oak, chestnut, etc.), under hay, or in nests of *Talpa* and *Apodemus*. OSELLA & ZANETTI (1974) frequently recorded the species (as *M. apicalis*) from mole nests, often in large numbers (up to 72 specimens per nest). Interestingly, they observed that *M. perniger* and *M. ripicola* appear to exclude each other in mole nests, with the former preferring drier situations and the latter occurring in damp habitats. The labels attached to the examined specimens indicate relatively low altitudes below 1000 m. With few exceptions, all the nest records examined are from the winter months. Flying specimens were collected in spring and summer (April through July, and September). On two occasions, the species was found at light sources (April, September). Three times in May and once in November it was collected from flood debris. Adult beetles were taken throughout the year, though only relatively few specimens were found in July and August.

### 3.3. *Medon sericellus* (Fairmaire, 1860) (Figs. 8-12, Map 2)

*Lithocharis sericella* Fairmaire, 1860 (FAIRMAIRE 1860: 159f).

**Type:** Neotype ♂, here designated: Gde Kabylie: Yakouren, forêt Beni-Ghobri, 800m, – V.1953, G. Fagel / G. Fagel det., 1954: *Medon apicalis* Kr / Neotypus ♂ *Lithocharis sericellus* Fairmaire desig. V. Assing 2003 / *Medon sericellus* (Fairmaire), det. V. Assing 2003 (IRSNB).

**Comments:** *Lithocharis sericellus* was described by FAIRMAIRE (1860) based on material from Bône, Algeria. Shortly after the description, the name was placed in the synonymy of *Medon apicalis*, where it has remained ever since (see e.g. FAUVEL 1886; BERNHAUER & SCHUBERT 1912). The type material was looked for, but not found, in the collections of the MNHNP (personally) and of the IRSNB by the curator in charge (D. DRUGMAND, Bruxelles, pers. comm. 2003). Thus, it must be regarded as lost. Due to the similarity of the Algerian species redescribed in this section and of *Medon apicalis*, as well as the fact the the sexual characters of *Medon* species were usually neither illustrated nor described in detail in the 19<sup>th</sup> century, the original description can be attributed either to *Medon apicalis* or to the material listed in this section. I have not seen any specimens of *M. apicalis* from Algeria (or Tunisia), so that the presence of this species in Algeria is doubtful. Consequently, the material from Grande Kabylie is here treated as conspecific with the type material of *M.*

*sericellus* and, in the interest of the stability of nomenclature, a neotype is designated.

#### Additional material examined (total: 22 exs.):

**Algeria:** 13 exs., Grande Kabylie, Yakouren, forêt Beni-Ghobri, 800 m, V.1953, leg. Fagel (IRSNB, cAss); 3 exs., Grande Kabylie, forêt de Akfadou, Tala Kitan, 1100 m, 18.V.1953, leg. Fagel (IRSNB); 2 exs., Grande Kabylie, Forêt d'Akfadou, 9 km W Adekar, 1300 m, 17.V.1988, leg. Besuchet, Löbl & Burckhardt (MHNG, cAss); 2 exs., Grande Kabylie, Djebel Bou-Berak, 350 m, 19.V.1988, leg. Besuchet, Löbl & Burckhardt (MHNG); 1 ex., Atlas de Blida, Chréa, Les Glacières, 1100 m, 3.V.1988, leg. Besuchet, Löbl & Burckhardt (MHNG).

**Tunisia:** 1 ex., 25 km W Jendouba, ca. 10 km N Ghardimaou, Aïn Soltane, 36°29N, 08°19E, 670 m, litter of oak forest, 27.XII.2004, leg. Assing (cAss).

**Diagnosis:** In external characters indistinguishable from *M. apicalis* (Figs. 8-9); separated from that species only by the male primary and secondary sexual characters:

♂: posterior margin of sternite VII in the middle concave (Fig. 10); aedeagus of highly distinctive morphology, apically very long and acute, both in lateral and in ventral view (Figs. 11-12).

**Comparative notes:** From other species of the *M. apicalis* group, *M. sericellus* is reliably distinguished only by the shape and chaetotaxy of the male sternite VII and by the distinctive morphology of the aedeagus.

**Distribution and bionomics:** *Medon sericellus* has become known only from central northern Algeria and from northwestern Tunisia (Map 2), where the species was collected at altitudes of 350-1300 m in May and December.

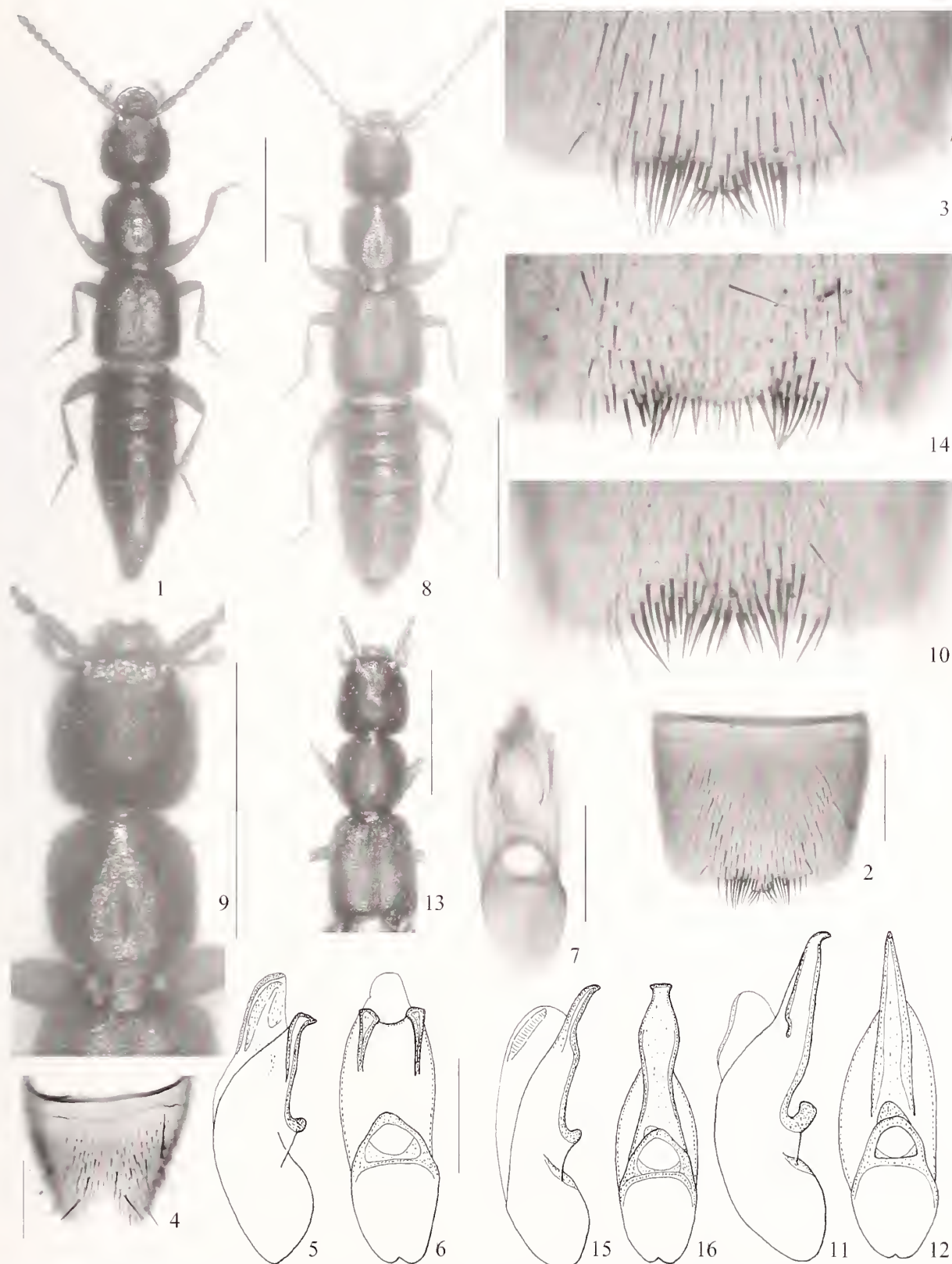
### 3.4. *Medon oronii* sp. n. (Figs. 13-16)

**Holotype** ♂: Gran Canaria, 22-V-91, Bco. del Risco, P. Oromi / Holotypus ♂ *Medon oronii* sp. n. det. V. Assing 2003 (DZUL).

**Diagnosis:** 3.9 mm. Coloration: head dark brown; pronotum reddish brown; elytra and antennae rufotestaceous; abdomen reddish brown with the apex lighter; legs testaceous.

Head weakly oblong (Fig. 13); eyes slightly more than half the length of postocular region in dorsal view; puncturation relatively dense, but shallow, relatively fine, ill defined, and not very conspicuous in the pronounced microreticulation; dorsal surface matt.





**Figs. 1-16.** *Medon perniger* Coiffait (1-7), *M. sericellus* (Fairmaire) (8-12), and *M. oronii* sp. n. (13-16): Habitus (1, 8); forebody (9, 13); male sternite VII (2); posterior margin of male sternite VII (3, 10, 14); male sternite VIII (4); aedeagus in lateral and in ventral view (5-7, 11, 12, 15, 16). Scale bars: 1, 8, 9, 13: 1.0 mm; 2-7, 10-12, 14-16: 0.2 mm.

Pronotum slightly narrower than head and approximately as wide as long (Fig. 13); puncturation extremely fine, barely noticeable; surface matt due to pronounced microreticulation.

Elytra large and long, approximately 1.25 times as wide and at suture 1.15 times as long as pronotum (Fig. 13); puncturation dense and slightly granulose, much more distinct than that of pronotum; surface more shining than that of head and pronotum. Hind wings fully developed.

Abdomen with fine and dense puncturation; posterior margin of tergite VII with palisade fringe.

♂: protarsomeres I - IV not dilated; posterior margin of sternite VII of similar morphology and chaetotaxy as that of *M. apicalis* (Fig. 14) Aedeagus of highly distinctive morphology, with long, slender, and apically dilated ventral process (Figs. 15-16).

**Etymology:** The species is dedicated to Dr. Pedro Oromí, La Laguna, who collected the holotype and who has contributed so much to the current state of knowledge of Canarian Coleoptera.

**Comparative notes and systematics:** Among its Western Palaearctic congeners, *M. oromii* is readily identified especially by the extremely fine puncturation and pronounced microreticulation of the pronotum and by the distinctive morphology of the aedeagus. The morphology and chaetotaxy of the male sternite VII suggests that it belongs to the *M. apicalis* group. The aedeagus is most similar to that of *M. sericellus*.

The only West Palaearctic congeners with a similarly pronounced microsculpture on the pronotum are *M. feloi* from La Palma, *M. antricola* from El Hierro, the Canarian endemic *M. subcoriaceus*, and the Madeiran endemic *M. vicentensis*. All these species have strongly reduced eyes, except for *M. subcoriaceus*, which is distinguished from *M. oromii* by an oblong head, relatively dark coloration, and completely different male sexual characters.

**Distribution and bionomics:** The long wings and fully developed eyes would suggest that *M. oromii* is a widespread species, but currently it is known only from Gran Canaria, Canary Islands. Nothing is known about its natural history. Strangely, no further material of this species has become available, despite the fact that the staphylinid fauna of the Canaries is comparatively well studied.

### 3.5. *Medon dilutus* (Erichson, 1839)

In the Western Mediterranean, *Medon dilutus* is represented by three morphs, two of more or less uniformly rufous to ferrugineous coloration with shorter elytra and

slightly smaller eyes and one usually with a coloration similar to that of *M. castaneus* (i.e. head, central part of pronotum, and abdominal segments blackish; elytra, pronotal margins, abdominal apex, and appendages lighter), with longer and broader elytra, and with slightly larger eyes. Based on slight differences in the shape of the aedeagal apex, the light-coloured short-winged morph can again be subdivided into fractions: one with an broader aedeagal apex with subparallel sides, distinct apico-lateral angles, and a small medio-apical emargination (Figs. 28-29), and one with curved sides, indistinct apico-lateral angles, and a large medio-apical emargination (Figs. 22-23), a condition also found in the long-winged morph. I have been unable to find other constant differences in the primary and secondary sexual characters. Since these morphs show a zoogeographically plausible allopatric distribution pattern, their previously proposed subspecific status is here maintained. As no material of *Lithocharis spelaea* Scriba, 1870 or its synonym *Medon dilutus breuili* Jeannel, 1921 was available for examination, their status still requires clarification. The types of both names were collected in caves in Valencia (Spain). JEANNEL & JARRIGE (1949) provide a very detailed illustration of a male of *M. dilutus breuili*, demonstrating that the eyes are considerably smaller than in *M. dilutus*. This and the fact that the type locality is within the distribution range of *M. dilutus cephalus* suggests that *M. spelaeus* (Scriba) represents a distinct species rather than a subspecies.

Remarkably, a comparison of the Western Mediterranean subspecies of *M. dilutus* with material of the widespread *M. pythionissa* (Saulcy, 1864) from the Eastern Mediterranean yielded no constant differences. In external appearance the latter is difficult to separate from *M. d. quadriceps*. It usually has an uniformly blackish pronotum, darker elytra, a somewhat coarser and sparser puncturation on the head and pronotum, slightly larger eyes, often an infuscated basal antennomere, but there are also transitions. The male secondary sexual characters are identical to those of the western subspecies, and the aedeagal apex is of similar morphology as that of *M. d. dilutus*. These observations suggest that *M. pythionissa* is conspecific with *M. dilutus* and that it should be regarded as a subspecies of this polytypical species, which apparently has a circum-Mediterranean distribution: *M. dilutus dilutus*, *M. d. cephalus*, and *M. d. quadriceps* in the northwest and southwest, respectively, of the Mediterranean basin and *M. d. pythionissa* representing the species in the eastern parts of the Mediterranean (Map 5).



**3.5.1. *Medon dilutus dilutus* (Erichson, 1839)**

(Figs. 24-29, Maps 4-5)

*Lithocharis diluta* Erichson, 1839 (ERICHSON 1839: 514).*Lithocharis oppidana* Kraatz, 1857 (KRAATZ 1857: 711f) synonymy confirmed.*Medon dilutus meridionalis* Bordoni, 1980 (BORDONI 1980: 98) **syn. n.***Medon dilutus*: GUSAROV 1992: 22f; invalid lectotype designation.

**Types examined:** *L. diluta*: Holotype ♀: 6364 / diluta Er. Berol. Er. / Lectotypus ♀ *Lithocharis diluta* Erichson V. Gusarov des. 1991 / *Medon dilutus* (Er.) ♀ Gusarov det. 1991 / Holotypus *Lithocharis diluta* Erichson labelled by Zool. Mus. Berlin, 7.2003 / Hist.-Coll. (Coleoptera) Nr. 6364 *Lithocharis diluta* Er., Berlin, Erichson, Zool. Mus. Berlin (MNHUB).

*L. oppidana*: Lectotype ♂ [remounted, aedeagus dissected], present designation: Berol. / Mayer / oppidana mihi / Syntypus / Coll. Kraatz / ♂ / Coll. DEI Eberswalde / Lectotypus ♂ *Lithocharis oppidana* Kraatz desig. V. Assing 2003 / *Medon dilutus* (Erichson) det. V. Assing 2003 (DEI). Paralectotype ♀: Berlin, Calix / oppidana Kr. \* / Syntypus / Coll. Weise / Coll. DEI Eberswalde / Paralectotypus ♀ *Lithocharis oppidana* Kraatz desig. V. Assing 2003 / *Medon dilutus* (Erichson) det. V. Assing 2003 (DEI).

*M. dilutus meridionalis*: Holotype ♂: prov. di Bari, grotta di Cassano, 14.XI.1908, Dr. A. Andreini / HOLO-TYPUS / *Medon dilutus meridionalis* ssp. n. det. Bordoni 1980 / *Medon dilutus meridionalis* Bord. Gusarov det. 1991 / *Medon dilutus* (Erichson) det. V. Assing 2003 (cBor). Paratypes: 1♂ [teneral], 3♀♀: same data as holotype (cBor).

**Comments:** The original description of *Lithocharis diluta* is based on "ein einziges weibliches Exemplar" from the Erichson collection, which consequently has holotype status. Thus, the lectotype designation by GUSAROV (1992) is invalid. The holotype represents the light-coloured morph (similar to material from Sardinia and Spain).

According to KRAATZ (1857), there are several syntypes of *Lithocharis oppidana*, which were collected "unter feuchtem Laube von den Herren Mayer und Calix". Two of these syntypes were found in the Kraatz collection; they are conspecific with the holotype of *M. dilutus* (Erichson). In order to secure the present interpretation and the long-standing synonymy with *Medon dilutus*, the male syntype is here designated as the lectotype.

According to BORDONI (1980), *M. dilutus meridionalis* is characterized by large body size, light coloration, elongate appendages, less convex eyes, and the different shape of the apex of the aedeagus. Regarding both external characters and the shape of the aedeagus the types are indistinguishable from Central European *M. dilutus dilutus* (see Figs. 25-26, 28-29), so that the hypothesis that the population in southern Italy represents a distinct subspecies is not supported and *M. d. meridionalis* is considered a junior synonym of *M. d. dilutus*.

**Additional material examined (total: 25 exs.):**

**Germany: Berlin/Brandenburg:** 1 ex., Brieselang (DEI); 4 exs., Eberswalde ["Neustadt"] (DEI, NHMW); 1 ex., Berlin env. (DEI); 3 exs. [2 with worker of *Lasius fuliginosus* attached to the pin], Forst Dubrow, coll. Neresheimer (DEI). **Sachsen:** 1 ex., Rauden (DEI).

**Austria: Niederösterreich/Wien:** 6 exs., Wien, Lobau, mole nest, 21.III.1926, leg. Beier (NHMW, cAss). **Burgenland:** 2 exs., Zurndorf, leg. Franz (NHMW)

**Czech Republic:** 2 exs., Praha (NHMW); 1 ex., Brandys n. L. (NHMW).

**Hungaria:** 1 ex., NW Budapest, Mt. Pilis (NHMW).

**Locality not identified or not specified:** 1 ex., without locality label, coll. Erichson (MNHUB); 2 exs. (DEI, NHMW).

**Diagnosis:** Since the nominal subspecies and *M. d. cephalus* are externally indistinguishable, the following description of characters, except for that of the aedeagus, refers to both taxa:

4.0-6.0 mm. Coloration more or less uniformly rufous to ferrugineous.

Head of very variable size and shape, weakly transverse to oblong (Figs. 17-21, 25-26), in small specimens sometimes not wider than pronotum (Fig. 18), in large specimens 1.2 times as wide as pronotum (Figs. 19, 26); eyes barely projecting from lateral outline of head, in dorsal view 0.35 - 0.45 times the length of postocular region; puncturation relatively fine, dense, well-defined, non-areolate, and usually more or less evenly distributed on whole dorsal surface (i. e. as dense in central dorsal area as in lateral areas), but density of puncturation rather variable (Figs. 17-21, 25-26); microsculpture absent or very shallow.

Pronotum usually with puncturation similar to that of head, with or without narrow unpunctured midline. Elytra 1.10 - 1.15 times as wide as pronotum, at suture approximately as long as, sometimes slightly longer than pronotum (Figs. 17-21, 25-26). Abdomen with very dense and fine puncturation; posterior margin of tergite VII with palisade fringe.



**Map 4:** Distributions of *Medon dilutus dilutus* (Erichson) (open circles; examined records), *M. d. cephalus* Koch (filled circles; examined records), and of *M. d. quadriceps* (Wollaston) (filled squares; examined records and literature records). Grey circles: literature records, referring to either *M. d. dilutus* and *M. d. cephalus*.

♂: protasomeres I - IV distinctly dilated; sternite VII posteriorly moderately excavate, with two combs of palisade setae, margin between these combs straight and without conspicuous tufts of long dark setae (Fig. 24); sternite VIII with relatively small posterior excision; aedeagal apex with subparallel sides, pronounced apico-

lateral angles, and a small medio-apical emargination (ventral view) (Figs. 27-29).

♀: protasomere I - IV not dilated.

**Intraspecific variation:** Both the nominal subspecies and *M. d. cephalus* are extremely variable. This particu-



larly applies to the coloration, body size, the size and shape of the head, and the density of the puncturation (Figs. 17-21, 25-26). The head is usually relatively larger (e. g. in relation to the pronotum) and more transverse in larger than in smaller specimens (compare Figs. 18 and 19).

**Comparative notes:** Among Western Mediterranean *Medon* species, *M. dilutus dilutus* is readily identified by the dense, well defined, relatively fine, and usually more or less evenly spaced puncturation of head and pronotum, by the uniformly light coloration, and by the primary and secondary sexual characters. The somewhat similar *M. pocifer* has a flatter head, a more irregularly spaced puncturation of the head and pronotum, a relative wide impunctate midline of the pronotum, and shorter and broader pro-, meso-, and metatarsomeres. From *M. d. quadricaps* and *M. d. pythonissa* it is distinguished especially by the uniformly light coloration, the smaller eyes, and the shorter and narrower elytra, from *M. d. quadricaps* also by the different shape of the aedeagal apex.

**Distribution and bionomics:** *Medon dilutus dilutus* is apparently an Adriatic-Mediterranean element (Maps 4-5), its distribution ranging from southern mainland Italy in the south at least to southern Central Europe (Poland, Austria, Germany, Hungary; material examined). The literature records from the western parts of Germany and from the Swedish island Gotska Sandön (LUNDBERG 1978) may refer to either this subspecies or to *M. d. cephalus*; the corresponding material was not available for examination. For additional literature records see also BOHÁČ (1985), HORION (1965), JANÁK (1993), KOCH (1968), KÖHLER & KLAUSNITZER (1998), KOLBE (1918), KÖRGE (1989), LUIGIONI (1929), and LUNDBERG (1995). The species is unknown from Belgium, Denmark, and the Baltic countries (BRUGE 2001; DRUGMAND 1989; HANSEN 1996; SILFVERBERG 1992). I know of only one recent record from Germany (KÖRGE 1989); from the Rhineland area, only two old records are known (KOCH 1968 1974), but they may refer to *M. d. cephalus*. In Italy, it is known from three localities in Campania and Puglia in the south of the mainland (BORDONI 1980; LUIGIONI 1929; SCHEERPELTZ 1958). It has also been recorded from Corsica (LUIGIONI 1929; SAINTE-CLAIRE DEVILLE 1906), but this record, too, probably refers to *M. d. cephalus*. The record of *M. dilutus* from the Crimea by GUSAROV (1989) was later corrected into *M. mersinus* Bordoni by GUSAROV (1992); *M. mersinus* is now a synonym of *M. d. pythonissa* (see ASSING 2004a).

On the whole, *M. dilutus dilutus* has been collected very rarely. On several occasions, the subspecies was found at the bases or under bark of old or dead oak trees, under bark of pine trees, in nests of various mammals

(mole, mouse/vole, fox), in a nest of the ant *Lasius fuliginosus*, and in caves (material examined, and BOHÁČ (1985); BORDONI (1980); FRANZ (1938); HORION (1965); KÖRGE (1989); STROUHAL & BEIER (1928)). On one occasion, STROUHAL & BEIER (1928) found as many as 10 specimens in one apparently abandoned mole nest in Wien-Lobau, but no further specimens were recorded from a total of 188 nests examined. All these data suggest that the reproduction habitat is somewhat cryptic, subterranean, but essentially unknown. Flying specimens were recorded in May and June (HORION 1965). Adult beetles have been found almost throughout the year, but most records are from spring and autumn.

### 3.5.2. *Medon dilutus cephalus* Koch, 1938

(Figs. 17-23, Maps 4-5)

*Medon dilutus cephalus* Koch, 1938 (KOCH 1938: 140f)

*Medon dilutus boeticus* Jeannel & Jarrige, 1949 (JEANNEL & JARRIGE 1949: 361) **syn. n.**

**Types examined:** *M. dilutus cephalus*: Holotype ♂: LULA, Sard., 7.III.1912, A. Dodero / *Medon dilutus* / spec. nov. det. C. Koch / Type / Mikr. Pr. 104 / *M. dilutus* var. *cephalus* Koch det. C. Koch / *Medon dilutus* (Erichson) det. V. Assing 2003 (NHMB).

*M. dilutus boeticus*: Syntype ♀: Cueva de la D. Trinidad / Biospeologica 932 III 18 / Jeanneli m. det. Dr. Rambousek / Muséum Paris Ex Collection J. JARRIGE 1976 / COTYPE / d. baeticus [sic] Jean. & Jar. / *Medon dilutus* (Erichson) det. V. Assing 2003 (MNHN).

**Comments:** The holotype of *M. dilutus cephalus* was dissected prior to the present study. The aedeagus and apical abdominal segments are missing; as can be inferred from one of the labels attached to the specimen, they were mounted separately for microscopic examination probably by Koch himself.

The type of *M. dilutus boeticus* represents a – probably submacropterous – uniformly ferrugineous specimen with relatively short elytra. In all respects it is within the range of intrasubspecific variation of *M. dilutus cephalus*, hence the synonymy indicated above.

**Additional material examined** (total: 48 exs.):

**Spain: Cataluña:** 1 ex., Malgrat de Mar, 3.V.1959, leg. Liebmann (NHMW). **Extremadura:** 1 ex., Cáceres, Gata, 3.V.1957, leg. González (MHNG). **Andalucía:** 5 exs., Sierra de Alhamilla (AL), 1000 m, N-slope, 20.III.1994, leg. Assing, Wunderle (cAss, cWun); 2 exs., Sierra Nevada, Rio Genil, 37°08'26N, 03°24'01W, 1000 m, 24.II.2000, leg. Lompe (cAss); 1 ex., Sierra de Cordoba, leg. Franz (NHMW); 1 ex., San Roque (CA), leg. Comellini (MHNG).

**France:** 2 exs., Lyon env. (DEI); 1 ex., Fontainebleau, 23.V.1900 (MHNG); 1 ex., La Bonde, 10.XII.1903, leg. Fagniez (MHNG); 2 exs., Gironde, Biscarosse Plage, 25.-28.VII.1980, leg. Kiener (MHNG). **Corsica:** 1 ex., locality not specified (NHMW).

**England:** 1 ex., London, Richmond, 19.X.1998, leg. Owen (cOwe).

**Italy: Sardegna:** 1 ex., Mte. Chiesa (NHMB); 2 exs., Aritzo (NHMW); 1 ex., Aritzo, Mte. Genargentu, leg. Krüger (DEI); 2 exs., Golfo Aranci, III.1907, leg. Doderro (DEI); 1 ex., Seneghe, 2.V.1891, leg. Doderro (DEI); 1 ex., Seui (NHMB); 1 ex., Seui, 7.V.1902, leg. Doderro (NHMW); 2 exs., Seui, leg. Doderro (NHMW, cAss); 1 ex., N Bolotana (SS), 850 m, 13.IV.1992, leg. Scheuern (cAss); 1 ex., Onani (NU), 450m, 24.XI.1992, leg. Meloni (cZan); 1 ex., Lanusei (NU), 12.V.1980, leg. Torchia (UCBA); 1 ex., Padru (SS), XII.1999, leg. Fancello (cZan); 1 ex., Iglesias (CA), 8.III.2001, leg. Fancello

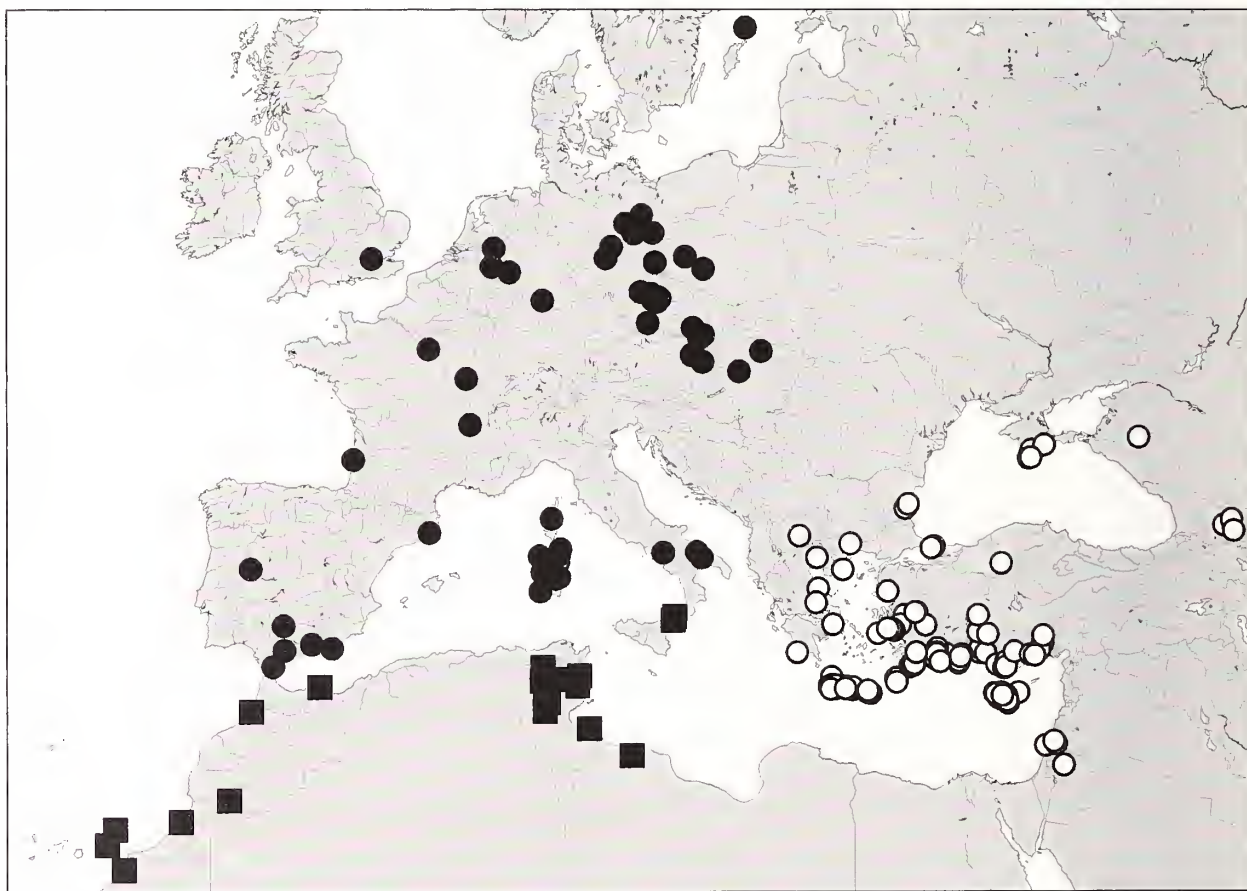
(cZan); 1 ex., Sorgono, leg. Krausse (DEI); 1 ex., Campeda, 28.IV.1908, leg. Doderro (cAss); 1 ex., NE Sadali (NU), 850 m, 20.IV.1992, leg. Schawaller (SMNS).

**Diagnosis:** For a description of external and secondary sexual characters see the diagnosis of *M. d. dilutus* above.

♂: aedeagal apex in ventral view with curved sides, indistinct apico-lateral angles, and a large medio-apical incision (Figs. 22-23).

**Intraspecific variation:** Similar to that of *M. d. dilutus*.

**Comparative notes:** For separation from other Western Mediterranean species of *Medon*, see the comparative notes below *M. d. dilutus*. From *M. d. quadriceps* and *M. d. pythonissa* it is distinguished by the uniformly light coloration, the smaller eyes, and the shorter and narrower elytra, from *M. d. pythonissa* also by the different shape of the aedeagal apex.



**Map 5:** Distributions of *Medon dilutus dilutus* (Erichson) + *M. d. cephalus* Koch (filled circles), *M. d. quadriceps* (Wollaston) (filled squares), and *M. d. pythonissa* (Saulcy) (open circles), mainly based on examined records.

**Distribution and bionomics:** *Medon dilutus cephalus* is an Atlanto-Mediterranean element (Maps 4-5), its distribution ranging from southern Spain and Sardinia in

the southwest and south to southern England in the north, possibly even to the Swedish island Gotska Sandön (see notes on the distribution of the nominal



subspecies). In Sardinia it is apparently relatively common (see material examined). The records of *M. dilutus* from Corsica (LUIGIONI 1929; SAINTE-CLAIRE DEVILLE 1906) probably refer to this subspecies, but I have seen only a female from this island. In the British Isles, it is known from only three localities in southern England (ALLEN 1996; OWEN 1998, 2000). This subspecies has been found in similar habitats and under similar circumstances as *M. d. dilutus*. Several specimens were sifted from the leaf litter in a mixed stand of *Quercus ilex* and *Pinus* sp. in southern Spain (material examined).

### 3.5.3. *Medon dilutus quadriceps* (Wollaston, 1864) (Figs. 30-32, Maps 4-5)

*Lithocharis quadriceps* Wollaston, 1864 (WOLLASTON 1864: 586).

*Medon vitalei* Bernhauer, 1936 (BERNHAUER 1936: 306f) **syn. n.**

*Medon dilutus eremicus* Koch, 1939 (KOCH 1939: 243f) **syn. n.**

*Medon algericus* Jeannel & Jarrige, 1949 (JEANNEL & JARRIGE 1949: 361f).

*Medon marocanum* Coiffait, 1970a (COIFFAIT 1970a: 707) **syn. n.**

*Medon mateui* Coiffait, 1973b (COIFFAIT 1973b: 282) **syn. n.**

**Types examined:** *M. vitalei*: Holotype ♀: Castanea, 27.X.34, F. Vitale / Vitalei Brnh. Typus unic. *Medon* / *Medon dilutus* (Erichson) det. V. Assing 2003 (FMNH).

*M. dilutus eremicus*: Holotype ♀: Tauorga nordöstl. Trip., IV.38. G. Frey / *Medon eremicus* Koch det. C. Koch / *Medon dilutus* (Erichson) det. V. Assing 2003 (NHMB).

*M. marocanum*: Holotype ♂: IXMOART, B. SICAR. (MARR.), COBOS SANCHEZ / MUSEUM PARIS COLL H. COIFFAIT / HOLOTYPE / *Medon marocanum* Coiff. H. COIFFAIT det. 1969 / *Medon dilutus* (Erichson) det. V. Assing 2003 (MNHNP).

*M. mateui*: Holotype ♂: MAROC, env. Ifni, H. COIFFAIT / MUSEUM PARIS COLL H. COIFFAIT / HOLOTYPE / *Medon mateui* H. COIFFAIT det. 1973 / *Medon dilutus* (Erichson) det. V. Assing 2003 (MNHNP).

**Comments:** The original description of *Lithocharis quadriceps*, which is based on material from Lanzarote and Fuerteventura, leaves no doubt that the types are conspecific with the male non-type specimen seen from Fuerteventura.

The original description of *M. vitalei* is explicitly based on a single female. The holotype was examined and found to be a small specimen of the morph here referred to as *M. dilutus quadriceps*, hence the synonymy indicated above. Similarly, no evidence was found suggesting that the examined holotypes of *M. dilutus eremicus* and *M. marocanum* should represent a distinct (sub-) species, so that both names are placed in the synonymy of *M. d. quadriceps*.

COIFFAIT (1973b) compares *M. mateui* with *M. marocanum* stating that the former is distinguished from the latter by the dilated male protarsi, the more shallowly convex posterior margin of the male sternite VII, and the apex of the aedeagus having the shape of a semicircle and lacking the median incision. An examination of the holotype of *M. mateui*, however, revealed no such differences in the degree of dilatation of the male protarsi or in the shape of the male sternite VII. Moreover, the apex of the aedeagus clearly has a median incision, though this incision is somewhat smaller than is usually the case in *M. dilutus*. However, this teratological malformation is a common phenomenon in the genus and is present also, for instance, in the holotype of *M. aquitanicus* Coiffait. Aside from the somewhat lower body size and the much smaller head, the holotype of *M. mateui* is, in fact, strikingly similar to the holotype of *M. marocanum*. Since there is no evidence that it represents a distinct species, *M. mateui* is here synonymized with the senior name *M. dilutus quadriceps*.

### Additional material examined (total: 23 exs.):

**Tunisia:** 1 ex., Kasserine (=Al Qasrayn), II.1941, leg. Demoflys (cTro); 3 exs., Zarzis (=Jarjis), II.1951, leg. Demoflys (cTro, cAss); 1 ex., Zarzis, VI.1944, leg. Demoflys (cTro); 1 ex., Gafsa (MHNG); 1 ex., Qibili ["Kebili", 33°41N, 08°58E] (MHNG); 1 ex., Tālah ["Thala", 35°34N, 08°40E] (cAss); 1 ex., ca. 40 km W Sousse, 35°54N, 10°15E, roadside, under stones, 30.XII.2004, leg. Assing (cAss).

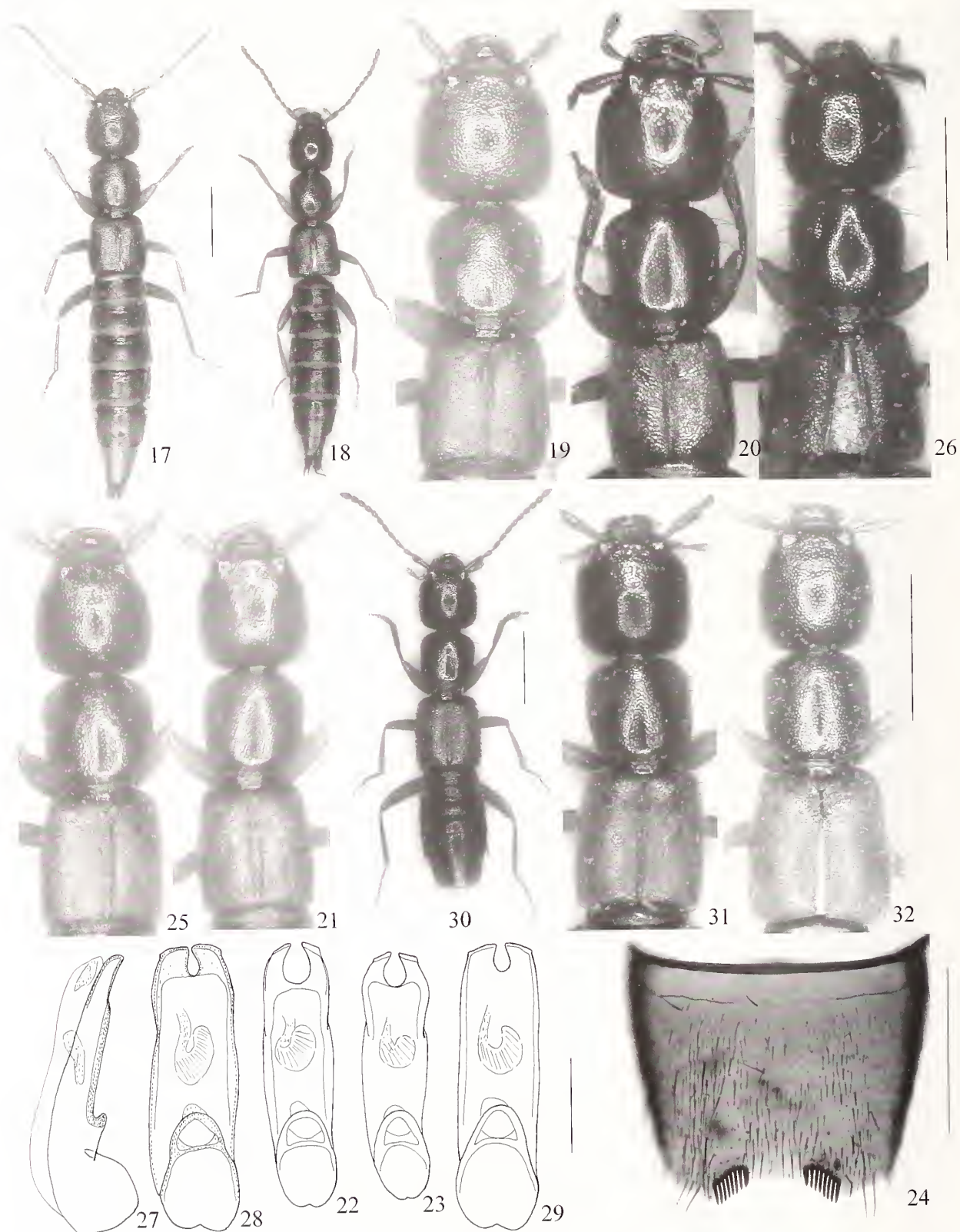
**Morocco:** 1 ex., Oued Sebou, IV.1961, leg. Comellini (cAss); 1 ex., Anti-Atlas, Agard-Oudad (?), 1200m, 7.-8.IX.1990, leg. Annot (DEI).

**West Sahara:** 1 ex., Meseied near Al Aaiun, leg. Franz (NHMW).

**Portugal: Azores:** 4 exs. [identification uncertain], Sao Miguel, leg. Franz (NHMW, cAss).

**Canary Islands:** 1 ex., Fuerteventura, Cueva del Llano, 4.IV.1992, leg. Oromí (cAss).

**Italy: Sicilia:** 1 ex., locality not specified, leg. Vitale (UCBA); 1 ex., Messina, leg. Vitale (cAss).



**Figs. 17-32.** *Medon dilutus dilutus* (Erichson) (24-29), *M. dilutus cephalus* Koch (17-23), and *M. dilutus quadriceps* (Wollaston) (30-32): Habitus (17: Sardinia; 18: Andalucia; 30: Tunisia); forebody (19: Sardinia; 20: holotype of *M. dilutus cephalus* Koch; 21: Andalucia; 25: Wien; 26: holotype of *M. dilutus meridionalis* Bordoni; 31: Tunisia; 32: Fuerteventura); male sternite VII (24: Prague); aedeagus in lateral and in ventral view (27, 28: Wien; 29: Prague; 22: Andalucia; 23: Sardinia; ). Scale bars: 17-21, 25-26, 30-32: 1.0 mm; 24: 0.5 mm; 22-23, 27-29: 0.2 mm.



**Diagnosis:** This subspecies is distinguished from the nominal subspecies and from *M. d. cephalus* as follows:

Coloration highly variable, but usually similar to that of *M. castaneus* and *M. subcoriaceus*: Head, central part of pronotum, and abdominal segments III to anterior half of VII usually dark brown to blackish brown; margins of pronotum near anterior angles broadly, in other places narrowly ferruginous; elytra and abdominal apex testaceous, rufous, or brown; legs and antennae more or less rufous.

Elytra larger, approximately 1.3 times as wide and at suture 1.1 times as long as pronotum. Eyes of somewhat variable size, but on average larger, approximately half as long as temples in dorsal view (Figs. 30-32).

♂: aedeagal apex as in *M. d. cephalus* (cf. Figs. 22-23).

**Intraspecific variation:** The extent of intrasubspecific variation is similar to that observed in the other subspecies, especially as regards coloration, body size, as well as size and shape of the head. One nanistic specimen seen from Morocco represented a transitional state between the nominal subspecies and *M. d. quadriceps* in that it had a light coloration and relatively long, but rather narrow elytra. The specimens from the Azores have a very pronounced microsculpture on the head and pronotum; the latter is of uniformly dark coloration. Unfortunately, only females were available from the Azores, so that their present interpretation must be considered tentative.

**Comparative notes:** *Medon d. quadriceps* is highly similar to the Ponto-Mediterranean *M. d. pythonissa*, but distinguished by on average finer puncturation of the head and pronotum, the lower average size of the eyes, the lighter margins of the pronotum, the darker elytra, and the different shape of the aedeagus apex (in *M. d. quadriceps* similar to that of *M. d. cephalus* and in *M. d. pythonissa* similar to that of the nominal subspecies).

**Distribution and bionomics:** The distribution of *M. d. quadriceps* (Maps 4-5) includes Northwest Africa from Tunisia to southern Morocco and West Sahara, the Canary Islands (Fuerteventura, Lanzarote), and Sicily, possibly also the Azores (material examined; see also HORION (1965), MACHADO & OROMÍ (2000), and NORMAN (1935)). Horion (1965) reports it from the Hoggar range in southern Algeria. Material of this subspecies has been collected in various habitats such as caves or a sparrow's nest (NORMAN 1935), but its real reproduction habitat must be considered unknown. The distribution suggests that it is adapted especially to hot and dry regions. The material examined was collected in February, April, June, October, and December.

### 3.6. *Medon subcoriaceus* (Wollaston, 1864) (Figs. 33-37)

*Lithocharis subcoriaceus* Wollaston, 1864 (WOLLASTON 1864: 586).

**Material examined** (total: 1097 exs.; see also material listed in ASSING (1999a, 2000) and ASSING & WUNDERLE (1999)):

**Canary Islands: Tenerife:** 4 exs., Pico del Ingles, 960 m, 4.&13.IV.1992, leg. Assing (cAss); 1 ex., same locality, 950 m, 28.XI.1996, leg. Schülke & Grünberg (cSch); 2 exs., La Laguna, 750 m, 4.IV.1992, leg. Assing (cAss); 16 exs., El Bailadero, 900 m, 3.IV.1992, leg. Assing (cAss); 22 exs., Anaga, Chamorga, 700 m, 5.IV.1992, leg. Assing (cAss); 1 ex., Anaga, Chinobre, 850 m, 5.IV.1992, leg. Assing (cAss); 1 ex., Anaga, E Chinobre, Bco. d. Corral Viejo, 600 m, 5.XII.1996, leg. Schülke (cSch); 2 exs., E Chinobre, 700 - 800 m, 24.XI.1996, leg. Schülke & Grünberg (cSch); 2 exs., NE Chinobre, 850 m, 8.VII.1995, leg. Zerche (DEI); 1 ex., Anaga, Taborno, 1020 m, 5.IV.1992, leg. Assing (cAss); 14 exs., Anaga, leg. Franz (NHMW); 4 exs., Montes de las Mercedes, leg. Franz (NHMW); 1 ex., Las Mercedes, 750 m, 4.IV.1992, leg. Zerche (DEI); 1 ex., Anaga, Estanque, 28°34'N, 16°10'W, 26.III.2000, leg. Lompe (cAss); 1 ex., Anaga, 28°34'N, 16°10'W, 25.III.2000, leg. Lompe (cAss); 2 exs., Anaga, Atalaya del Sabinal, 1.5 km SE Lomo de la Bodegas, 500 - 550 m, 11.I.2002, leg. Schülke (cSch); 1 ex., Anaga, 1 km S Lomo de las Bodegas, road to Chamorga, 650 m, 11.I.2002, leg. Schülke (cSch); 16 exs., Anaga, 3 km E El Bailadero, 900 m, 3.IV.1992, leg. Zerche (DEI); 17 exs., El Bailadero, 800 m, 2.VII.1995, leg. Zerche (DEI); 1 ex., Anaga, Cabezo del Tejo, 730 m, 5.VII.1995, leg. Zerche (DEI); 13 exs., Anaga El Pijaral, 800-850 m, laurisilva, 4.VII.1995, leg. Zerche (DEI); 7 exs., Anaga, Vueltas de Taganana, 780-850 m, *Erica* forest, 5.VII.1995, leg. Zerche (DEI); 2 exs., same data, but 450 m, laurisilva (DEI); 9 exs., Anaga, Cruz del Carmen, 900 m, *Erica* litter, 2.VII.1995, leg. Zerche (DEI); 5 exs., Bosque de la Esperanza, W Las Rosas, 1000 m, 26.II.1996, leg. Schülke & Grünberg (cSch); 1 ex., Esperanza, 1200 m, 6.VII.1995, leg. Zerche (DEI); 1 ex., Orotava valley, Aguamansa, 1080 m, 25.XII.1995, leg. Stüben & Bahr (DEI); 9 exs., Teno, Erjos, 900 m, 8.-10.IV.1992, leg. Assing (cAss); 3 exs., Erjos, 12.III.1996, leg. Meybohm (cAss); 1 ex., Teno, N Erjos, 700 m, 30.XI.1996, leg. Schülke & Grünberg (cSch); 2 exs., Teno, Monte del Agua, 900-950m, 1.&10.VII.1995, leg. Zerche (DEI); 1 ex., Bajamar, 27.IX.1965, leg. Benick (cAss); 2 exs., Bco. del Infierno, 500 m, 9.IV.1992, leg. Assing (cAss); 3 exs., Vueltas de Taganana, VI.1957, leg. Fernández (NHMW); 4 exs., locality not specified (NHMW). **Gran Canaria:** 98 exs., NNW Lanzarote, Bco. de la Virgen, 500 m, de-

graded laurisilva, 20.XII.1997, leg. Assing (cAss); 7 exs., E Osorio, SW El Palmar, 600m, degraded laurisilva, 20.XII.1997, leg. Assing (cAss); 10 exs., Pinar de Tamadaba, 1200 m, pine forest, 22.XII.1997, leg. Assing (cAss); 3 exs., Pinar de Tamadaba, 1275m, 28°03'N, 15°41'W, pine forest with *Erica arborea*, 4.II.1998, leg. Zerche (DEI); 1 ex., S Moya, Los Tilos, 400 m, laurisilva, 23.XII.1997, leg. Assing (cAss); 9 exs., W Moya, El Palmital, 500 m, 23.XII.1997, leg. Assing (cAss); 2 exs., Cruz de Tejada, 1600 m, 25.XII.1997, leg. Assing (cAss); 1 ex., Tejada, leg. Gaudin (cSch); 10 exs., Valleseco, leg. Franz (NHMW); 9 exs., laurisilva near Moya, leg. Franz (NHMW); 1 ex., Isleta near Las Palmas, leg. Franz (NHMW); 1 ex., Bco. de Mogán, 27°54'N, 15°42'W, 355 m, *Euphorbia obtusifolia* + *Echium decaisnei*, sifted, 7.II.1998, leg. Zerche (DEI). **La Palma:** 1 ex., Los Tilos, leg. Franz (NHMW). **El Hierro:** 1 ex., Los Gramales, 21.IV.1985, leg. Oromí (cAss); 9 exs., Valverde, leg. Franz (NHMW); 7 exs., El Golfo, leg. Franz (NHMW); 4 exs., El Golfo, S El Moncenal, 900 m, Fayal-Brezal, 9.XII.1996, leg. Schülke (cSch); 1 ex., Mirador de la Peña, 650 m, 10.-13.XII.1996, leg. Schülke & Grünberg (cSch); 2 exs., Sabina, leg. Franz (NHMW); 12 exs. [partly teneral], El Brezal near Tabano, 850/1205 m, fayal-brezal, 27°44'N, 18°01'W, 17.I.1998, leg. Behne (DEI); 1 ex., below Sabinosa, 95 m, 27°45'N, 18°06'W, *Eonim* sifted, 27.I.1998, leg. Behne (DEI); 31 exs., Lomo Blanco, 6 km W Frontera, 27°45'N, 18°03'W, 550 m, fayal-brezal, 25.I.1998, leg. Behne (DEI); 5 exs., El Gretime, 8 km W Frontera, 27°44'N, 18°04'W, 800 m, fayal-brezal, 21.I.1998, leg. Behne (DEI); 4 exs. [1 teneral], Mtn. Colorada, 10 km SW Frontera, 27°44'N, 18°02'W, 1050 m, 21.I.1998, leg. Behne (DEI); 1 ex., Camino de San Salvador near Tabano, 27°44'N, 18°01'W, 1325 m, fayal-brezal, 17.I.1998, leg. Behne (DEI). **La Gomera:** 1 ex., El Cedro, 1000 m, 27.X.1990, leg. Wunderle (cAss); 2 exs., El Cedro, 900 m, 2.XI.1990, leg. Wunderle (cAss, cSch); 35 exs., El Cedro, leg. Franz (NHMW); 2 exs., El Cedro, 29.VI.2002, leg. Klemm & Wissner (cSch); 4 exs., El Cedro, 1 km S Ermitá, 14.I.2002, leg. Schülke (cSch); 20 exs., El Cedro, Ermitá, 900 m, 17.&19.VII.1995, leg. Zerche (DEI); 4 exs. [1 teneral], El Cedro, 600 m, 2.I.1998, leg. Stüben & Bahr (DEI); 1 ex., S Las Creces, 21.II.-8.III.2001, leg. Arndt (cSch); 1 ex., N Laguna Grande, laurisilva, 14.I.2002, leg. Schülke (cSch); 2 exs., Camino Forestal La Meseta, 650 m, laurisilva, 15.VII.1995, leg. Zerche (DEI); 2 exs., barranco above Hermigua, laurisilva, 550 - 580 m, 16.&19.VII.1995, leg. Zerche (DEI); 6 exs., Bco. N La Laguna Grande, 1010-1050 m, laurisilva, 15.&17.VII.1995, leg. Zerche

(DEI); 2 exs.; Raso de la Bruma, 1000 m, laurisilva, 18.VII.1995, leg. Zerche (DEI); 1 ex., Mirador de Alojara, 26.V.2003, leg. Contreras & Oromí (cOro); 2 exs., Cabecera del Bco. de Juel, 8.VIII.2002, leg. Oromí (cOro). **Fuerteventura:** 1 ex., Mte. de Betancuria, leg. Franz (NHMW).

**Diagnosis:** 4.0-5.2 mm. Habitus as in Fig. 33. Head brown to blackish; pronotum usually slightly lighter than head, more rarely of similar coloration; elytra light brown to brown; abdomen, except for the lighter apex, of similar coloration as head or pronotum; legs and antennae rufous to yellowish brown.

Head distinctly oblong, about 1.10 - 1.15 times as long as wide; eyes relatively large, in dorsal view usually slightly more than half the length of temples; puncturation very fine, dense, and more or less well-defined; microsculpture usually distinct, more rarely shallow, but always visible especially in lateral areas (Fig. 34).

Pronotum 1.05 - 1.10 times as wide as head and approximately as wide as long; puncturation even finer than that of head, often barely noticeable in the pronounced microsculpture (Fig. 34).

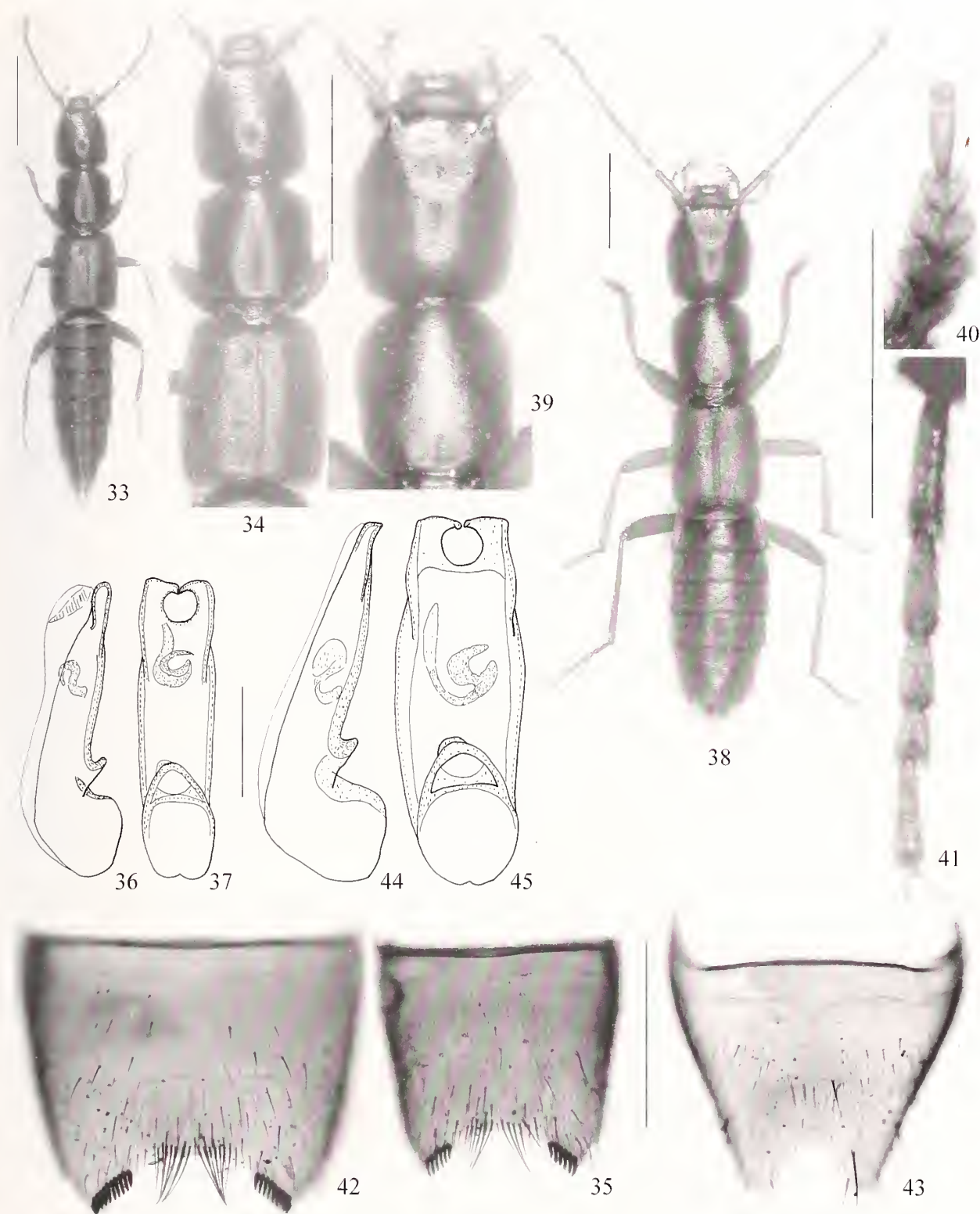
Elytra relatively large, 1.2 - 1.3 as wide and at suture 1.10 - 1.15 times as long as pronotum (Fig. 34); puncturation dense, fine, and weakly granulose. Hind wings fully developed.

Abdomen narrower than elytra (Fig. 33); puncturation very dense and fine; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of sternite VII deeply concave, with two combs of 5 - 8 palisade setae and on either side of middle with a tuft of long dark setae (Fig. 35); sternite VIII not distinctive; aedeagus of similar general morphology as that of *M. dilutus*, but apical part of different shape (Figs. 36 - 37).

**Comparative notes:** *Medon subcoriaceus* is readily identified by external characters alone, especially by its oblong head with a dense, fine, and well-defined puncturation and usually distinct microsculpture, by the extremely finely punctured and distinctly microsculptured pronotum, and the long elytra. In addition it is identified by the presence of tufts of long black setae at the posterior margin of the male sternite VIII (one on either side of middle) – a character otherwise exclusive to the following species, to *M. kabylicus*, and to the species of the *M. fuscus* group – as well as by the distinctive shape of the apex of the aedeagus.





**Figs. 33-45.** *Medon subcoriaceus* (Wollaston) (33-37) and *M. antricola* sp. n. (38-45): Habitus (33, 38); forebody (34); male sternite VII (35, 42); aedeagus in lateral and in ventral view (36, 37, 44, 45); head and pronotum (39); male protarsus (40); metatarsus (41); male sternite VIII (43). Scale bars: 33, 34, 38, 39: 1.0 mm; 35, 40-43: 0.5 mm; 36, 37, 44, 45: 0.2 mm.

**Distribution and bionomics:** *Medon subcoriaceus* is endemic to the Canary Islands. It occurs in all larger islands except Lanzarote (material examined; MACHADO & OROMÍ 2000) and is common everywhere except Fuerteventura, from where it is here recorded for the first time. The species was found in large numbers especially in the laurisilva, fayal-brezal, and other semi-natural woodland habitats of Tenerife, Gran Canaria, La Gomera, La Palma, and El Hierro, but also in semi-arid biotopes. The examined material was collected throughout the year; teneral adults were repeatedly observed in January.

### 3.7. *Medon antricola* sp. n. (Figs. 38-45)

**Holotype** ♂: El Hierro, JN-C/CO-3920, Cueva de Jinama, 26-IX-00, GIET leg. / Holotypus ♂ *Medon antricola* sp. n. det. V. Assing 2003 (DZUL). **Paratypes:** 1♂: El Hierro, JN-C/CO-3779, Cueva de Jinama, 26-09-00, GIET leg.; 1♀: El Hierro, JN-C/CO-2523, Cueva de Jinama, 9-II-2000, GIET leg.; 1♀: El Hierro, FI-VG/CO-2346, Cueva de Fileba, 8.II.2000, GIET leg. (DZUL, MCNT, cOro); 1♂: El Hierro, FI-C/CO-2103, Cueva de Fileba, I.II.2000, GIET leg. (cAss); 1♂ [teneral]: El Hierro, Cueva de Fileba, 4-XI-01, H.López leg. (cAss); 1♂ [remains; in ethanol]: El Hierro, Cueva de Jinama, 26.IX.00, JN-C/CO-3779, GIET leg. (DZUL); 1♀ [remains; in ethanol]: NO: FI-C/CO-3868, El Hierro, Cueva de Fileba, Fecha: 15.IX.00, GIET leg. (DZUL); 1♀: No: FI-C/CO-5717, El Hierro, Cueva de Fileba, Fecha: 28/07/01, leg. S. de la Cruz (cAss).

**Diagnosis:** 5.0-6.8 mm. Habitus as in Fig. 38. Coloration of whole body more or less uniformly reddish brown, with the elytra, the legs, and the antennae yellowish brown.

Head distinctly oblong, 1.10 - 1.15 times as long as wide; widest at a short distance behind eyes, i.e. at slightly tapering posteriad (Fig. 39); eyes reduced: rudiments without pigmentation and without distinct ommatidia, in dorsal view about 1/5 - 1/6 the length of temples; integument with very dense, fine, shallow, non-areolate puncturation; interstices with distinct microsculpture. Antennae long and slender; antennomere III approximately 4 times as long as wide and distinctly longer than II; IV shorter than III and more than twice as long as wide; IV - X of gradually decreasing length; X approximately as wide as long (Fig. 39).

Pronotum 1.05 - 1.10 times as wide as long and about 0.95 times as wide as head; microsculpture distinct, rendering the extremely fine puncturation almost invisible (Fig. 39).

Elytra approximately 1.1 times as wide and at suture about as long as pronotum; puncturation very dense, fine, and weakly granulose. Hind wings of reduced

length, about twice as long as elytra. Legs long and slender; metatarsomere I 4 - 5 times as long as wide; I - IV of decreasing length, IV weakly oblong (Fig. 41); protarsus with pronounced sexual dimorphism.

Abdomen with very fine and dense puncturation; posterior margin of tergite VII with narrow palisade fringe.

♂: protarsomeres strongly transverse and cordiform (Fig. 40); posterior margin of sternite VII broadly concave, laterally with combs of about 10 palisade setae and on either side of middle with tuft of long black setae (Fig. 42); sternite VIII not distinctive (Fig. 43); aedeagus as in Figs. 44 - 45.

♀: protarsomeres weakly transverse and not cordiform.

**Etymology:** The name (Lat.) is a noun in apposition and means cave inhabitant.

**Comparative notes and systematics:** *Medon antricola* is readily identified by external characters alone, especially the large size, uniformly light coloration, the reduced eyes, long antennae and legs, the oblong head, as well as by the puncturation and microsculpture of the head and pronotum. Based on the evident similarities in the shape and chaetotaxy of the male sternite VII, the morphology of the aedeagus, the oblong head, as well as on the puncturation and microsculpture of head and pronotum, *M. antricola* is doubtlessly the sister species of *M. subcoriaceus*. It is not closely allied to *M. feloi*, another cave-dwelling species from the Canary Islands (see section 3.25).

**Distribution and bionomics:** The species is endemic to El Hierro, Canary Islands, where it was found at least in two caves, the Cueva de Jinama and the Cueva de Fileba in the north of the island. Larvae possibly belonging to this species were also found in caves in the south of El Hierro (P. OROMÍ, La Laguna, pers. comm. 2003). As can be inferred from the adaptive reductions of the eyes, wings, and pigmentation, as well as from the conspicuously long antennae and legs, *M. antricola* is a true troglobite. This is also supported by the circumstances of collection: the type specimens were found by handsampling (on bare ground) and with pit-fall traps in the deep and dark parts of the caves, partly near water (P. OROMÍ, La Laguna, pers. comm. 2003). One specimen taken in November is teneral.

### 3.8. *Medon castaneus* (Gravenhorst, 1802) (Figs. 46-52, Map 6)

*Paederus castaneus* Gravenhorst, 1802 (GRAVENHORST 1802: 60).

*Lathrobium brevicorne* Latreille, 1804 (LATREILLE 1804: 342).

*Paederus quadratus* Beck, 1817 (BECK 1817: 25).



*Medon ruddii* Stephens, 1833 (STEPHENS 1833: 273).

**Types examined:** *P. castaneus*: Lectotype ♂, present designation: 6361 / castanea Er., *Paederus* Gr. / Syntypus *Lathrobium castaneum* Gravenhorst 1802, labelled by Zool. Mus. Berlin, 7.2003 / Hist.-Coll. (Coleoptera) Nr. 6361 *Lathrobium castaneum* Gravenhorst, 1802, Europa, Zool. Mus. Berlin / Lectotypus ♂ *Paederus castaneus* Gravenhorst, desig. V. Assing 2003 / *Medon castaneus* (Gravenhorst) det. V. Assing 2003 (MNHUB). Paralectotype ♀: Syntypus *Lathrobium castaneum* Gravenhorst 1802, labelled by Zool. Mus. Berlin, 7.2003 / Hist.-Coll. (Coleoptera) Nr. 6361 *Lathrobium castaneum* Gravenhorst, 1802, Europa, Zool. Mus. Berlin / Paralectotypus ♀ *Paederus castaneus* Gravenhorst, desig. V. Assing 2003 / *Medon castaneus* (Gravenhorst) det. V. Assing 2003 (MNHUB).

**Material examined** (total: 92 exs.):

**Portugal:** 1 ex., Serra de S. Mamede, Marvão, 39°24'N, 07°23'W, 665 m, swept from vegetation, 16.III.2002, leg. Meybohm (cAss); 1 ex., Castelo Branco, S Manteigas, 1450 m, 16.IV.1960, leg. Besuchet (cSch).

**Spain:** 1 ex., Castilla-León, Segovia, San Rafael, 14.V.1960, leg. Comellini (cBor).

**France:** 1 ex., Gironde, Vendays-Montalivet, IX.1950, leg. Tempère (MHNG); 1 ex., Gironde, Pessac (MHNG); 1 ex., Poutou-Charentes, St. Georges-de-Didonne, VIII.1925 (MHNG); 1 ex., Rhône-Alpes, Ardèche, Saint-Agrève, 900m, III.1934, leg. Gaudin (UCBA, cZan); 1 ex., Lyon, 6.IV.1950 (MHNG); 1 ex., Alsace, Strasbourg, X.1953 (MHNG). **Locality not identified or ambiguous:** 1 ex., Ft. de St. Germain, I.1932, leg. Tempère (MHNG); 1 ex., St. Germain, 24.I.1937, leg. Levasseur (MHNG).

**England:** 1 ex., Surrey, Pyrford, 26.II.1992, leg. Owen (cOwe).

**Sweden:** 2 exs., Skåne, N Landskrona, Ålabodarna, vole burrow, 21.V.1971 & 25.V.1975, leg. Gillerfors (cGil).

**Germany: Nordrhein-Westfalen:** 1 ex., Münster, Gas-selstiege, III.1991, leg. Feldmann (cFel). **Rheinland-Pfalz:** 1 ex., Landau, Rülzheim, meadow, mole nest, II.1987, leg. Persohn (cKöh). **Schleswig-Holstein:** 1 ex., Krummesse, 22.III.1973 (MHNG). **Niedersachsen:** 2 exs., Hannover, Herrenhäuser Gärten, 24.III.1988, leg. Assing (cAss); 1 ex., Hannover-Ahlem, fallow area, pitfall trap, 5.V.1992, leg. Sprick (cAss); 1 ex., Harz, Herzberg, pitfall trap, 5.V.1992 (cAss); 2 exs., Hann.-Münden, left bank of Fulda river, 6.I.1932, leg. Kirch (cSch); 2 exs., Holzminden, leg. Gerhard (NHMW). **Hessen:** 2 exs., Seeheim-Jugenheim, fallow, mole nest, II.2003, leg. Hetzel (cFel); 1 ex. [teneral], Karlshafen, 27.I.1934, leg. Folwaczny (MHNG); 2 exs., Erlensee,

10.II.1993, leg. Höhner (cKöh). **Bayern:** 1 ex., Bamberg, leg. Weise (NHMW). **Brandenburg/Berlin:** 1 ex., Frankfurt/O., Markendorf, Helenesee, 22.IV.1984, leg. Gasche (cSch); 4 exs., W Potsdam, Wildpark Golm, mole nest, coll. Neresheimer (DEI); 1 ex., Hönnow, mole nest, coll. Neresheimer (DEI); 1 ex., Mittenwalde, mole nest, coll. Neresheimer (DEI); 10 exs., Strausberg, mole nest, coll. Neresheimer (DEI); 1 ex., NSG Rietzer See, 52°23'N, 12°41'E, Helsberg, rabbit burrow, fish bait, 16.V.1979, leg. Uhlig (DEI). **Sachsen:** 1 ex., Leipzig, 19.X.1913, leg. Linke (MHNG); 1 ex., Leipzig, Dölzig, leg. Linke (NHMW).

**Austria: Vorarlberg:** 2 exs., Feldkirch (NHMW). **Tirol:** 1 ex., Innsbruck, 4.XII.1932, leg. Pechlaner (NHMW); 1 ex., Innsbruck, leg. Strupi (MHNG). **Oberösterreich:** 1 ex., Ostermiething, mole nest, leg. Leeder (NHMW). **Niederösterreich/Wien:** 1 ex., Oberwaltersdorf, mole nest, leg. Franz (NHMW); 2 exs., Wien, Lobau, mole nest, 21.III.1926, leg. Breit (NHMW); 1 ex., Moosbrunn, mole nest, 1.III.1927, leg. Breit (NHMW); 3 exs., Wien, leg. Schade (NHMW, cAss); 12 exs., Purgstall, mole nests, 14.II.1957, 1.IV.1958, 13.XII.1958, 4.III.1959, 31.III.1959, 29.IX.1959, 4.X.1959 (3 exs.), 5.I.1959, 4.VII.1960, 20.X.1960, leg. Ressler (NHMW); 1 ex., Oberweiden, 11.II.1968, leg. Gotz (NHMW). **Burgenland:** 1 ex., Salmansdorf (NHMW); 1 ex., Zurndorf, leg. Franz (NHMW).

**Italy: Trentino-Alto Adige:** 1 ex., Bressanone, 24.V.1957, leg. Peez (cBor); 1 ex., Bressanone, 2.III.1953, leg. Peez (cZan); 1 ex., Piemonte, Novara, Inverio, III.1971, leg. Rosa (cZan).

**Czech Republic:** 1 ex., Bohemia, Hostivice (MHNG); 1 ex., Prag (NHMW).

**Poland:** 1 ex., Lubin, 6.II.1916 (NHMW).

**Slovakia:** 3 exs., Banská Bystrica, XI.1923, leg. Roubal (MHNG, cBor).

**Locality illegible or not specified:** 1 ex., 16.X.1960 (MHNG); 2 exs. (MHNG).

**Comments:** The original description of *Paederus castaneus* is based on an unspecified number of type specimens, so that the two types found in the historical collection of the MNHUB are attributed syntype status. In order to stabilize the present interpretation of the species, the male syntype is here designated as the lectotype.

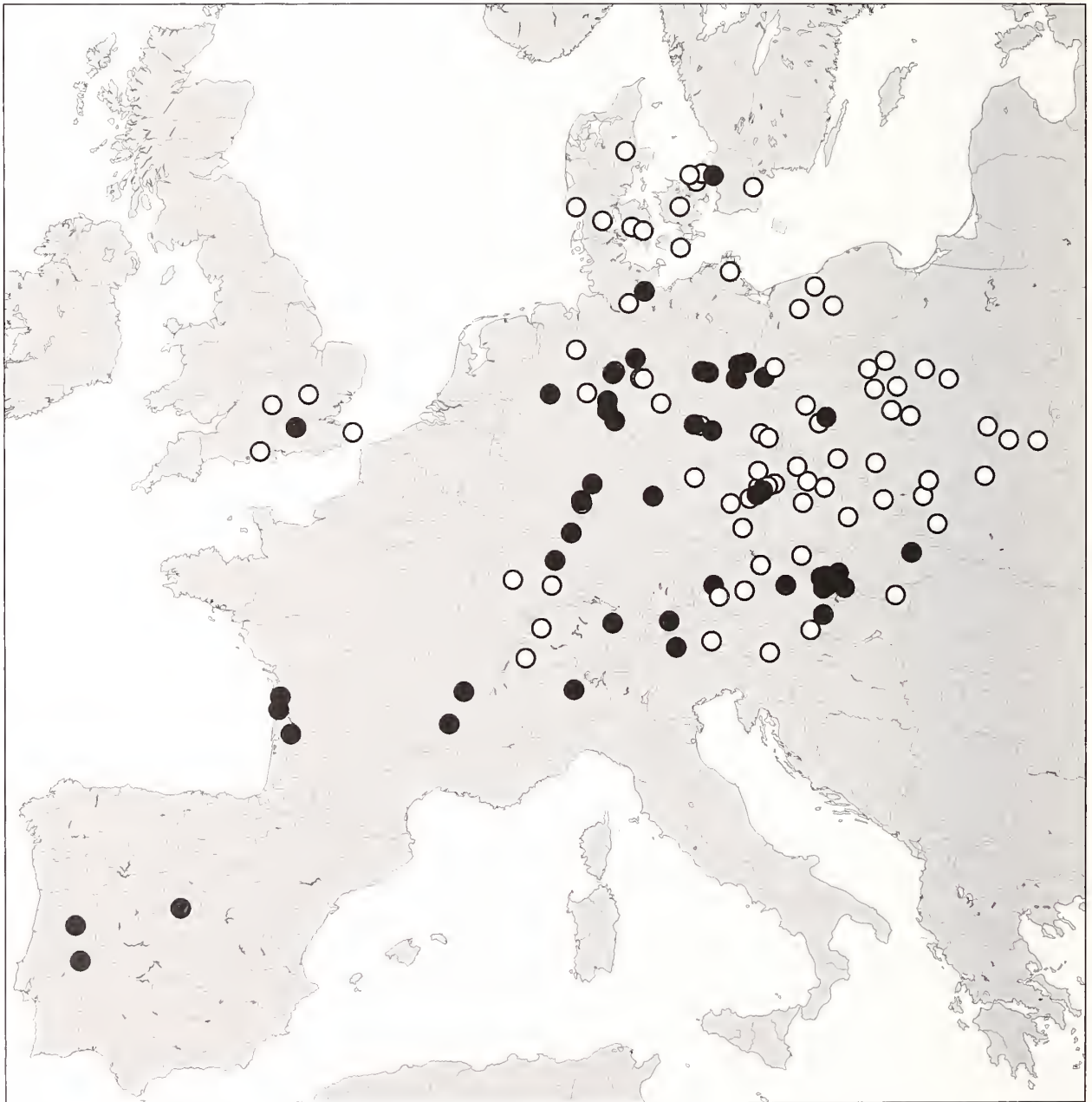
**Diagnosis:** Large species, 6.0-8.0 mm. Habitus as in Fig. 46. Head dark brown to blackish brown, sometimes with the frons ferrugineous; pronotum dark brown to blackish, with the margins and especially the anterior angles more or less extensively ferrugineous; elytra rufous to castaneous; abdomen dark brown to blackish,

with the apex, paraterga, and the tergal hind margins lighter; legs and antennae rufous.

Head at least weakly oblong and of subquadrangular shape, i.e. with subparallel lateral margins and marked posterior angles; eyes less than half the length of postocular region in dorsal view; puncturation moderately coarse, well-defined, and dense, with the interstices much narrower than the punctures, in median dorsal area

usually sparser and with shining interstices (Fig. 47); shallow microsculpture may be present in posterior and lateral areas. Antenna very long and slender, antennomere IV and V more than twice as long as wide (Fig. 46).

Pronotum as wide as long or weakly transverse, slightly to distinctly narrower than head; puncturation denser and less well defined than that of head, often partly confluent; interstices narrow, but more or less shining (Fig. 47).



Map 6: Distribution of *Medon castaneus* (Gravenhorst) based on revised (filled circles) and selected literature records (open circles).



Elytra 1.15-1.20 times as wide and at suture 1.05-1.18 times as long as pronotum (Fig. 46); puncturation dense and granulose, less coarse than that of head and pronotum. Hind wings fully developed. Legs very long and slender, metatarsus almost as long as metatibia; metatarsomere III at least about 3 times as long as wide.

Abdomen with very fine and dense puncturation and with microsculpture; posterior margin of tergite VII with palisade fringe.

♂: protarsomeres distinctly dilated, protarsomere II cordiform and wider than long; posterior margin of sternite VII distinctly concave and with two combs of palisade setae, each consisting of usually more than 10 setae (Fig. 48); aedeagus long and slender (Figs. 49-52).

♀: protarsomeres weakly dilated, protarsomere II not wider than long and not distinctly cordiform.

**Comparative notes:** *Medon castaneus* is easily distinguished from all its Western Palearctic congeners, except for *M. procerus* (see the following section), especially by its large size, the elongate legs and antennae, and by the long and slender aedeagus.

**Distribution and bionomics:** *Medon castaneus* represents an Atlanto-Mediterranean element (Map 6), its distribution ranging from the western part of the Iberian Peninsula to southern England, southern Scandinavia, Poland, western Russia, Ukraine, Slovakia, and Hungary (material examined). For more records see e.g. BARANOWSKI (1977, 1979), BOHÁČ (1985), BRUGE et al. (2001), BÜCHE & ESSER (1999), DRUGMAND (1989), ERMISCH & LANGER (1933), FALCOZ (1914), FOWLER (1888), HANSEN (1996), HANSEN et al. (1995), HANSEN (1964), HORION (1965), KOCH (1968), KÖHLER (2000), KÖHLER & KLAUSNITZER (1998), LUNDBERG (1995), TERLUTTER (1995), and TRONQUET (2001). In Scandinavia, it is present only in Denmark and Skåne. According to HORION (1965), there are old records from Slovenia and Hungary, and also from Ukraine (Wolyn'ska Oblast, Kiev) and Russia as far east as Samara, but these require confirmation. SILFVERBERG (1992) reports the species from Lithuania. Confirmed records from Italy are only known from two localities in the north (material examined; OSELLA & ZANETTI (1974)); it is also indicated from Lazio (southern Italy) (CICERONI & ZANETTI 1995; LUIGIONI 1929; PORTA 1926), but this old record has not been confirmed and should be considered doubtful.

*Medon castaneus* is nidicolous and usually associated with the nests and burrows of the European mole (*Talpa europaea* Linné), which, however, is absent from the western Iberian Peninsula. Thus, *M. castaneus* may also inhabit the nests of *Desmana pyrenaica* (Geoffroy Saint Hilaire) or *Talpa caeca* (Savi), which occur in this region. The observation that the species has also been

found in rabbit burrows on two occasions, once on fishbait (material examined; BARANOWSKI (1979)), and once in vole burrows suggests that the host spectrum may also include other mammals with subterranean nests and burrows.

Nests of moles are inhabited by rather many species of Coleoptera and are relatively easy to find and to dig up, which is why there are numerous thorough studies on the beetle fauna of this habitat (e.g. HEINEMANN 1910; HORION 1933; NOWOSAD 1990; OSELLA & ZANETTI 1974; STROUHAL & BEIER 1928). According to these investigations, *M. castaneus* is rather rarely found in most regions. In the environs of Braunschweig (Germany: Niedersachsen), HEINEMANN (1910) found only 2 specimens in 225 nests. In the surroundings of Wien, STROUHAL & BEIER (1928) dug up 118 nests and collected 21 beetles. The by far most comprehensive and systematic study of the staphylinid fauna of mole nests was carried out in Poland by NOWOSAD (1990), who recorded *M. castaneus* in only 28 nests (48 specimens) of a total of about 5000 nests studied.

The literature data on the preferred biotope are diverse or even contradictory. According to most authors (e.g. JOY 1932; HORION 1933, 1965; STROUHAL & BEIER 1928; VOGT 1956), *M. castaneus* is usually found in damp situations, especially near rivers and streams, whereas LINKE (1927) reports it from dry places; on one occasion he found 14 specimens in a single nest.

Adult beetles have been found almost throughout the year, except in August. The low number of summer records, however, may also be due to the probably low number of nests examined during this period. Larvae have been found in July (BOHÁČ 1985, HORION 1965). A teneral adult was collected in January (material examined). One specimen was swept from vegetation in March (Portugal) and two specimens were caught with pitfall traps in April and at the beginning of May, suggesting that dispersal by flight and on the ground probably takes place in early spring.

### 3.9. *Medon procerus* (Perez Arcas, 1874), sp. propr. (Figs. 53-57)

*Lithocharis procera* Perez Arcas, 1874 (PEREZ ARCAS 1874: 114ff).

**Material examined: Spain:** 2 exs., Madrid, Cueva de la Magdalena (NHMW, cAss).

**Diagnosis:** Largest species of the genus in the Western Palearctic region, 7.0-9.0 mm (Fig. 53). Coloration uniformly ferrugineous.

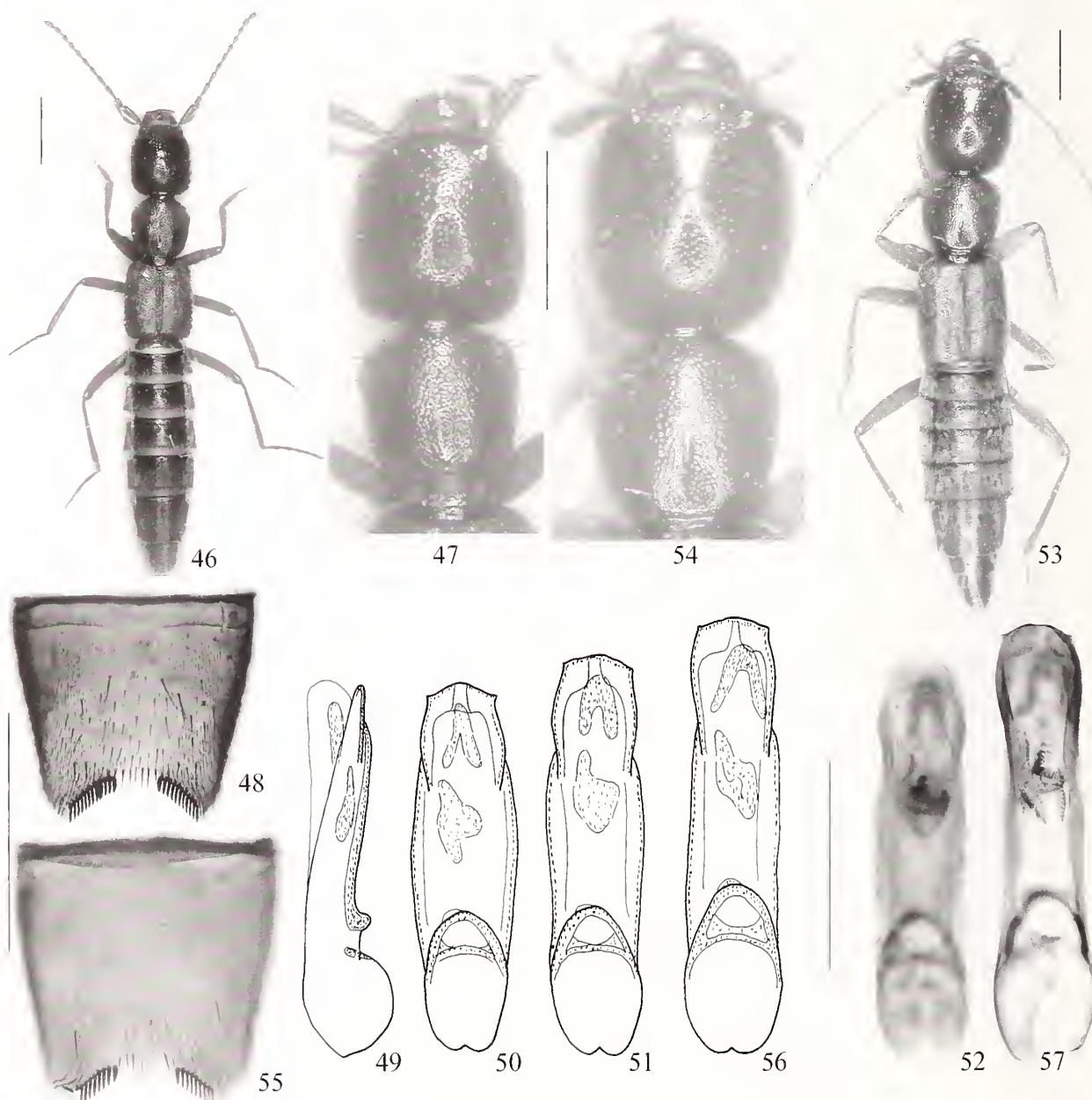
Head very large and of ellipsoid shape, i. e. lateral margins convex and posterior angles almost obsolete; eyes slightly smaller than in *M. castaneus*; puncturation as in

*M. castaneus*, but slightly less coarse (Fig. 54). Antennae of similar morphology as in *M. castaneus*.

Pronotum small in relation to head, distinctly tapering posteriorly; puncturation less dense and more well defined than is usually the case in *M. castaneus* (Fig. 54).

Legs even longer and more slender than in *M. castaneus*; length of metatibia 1.7-1.8 mm (maximum length in largest specimens of *M. castaneus* 1.4 mm). Elytra and abdomen as in *M. castaneus* (Fig. 53).

♂: protarsomeres I - IV distinctly dilated; sternite VII of similar morphology and chaetotaxy as in *M. castaneus*, but more oblong and posterior concavity shallower in relation to total length of sternite (Fig. 55); sternite VIII elongate and slender; aedeagus longer than in *M. castaneus* and with longer and more slender ventral process (Figs. 56-57).



Figs. 46-57. *Medon castaneus* (Gravenhorst) (46-52) and *M. procerus* (Perez Arcas) (53-57): Habitus (46, 53); head and pronotum (47, 54); male sternite VII (48, 55); aedeagus in lateral and in ventral view (49-57; 49, 50: northern Germany; 51, 52: Portugal). Scale bars: 46-48, 53-55: 1.0 mm; 49-52, 56-57: 0.5 mm.



**Comparative notes:** The species is distinguished from the similar *M. castaneus* especially by the uniformly ferrugineous coloration, the ellipsoid shape of the head, the longer legs, and the longer and more slender aedeagus. From all other Western Palaearctic congeners, it is readily separated by its much greater body size alone.

**Comments:** The types of this species were not examined, but in view of the distinctive external appearance and the fact that the non-type specimens listed above were collected at the type locality, there is no doubt that the present interpretation is correct. *M. procerus* was previously regarded as a synonym of *M. castaneus* (e.g. COIFFAIT 1984). However, the constant differences in external morphology, in the shape of the primary and secondary sexual characters, as well as the different habitat suggest that it represents a distinct species. A similar case of adelphotaxa, one of them widespread and the other an endemic troglobite, is known from the Eastern Mediterranean (ASSING 2004a): *Medon fuscus* and *M. dobrogicus* Decu & Georgescu.

**Distribution and bionomics:** This troglobite is known only from the Cueva de la Magdalena, a cave near Madrid, where it is apparently endemic. According to PEREZ ARCAS (1874) adult beetles were found almost throughout the year.

### 3.10. *Medon pocofer* (Peyron, 1857) (Figs. 58-59)

*Lithocharis pocofera* Peyron, 1857 (PEYRON 1857: 718ff).

*Lithocharis maritimus* Aubé, 1863 (AUBÉ 1863: 36).

**Material examined** (total: 51 exs.; for additional material see ASSING (2004a)):

**France: Provence:** 2 exs., locality not specified (NHMW); 1 ex., Port Miod near Cassis, "feinkiesiger bis grobschottriger Untergrund", 10.VIII.1959, leg. Schuster (NHMW); 1 ex., Nice, III.1954 (cBor); 1 ex., Nice, 25.IX.1918 (MHNG); 10 exs., Nice, 5.III.1954 (MHNG, cAss); 2 exs., La Seyne (NHMW); 3 exs., Saint-Raphaël, leg. Fauvel (NHMW, cAss); 1 ex., Fréjus, VII.1892, leg. Rey (NHMW); 1 ex., Toulon, leg. Bauduer (NHMW); 1 ex., Toulon (DEI); 1 ex., Var, locality not specified (DEI); 1 ex., Var inundation [W Nice], Alpes Maritimes, IV.1859 (DEI); 1 ex., Antibes (DEI).

**England:** 1 ex., Dorset, Lulworth Cove, shingle, 22.III.1990, leg. Owen (cOwe).

**Italy: Friuli-Venezia Giulia:** 1 ex., Trieste, Sistiana, Adria, leg. Breit (NHMW); 1 ex., Trieste, Grignano, IX.1907, leg. Krekich (MHNG). **Liguria:** 7 exs., Genova, XII.1900, leg. Dodero (NHMW, cAss); 1 ex. [tene-

ral], Genova, VII.1899, leg. Dodero (NHMW); 2 exs., Genova, III.1894, leg. Dodero (NHMW); 4 exs., Genova, IV.1893, leg. Dodero (DEI, cAss); 2 exs., Genova, I.1918, leg. Dodero (MHNG); 1 ex., Genova, XI.1918, leg. Dodero (NHMW); 4 exs., Genova, leg. Dodero, Hauser (DEI, NHMW). **Umbria:** 1 ex., locality not specified (NHMW).

**Diagnosis:** See ASSING (2004a). Habitus as in Fig. 58. All tarsomeres III and IV are transverse and more or less cordiform (Fig. 59), a character not emphasized by ASSING (2004a), but distinguishing *M. pocofer* from all other Western Palaearctic species.

**Comments:** The type material of *M. pocofer* was looked for, but not found, in the collections of the MNHNP. However, both the characters and the ecological details indicated in the original description leave no doubt that the present interpretation is correct.

**Distribution and bionomics:** According to the literature, *Medon pocofer* is distributed on the Atlantic coasts northwards to southern England and in the Western Mediterranean, including Algeria and Tunisia (COIFFAIT 1984; FOWLER 1888; NORMAND 1935). The easternmost record is from Montenegro (ASSING 2004a). In the Western Mediterranean, I have seen material only from southern France (Provence) and Italy. LUIGIONI (1929) reports the species from various Italian regions (Liguria, Venezia Giulia, Lazio, Sardinia, and Sicily) and from Corsica. Based on the material examined, the species is not rare at the coasts of Var, Alpes Maritimes, and Liguria.

Among Western Palaearctic *Medon* species *M. pocofer* is the only representative that is apparently confined to coastal habitats. It is usually found under seaweed and under stones between shingles (COIFFAIT 1984; FOWLER 1888; JOY 1932; NORMAND 1935). FOWLER (1888) observes that the specimens are very quick and immediately hide between shingles when disturbed. One specimen collected in July was teneral (material examined).

### 3.11. *Medon rufiventris* (Nordmann, 1837) (Figs. 60-61, Map 7)

*Lathrobium rufiventre* Nordmann, 1837 (NORMANN 1837: 147f).

*Medon anatolicum* Coiffait, 1970a (COIFFAIT 1970a: 704ff); synonymy by ASSING (2004a).

*Medon burdigalensis* Coiffait, 1970a (COIFFAIT 1970a: 711f) **syn. n.**

*Medon aquitanicum* Coiffait, 1970a (COIFFAIT 1970a: 712) **syn. n.**

*Medon siculum* Coiffait, 1970a (COIFFAIT 1970a: 709ff) **syn. n.**

*Medon sicilianum* Coiffait, 1970c (COIFFAIT 1970c: 712); replacement name for *M. siculus* Coiffait; **syn. n.**

**Types examined:** *M. burdigalensis*: Holotype ♂ [aedeagus missing]; Gironde V.45, Gazinet, H. Coiffait / MUSEUM PARIS COLL H. COIFFAIT / HOLOTYPE / *Medon burdigalensis* Coiff. H. COIFFAIT det. 1969 / *Medon rufiventris* (Nordmann) det. V. Assing 2003 (MNHNP).

*M. aquitanicus*: Holotype ♂: Gironde, Cussac / Collection H. Coiffait / MUSEUM PARIS COLL H. COIFFAIT / HOLOTYPE / *Medon aquitanicum* Coiff. H. COIFFAIT det. 1969 / *Medon rufiventris* (Nordmann) det. V. Assing 2003 (MNHNP).

*M. siculus*: Holotype ♂: U. Lostia, Sardinia / MUSEUM PARIS COLL H. COIFFAIT / HOLOTYPE / *Medon siculum* Coiff. H. COIFFAIT det. 1969 / *Medon rufiventris* (Nordmann) det. V. Assing 2003 (MNHNP).

*M. anatolicus*: Holotype ♂: Turquie (Isparta). Bodemli, H. Coiffait, 27.V.54 / HOLOTYPE / *Medon anatolicum* Coiff. H. COIFFAIT det. 1969 (MNHNP). Paratypes: 1♂, 1♀: same data as holotype (MNHNP).

**Comments:** According to COIFFAIT (1970a), *M. burdigalensis* is distinguished from *M. rufiventris* by the finer puncturation of the pronotum and by the different shape of the aedeagus. The puncturation of the pronotum is indeed very fine in the holotype, but this character is highly variable in the species and I have seen specimens with a similarly punctured pronotum also from other parts of the range of *M. rufiventris*, e.g. from Greece. The aedeagus of the holotype is apparently lost, but the drawing provided in the original description is quite in agreement with the aedeagus of *M. rufiventris*. The apical emargination is rather small, but this is probably an artefact resulting from mounting a dry aedeagus. The fact that the illustration of the aedeagus of *M. rufiventris* in COIFFAIT (1984: 19, figs. 6I and 6J) is taken from the literature suggests that Coiffait had not seen a male *M. rufiventris* himself.

In the original description of *M. aquitanicus*, COIFFAIT (1970a) states that the species is similar to *M. burdigalensis*, but separated by the more parallel shapes of the head and pronotum, by the more numerous black palisade setae at the posterior margin of the male sternite VII, the lower distance between the two clusters of palisade setae, and by the different shape of the aedeagus. Head shape is an extremely variable character in *M. rufiventris*; the majority of specimens have a relatively large and somewhat wedge-shaped head, but the head may also be of subparallel shape and/or of reduced size (ASSING 2004a). The apex of the aedeagus (Fig. 61) differs somewhat from the usual condition encountered

in *M. rufiventris*, but teratological aedeagi are a common phenomenon in the genus.

Neither the male secondary sexual characters nor the other external characters of the holotypes of *M. burdigalensis* and *M. aquitanicus* (Fig. 60) provide sufficient evidence that these specimens should represent distinct species (not to mention the unlikelihood of endemic *Medon* species occurring in Gironde), so that both *M. burdigalensis* and *M. aquitanicus* is here placed in the synonymy of *M. rufiventris*.

The type locality indicated in the original description of *M. siculus* ("Sicile") is clearly incorrect; the label attached to the holotype gives "Sardinia". This error has resulted in the conclusion that *M. siculus* (later known under the replacement name *M. sicilianus*) is endemic to Sicily (COIFFAIT 1984; CICERONI & ZANETTI 1995). COIFFAIT (1970a) compares *M. siculus* with *M. brunneus*, probably because of the relatively coarse puncturation of the pronotum of the type specimens, but an examination of the holotype revealed that it is conspecific with the senior name *M. rufiventris*. The puncturation of the pronotum and of the head is indeed coarser than is usually the case in the species, but, like the size and the shape of the head, the puncturation of the forebody is subject to pronounced intraspecific variation in this species and the condition found in the holotype is still within the range observed in *M. rufiventris*. An examination of other characters, including the male secondary sexual characters and the morphology of the aedeagus, did not produce any evidence that the types of *M. siculus* should represent a distinct species.

Based on non-type material and the original description (COIFFAIT 1970a), the synonymy of *M. anatolicus* with *M. rufiventris* was already established by ASSING (2004a). A recent examination of the types of *M. anatolicus* confirms this synonymy.

**Additional material examined** (total: 48 exs.; for additional material see ASSING (2004a)):

**Spain:** 1 ex., Cuenca, Serrania de Cuenca, 40°07'N, 02°02'W, 17.V.2002, leg. Starke (cAss).

**France:** 2 exs., Landes, Sos (NHMW); 2 exs., Île-de-France, Fontainebleau, IV.1904, leg. Mequignon (MHNG); 1 ex., Fontainebleau, leg. Mequignon (MHNG); 1 ex., Fontainebleau, 20.III.1905, leg. Gruardet (MHNG); 1 ex., Var, St.-Paul-en-Forêt, 5.I.1939 (MHNG); 4 exs., Var, Figanières, 29.IV.1975, leg. Zoia (UCBA, cZan); 2 exs., Var, Bagnols-en-Forêt, cork tree, IV.1937 (MHNG); 2 exs., Var, Plan de Canjuers, 43°42'N, 06°18'E, 22.IV.1954 (MHNG); 1 ex., Var, locality not specified, II.1950 (MHNG).





**Map 7:** Distributions of *Medon rufiventris* (Nordmann) (black circles: revised records; grey circles: selected literature records) and of *M. africanus* (Fauvel) (white circles: examined records only).

**Luxemburg:** 1 ex., locality not specified, leg. Franz (cAss).

**Italy:** 1 ex., Lombardia, Berbenno di Valtellina, Colorina, 4.IV.1972 (cZan); 1 ex., Piemonte, Brandizzo, mole nest, 28.XII.1973, leg. Osella (cZan); 1 ex., Veneto, Grezzana (VR), 10.IV.1992, leg. Zanetti (cZan); 1 ex., Elba, 22.-31.V.1993, leg. Rauhut (cAss); 7 exs., Elba, Mt. Capanno, 600 m, under chestnut bark, 30.III.-13.IV.1921, leg. Moczarski & Scheerpeltz (NHMW, cAss).

**Germany:** 1 ex., Sachsen-Anhalt, Dessau, leg. Nebel (NHMW).

**Slovakia:** 1 ex., Hronská Breznica [48°34N, 19°00E], leg. Roubal (MHNG).

**Greece:** 11 exs., Métsovon, 1200 m, 8.IV.1993, leg. Frisch (MNHUB, cAss); 4 exs., Pelopónnisos, Olympia, Ladzoi, 100 m, 25.III.1992, leg. Frisch (MNHUB, cAss); 1 ex., Pelopónnisos, Taygetos, Katafigion, 1550 m, 10.IX.1995, leg. Zoia (cZan).

**Belarus:** 1 ex., Gomel region, Simonitschi, National Park "Pripiatsky", 20.VII.1998, leg. Sheshurak (cGon).

**Diagnosis:** See ASSING (2004a).

**Distribution and bionomics:** Based on the material examined, *M. rufiventris* is evidently a Ponto-Mediterranean element, its distribution ranging from eastern Anatolia, Krasnodar, and Belarus in the southeast and east to the central parts of Poland and Germany and to Luxemburg in the north, and finally to western France, and northeastern Spain in the west (material examined). There is an isolated record from the Swedish island Öland, the only Scandinavian locality known for the species (LUNDBERG 1995). For additional records see BOHÁČ (1985), HORION (1965), KÖHLER (2000), KÖHLER & KLAUSNITZER (1998), LUNDBERG (1995), SCHEERPELTZ (1968), SZUJECKI (1968), and TRONQUET (2001). The species is here recorded from Luxemburg for the first time. It is unknown from the British Isles (LOTT & DUFF 2003), Belgium (BRUGE et al. 2001), and from the Baltic countries (SILFVERBERG 1992). Rather recent German records are from Berlin and Sachsen-

Anhalt (KORGE 1989; SCHÜLKE 1998). The presence of the species in Sardinia was considered doubtful by CICCERONI & ZANETTI (1995), but is here confirmed through the holotype of *M. siculus* Coiffait. In view of the general distribution pattern of the species, as well as of the absence of any confirmed records, the presence of the species in Northwest Africa, as indicated by COIFFAIT (1984) and HORION (1965), must be considered most unlikely. Previous records from this region are evidently based on confusion with other species, especially the externally similar *M. africanus*.

*Medon rufiventris* was mostly found associated with dead wood, especially in or under bark of old or dead tree trunks of deciduous trees (various species of oak, beech, chestnut) and pine trees (material examined; see also ASSING (2004a), HORION (1965), KORGE (1989), and VOGT (1968)). One specimen was collected from a mole nest (OSELLA & ZANETTI 1974; specimen examined). The examined beetles (see also ASSING 2004a) were collected during the period from December through July, and in October, the vast majority of them in spring (March through June). One of three specimens taken in October was teneral (ASSING 2004a).

### 3.12. *Medon africanus* (Fauvel, 1872)

(Figs. 62-69, Map 7)

*Lithocharis africana* Fauvel, 1872 (FAUVEL 1872: 38).

*Medon bodemeyeri* Bernhauer, 1915 (BERNHAEUER 1915: 266) **syn. n.**

**Types examined:** *L. africana*: Lectotype ♂, present designation: Bône / africanus FvI. type / Coll. et det. A. Fauvel *Medon rufiventris* Nordm. R.I.Sc.N.B. 17.479 / TYPE / *Medon africanus* (Fauvel) det. V. Assing 2003.

*M. bodemeyeri*: Lectotype ♀: Ain Drahm, Tunis, B. V. Bodemeyer / Bodemeyeri Bernh. Typus / Chicago NHMus, M. Bernhauer Collection / Lectotypus *Medon bodemeyeri* ♀ Bernhauer desig. V. Assing 2003 / *Medon africanus* (Fauvel) det. V. Assing 2003 (FMNH); 1♀: same data, but "Cotypus ..." (FMNH); 3♀♀: same data, but without type labels (DEI, FMNH); 1♂: Ain Drahm, Tunis, B. V. Bodemeyer / Syntypus / *Medon Bodemeyeri* Bernh. / O. Leonhard / Coll. DEI Eberswalde / Paralectotypus *Medon bodemeyeri* ♂ Bernhauer desig. V. Assing 2003 / *Medon ripicola* (Kraatz) det. V. Assing 2003 (DEI).

**Comments:** FAUVEL (1872) neither specified the number of types nor did he designate a holotype. Therefore, in order to fix the identity of *M. africanus*, the male syntype in the Fauvel collection is here designated as the lectotype.

The original description of *M. bodemeyeri* is based on an unspecified number of syntypes (BERNHAEUER 1915).

Five of them were found in the collections of the FMNH and the DEI; four of them – the ♀♀ – are conspecific with *M. africanus* (Fauvel), the male is conspecific with *M. ripicola* (Kraatz). The original description is in better agreement with the ♀♀, one of which was labelled as "Typus" by Bernhauer. In view of the fact that the type series consists of two species, a lectotype designation is mandatory. The female with Bernhauer's type label was selected as the lectotype and *M. bodemeyeri* Bernhauer is placed in the synonymy of *M. africanus* (Fauvel).

### Additional material examined (total: 51 exs.):

**Tunisia:** 1 ex., 2 km E Ain Sobah, 18 km E Tabarka, 100 - 200 m, 1.X.1995, leg. Schulz & Vock (cAss); 3 exs., "Tunis" (NHMW); 1 ex., Ain Drahm (= Ayn ad Darahim; 36°47'N, 8°42'E) (cAss); 1 ex., same locality, 6.IV.1962, leg. Besuchet (MHNG); 1 ex., same locality, VI.1884 (IRSNB); 2 exs., ca. 2 km S Ain Drahm, 36°44'N, 08°41'E, 670 m, litter of oak forest, 28.XII.2004, leg. Assing (cAss); 2 exs., El Feidja (IRSNB); 11 exs., Ain Soltane, near Ghardimaou, 30.IV.2004, leg. Lackner (cAss).

**Algeria:** 1 ex., Laverdure [=Mechroha], 7.X.1929, leg. Schatzmayr (FMNH); 6 exs., Bou Berak, Dellys (IRSNB, cSch); 2 exs., Bou Berak (IRSNB, NHMW); 1 ex., Grande Kabylie, Forêt d'Akfadou, Adekar, 1300 m, 15.V.1988, leg. Besuchet, Löbl & Burckhardt (MHNG); 2 exs., Annaba ['Bône'] (NHMW); 1 ex., Idough [Edough] (MHNG); 2 exs., Constantine (MHNG, cAss); 1 ex., Mt. Babor (IRSNB); 1 ex., St. Antoine, leg. Thery (IRSNB); 1 ex., Theniet el Had ["Teniet el H."], cedar forest (IRSNB); 1 ex., Theniet el Had, 30.V.-5.VI.1954, leg. Fagel (IRSNB); 1 ex., Ain Babouche ["Babouch"] (IRSNB); 1 ex., Philippeville (IRSNB).

**Locality not identified:** 2 exs., Ternano (?) (MHNG).

**Diagnosis:** 3.7-5.0 mm. Habitus as in Figs. 62-63. Head, pronotum, and anterior segments of abdomen dark brown to blackish brown; elytra and abdominal apex rufous; legs and antennae ferrugineous.

Head (Figs. 64-65) approximately as wide as long or weakly oblong, of similar shape as in *M. canchoisi*; eyes relatively large, clearly more than half the length of postocular region in dorsal view; puncturation dense, relatively coarse, and non-areolate; interstices mostly narrower, in central dorsal area often wider than punctures, usually without microsculpture.

Pronotum as wide as or slightly wider than head (Figs. 64-65); puncturation similar to that of head or slightly less coarse; microsculpture absent.

Elytra about 1.5 times as wide and at suture 1.15-1.20 times as long as pronotum; puncturation fine and dense. Hind wings fully developed.



Abdomen with fine and dense puncturation; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of sternite VII distinctly concave and with two combs of about 10 or more palisade setae (Fig. 66); aedeagus with apex of ventral process of distinctive morphology (Figs. 67-69).

**Intraspecific variation:** The species is extremely variable, especially regarding the puncturation (size and density of punctures) of the forebody (Figs. 62-64).

**Comparative notes:** *Medon africanus* is most similar to *M. cauchoisi* and *M. rufiventris*. From the former, it is distinguished by the somewhat less coarse and less dense puncturation and the consequently more shining appearance of the head and pronotum, the relatively wider pronotum, the more convex posterior margin and the more numerous palisade setae of the male sternite VII, and by the different morphology of the aedeagus. *Medon rufiventris* often has a posteriorly dilated head, a finer and sparser puncturation of the head and pronotum, a male sternite VII with a usually slightly less strongly concave posterior margin and with on average fewer palisade setae, and an apically emarginate aedeagus (ventral view).

**Distribution and bionomics:** The species is currently known only from Tunisia and Algeria (Map 7). For additional Tunisian and Algerian localities see BORDONI (1988) and NORMAND (1935). Like *M. rufiventris*, *M. africanus* apparently lives under bark of deciduous and coniferous trees (NORMAND 1935; PEYERIMHOFF 1919). Two specimens from Tunisia were sifted from the leaf litter of an oak forest. The material with specified dates on the labels was found in April - June, October, and December.

### 3.13. *Medon vicentensis* Serrano, 1993 (Figs. 70-72)

*Medon vicentensis* Serrano, 1993 (SERRANO 1993: 4ff).

#### Material examined:

**Madeira:** 1 ex., São Vicente, Gruta dos Cardais, pitfall trap, 5.I.1996, leg. Erber (cErb).

**Diagnosis:** For a more detailed description see SERRANO (1993).

4.4-5.4 mm. Habitus as in Fig. 70. Coloration of whole body uniformly ferrugineous. Head large, approximately as wide as long; eyes reduced to minute rudiments, without ommatidia; puncturation distinct, moderately coarse and moderately sparse, interstices, except for the sparsely punctured dorso-median area, on average about twice as wide as punctures; surface with pronounced microreticulation and almost matt (Fig. 71). Antenna slender, antennomeres III - V more than twice

as long as wide; VI about twice as long as wide; VII about 1.5 times as long as wide (Fig. 72).

Pronotum slightly narrower than head; approximately as wide as long; puncturation finer and less distinct than that of head, median line impunctate; microreticulation pronounced (Fig. 71).

Elytra widest near posterior margin, anterior external angles almost obsolete; as wide as or slightly narrower than pronotum; at suture about 0.7 times as long as pronotum; puncturation very fine, ill-defined and moderately dense; with much weaker microsculpture and much more shine than head and pronotum (Fig. 71). Hind wings completely reduced.

Abdomen with moderately dense, fine, slightly granulate puncturation; microsculpture present, but weaker than that of head and pronotum; posterior margin of tergite VII without palisade fringe.

♂: posterior margin of sternite VII of similar shape and chaetotaxy as in *M. dilutus*; aedeagus as illustrated by SERRANO (1993).

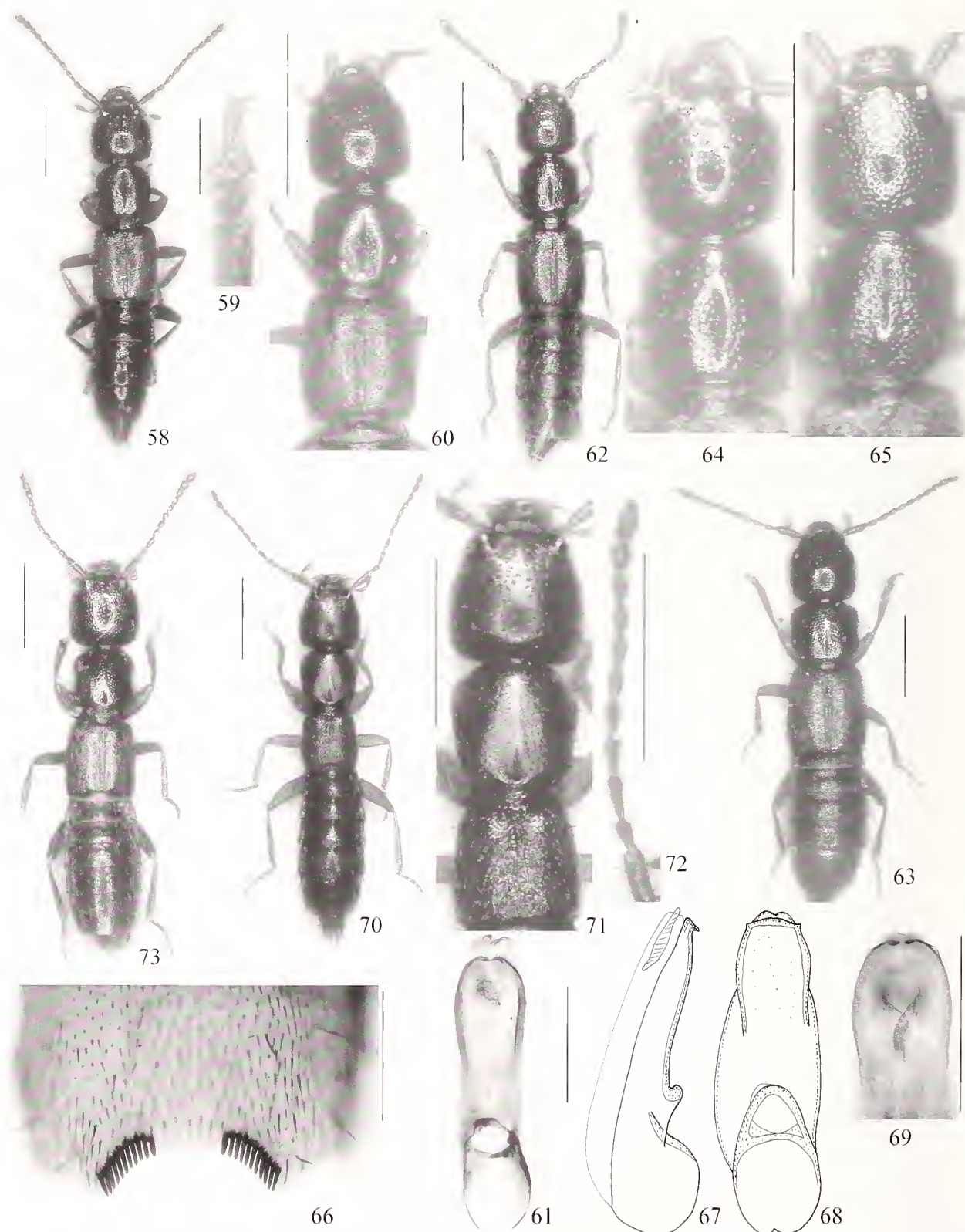
**Comparative notes:** This species is readily distinguished from its Western Palaearctic congeners by the almost completely reduced eyes, the long and slender antennae, the reduced pigmentation and wings, and by the male sexual characters. The only other troglobiont *Medon* species with almost completely reduced eyes, i. e. without ommatidia, in the Western Palaearctic are *M. feloi* from La Palma and *M. antricola* from El Hierro, Canary Islands. These species are also similar in the distinctly microreticulate and rather shallowly punctate head and pronotum. *Medon feloi*, however, has shorter antennae, a more convex (cross-section) and more oblong head, a more slender and posteriorly less distinctly tapering pronotum, longer elytra, not distinctly dilated protarsomeres I - IV, a differently shaped aedeagus, and its male secondary sexual characters are similar to those of *M. indigena*. *Medon antricola*, on the other hand, is distinguished by much greater body size, larger eye rudiments, longer and more slender legs and antennae, a much more oblong and posteriorly tapering head, and completely different male sexual characters.

**Distribution and bionomics:** *Medon vicentensis*, a true troglobite, is a local endemic of Madeira proper, where it is known only from a cave system near São Vicente.

### 3.14. *Medon augur* Fauvel, 1906 (Fig. 73)

*Medon augur* Fauvel, 1906 (FAUVEL 1906: 89).

**Type examined:** Holotype ♀: Corse / Croatie / augur Fvl.I / Ex-Typis / R. I. Sc.N.B. 17.479, Coll. et det. A. Fauvel (IRSNB).



**Figs. 58-73.** *Medon pocifer* (Peyron) (58-59), *M. rufiventris* (Nordmann) (holotype of *M. aquitanicus* Coiffait) (60-61), *M. africanus* (Fauvel) (62-69; 62: lectotype), *M. vicentensis* Serrano (70-72), and *M. augur* Fauvel (73, holotype); Habitus (58, 62, 63, 70, 73; 63: Algeria); protarsus (59); forebody (60, 71); head and pronotum (64, 65; 64: Algeria, 65: Tunisia); male sternite VII (66); aedeagus in lateral and in ventral view (61, 67, 68); apical part of aedeagus in ventral view (69); antenna (72). Scale bars: 58, 60, 62-66, 70-73: 1.0 mm; 59, 61, 67-69: 0.2 mm.



**Comments:** The original description is based on a holotype from Corsica ("Corse. – Unique") and an additional specimen from Croatia ("J'en ai vu un second exemplaire de Croatie") (FAUVEL 1906). The label "Croatie" attached to the pin of the holotype suggests that Fauvel apparently exchanged the Croatian specimen with a colleague, but kept the locality label and added it to the pin of the type specimen from Corsica. Types and other material with different locality labels attached to the same pin are not uncommon in the Fauvel collection (see e.g. ASSING 1999b).

It seems somewhat unlikely that the holotype is a representative of a distinct species with a distribution confined to Corsica. (The Croatian specimen attributed to this species in the original description probably refers to the similar *M. dilutus pythonissa* (Saulcy).) The holotype could be an extremely large specimen of *M. rufiventris*. However, it cannot be assigned to this nor any of the other widespread species without doubt, so that it is here maintained as a valid species, until males become available from Corsica.

**Diagnosis:** 4.8 mm. Habitus as in Fig. 73. Of similar general appearance as *M. dilutus pythonissa*. Head, pronotum, and abdomen (except apex and posterior margins of segments) dark brown; elytra, legs, and antennae ferrugineous.

Head large and convex, as wide as long; eyes relatively small (about as small as in *M. dilutus*), not distinctly projecting from lateral outline of head and slightly less than one third the length of temples in dorsal view; puncturation coarse (similar to *M. dilutus pythonissa* and *M. rufiventris*), along median line without or with very sparse puncturation; microsculpture absent.

Pronotum as wide as long, distinctly narrower than head; puncturation slightly less coarse than that of head; median line without punctures; microsculpture absent.

Elytra 1.13 times as wide and at suture 0.98 times as long as pronotum. Protarsomeres I – IV dilated (about as wide as in *M. rufiventris* and *M. dilutus pythonissa*).

Abdomen similar to that of *M. dilutus pythonissa*, but with slightly less distinct microsculpture; posterior margin of tergite VII with palisade fringe.

♂: unknown.

**Comparative notes:** *Medon augur* is most similar to *M. dilutus pythonissa*, which is most unlikely to occur in Corsica and from which it is distinguished by the smaller and less prominent eyes and by the slightly shorter and narrower, uniformly ferrugineous elytra. *Medon rufiventris* is smaller, usually has a more wedge-shaped head, larger eyes and relatively longer and wider elytra. In the paler *M. dilutus dilutus*, the puncturation

of the head and pronotum is finer and the median lines of head and pronotum are usually not free of punctures.

**Distribution and bionomics:** The species is represented only by its holotype from Corsica; the locality is not specified.

### 3.15. *Medon brunneus* (Erichson, 1839) (Map 8)

*Lithocharis brunnea* Erichson, 1839 (ERICHSON 1839: 513f).

*Lathrobium megacephalum* Heer, 1839 (HEER 1839: 238).

*Lithocharis monticola* Hampe, 1867 (HAMPE 1867: 372).

*Medon robustior* Roubal, 1920 (ROUBAL 1920: 150).

*Medon olympicus* Scheerpeltz, 1963b (SCHEERPELTZ 1963b: 439ff).

**Types examined:** See ASSING (2004a).

**Additional material examined** (total: 1300 exs.; for additional material see ASSING (2004a)):

**Sweden: Skåne:** 2 exs., Skäralid, 4.V.1973 & 6.XII.1975, leg. Gillerfors (cGil); 3 exs., same locality 6.V.1977, leg. Gillerfors (cGil); 2 exs., same locality, 17.IX.1996, leg. Gillerfors (cGil); 1 ex., same locality, 31.V.1997, leg. Gillerfors (cGil); 3 exs., Hall. Väderö, 2.XI.1974, leg. Gillerfors (cGil); 1 ex., Hall. Väderö, 31.VIII.1985, leg. Gillerfors (cGil).

**Spain: Cataluña:** 1 ex., Gerona, Ripoll, 11.III.1978 (cAss); 3 exs., Ripoll – Vic, leg. Franz (NHMW); 1 ex., Gerona, 7 km S Vidreras, 41°43'N, 02°50'E, 150 m, oak forest, 10.X.1997, leg. Zerche (cAss); 5 exs., 40 km N Barcelona, Sierra de Montseny, S-slope, 700 m, 19.III.1994, leg. Assing (cAss); 1 ex., Sierra de Montseny, 1400 m, beech forest, 19.III.1994, leg. Wunderle (cWun); 1 ex., Sierra de Montseny (cBor); 1 ex., Sierra de Montseny, 1100 m, 20.IV.1999, leg. Tronquet (cTro); 1 ex., same data, but 1800 m (cTro).

**England:** 1 ex., Kent, Maidstone, 23.IV.1990, leg. Owen (cOwe).

**France: Languedoc-Roussillon:** 8 exs., N Nîmes, Pont du Gard, leg. Franz (NHMW, cAss); 5 exs., Gard, W Nîmes, Dions, 19.V.1994, leg. Schülke (cSch); 1 ex., Hérault, St. Jean de Buèges, 17.VI.2000, leg. Tronquet (cTro); 12 exs., Prats de Mollo, leg. Franz, Giraud (MHNG, NHMW, cAss); 1 ex., same locality, 26.V.1937, leg. Giraud (MHNG); 1 ex., Pyrénées Orientales, Argelès, Vallée de la Massane, leg. Franz (cAss); 1 ex., Molière les Bains, 600 m, 13.VI.1995, leg. Tronquet (cTro); 1 ex., same data, but 28.V.1995 (cTro); 1 ex., Molière les Bains, 700 m, 7.III.1999, leg. Tronquet (cTro); 1 ex.,

Campôme, 700 m, 16.XI.1996, leg. Tronquet (cTro); 1 ex., Campôme, 800 m, 24.VI.1995, leg. Tronquet (cTro); 2 exs., forêt de Boucheville near Rabouillet [42°45N, 2°21E], 750-650 m, 27.II.2001, leg. Tronquet (cTro). **Aquitaine:** 1 ex., Dordogne, Brantôme (MHNG); 1 ex., Dordogne, Le Bugue, 3.VIII.1941 (MHNG); 1 ex., Gironde, Sadirac, 22.IV.1939, leg. Tempère (MHNG); 3 exs., Léognan, 26.IV.1936, leg. Tempère (MHNG). **Bretagne:** 3 exs., Forêt de Huelgoat, leg. Franz (NHMW, cAss). **Normandie:** 1 ex., Caen (NHMW); 6 exs., Rouen (NHMW). **Île-de-France:** 1 ex., Paris [paralectotype of *Lithocharis picea* Kraatz]. **Bourgogne:** 1 ex., Nièvre, Brassy, leg. Mequignon (MHNG); 2 exs., Nièvre, Dun-les-Places, VII.1903, leg. Mequignon (MHNG). **Champagne-Ardenne:** 3 exs., Épernay (MHNG); 1 ex., Marne, Ft. de Troisfontaine (MHNG). **Centre:** 3 exs., Perrusson, leg. Mequignon (MHNG). **Provence:** 3 exs., Vaucluse, Plateau de Vaucluse, Gorge de Nesque, 500 m, 28.XII.1995, leg. Assing & Stüben (cAss); 3 exs., Vaucluse, Mt. Ventoux near Mt. Serein, 1000 m, 27.XII.1995, leg. Assing & Stüben (cAss); 1 ex., Vaucluse, Montagne du Luberon, Apt, S Auribeau, 700 - 800 m, 29.XII.1995, leg. Assing & Stüben (cAss); 2 exs., Carpentras, Vénasque, 300 m, 5.VIII.1997, leg. Stüben (cAss); 4 exs., Tanneron, 350 m, 26.V.1991, leg. Wunderle (cWun); 1 ex., Tanneron, VI.1988, leg. Wunderle (cWun); 4 exs., Le Beausset, 30.VII.1921 (MHNG); 1 ex., Port-Cros, IV.1962 (MHNG); 1 ex., Olioules, XI.1960 (MHNG); 1 ex., Lantosque (cBor); 3 exs., Sophia Antipolis near Antibes, haystack, 16.X.1991, leg. Schülke (cSch); 9 exs., Col de Castillon, N Monti, 350 m, 5.V.1996, leg. Wolf (cSch); 2 exs., road from Col de Castillon to Col de Braus, 700 m, 8.V.1996, leg. Wolf (cSch); 5 exs., Col de Braus, 1000 - 1150 m, 7.V.1996, leg. Wolf (cSch); 1 ex., SE Sospel, Albarée, 860 m, 9.V.1996, leg. Wolf (cSch); 10 exs., Menton, Annonciade, 13.XI.1983, leg. Zoia (cZan); 4 exs., Mandelieu, 6.XII.1992, leg. Zoia (cZan); 1 ex., St.-Vallier-de-Thiery, leg. Toumayeff (MHNG); 2 exs., same data, but VI.1968 (MHNG); 2 exs., same data, but VIII.1969 (MHNG); 1 ex., same data, but VIII.1976 (MHNG); 2 exs., same locality, leg. Sainte Claire Deville (MHNG); 1 ex., Nice, La Lanterne, XII.1956 (MHNG); 2 exs., Nice, 25.VIII.1921 (MHNG); 1 ex., Nice, leg. Bedel (MHNG); 2 exs., St. Augustin, III.1958 (MHNG); 1 ex., St. Augustin, leg. Ochs (MHNG); 1 ex., Beaulieu-sur-Mer, I.IV.1932 (MHNG); 1 ex., Theoule (MHNG). **Rhône-Alpes:** 1 ex., Bourg-en-Bresse, 450 m, 10.VIII.1997, leg. Stüben (cAss); 1 ex., Voiron, 17.VII.1972 (cBor); 1 ex., Cevennes, Col de l'Escrinet, 790 m, 8.-9.VI.1999, leg. Wolf (cSch); 1 ex., W Tullins, road from Venrey to Grenoble, 300 m, 26.VI.1999, leg. Wolf (cSch); 1 ex., Gorges de l'Ardeche, near Grotte de la Madeleine, 10.VI.1999, leg. Wolf (cSch); 1 ex., Saint Jean d'Conz,

15 km W Chambéry, C. la Bruyere, 650 m, 26.VI.1999, leg. Wolf (cSch); 1 ex., Ain, Cerdon, I.1948 (MHNG); 3 exs., Ain, La London [46°10N, 06°01E], 12.VII.1961, 7.IX.1964, leg. Comellini (MHNG); 3 exs., Ain, Longera [46°06N, 05°53E], 15.XII.1961, leg. Comellini (MHNG); 7 exs., Savoie, Pont-du-Fier, 5.X.1960, leg. Comellini (MHNG); 1 ex., Savoie, forêt de St. Hugon, VII.19124 (MHNG); 1 ex., Savoie, St.-Alban, 15.IX.1960, leg. Comellini (MHNG); 1 ex., Haute-Savoie, Iles d'Arve [46°12N, 06°08E], 30.V.1959, leg. Comellini (MHNG); 2 exs., Haute-Savoie, Allinges, VII.1960, leg. Comellini (MHNG); 1 ex., Haute-Savoie, Dingy-en-Vuache, 12.II.1961, leg. Comellini (MHNG); 2 exs., Haute-Savoie, Vulbens, 9.V.1960 & 9.V.1961, leg. Comellini (MHNG); 3 exs., Haute-Savoie, Rumilly, 10.X.1959, leg. Comellini (MHNG); 1 ex., Haute-Savoie, Arcine, I.V.1961, leg. Comellini (MHNG); 1 ex., Haute-Savoie, Chamonix, La Fégère (MHNG); 1 ex., Rhône, Vaugneray (MHNG); 3 exs., Drôme, Valence (MHNG). **Locality illegible:** 4 exs. (MHNG).

**Monaco:** 3 exs., Monaco (MHNG).

**Switzerland:** 1 ex., Bern, Gümnenen, 19.IV.1986, leg. Feller (cSch); 1 ex., Bern, Gallmitz, 7.IV.1986, leg. Feller (cSch); 4 ex., Vaud, Morges (NHMW).

**Belgium:** 1 ex., Spa, 6.IV.1983, leg. Assing (cAss).

**Germany: Nordrhein-Westfalen:** 8 exs., Porta Westfalica, Wittekindsberg, oak forest, 10.VI.1993, leg. Assing (cAss); 1 ex., Höxter, Beverungen, 17.V.1990, (cAss); 3 exs., Menden, Hönnetal, Klusenstein, XI.1994 & 29.IV.1996, leg. Feldmann (cFel); 1 ex., Rosbach, leg. Katschak (cFel); 1 ex., Nachrodt, 200 m, XII.1997, leg. Feldmann (cFel); 3 exs., Brühl near Köln, Staatsforst Ville, 2.VIII.1989, leg. Köhler (cKöh, cWun); 1 ex., same data, but 23.VII.1988 (cKöh); 1 ex., Radevormwald, 29.X.1985, leg. Wenzel (cKöh). **Rheinland-Pfalz:** 1 ex., Lahnstein, NSG "Koppelstein", 18.VIII.1985, leg. Wunderle (cWun); 1 ex., Altenahr, Vischeltal, 17.VIII.1985, leg. Wunderle (cWun); 1 ex., Altenahr, vineyard, 2.VI.1984, leg. Wunderle (cWun); 2 exs., Altenahr, Langfigtal, 11.IV.1987, leg. Köhler, Wunderle (cKöh, cWun); 1 ex., Altenahr, Reimertzhoven, I.IV.1987, leg. Köhler (cKöh); 1 ex., Eifel, Gemünd, Kermeter, Am Steinbach, 23.VI.1992, el. Köhler (cKöh); 3 exs., 3 km S Ahrweiler, 18.IX.1980, leg. Scheuern (cWun). **Baden-Württemberg:** 1 ex., Wyhlen, 20.VIII.1978, leg. Kiener (MHNG). **Schleswig-Holstein:** 3 exs., Ratzeburg, 3.IV.1988, leg. Wunderle (cWun). **Niedersachsen:** 2 exs., Ith, Coppenbrügge, 29.IX.1991, leg. Assing (cAss); 1 ex., same data, 14.X.1984 (cAss); 2 exs., Ith, Lauenstein, 300 m, mixed forest, pitfall trap, 28.VII., 2.IX. & 6.XII.1990 (cAss); 1 ex., same locality, 6.VIII.1988 (cAss). **Hessen:** 2 exs., Marburg, Caldern, 5.V.1984, leg. Wunderle (cWun); 1 ex., Rasdorf (MHNG); 1 ex., Darmstadt (NHMW).



**Bayern:** 1 ex., Bad Feilnbach, IV.1999, leg. Feldmann (cFel); 4 exs., Chiemgau, Kampenwand, 1000 m, 4.VIII.1995, leg. Wolf (cSch); 2 exs., Königssee, 23.IX.1949, leg. Benick (MHNG). **Mecklenburg-Vorpommern:** 1 ex., Rügen, Lohme, 26.VII.1984, leg. Behne (cSch); 1 ex., S Lohme, 1.X.1989, leg. Zerche (DEI). **Sachsen-Anhalt:** 1 ex., LKr. Sangerhausen, Questenberg, 26.VI.1998, leg. Schülke (cSch). **Brandenburg/Berlin:** 3 exs., Pusack, deciduous forest, 25.IX.1999, leg. Wrase (cSch); 16 exs., Eberswalde, coll. Neresheimer (DEI). **Sachsen:** 3 exs., Meissen, Zadel, 3.IV.1976 (cSch); 2 exs., Dresden, NSG Rotstein near Sohland, 8.X.1988, leg. Zerche (DEI); 2 exs., Dresden, Zittauer Geb., NSG Lausche, 7.X.1988, leg. Zerche (DEI). **Locality not specified:** 1 ex. (MHNG).

**Italy: Trentino-Alto Adige:** 1 ex., Wals near Kaltern, 25.VII.1973 (cAss); 1 ex., Pieve di Ledro, 30.VIII.1972, leg. Pace (cBor); 2 exs., Bressanone (BZ), Tiles, 800-1000m, 30.VII.1973, leg. Sette (cZan); 4 exs., Tiles, VIII.1975, leg. Sette (cZan); 1 ex., Smarano (TN); VII.1972, leg. Zanetti (cZan); 1 ex., same locality, 1000m, 11.VII.1973 (cZan); 2 exs., same data, but 11.VII.1974 (cZan); 2 exs., same data, 21.VIII.1996 (cZan); 1 ex., Trento (NHMW). **Piemonte:** 1 ex., Abbazia, 23.XII.1934, leg. Springer (UCBA). **Lombardia:** 6 exs., Alpi Orobì, Morbegno, 350 m, deciduous forest, 10.VIII.1994, leg. Assing (cAss); 4 exs., Val Formazza, N Domodossola, 1050 m, 1.VIII.1996, leg. Wolf (cSch); 1 ex., Mantova, Bosco Fontana, 27.X.1980, leg. Zanetti (cZan). **Veneto:** 1 ex., Fongara, 21.V.1972, leg. Pace (cBor); 1 ex., Valli del Pasubio, 9.V.1972, leg. Pace (cBor); 1 ex., San Giovanni Ilarione, 7.V.1972, leg. Pace (cBor); 1 ex., Belluno, 23.IV.1973, leg. Garagnani (cBor); 2 exs., Feltre (BL), 1.V.1973 (cZan); 7 exs., Pieve d'Alpago (BL), 22.VII.1961 (UCBA, cZan); 1 ex., Valdagno (VI), 21.V.1972, leg. Zanetti (cZan). **Friuli-Venezia-Giulia:** 1 ex., Tagliamento near Comino, 46°13N, 13°01E, 50 m, 12.IX.1998, leg. Schülke (cSch); 2 exs., E Cividale del Friuli, Podresca, 750m, 30.V.1986, leg. Torti (cZan); 1 ex., E Trieste, Grópada, 3.IX.1980, leg. Seriani (Zan); 3 exs., Aurisina (TS), 29.V.1986, leg. Torti (cZan); 29 exs., Trieste env. (NHMW); 14 exs., Trieste, Opacina-Basovizza, V.-VI.1921, leg. MoczarSKI & Scheerpeltz (NHMW). **Emilia-Romana:** 1 ex., NW Imola, Mte. Calderano, 570 m, 9.V.1997, leg. Wolf (cSch). **Toscana:** 8 exs., 30 km SW Firenze, Figline Valdarno, 200 m, 14.VI.1992, leg. Assing (cAss); 1 ex., Monticiano, R. N. Alto Merse, 8.II.1999, leg. Meybohm (cAss); 1 ex., Mt. di Calvani (FI), Mungona, 650 m, 1.V.1991, leg. Wunderle (cWun); 3 exs., Siena Vecchia (SI), 300 m, 9.V.1991, leg. Wunderle (cWun); 1 ex., Mt. Falterona, Castagno di Andrea, 700 m, 7.V.1991, leg. Wunderle (cAss); 2 exs., Ruota, XI.1971, leg. Bordini (cBor); 1 ex., N Borgo San Lorenzo, Grezzano, X.1971, leg. Bordini (cBor); 2

exs., S Massa, Lago dell'Accesa, 3.X.1995, leg. Bordini (cBor); 4 exs., P.so Viamaggio (AR), 830m, oak forest, 2.V.1986, leg. Zoia (cZan); 13 exs., Radicondoli (SI), 3.IV.1994 (cZan); 3 exs., Petriolo, 3.XI.1972, leg. Castellini (cTro); 5 exs., Cantagallo, IX.1976, leg. Castellini (cTro). **Umbria:** 2 exs., Lago di Trasimeno, Monte Solare, 400 m, 24.V.1998, leg. Wolf (cSch); 3 exs., Castiglione del Lago (PG), Pozzuolo, oak forest, 2.V.1986, leg. Zoia (cZan). **Abruzzi:** 15 exs., Torino di Sangro, 24.-26.VII.1974, leg. Pace (cBor). **Campania:** 2 exs., Napoli, Ischia, S. Angelo, 27.X.1936, leg. Benick (cAss); 5 exs., Napoli, Caserta, X.1924, leg. Andreini (cBor); 1 ex., Novi Velia, 7.VIII.1973, leg. Pace (cBor); 1 ex., Monti Albumi, Salerno, W San Rufo, Pso. di Sentinella, 900 m, 10.X.2000, leg. Wolf (cSch); 1 ex., Salerno, E Paestum, Capaccio, Mte. Soprano, 350 m, 13.X.2000, leg. Wolf (cSch); 2 exs., NE Salerno, Monte Stella, leg. Liebmann (MHNG). **Lazio:** 2 exs., Monte Circeo, N-Slope, 300 - 450 m, *Quercus ilex* forest, 27.XII.1994, leg. Assing (cAss); 2 ex., Monti Lepini near Carpineto, 27.VI.1973, leg. Pace (cBor); 8 exs., Monti Aurunci NE Formia, 3.VII.1975, leg. Pace (cBor); 1 ex., Lago di Vico (UT), 10.XI.1974, leg. Rossi (cZan); 1 ex., Lago di Bracciano, Monti Sabatini, Mte. Guerrano, 500 m, 7.V.1998, leg. Wolf (cSch); 1 ex., Lago di Bracciani, 3 km N Orido Romano, 5.V.1998, leg. Wolf (cSch); 1 ex., 19 km S Rieti, Cerdomare, 19.V.1998, leg. Wolf (cSch); 2 exs., Itri (LT), 320m, 30.IX.1982, leg. Zoia (cZan); 5 exs., Colli Albani, Monte Cavo, 7.XI.1980, leg. Zoia (cZan); 3 exs., Colli Albani, Rocca di Papa, Monte Cavo, 600 - 800 m, 9.V.1998, leg. Wolf (cSch). **Puglia:** 2 exs., Gargano, W San Marco in Lamis, Montenero, 900 m, oak forest, 30.XII.1994, leg. Assing (cAss); 4 exs., Gargano, 16.VIII.1974, leg. Pace (cBor); 1 ex., Foresta Umbra, Foggia, VII.1972, leg. Sciaky (UCBA); 1 ex., Foresta Umbra, 22.VI.1967, leg. Lohse (MHNG); 3 exs., B. Umbra, 26.V.1913, leg. Fiori (UCBA). **Basilicata:** 1 ex., Maratea, 40°01N, 15°44E, 485 m, 12.V.2002, leg. Wunderle (cWun); 1 ex., 12 km SSW Latrónico, 40°01N, 15°58W, 635 m, 9.V.2002, leg. Wunderle (cWun); 2 exs., Potenza, W San Mauro Forte, Accettura, 600 - 780 m, 22.X.2000, leg. Wolf (cSch). **Calabria:** 1 ex., Orsomarso (CS), 1.VII.1986, leg. Angelini (cZan); 4 exs., Orsomarso, Grisolia (CS), 700 m, 17.VI.1997, leg. Angelini (cZan).

**Austria: Vorarlberg:** 3 exs., Gebhardsberg (NHMW). **Oberösterreich:** 1 ex., Windischgarsten, leg. Franz (NHMW); 1 ex., Gmunden, leg. Franz (NHMW); 1 ex., Weyr, leg. Franz (NHMW); 1 ex., Kleinreifling, leg. Franz (NHMW). **Tirol:** 7 exs., Hall, 1200 m, 7.VIII.1997, leg. Wolf (cSch). **Salzburg:** 1 ex., Mandling, leg. Franz (NHMW). **Niederösterreich/Wien:** 2 exs., Frankenfels, leg. Franz (NHMW); 1 ex., Hardegg, leg. Franz (NHMW); 2 exs., Haslau, leg. Scheerpeltz (NHMW); 26 exs., Mödling, leg. Franz, Mandl, Scheer-

peltz (NHMW); 1 ex., Tullnerbach, leg. Scheerpeltz (NHMW); 2 exs., Vöslau, leg. Franz (NHMW); 1 ex., Krenngraben near Kl. Hollenstein, leg. Franz (NHMW); 1 ex., Donauauen, Wolfsthal, leg. Franz (NHMW); 1 ex., Ebreichsdorf, mole nest, leg. Franz (NHMW); 3 exs., Wien (NHMW); 2 exs., Hütteldorf (NHMW); 1 ex., Neuwaldegg (NHMW); 2 exs., Wien, Weidlingau (NHMW); 2 exs., Rodaun (NHMW); 1 ex., Wien, Prater, leg. Franz (NHMW); 1 ex., Wienerwald, Hadersdorf, leg. Skalitzky (NHMW); 12 exs., Wienerwald, Rekawinkel, leg. Scheerpeltz, Skalitzky (NHMW); 2 exs., Wien, Bisamberg, leg. Skalitzky, Scheerpeltz (NHMW); 4 exs., Pressbaum, leg. Scheerpeltz (NHMW); 1 ex., Lunz (MHNG); 3 exs., Scheibbs, 24.VII.1970, leg. Resse (MHNG); 16 exs., 4 km SE Hof am Liethberge, Franz-Joseph-Warte, 47°56'N, 16°37'E, 480 m, deciduous forest, 15.X.1998, leg. Zerche (DEI); 2 exs., Brühl, leg. Schuster (NHMW); 6 exs., Leithagebirge (NHMW); 1 ex., Schneeberg (NHMW); 2 exs., Rabenstein (NHMW); Tullnerbach, leg. Scheerpeltz (NHMW). **Steiermark:** 7 exs., Mühlbachgraben near Rein, leg. Franz (NHMW); 1 ex., Pass im Stein, leg. Franz (NHMW); 2 exs., Peggau, leg. Franz (NHMW); 1 ex., Frauenstein, leg. Franz (NHMW); 1 ex., Tüffer, leg. Franz (NHMW); 1 ex., Ringkogel, Hartberg, leg. Franz (NHMW); 1 ex., Hochschwab, Bodenbauer, leg. Wimmer (NHMW); 1 ex., Tobelbad (MHNG); 13 exs., Pleschkogel near Rein, 470 m, 20.VI.1999, leg. Zerche (DEI). **Kärnten:** 1 ex., Flattach, Mölltal, leg. Franz (NHMW); 1 ex., Saualpe, Eberstein, 17.VII.1986, leg. Wunderle (cWun); 1 ex., Karnische Alpen, Weidenburger Wasserfall near Weidenburg, 17.-20.IX.1987, leg. Wunderle (cWun); 1 ex., Maria Rain (NHMW); 1 ex., Waidisch, leg. Mandl (NHMW); 1 ex., Dobratsch (NHMW); 1 ex., Gailtaler Alpen, Presseggen (NHMW). **Burgenland:** 1 ex., Rechnitz, leg. Franz (NHMW); 2 exs., Geschriebenstein, leg. Franz (NHMW); 4 exs., Eisenberg near Burg, leg. Franz (NHMW); 2 exs., Leithagebirge, Zeilerberg, 24.VIII.1983, leg. Assing (cAss); 17 exs., Leithagebirge, Purbach, leg. Franz (NHMW); 5 exs., Leithagebirge, Wimpasing, leg. Franz (NHMW); 1 ex., Leithagebirge, Winden, leg. Franz (NHMW); 1 ex., Donnerskirchen, leg. Franz (NHMW); 2 exs., Ruster Hügelszug, leg. Franz (NHMW); 1 ex., Rust, pasture, 11.VII.1973 (cAss); 43 exs., Zurndorf, leg. Franz (NHMW); 1 ex., Nickelsdorf, leg. Franz (NHMW); 1 ex., Neusiedlersee, eastern lakeshore, leg. Franz (NHMW); 1 ex., Groß-Petersdorf, leg. Franz (NHMW); 1 ex., Leithagebirge (MHNG); 20 exs., Neudorf (NHMW). **Locality ambiguous:** 4 exs., Gaming (MHNG).

**Slovakia:** 1 ex., Velka Fatra, Blatnica, 900 m, 11.VII.1992, leg. Assing (cAss); 1 ex., Nový Salas, Presev, 8.V.1998, leg. Smatana (cSch); 3 exs., Pezinok, 400m, 14.VIII.1992, leg. Zoia (cZan); 2 exs., Hrhov, 3.V.1967, leg. Lohse (MHNG); 2 exs., Mala Fatra, Rieka W Kralovany, Cha-

ta Sútovska dolina, 40°10'N, 19°05'E, 500 m, 24.VII.2001, leg. Zerche (DEI); 4 exs., E Bánovce, E Ostrý Vrach peak, 48°44'N, 18°22'E, 520 m, beech forest, 3.VIII.2001, leg. Zerche (DEI); 3 exs., Slovenský kras, W Bôrka, 48°38'N, 20°47'E, 655 m, beech forest, 29.VII.2001, leg. Zerche (DEI); 2 exs., Pieninsky narodnen park, 18.VII.1993, leg. Zerche (DEI); 1 ex., Bratislava, Svaty jur, 220 m, 26.V.1991, leg. Behne (DEI); 2 exs., Pieniny Geb., Lesnica 500 m, 11.-14.VI.1990, leg. Behne (DEI); 3 exs., Nitra (NHMW); 3 exs., Herlany, 15.V.2000, leg. Hlavač (cAss).

**Slovakian or Polish territory:** 2 ex., "Beskiden" (NHMW).

**Czech Republic:** 5 exs., Prag env. (NHMW); 2 ex., "Erzgebirge, Hamergrund" (NHMW); 2 exs., "Hof" (NHMW); 1 ex., Oskau (NHMW).

**Slovenia:** 6 exs., Celje, leg. Franz (NHMW); 1 ex., Lipica, 27.VI.1981 (cAss); 1 ex., Mozelj Kocevje, 500 m, mixed forest, 11.V.1993, leg. Gasparo (cZan); 7 exs., Senožeče, 7.VIII.1969, leg. Besuchet (MHNG); 2 exs., Podčetrtek, 26.IV.1930, leg. Kodrik (MHNG); 2 exs., Postojna (NHMW); 5 exs., "Wochein" (NHMW).

**Hungary:** 2 ex., Sopron (NHMW); 3 exs., Budapest (NHMW); 8 exs., locality not specified or not identified (NHMW).

**Romania:** 1 ex., Brasov (MHNG); 4 exs., Bihar (NHMW); 8 exs., Băile Herculane (NHMW); 2 exs., "Roterturm Pass" (NHMW); 1 ex., Sinaia (NHMW); 1 ex., Azuga (NHMW); 2 exs., Tismana (NHMW); 1 ex., Campu Selului (NHMW); 1 ex., Gaia Arama (NHMW).

**Bulgaria:** 4 exs., Pirin, leg. Weirather (MHNG).

**Croatia:** 1 ex., Ridnik-Karlovac, 30.IV.1990, leg. Wunderle (cWun); 1 ex., Istria, Opatija, Mt. Učka, 250 m, 24.VI.1996, leg. Wolf (cSch); 5 exs., same data, but 950 m (cSch); 5 exs., Pula, 13.IV.1974, leg. Zoia (UCBA); 6 exs., Pula (NHMW); 1 ex., Plitvice, 18.VIII.1977, leg. Lohse (MHNG); 1 ex., Plitvice (NHMW); 19 exs., Opatija (NHMW); 8 exs., Noghera (NHMW); 34 exs., Rab island (NHMW); 9 exs., Mljet island (NHMW); 16 exs., Velebit (NHMW); 3 exs., Radostak (NHMW).

**Bosnia-Herzegovina:** 1 ex., Prozor, 16.VIII.1977, leg. Lohse (MHNG); 4 exs., Bjelasnica, 15.VIII.1977, leg. Lohse (MHNG); 5 exs., Bjelasnica (MHNG); 5 exs., Nevesinje (NHMW); 4 exs., Jablanica (NHMW); 2 exs., Metkovic (NHMW); 3 exs., Majevisa planina (NHMW); 5 exs., Travnik, 30.V.1934, leg. Natterer (NHMW); 3 exs., Čelič (NHMW); 4 exs., Žepče (NHMW); 5 exs., Sarajevo (NHMW).

**Serbia-Montenegro:** 1 ex., Lovcen (NHMW); 6 exs., Bojana range (NHMW); 18 exs., Rtanj Planina, leg.



Breit (NHMW); 2 exs., Visočka Ržana, Pirot, 750 m, 29.IV.2002, leg. Hlavač (cAss).

**Macedonia:** 1 ex., Koševo, leg. Pfeiffer (MHNG); 5 exs., northern shore of lake Prespa, 23.IX.1958, leg. Schuster (NHMW); 3 exs., Monastir (NHMW).

**Albania:** 5 exs., Krujë, leg. Mader (NHMW); 2 exs., Sarisaltik, 1180m, leg. Mader (NHMW).

**Greece:** 6 exs., Pindos, Kalivia, 28.-29.V.1989, leg. Zoia (cZan); 4 exs., Evvoia, Pagóndas, 4.IV.1983, leg. Zoia (cZan); 2 exs., Evvoia, Dirfys, 1.III.1983, leg. Zoia (cZan); 1 ex., Pelopónnisos, Olympia, O. Alfios, 7.IX.1995, leg. Zoia (cZan); 38 exs., Pilion (NHMW); 22 exs., Parnassos Oros (NHMW); 6 exs., Athina (NHMW); 1 ex., Sfendali (NHMW); 12 exs., Nisista, Xeravunei (NHMW); 2 exs., Pelopónnisos, Patras, 22.III.1971, leg. Löbl (MHNG); 4 exs., Pelopónnisos, Kalavrita, 800 m, 3.IV.1971, leg. Löbl (MHNG); 1 ex., Pelopónnisos, Enochorion (NHMW); 1 ex., Pelopónnisos, Olympia, Ladzoi, 100 m, 22.III.1992, leg. Frisch (MNHUB); 1 ex., Pelopónnisos, Taygetos, Kalamata-Sparta, 1300 m, 1.IV.1992, leg. Frisch (MNHUB); 1 ex., Taygetos (NHMW); 6 exs., Drama, Falakró, leg. Weirather (MHNG, cBor); 1 ex., Zakynthos, Skopos, 24.III.1971, leg. Löbl (cBor); 6 exs., Kefallinia, Sami, 31.III.&2.IV.1971, leg. Löbl (MHNG); 1 ex., Kefallinia, Oros Aenos, 31.III.1971, leg. Mahnert (MHNG); 13 exs., Kefallinia, several collectors (NHMW); 12 exs., Lefkas, Moni near Fryni, 27.III.1971, leg. Hauser (MHNG); 44 exs., Lefkas, several collectors (NHMW); 1 ex., Zante, 1809, leg. Hilf (NHMW); 50 exs., Corfu, leg. Beier, Hummler, Moczarski (MHNG, NHMW); 2 exs., Crete, Amari, leg. Biró (NHMW).

**Ukraine:** 1 ex., Crimea, Evpatoria, 10.-20.VII.1999 (cSch).

**Turkey:** 22 exs., Kırklareli, Demirköy, 31.VII.1969, leg. Besuchet (MHNG, cAss); 4 exs., Istanbul, "Forêt de Belgrade", 4.VI.1967, leg. Besuchet (MHNG); 1 ex., same data, but 10.VII.1969 (MHNG); 4 exs., Istanbul, Şile, 28.V.1967, leg. Besuchet (MHNG, cAss).

**Locality not specified:** 11 exs. (MHNG).

**Diagnosis:** See ASSING (2004a) and the key in Section 4.

**Distribution and bionomics:** *Medon brunneus* is a widespread Adriatic-Mediterranean element (Map 8). Its distribution ranges from northwestern Turkey, southern Greece (including Crete), and southern Italy in the southeast and south, to southern Sweden and southern England in the north, and to western France and north-eastern Spain in the west (material examined; ASSING 2004a). For additional records see e.g. BOHÁČ (1985), BRUGE et al. (2001), DRUGMAND (1989), FOWLER (1888), HANSEN (1996), HANSEN et al. (1995), HANSEN (1964), HORION (1965), HUGENTHOBLE (1966), KOCH

(1968), KÖHLER & KLAUSNITZER (1998), LINKE (1907, 1913), LUNDBERG (1995), SCHILLER (1989), TERLUTTER (1995), and TRONQUET (2001). In Scandinavia, the species is present only in Denmark and southwestern Sweden: Skåne, Halland, Västergötland, Bohuslän (HANSEN 1964; LUNDBERG 1995). It is unknown from Norway, Finland, and the Baltic countries (SILFVERBERG 1992). HORION (1965) reports the species from Poland (two localities), Kiev (Ukraine), and from Russia (Wolyn'ska Oblast). The records from the Caucasus region must be considered doubtful until they are confirmed (ASSING 2004a). The species is very common in the southeast of its range: in the Balkans, Italy, and the southeast of Central Europe; it is much rarer in the northwest. In Italy, it is absent from Sicily and probably also from Sardinia. The records from the latter island (LUIGIONI 1929) are apparently based on misidentifications; I have seen no specimens from there. The previous record from the island of Pantelleria (CICERONI & ZANETTI 1995) refers to *M. despectus* (see Section 3.18). OUTERLO (1980) reports *M. brunneus* from Andalucía, stating that the species occurs in the whole Iberian Peninsula. These records are most likely to be based on misidentifications (confusion with *M. canchoisi*). The occurrence of *M. brunneus* in the Iberian Peninsula is confined to the very northeast of Spain.

DRUGMAND (1989) states that the species is bivoltine, but there is no evidence supporting this. Based on the material examined here, *M. brunneus* is univoltine. According to HORION (1965), the species may be associated with nests of voles and/or mice, but there is still no striking evidence proving this. Previous records from mole nests are probably accidental; NOWOSAD (1990) found the species in only 7 nests out of 5000 nests studied. It is usually – and often in large numbers – found in the leaf litter of forests, especially deciduous forests (oak).

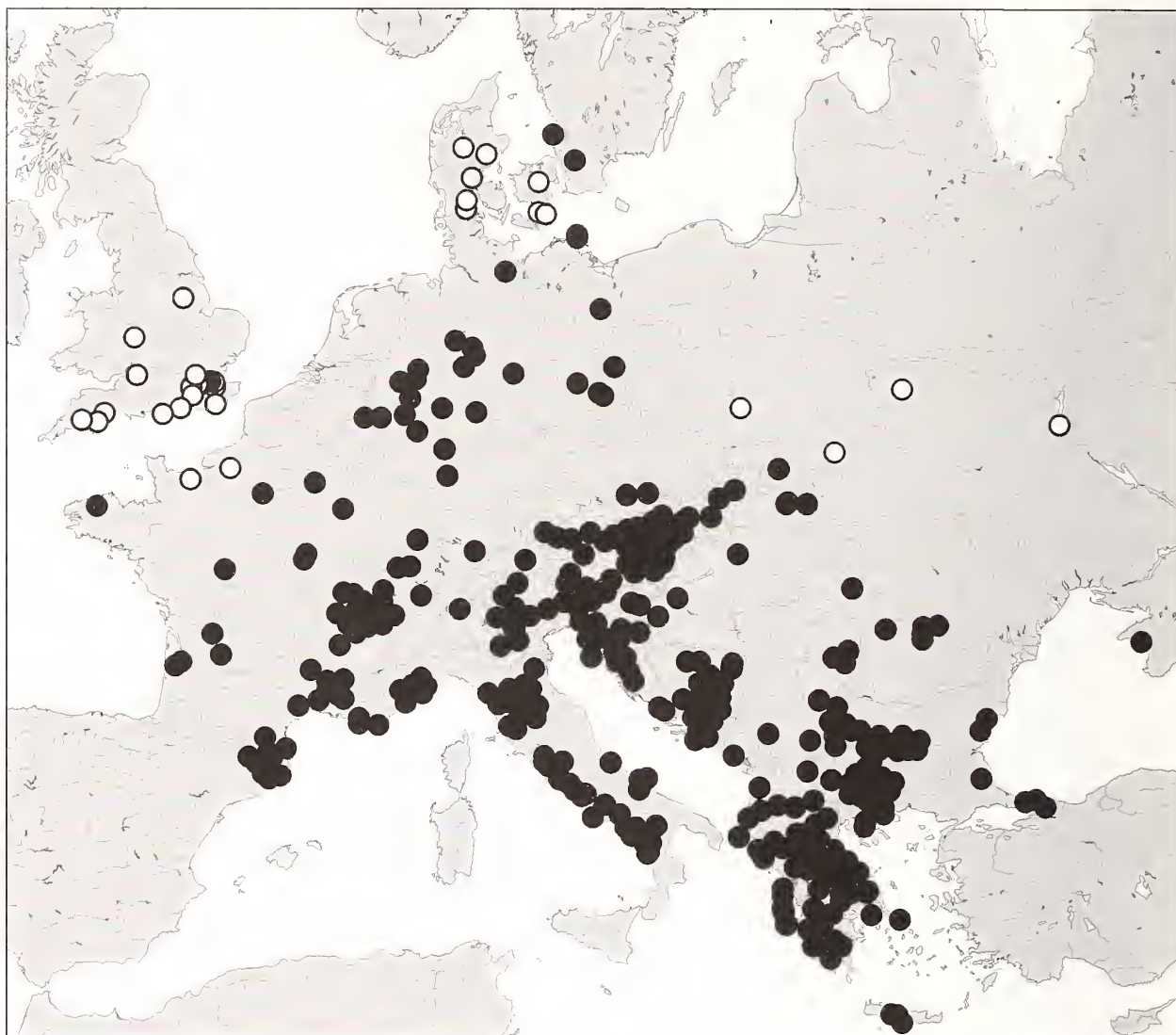
### 3.16. *Medon piceus* (Kraatz, 1858) (Figs. 74-78, Map 9)

*Lithocharis picea* Kraatz, 1858 (KRAATZ 1858: exci f).

*Medon muscicola* Mulsant & Rey, 1878 (MULSANT & REY 1878: 128).

*Medon murciensis* Coiffait, 1970a (COIFFAIT 1970a: 715f) **syn. n.**

**Types examined:** *L. picea*: Lectotype ♂ [remounted, aedeagus dissected], here designated: Paris / Coll. Kraatz / Syntypus / Coll. DEI Eberswalde / *Medon piceus* (Kr.) V.I.Gusarov det. 1996 / Lectotypus ♂ *Lithocharis picea* Kraatz desig. V. Assing 2003 / *Medon piceus* (Kraatz) det. V. Assing 2003 (DEI). Paralectotypes: 1♂, 1♀: same data as lectotype (DEI); 1♂: same data, but "*Medon brunneus* (Erichson) det. V. Assing 2003" (DEI).



**Map 8:** Distribution of *Medon brunneus* (Erichson) (filled circles: revised records; open circles: selected literature records).

*M. murciensis*: Holotype ♂: Sierra de Espuña bei Murcia, Hi. m., lg. H. Franz / MUSEUM PARIS COLL H. COIFFAIT / HOLOTYPE / *Medon burdigalensis* Coiff. H. COIFFAIT det. 1969 / *Medon piceus* (Kraatz) det. V. Assing 2003 (MNHP).

**Comments:** One of the syntypes of *Lithocharis picea* is conspecific with *M. brunneus* (Erichson), the others are in agreement with the long-standing interpretation of the species. Since the type series is a mixture of two species, a lectotype designation is mandatory, in order to unambiguously define the name; the male in better condition was selected as the lectotype.

In the original description of *M. murciensis*, which is based on a single male, COIFFAIT (1970a) compares the species with *M. ripicola* (Kraatz). An examination of the holotype revealed, however, that it is conspecific with

*M. piceus* (Kraatz), so that the junior name *M. murciensis* is here placed in the synonymy of that species.

**Additional material examined** (total: 677 exs.):

**Portugal:** 2 exs., Serra do Geres, Portela de Homem, 41°48N, 08°08W, 750 m, oak forest, 23.III.2002, leg. Lompe (cAss); 5 exs., Serra do Geres, Puerto la d'Home, leg. Franz (NHMW); 2 exs., Serra do Geres, 800 m, oak forest, 16.V.1992, leg. Wunderle (cWun); 1 ex., Serra de Montezinho, Rio Sabor, 41°54N, 06°47W, 900 m, poplar litter, 21.III.2002, leg. Meybohm (cAss); 1 ex., Serra de Estrela, S Manteigas, 40°22N, 07°33W, 980 m, oak forest, 18.III.2002, leg. Lompe (cAss); 2 exs., Serra da Estrela, S Manteigas, 40°21N, 07°34W, 1070 m, 19.III.2002, leg. Lompe (cAss); 1 ex., Serra da Estrela, N Manteigas, 40°24N, 07°32W, 850 m, 19.III.2002, leg. Meybohm (cAss); 8 exs., Manteigas,



1000 - 1100 m, leg. Franz (NHMW); 10 exs., Serra da Estrela, leg. Franz (NHMW); 1 ex., Guarda, S Gouveia, 1100 m, 17.IV.1960, leg. Besuchet (cAss); 4 exs., Coimbra, leg. Paulino (NHMW); 1 ex., Coimbra (NHMW); 2 exs., Lisboa, Serra do Sintra, 24.V.1992, leg. Wunderle (cAss); 10 exs., Sintra, Lagoa Azul, 6.VI.1966, leg. Besuchet, Comellini (MHNG); 2 exs., Luso, V.1959, leg. Fagel (IRSNB); 41 exs., Algarve, 10 km N S. Brás de Alportel, 400 m, 4.VI.1992, leg. Wunderle (cWun, cAss, cSch); 22 exs., Algarve, Caldas de Monchique, V.-VI.1960, leg. Fagel (IRSNB); 1 ex., Algarve, Serra Monchique, E Monchique, 37°19'N, 8°31'W, 530 m, 10.IV.2002, leg. Meybohm (cAss).

**Spain: País Vasco:** 2 exs., Sierra de Cantabria, ca. 30 km NW Logroño, NE Pipaón, 42°37'45N, 02°36'18W, 770m, oak forest with dense undergrowth, 14.X.2003, leg. Assing (cAss); 14 exs., Guizpúzcoa, pass between Elgoibar and Azcoitia, leg. Franz (NHMW). **Cantabria:** 2 exs., Santander, Monte de Candino, Liendo, leg. Franz (NHMW); 10 exs., Santander, Monte Aa, Riente, leg. Franz (NHMW); 4 exs., Santander, Jesus de Montes, W Beranga, leg. Franz (NHMW); 2 exs., Santander, Marron, leg. Franz (NHMW); 1 ex., Santander, Puente Viesgo, leg. Franz (NHMW); 1 ex., Santander, Villaverde de Pontones, leg. Franz (NHMW); 5 exs., Pechon, Unquera, leg. Franz (NHMW); 1 ex., Reinosa, road to Alto de Campoo, 1400 m, 4.VI.1991, leg. Wunderle (cWun); 1 ex., Alto Campoo, 1600 m, oak forest, 4.VI.1991, leg. Zerche (DEI); 7 exs., same data, but 1400 m (DEI); 1 ex., Espinama, Puerto de Aliva, 28.VII.1972 (cBor); 2 exs., Picos de Europa, 10 km NNW Potes, 43°14'12N, 04°39'11W, 1025 m, N-slope, montane pasture, sifted from grass and moss, 17.VII.2003, leg. Assing (cAss). **Navarra:** 5 exs., Otxondo, 16.VII.1968, leg. Besuchet, Comellini (MHNG). **La Rioja:** 13 exs., Logroño, Monasterio de Valmamera, leg. Franz (NHMW). **Asturias:** 8 exs., Cabo Vidio, leg. Franz (NHMW); 8 exs., Posada, leg. Franz (NHMW); 2 exs., S Villaviciosa, leg. Franz (NHMW); 2 exs., Covadonga, leg. Franz (NHMW); 1 ex., Nueva, leg. Franz (NHMW); 8 exs., Arriendas, El Fito, VI.1965, leg. Fagel (IRSNB). **Galicia:** 3 exs., Lugo, Alto de Acebo-Cecos, 700 m, 31.VII.1992, leg. Tronquet (cTro); 3 exs., Lugo, Cruzul, Becerreá, leg. Franz (NHMW); 6 exs., Lugo, Valle de Lozera, leg. Franz (NHMW); 3 exs., Lugo, Villasouto, 2.X.2000, leg. Valcárcel (cSch, cAss); 1 ex., Lugo, Serra do Courel, Rio de Rofión, 23.V.2000, leg. Valcárcel (cSch); 6 exs., Lugo, Monforte de Lemos, Gullade, 5.IX.2000, leg. Valcárcel (cSch, cAss); 4 exs., Lugo, Sierra de Ancares, 2 km NE Doiras, 42°47'N, 06°58'W, 11.VI.2000, leg. Wrase (cSch); 4 exs., Sierra de Barbanza, Noia, leg. Franz (NHMW); 2 exs., Noia, leg. Franz (NHMW); 3 exs., Noia, Outes, leg. Franz (IRSNB, NHMW); 2 exs., La Coruña, San Saturnino, leg. Franz (NHMW); 1 ex., La Coruña, Punta

de la Estaca, leg. Franz (NHMW); 1 ex., La Coruña, Puenteseco, leg. Franz (NHMW); 1 ex., Orcense, Verín, Montes del Invernadero, Campo de Becerros, leg. Franz (NHMW); 6 exs., Santiago, Bosque de Cernadas, leg. Franz (NHMW); 2 exs., Santiago, Orilla del Rio Tambre, leg. Franz (NHMW); 10 exs., Prov. Pontevedra, Pontevedra, leg. Franz (NHMW); 4 exs., Pontevedra, Isla Cies del Norte, leg. Franz (NHMW); 1 ex., Pontevedra, Testeiro, 800 - 900 m, leg. Franz (NHMW); 2 exs., Pontevedra, Cabo Silieiro, Baiona, leg. Franz (NHMW); 2 exs., Pontevedra, A Lamosa, Sierra de Fonteira, leg. Franz (NHMW); 2 exs., Pontevedra, leg. Franz (NHMW); 1 ex., Prov. Pontevedra, Rio Umia near Morana, leg. Franz (NHMW). **Castilla-León:** 3 exs., Sierra de la Demanda, ca. 40 km E Burgos, NE Valmala, Rábanos, 42°18'N, 03°16'W, 1190m, oak forest with grass, 12.X.2003, leg. Assing (cAss); 1 ex., Zamora, Lago de Sanabria, leg. Franz (NHMW); 11 exs., Ponferrada, leg. Paganetti (DEI, NHMW); 1 ex., Puerto de Bejar, 800-1400 m, V.-VI.1957, leg. Fagel (IRSNB). **Extremadura:** 1 ex., Prov. Badajoz, Puerto de las Marismas, 8.IV.1959, leg. Besuchet (MHNG). **Castilla-La Mancha:** 11 exs., SW Albacete, Sierra de Alcaraz, 15 km NNE Riópar, 38°32'N, 02°25'W, 1350 m, 7.IV.2003, leg. Assing (cAss); 9 exs., same data, but 38°35'N, 02°21'W, 1125 m, 10.IV.2003, leg. Assing (cAss); 1 ex., same data, but 38°34'N, 02°20'W, 1120 m, 10.IV.2003 (cAss); 1 ex., Albacete, leg. Comellini (MHNG). **Murcia:** 5 exs., Sierra de Espuña, leg. Franz (NHMW); 2 exs., Sierra de Espuña, 26.III.1959, leg. Besuchet (MHNG). **Andalucía:** 1 ex., Sierra de Segura, Villaverde de Guadalimar, leg. Franz (NHMW); 1 ex., Jaén, Sierra de Segura, Embalse del Tranco, 38°10'N, 2°48'W, 15.VI.2001, leg. Starke (cFel); 2 exs., Jaén, Sierra de Cazorla, leg. Franz (NHMW); 3 exs., Sierra de Cazorla, Cazorla, source of Gualaquivir, 6.X.1993, leg. Wunderle (cWun); 15 exs., Sierra de Cazorla, 12.IV.1959, leg. Besuchet (MHNG); 6 exs., SE Ronda (MA), Sierra de Palmitera, 900 m, 24.III.1994, leg. Assing, Wunderle (cAss, cWun); 20 exs., Sierra de Bermeja (CA), Jubrique, 350 m, 26.III.1994, leg. Assing, Wunderle (cAss, cWun); 1 ex., Sierra de Bermeja, 1000 m, 26.III.1994, leg. Assing (cAss); 11 exs., Algeciras (CA), Sierra de Luna, 200 - 350 m, 28.III.1994, leg. Assing, Wunderle (cAss, cWun); 16 exs., Sierra de Luna, 27.V.1966, leg. Besuchet, Comellini (MHNG); 3 exs., Algeciras (CA), Sierra de Fates, 350 m, 28.III.1994, leg. Assing, Wunderle (cAss, cWun); 1 ex., Sierra Nevada, Pampaneira, 1000 m, 2.VIII.1991, leg. Sprick (cAss); 4 exs., Sierra Nevada, Lanjaron, 600 m, 23.III.1994, leg. Assing, Wunderle (cAss, cWun); 15 exs., Lanjaron, 26.IV.-18.V.1961, leg. Fagel (IRSNB); 1 ex., Sierra Nevada, leg. Franz (NHMW); 3 exs., Sierra Nevada, Guejar Sierra, 1200 m, 28.IX.1993, leg. Wunderle (cWun); 1 ex., Granada, Sierra de Baza, 37°20'N, 02°54'W, 1700 m, 14.IV.2001, leg. Sprick (cAss); 1 ex.,

Sierra de Córdoba, 9.IV.1959, leg. Besuchet (cBor); 1 ex., Algeciras, Sierra del Niño, 180m, 26.III.1987, leg. Zoia (cZan); 2 exs., Granada, Sierra de la Sagra, 1250 m, 21.V.1966, leg. Besuchet (MHNG); 1 ex., Cordoba, Villaviciosa, 29.VI.1969, leg. Comellini (MHNG); 12 exs., Huelva, Zalamea La Real, 6.VII.1969, leg. Comellini (MHNG); 4 exs., Cadiz, 10 km W Los Barrios, 36°11N, 05°34W, 210 m, sifted under cork trees, 10.II.1999, leg. Zerche (DEI); 1 ex., ca. 25 km N Almuñécar, Sierra de Almijara, 36°53N, 03°42W, ca. 1200 m, mixed pine, oak, and corktree forest, 25.XII.2003, leg. Assing (cAss).

**England:** 1 ex., Surrey, Leatherhead, Bookham Common, 24.V.1999, leg. Owen (cOwe).

**France: Picardie:** 1 ex., Pontarmé, 11.V.1969, leg. Tronquet (cBor). **Aquitaine:** 1 ex., Lot-et-Garonne, leg. Pandellé (NHMW); 1 ex., Bordeaux, 11.V.1952, leg. Tempère (MHNG); 1 ex., Gironde, Cazaux, 29.V.1904 (MHNG); 1 ex., Gironde, Fature, 6.VII.1929, leg. Tempère (MHNG); 1 ex., Gironde, locality illegible, 28.VIII.1931, leg. Tempère (MHNG); 1 ex., Gironde, Guzmét, 3.III.1928, leg. Tempère (MHNG); 1 ex., Gironde, Taussat-les-Bains, IV.1934, leg. Tempère (MHNG); 1 ex., Pyrénées Atlantiques, Sare, 400 m, 23.V.1966, leg. Tempère (MHNG); 2 exs., Sos, leg. Fauvel (DEI); 2 exs., Sos (NHMW). **Bretagne:** 7 exs., Morlaix, leg. Hervé (NHMW); 2 exs., Morlaix (NHMW). **Midi-Pyrénées:** 1 ex., Sarrant, 28.V.1936, leg. Giraud (MHNG); 5 exs., Hautes-Pyrénées, SW Bagnères-de-Luchon, Lac d'Oo, 1800 m, VII.1919 (NHMW); 5 exs., Saint-Sauveur-les-Bains near Luz-Saint-Sauveur, 17.IX.1965, leg. Tempère (MHNG). **Limousin:** 1 ex., Haute Vienne (NHMW). **Île-de-France:** 1 ex., Fontainebleau, 16.X.1938, leg. Moingeon (MHNG); 2 exs., Fontainebleau (MHNG); 1 ex., Versailles (MHNG); 1 ex., Paris (NHMW). **Auvergne:** 1 ex., Vichy, 12.VII.1934 (UCBA); 1 ex., Broût-Vernet, ant nest, 21.XII.1883 (MHNG). **Centre:** 2 exs., Bourges, leg. Boitel (MHNG); 4 exs., F. de Loches, leg. Mequignon (MHNG); 1 ex., Fréteval, leg. Mequignon (MHNG); 1 ex., Vendôme (MHNG); 1 ex., Perusson, leg. Mequignon (MHNG). **Rhône-Alpes:** 2 exs., Rhône, Charbonnières (MHNG); 1 ex., Ardèche, Vals-Les-Bains (MHNG). **Alsace:** 1 ex., Strasbourg, VII.1955 (MHNG). **Locality not identified or ambiguous:** 1 ex., Forêt de Moladier All., 23.X.1906 (cSch); 1 ex., St. Germain (MHNG); 1 ex., Las, leg. Fauvel (MHNG).

**Netherlands:** 1 ex., Nuenen, mole nest, 10.I.1976, leg. Kanaar (cSch).

**Germany: Nordrhein-Westfalen:** 13 exs., Kreis Steinfurt, Emsdettener Venn, 6.III.1999, leg. Assing, Wunderle (cAss, cWun); 3 exs., Kreis Steinfurt, N Hopsten, Wiechholz, 6.III.1999, leg. Assing, Wunderle (cAss, cWun); 1 ex., Neuss, 5.I.1978, leg. Koch (cAss); 1 ex.,

Vreden, Wallburg, 26.X.1992, leg. Terlutter (cFel); 1 ex., Vreden, Vredener Feld, 3.III.1993, leg. Terlutter (cFel); 3 exs., Troisdorf, Wahner Heide, 12.IV.1987, leg. Wunderle (cWun); 1 ex., Köln, Troisdorf, Wahner Heide, 21.III.1987, leg. Köhler (cKöh); 3 exs., Viersen, Ritzeroder Moor, 19.V.1990, leg. Wunderle (cWun); 2 exs., Brühl, Staatsforst Ville, 20.III.1987, 5.XI.1989, leg. Köhler (cKöh); 1 ex., Köln-Worringen, Worninger Bruch, 5.VIII.1996, leg. Köhler (cKöh); 2 exs., Kölner Bucht, Pulheim-Sinnersdorf, 14.III & 19.VI.1986 (cKöh); 2 exs., Kölner Bucht, Pulheim-Sinnersdorf, Chorbush, 10.II.&2.VI.1986, leg. Köhler (cKöh); 1 ex., Mönchengladbach, Gerkerather Wald, 14.II.1986, leg. Köhler (cKöh); 1 ex., Münster-Wölbeck, Tiergarten, 5.VIII.1991, leg. Köhler (cKöh); 4 exs., Elmpt, Elmpter Bruch, 20.XI.1991, leg. Wunderle (cWun); 1 ex., Niederkrüchten, Elmpter Bruch, 20.XI.1991, leg. Köhler (cKöh). **Rheinland-Pfalz:** 3 exs., Lahnstein, NSG Koppelstein, 26.VI.1984 & 4.XI.1985, leg. Wunderle (cWun); 1 ex., Mainz (DEI); 1 ex., Wachenheim, Kammermertsberg, 25.IV.1995, leg. Köhler (cKöh); 1 ex., Altenahr, Reimertzhoven, 11.IV.1987, leg. Köhler (cKöh); 1 ex., Ahrweiler (NHMW). **Schleswig-Holstein:** 1 ex., Schleswig, leg. Varendorff (NHMW). **Niedersachsen:** 1 ex., Lüneburger Heide, Niederhaverbeck, heathland, 15.XI.1993 (cAss); 1 ex., Lüneburg, Dahlenburg-Dahlem, 20.-21.VI.1994, leg. Köhler (cKöh); 3 exs., Soltau, Schneverdingen, 16.V.1998, 15.V.1999, 17.X.2000 (cAss); 1 ex., Winsen/Luhe, Laßbrönne, 24.II.1995, leg. Assing (cAss); 76 exs., NW Hannover, Helstorf, heathland, 1980 - 1990 (cAss); 2 exs., Celle, Scheuen, heathland, XII.1984 (cAss); 1 ex., N Gifhorn, NSG "Heiliger Hain", heathland, IX.1985 (cAss); 1 ex., Lehrte, Immensien, mixed forest, 30.IV.1986 (cAss); 1 ex., Meppen, Sprakeler Heide, heathland, IX.1987 (cAss); 2 exs., Oldenburg, Dötlingen, 22.IX.1970, leg. Lohse (MHNG); 1 ex., Oldenburg, Ostrittrum, 1.V.1971, leg. Lohse (MHNG). **Hessen:** 1 ex., Darmstadt, Eberstadt, beech forest, XI.1996, leg. Hetzel (cFel); 1 ex., Darmstadt, 15.VII.1958, leg. Vogt (cBor); 1 ex., Hanau (MHNG). **Baden-Württemberg:** 1 ex., Karlsruhe, Baden, 18.IV.1951, leg. Nowotny (MHNG). **Berlin/Brandenburg:** 1 ex., Schlaubetal, 9.I.1999, leg. Pütz (cAss); 1 ex., Berlin Karlshorst, Biesenhorster Sand, 9.IV.2001, leg. Nickel (cSch); 2 exs., NSG Rietzer See, 52°23N, 12°40E, pine forest, 11.V.1978, leg. Uhlig (DEI). **Thüringen:** 2 exs., Eisenberg (NHMW); 2 exs., locality not specified (DEI, NHMW).

**Italy:** 1 ex., Trentino-Alto Adige, Laces, 900 m, 10.V.1992, leg. Kapp (cKap).

**Locality not specified:** 5 exs. (MHNG).

**Diagnosis:** Highly variable species. 3.8-4.8 mm. Coloration somewhat variable; usual coloration: head black, pronotum dark brown to blackish brown, usually noticeably lighter than head; elytra brown to dark brown,



usually slightly lighter than pronotum; abdomen dark brown to blackish brown with the apex, the lateral and often also the anterior margins of the segments lighter; legs and antennae reddish brown to ferruginous, middle antennomeres often slightly darker than the basal and the apical ones.

Head of very variable shape, slightly oblong and approximately as wide as pronotum to weakly transverse and distinctly (ca. 1.15 x) wider than pronotum; eyes approximately half the length of postocular region or slightly larger; puncturation very variable, ranging from extremely dense and fine, rendering the surface of the head almost completely matt, to moderately dense and coarser, with a small median area free of punctures, and with the interstices shining; punctures non-areolate; interstices with or without microsculpture (Figs. 74-75).

Pronotum, too, with puncturation of variable size and density; interstices without microsculpture; surface on the whole with more shine than that of head (Figs. 74-75).

Elytra of very variable size, 1.15-1.30 times as wide and at suture 1.05-1.17 times as long as pronotum (Fig. 74).

♂: protarsomeres I - IV not dilated; posterior margin of sternite VII shallowly concave and laterally with combs of usually 5-9 palisade setae (Fig. 76); sternite VIII not distinctive. Aedeagus with long and slender ventral process, its lateral margins subparallel, shape of apex (ventral view) somewhat variable, truncate to weakly convex, middle area of ventral process in cross-section concave (Figs. 77-78).

**Comparative notes:** Among its Western Palaearctic congeners, *M. piceus* is especially characterized by the shape of the aedeagus. In addition, it is distinguished by the following character combination: male protarsi not dilated, relatively dark coloration, puncturation of head dense, well defined, and not conspicuously coarse. In the collections examined, *M. piceus* was most often confused with *M. brunneus*, from which it is separated by its darker average coloration, the distinctly finer puncturation of the head, the longer and broader elytra, and by the shape of the aedeagus.

**Distribution and bionomics:** *Medon piceus* is an Atlanto-Mediterranean element (Map 9), its distribution ranging from the south of the Iberian Peninsula to the south of England and Central Europe (material examined). For a selection of additional records see BOHÁČ (1985), BRUGE et al. (2001), DRUGMANN (1989), FOWLER (1888), KOCH (1968), KÖHLER (2000), KÖHLER & KLAUSNITZER (1998), SCHILLER (1989), TERLUTTER (1995), and VOGEL (1979). *Medon piceus* is unknown from Scandinavia and the Baltic countries (HANSEN 1996; LUNDBERG 1995; SILFVERBERG 1992), and from southeastern Europe (ASSING 2004a). In the British Isles, it has been reported only from a few localities in

southern England. According to LOTT & DUFF (2003), the species was last recorded from England in 1968, but OWEN (2000) indicates a recent record from Bookham. Apparently, the abundance of the species has increased in some areas of Central Europe since the beginning of the 20th century (HORION 1965), and there may have been a recent expansion at the northeastern limit of its range. The first record from the Czech Republic was by BOHÁČ (1981); only four years later the same author reported it from seven additional Czech localities (BOHÁČ 1985). The species is still unknown from Slovakia. Based on a written statement by Scheerpeltz, HORION (1965) maintains that, in Austria, *M. piceus* is "aus allen Bundesländern bekannt ...; zahlr. Belege in coll. Scheerpeltz"; however, the Scheerpeltz collection was examined and not a single Austrian specimen was found in this or in any other collection housed in the NHMW. Until the presence of *M. piceus* in Austria is confirmed, it should be deleted from the lists of Austrian Staphylinidae. Similarly, the species has been reported from various regions in Italy, including Sicily (CICERONI & ZANETTI 1995; LUIGIONI 1929; PORTA 1926; ROTTENBERG 1870), but I have seen only a single Italian specimen from the north (see material examined); KAHLEN (1987) reports the species from the same locality (Latsch = Laces). Most, if not all the other Italian records, however, are presumably based on misidentifications, as is suggested both by the revision of the material from various collections and the general distribution pattern of the species (Map 9). The record from Rhodos by SCHEERPELTZ (1964) is far outside the range of the species and doubtlessly erroneous. In the Iberian Peninsula, *M. piceus* is common in the south, the west and the northwest, but it is apparently absent from the northeast, where *M. cauchoisi* is abundant. Evidently, the species is much more common in the southwest than in the northeast of its range.

*Medon piceus* has been collected from various kinds of nests (moles, ants, etc.) (material examined; see also HORION (1965), RENNER & GRUNDMANN (1984)), but these observations are probably accidental. In Germany, the species is usually found in the leaf litter and humus of bogs, swamps, heathlands, and forests (mostly coniferous woods) with low-pH soils (material examined; HORION 1965; KOCH 1968; RENNER & GRUNDMANN 1984). In the Iberian Peninsula, according to personal observations, it occurs in various types of woodland (*Quercus ilex* and other oak species, pine forests, etc.) and in shrub habitats.

Adult specimens have been observed throughout the year (material examined). In pitfall trap studies in northwest German heathlands (Assing, unpubl.), teneral beetles were recorded in late summer and autumn (August through November). On two occasions, mature eggs were observed in the ovaries of females collected

in May. Based on the material examined here, *M. piceus* is univoltine, not bivoltine as indicated by DRUGMAND (1989). Dissections of the thorax revealed that the flight muscles of most of the examined specimens from northern German heathlands were either rudimentary or absent (Assing, unpubl.) and that consequently only part of the populations is capable of flight. Records of flying specimens are from May and July (KÖHLER 2000; VOGEL 1979).

**3.17. *Medon cauchoisi* Jarrige, 1949**  
(Figs. 79-84, Map 10)

*Medon cauchoisi* Jarrige, 1949 (JARRIGE 1949: 66).

*Medon oculator* Peyerimhoff, 1949 (PEYERIMHOFF 1949: 249f) **syn. n.**

*Medon lusitanicus* Coiffait, 1970a (COIFFAIT 1970a: 715f) **syn. n.**



Map 9: Distribution of *Medon piceus* (Kraatz) (filled circles: revised records; open circles: selected literature records).



*Medon parviphallus* Coiffait, 1973b (COIFFAIT 1973b: 278ff) **syn. n.**

*Medon mazices* Coiffait, 1973b (COIFFAIT 1973b: 280ff) **syn. n.**

*Medon fongondi* Coiffait, 1980 (COIFFAIT 1980: 39f) **syn. n.**

*Medon perraulti* Coiffait, 1980 (COIFFAIT 1980: 41) **syn. n.**

*Medon cribriceps* Scheerpeltz i. l.

**Types examined:** *M. cauchoisi*: Holotype ♂: St M. du Canigou, P.O. VII.48 Dr. Ph. C. / TYPE / Muséum Paris Ex Collection J. JARRIGE 1976 / cauchoisi / Holotypus *Medon cauchoisi* Jarrige rev. V. Assing 2003 (MNHNP).

*M. oculator*: Holotype ♂ [aedeagus missing]: O. el Akhdar pr. Tanant, Maroc, 28 juin 1923, *Euphorbia serinifera* [?] / TYPE / *Medon oculator* Peyerimhoff, Type uniq. (MNHNP).

*M. lusitanicus*: Holotype ♂: PORTUGAL ALGARVE, ALGOZ, H. COIFFAIT -I.68 / MUSEUM PARIS COLL H. COIFFAIT / HOLOTYPE / *Medon lusitanicum* Coiff. H. COIFFAIT det. 1969 / *Medon cauchoisi* Jarrige det. V. Assing 2003 (MNHNP).

*M. parviphallus*: Holotype ♂: Maroc, Arbaoua, IV-72, H. C. / MUSEUM PARIS COLL H. COIFFAIT / HOLOTYPE / *Medon parviphallus* Coiff. H. COIFFAIT det. 1972 / *Medon cauchoisi* Jarrige det. V. Assing 2003 (MNHNP).

*M. mazices*: Holotype ♂: MAROC 22.4.72, QUEZ-ZANE, H. COIFFAIT / MUSEUM PARIS COLL H. COIFFAIT / HOLOTYPE / *Medon mazices* H. COIFFAIT det. 1973 / *Medon cauchoisi* Jarrige det. V. Assing 2003 (MNHNP).

*M. perraulti*: Holotype ♂ [aedeagus missing]: St. Martin d'Albère / P.O. 26.III.70, G. Perrault / MUSEUM PARIS COLLECTION J. JARRIGE / TYPE / *perraulti* / *Medon cauchoisi* Jarrige det. V. Assing 2003 (MNHNP).

*M. fongondi*: Holotype ♂ [teneral]: Tizi n'Tchika, Ht Atlas, 9.V.67 / Maroc, H. Fongond / MUSEUM PARIS COLLECTION J. JARRIGE / TYPE / *fongondi* / *Medon fongondi* H. COIFFAIT 1978 / *Medon cauchoisi* Jarrige det. V. Assing 2003 (MNHNP).

**Comments:** The holotypes of *M. cauchoisi*, *M. oculator*, *M. lusitanicus*, *M. parviphallus*, *M. mazices*, and *M. perraulti* are externally so similar that it seems most remarkable that they were described as different species. The aedeagus of *M. parviphallus* Coiffait is clearly teratologically malformed; for more details on such malformations see ASSING (2004a). An examination of the

aedeagi and secondary sexual characters, as well as of the external characters of the other holotypes revealed no significant differences suggesting that they should represent distinct species. The teneral holotype of *M. fongondi* has a distinctly microsculptured head, but otherwise no evidence was found that it is specifically distinct from *M. cauchoisi*, neither in the external nor in the sexual characters. Consequently, *M. lusitanicus* Coiffait, *M. parviphallus* Coiffait, *M. mazices* Coiffait, *M. perraulti* Coiffait, and *M. fongondi* Coiffait are all placed in the synonymy of the senior name *M. cauchoisi*. Since *M. oculator* and *M. cauchoisi* were described simultaneously and neither of the names has priority by publication date, *M. cauchoisi* is here designated as the senior name. (The original descriptions of both species were published in 1949; since there is no indication of the precise date, the publication date of both descriptions must be assumed to be December 31.)

**Additional material examined** (total: 405 exs.):

**Morocco:** 4 exs., N-Morocco, Jbel Mousa, leg. Franz (NHMW, cAss); 2 exs., N-Morocco, Xauen, leg. Franz (NHMW, cAss); 1 ex., Rif, Xauen, Puente Fomento, 30.III.1959, leg. Besuchet (cBor); 3 exs., Rif, Dardara, near Xauen, 30.III.1959, leg. Besuchet (MHNG); 2 exs., Rif, Mt. Lexchab, 1.IV.1959, leg. Besuchet (MHNG); 1 ex., Moyen Atlas, Afourer, leg. Franz (cAss); 2 exs., Jebel Tazeka, Taza, leg. Franz (NHMW, cAss); 2 exs., M. de Kebdana, 30 km NW Berkane, 35°03'N, 02°36'W, 350 m, 31.XII.2001, leg. Bayer (cSch); 1 ex., Rif, 15 km SW Zinat, Tietta-des Beni-Yda-Cherki, 570 m, oak forest, 14.II.2003, leg. Wrase (cSch); 2 exs., Tanger (DEI, IRSNB); 1 ex., Tanger, XII.1894 (MHNG); 3 exs., Oued Sebou near Kenitra, V.1961, leg. Comellini (MHNG); 1 ex., Oued Sebou, IV.1961, leg. Comellini (cAss); 3 exs., 10 km N Larache, Jemis del Sahel, 8.V.1960, leg. Besuchet (MHNG); 1 ex., Jemis del Sahel, leg. Franz (NHMW); 4 exs., Ceuta [35°53'N, 05°20'W], leg. Comellini (MHNG, cAss).

**Portugal:** 1 ex., Algarve, Tavira, Alcaria do Cume, 37°15'N, 07°44'W, 440 m, 12.IV.2002, leg. Meybohm (cAss); 1 ex., Algarve, Serra de Monte Figo, 37°06'N, 07°48'W, 200 m, 4.IV.2001, leg. Meybohm (cAss); 5 exs., Algarve, Serra de Cume, Alcaria, 37°14'N, 07°43'W, 420 - 430 m, 31.III.2001, leg. Meybohm (cAss); 23 exs., Algarve, 10 km N S. Brás de Alportel, 400 m, 4.VI.1992, leg. Wunderle (cAss); 1 ex., N Alportel, 37°11'N, 07°55'W, 340 m, 4.IV.2002, leg. Meybohm (cAss); 4 exs., Algarve, N Faro, Freixo-Seco, 37°16'N, 08°03'W, 440 m, 9.IV.2001, leg. Meybohm (cAss); 2 exs., Algarve, Rocha da Pena, N-slope, 37°15'N, 08°05'W, 9.IV.2001, leg. Meybohm (cAss); 2 exs., Algarve, N Loulé, Querença, Fonte Benemola, 37°12'N, 08°00'W, 150 m, 5.IV.2002, leg. Meybohm (cAss); 12 exs., Algarve, Monchique, above road to Al-

ferce, 37°19N, 8°32W, 590 m, 10.IV.2002, leg. Meybohm (cAss); 31 exs., Caldas de Monchique, V-VI.1960, leg. Fagel (IRSNB); 2 exs., Faro, Silves, leg. Franz (NHMW); 2 exs., Faro, Azinhal, 14.V.1994, leg. Bayer & Winkelmann (cSch).

**Spain: Cataluña:** 1 ex., Granollers, La Roca, leg. Franz (cAss); 6 exs., 40 km N Barcelona, Sierra de Montseny, 700 m, S-slope, 19.III.1994, leg. Assing, Wunderle (cAss, cWun); 1 ex., Sierra de Montseny, Santa Fe, leg. Franz (NHMW); 5 exs., Sierra de Montseny, leg. Franz (NHMW); 1 ex., Barcelona, Vallirana, leg. Franz (NHMW); 1 ex., Barcelona (MHNG); 3 exs., Barcelona, Montsenat, 3.IV.1956, leg. Coiffait (MHNG); 2 exs., Barcelona, Puerto Ordal, 22.III.1959, leg. Besuchet (MHNG); 2 exs., Gerona, Ripoll, 11.III.1978 (cAss); 2 exs., Gerona, Puerto de Collsuspina, leg. Franz (NHMW); 2 exs., Gerona, Tapis, 1000 m, 28.II.1997, leg. Tonquet (cTro); 2 exs., Arampruya, Begas, leg. Franz (NHMW); 3 exs., Gerona, Ripoll, 11.III.1978 (MHNG). **Madrid:** 3 exs., Sierra Guadarrama, Escorial, leg. Franz (NHMW). **Aragón:** 3 exs., 20 km SE Teruel, La Puebla de Valverde, 40°13N, 00°57W, 1100 m, 14.IV.2003, leg. Assing (cAss); 8 exs., 50 km ESE Teruel, N Rubielos de Mora, 40°14N, 00°37W, 1255 m, oak forest, 13.IV.2003, leg. Assing (cAss); 1 ex., 30 km S. Teruel, Sierra del Javalambre, NE Javalambre, 40°09N, 01°00W, 1700 m, 14.IV.2003, leg. Assing (cAss); 5 exs., WNW Teruel, Sierra de Albarracín, Orihuela d. T., 40°32N, 01°40W, 1520 m, 12.IV.2003, leg. Assing (cAss); 1 ex., Huesca, Sierra de Alcubierre, leg. Franz (NHMW). **Castilla-La Mancha:** 2 exs., Cuenca, 9.IV.1887, leg. Korb (DEI, NHMW); 1 ex., 90 km N Montoro, Sierra del Rey, Puerto de Niefla, 38°32N, 04°22W, 850 m, oak forest, 28.XII.2003, leg. Assing (cAss). **Valencia:** 2 exs., Serra, leg. Franz (NHMW); 1 ex., Alicante, Sierra de Bernia, 19.III.1978, leg. Meybohm (MHNG); 1 ex., Castellón, Cervera del Maestre, 13.V.1966, leg. Besuchet (MHNG). **Murcia:** 2 exs., Sierra de Espuña, leg. Franz (NHMW); 4 exs., Sierra de Espuña, 26.III.1959, leg. Besuchet (MHNG). **Andalucía:** 7 exs., Ronda, Sierra de Grazalema (CA), Puerto las Palomas, 1000 m, 25.III.1994, leg. Assing, Wunderle (cAss, cWun); 1 ex., Sierra de Grazalema, 1100 m, 1.X.1993, leg. Wunderle (cSch); 2 exs., Malaga, leg. Franz (NHMW); 1 ex., SE Ronda, Sierra de Palmitera (MA), 900 m, 24.III.1994, leg. Assing (cAss); 12 exs., Ronda, Sierra de Ubrique (CA), 1000 m, 25.III.1994, leg. Assing, Wunderle (cAss, cWun); 1 ex., Ubrique, 600 m, 2.X.1993, leg. Wunderle (cWun); 1 ex., Sierra de Ronda, Mte. Arastepa, leg. Franz (NHMW); 2 exs., Sierra de Bermeja, M. Los Reales, 1450 m, 26.III.1994, leg. Assing (cAss); 10 exs., Sierra de Bermeja, Jubrique, 350 m, 26.III.1994, leg. Assing, Wunderle (cAss, cWun); 1 ex., Sierra de Bermeja, 1000 m, 26.III.1994, leg. Assing (cAss); 1 ex., Sierra de Bermeja, Puerto de

Peñas Blancas, 1200 m, 26.III.1994, leg. Wunderle (cWun); 1 ex., N Algeciras, 36°15N, 05°26W, moist forest, 21.II.2000, leg. Lompe (cAss); 18 exs., Algeciras, Sierra de Luna (CA), 200 - 350 m, 28.III.1994, leg. Assing, Wunderle (cAss, cWun); 6 exs., Sierra de Luna, 27.V.1966, leg. Besuchet, Comellini (MHNG); 1 ex., 8 km E Tarifa, Mirador del Estrecho, 36°03N, 05°33W, 310 m, under palm trees and bushes, 10.II.1999, leg. Zerche (DEI); 1 ex., 10 km W Los Barrios, 36°11N, 05°34W, 210 m, leaf litter below cork trees, 10.II.1999, leg. Zerche (DEI); 4 exs., Cadiz, 14 km NE Alcalá de los Gazules, 36°32N, 05°39W, 430 m, cork tree forest, 2.II.1999, leg. Zerche (DEI); 5 exs., Algeciras, Sierra de Fates (CA), 350 m, 28.III.1994, leg. Assing, Wunderle (cAss, cWun); 1 ex., Algeciras, leg. Quedenfeldt (NHMW); 1 ex., Algeciras, 1/2.V.1956, leg. Fagel (IRSNB); 2 exs., Algeciras, leg. Fauvel (IRSNB, NHMW); 2 exs., Algeciras, Cerro de Mirador, leg. Franz (NHMW); 4 exs., Sierra de Aracena, Acebuches, 37°53N, 06°48W, 5.IV.2001, leg. Meybohm (cAss); 2 exs., Cádiz, El Bujeo, 36°04N, 05°32W, 230 m, oak forest, 9.IV.2001, leg. Sprick (cAss); 3 exs., Cadiz, Pto. de Bujeo, 30.V.1966, leg. Besuchet (MHNG); 1 ex., Cádiz, Los Barrios, 22.IV.1960, leg. Besuchet (cAss); 1 ex., Tarifa, Puerto de Ojén, 19.III.2002, leg. Abmann (cAss); 1 ex., Tarifa, leg. Franz (NHMW); 2 exs., Sierra de Cordoba, leg. Franz (NHMW); 1 ex., N Sevilla, Sierra Morena, leg. Franz (NHMW); 1 ex., Sierra de Cazorla, source of Gualaquivir river, 1200 m, 6.X.1993, leg. Wunderle (cWun); 2 exs., Sierra de Cazorla, leg. Franz (NHMW); 2 exs., Sierra de Cazorla, 12.IV.1959, leg. Besuchet (cBor); 1 ex., W Lanjarón, Alpujarra, 1400 m, 23.III.1994, leg. Wunderle (cWun); 3 exs., Marbella, 1964, leg. Frey (NHMW); 2 exs., Sierra Nevada, Laroles, 300m, 22.III.1987, leg. Zoia (cZan); 2 exs., Vejer de la Frontera (CA), 27.III.1987, leg. Zoia (cZan); 4 exs., Malaga, Montes des Malaga, 28.III.1959, leg. Besuchet (MHNG); 4 exs., Malaga, 4 km NW Yunquera, 36°40N, 04°57W, 725 m, 1.II.1999, leg. Zerche (DEI); 13 exs., 15 km NNE Málaga, Montes de Málaga, 36°48N, 04°23W, 750 m, bank of stream with *Salix*, etc., 24.XII.2003, leg. Assing (cAss); 15 exs., 15 km NNE Málaga, Montes de Málaga, 36°48N, 04°22W, 900 m, mixed pine and corktree forest, 24.XII.2003, leg. Assing (cAss); 6 exs., 15 km NE Málaga, Montes de Málaga, 36°47N, 04°21W, 900 m, N-slope with *Quercus suber*, 24.XII.2003, leg. Assing (cAss); 1 ex., ca. 20 km S Loja, 5 km NW Zafarraya, 36°59N, 04°10W, 900 m, *Quercus ilex* forest, 24.XII.2003, leg. Assing (cAss); 23 exs., ca. 30 km NW Córdoba, E Villaviciosa, 38°05N, 04°54W, ca. 300 m, corktree forest, 28.XII.2003, leg. Assing (cAss); 4 exs., ca. 30 km NW Córdoba, E Villaviciosa, 38°05N, 04°53W, ca. 500 m, corktree litter at roadside, 28.XII.2003, leg. Assing (cAss); 4 exs., 60 km N Montoro, N Azuel, 38°19N, 04°19W, ca. 600 m, N-slope with scattered corktrees and shrubs, litter and



grass roots sifted, 28.XII.2003, leg. Assing (cAss); 1 ex., locality not specified (NHMW).

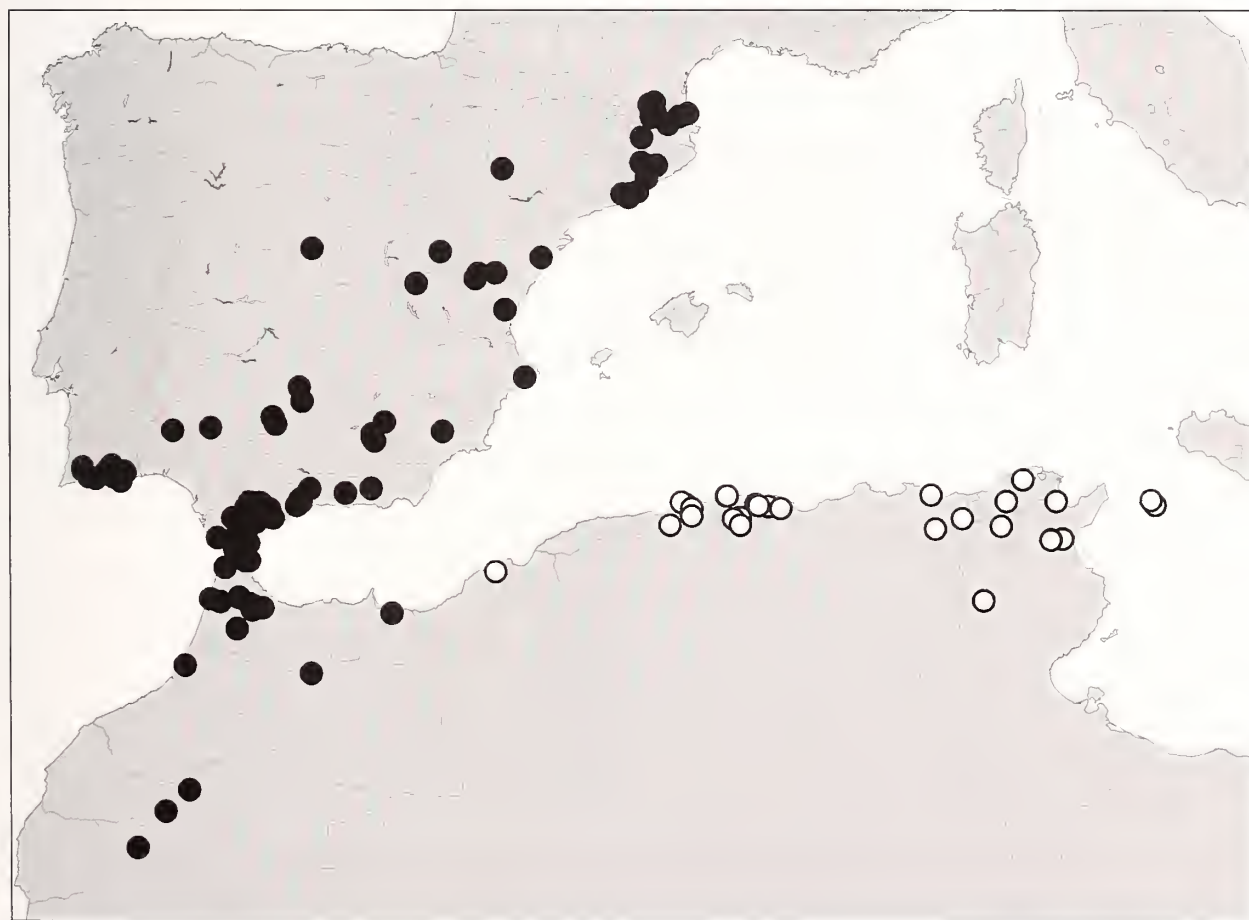
**Gibraltar:** 8 exs., The Upper Rock Nature Reserve, 36°09N, 05°21W, 350 m, leaf litter under bushes, 5.II.1999, leg. Zerche (DEI).

**France: Languedoc-Roussillon:** 2 exs., Vernet les Bains, Rte. de Sahorre, 700 m, 17.VI.1999, leg. Wolf (cSch); 1 ex., Molitg les Bains, 500 m, sifted from dry plants, 22.XI.1996, leg. Tronquet (cTro); 1 ex., same data, but 30.III.2001 (cTro); 1 ex., Molitg les Bains, 600 m, 13.VI.1995, leg. Tronquet (cTro); 1 ex., Molitg les Bains, 550 m, sifted moss, 22.II.1997, leg. Tronquet (cTro); 2 exs., Molitg les Bains, 22.II.2002, leg. Tronquet (cTro); 1 ex., Campôme, 1250 m, 9.IV.1999, leg. Tronquet (cTro); 1 ex., Campôme, 700 m, 13.IV.2001, leg. Tronquet (cTro); 4 exs., Collioure, 250 m, 3.XII.1999, leg. Tronquet (cTro); 4 exs., Collioure, 7.I.2000, leg. Tronquet (cTro); 1 ex., Fenouillet, gorges de Saint-Jaume, 11.XI.2002, leg. Tronquet (cTro); 4 exs., Corneilla-de-Conflent, 800 m, *Quercus ilex* litter, 25.III.2000, leg. Tronquet (cTro).

**Diagnosis:** 3.5 - 4.5 mm. Habitus as in Fig. 79. Coloration somewhat variable; usual coloration: castaneous to blackish brown, with the head usually slightly darker than pronotum and elytra; legs and antennae testaceous yellowish brown, with the basal antennomeres usually reddish brown to ferrugineous.

Head of variable shape, usually at least weakly oblong, rarely about as wide as long; temples behind eyes subparallel or weakly converging; eyes moderately large, in dorsal view slightly shorter than half the length of postocular region; puncturation coarse, dense, and well-defined, interstices reduced to narrow ridges or nearly so; occasionally in median dorsal area with small spot with slightly sparser puncturation; interstices usually without microsculpture and shining, sometimes with shallow microsculpture in posterior part of head, or very rarely microsculptured everywhere and matt (Fig. 80).

Pronotum approximately as wide as long and usually slightly narrower than head; puncturation variable, as coarse and dense as that of head or somewhat finer and sparser; median line without punctures; microsculpture absent (Fig. 80).



**Map 10:** Distributions of *Medon cauchoisi* Coiffait (filled circles) and of *M. despectus* (Fairmaire) (open circles) in the Western Mediterranean, based on examined records only.

Elytra of variable length and width, usually approximately 1.2 times as wide as and at suture at least slightly longer than pronotum (Fig. 79)

♂: protarsomeres I - IV not dilated; posterior margin of sternite VII shallowly concave and laterally with combs of 6-10 (mostly 8) palisade setae (Fig. 81); posterior incision of sternite VIII not very deep. Aedeagus as in Figs. 82-84, central area of ventral process in cross-section concave.

**Comparative notes:** Among most of its Western Mediterranean congeners, *M. cauchoisi* is readily identified by the coarse, dense, and well-defined puncturation of the head and the pronotum. Regarding the puncturation of the head, the species is similar to *M. brunneus*, which, however, differs by its usually larger size, its larger and usually not oblong head, the narrower and shorter elytra, and especially by the morphology of the aedeagus. In *M. mirei*, the head is relatively larger, of subcircular shape, and less shining, the elytra are much shorter and narrower, the hind wings are reduced, the palisade fringe at the posterior margin of the abdominal tergite VII is reduced, and the aedeagus is of different morphology.

**Distribution and bionomics:** *Medon cauchoisi* is an Atlanto-Mediterranean element (Map 10), its distribution including Morocco, southern Portugal, the southern, central, eastern, and northeastern parts of Spain, and the Pyrénées-Orientales in southwestern France. Interestingly, it is apparently absent from the northwestern half of the Iberian Peninsula, where *M. piceus* is common. Similarly, there is only little overlap of the range of *M. cauchoisi* and that of the closely related *M. brunneus* (Map 8) in northeastern Spain (Cataluña) and southwestern France (Pyrénées-Orientales). The distributions of *M. cauchoisi* and *M. despectus*, another closely allied species, are apparently strictly allo- or parapatric (Map 10).

*M. cauchoisi* has been collected in a wide range of – usually forest – habitats, mostly in the leaf litter of various species of oak, but also from debris below palm trees and bushes, and from moss. Adult beetles were found during the period from October through June, but the absence of records from the period July to September may also be due to low collecting activity in the region where *M. cauchoisi* occurs.

### 3.18. *Medon despectus* (Fairmaire, 1860) (Figs. 85-89, Map 10)

*Lithocharis despecta* Fairmaire, 1860 (FAIRMAIRE 1860: 160).

**Type examined:** Syntype ♀: Philippeville / Syntype / *despecta* Fairm / Coll. A. Fauvel, R.I.Sc.N.B.17.819 /

*Medon despectus* (Fairmaire) det. V. Assing 2003 (IRSNB).

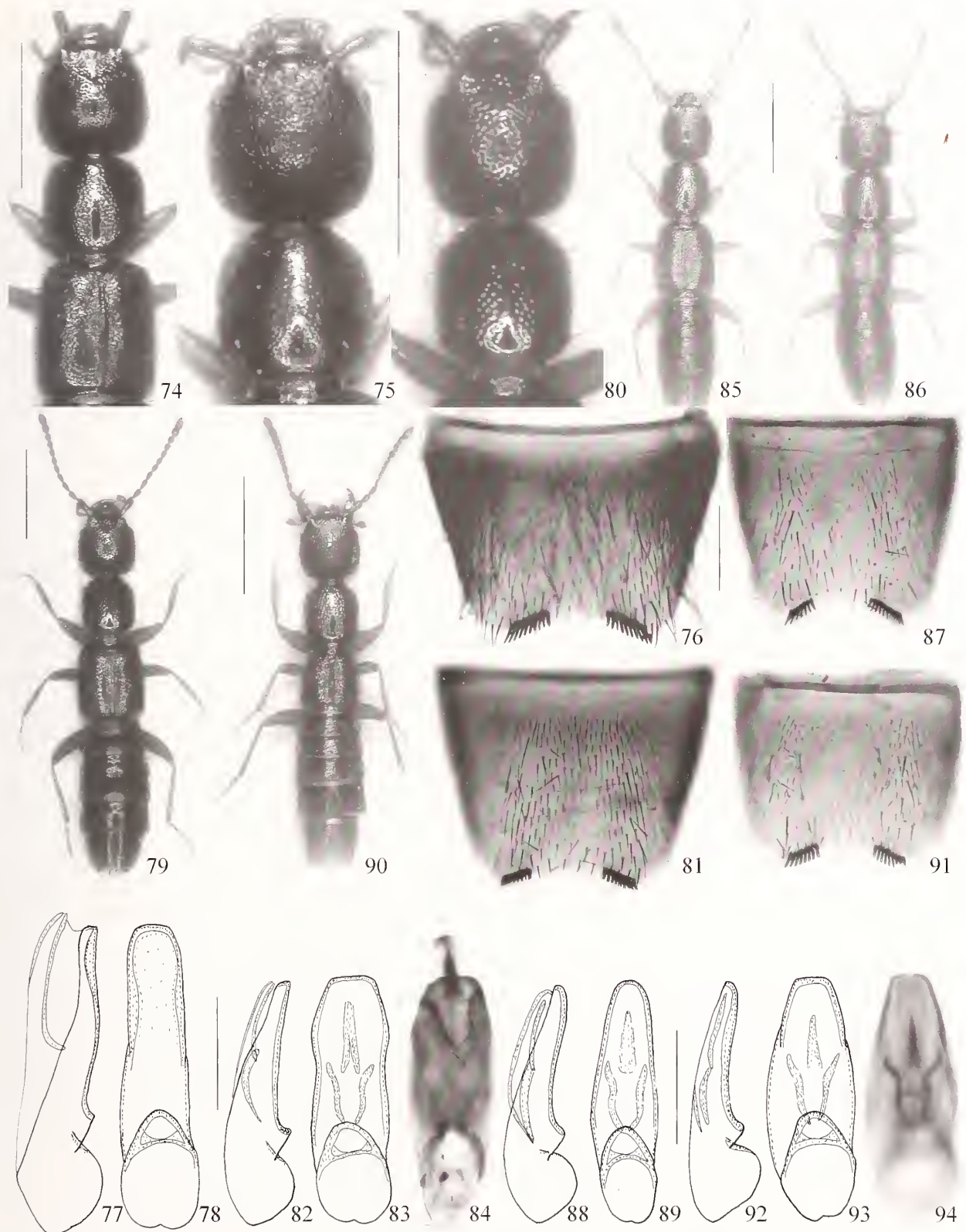
**Additional material examined** (total: 168 exs.):

**Tunisia:** 1 ex., SW Zaghouan, Jebel Zaghouan, 36°22'N, 10°07'E, 800 m, N-slope, litter and grass sifted, 29.XII.2004, leg. Assing (cAss); 3 exs., ca. 25 km SW El Fahs, 36°15'N, 09°48'E, 340 m, reservoir, stream valley with poplar etc., moss and litter sifted, 25.XII.2004, leg. Wunderle (cWun); 1 ex., Falnassa, 15 km N Beja, 500 m, 1.X.1995, leg. Schulz & Vock (cAss); 4 exs., "Tunis", leg. Fauvel (NHMW, cAss); 1 ex., El Feidja (NHMW); 1 ex., Kasserine, X.1937, leg. Demofys (cTro); 31 exs., 25 km W Jendouba, ca. 10 km N Ghardimaou, Ain Soltane, 36°29'N, 08°19'E, 670 m, litter of oak forest, 27.XII.2004, leg. Assing (cAss); 20 exs., same data, but 600 m, 28.XII.2004, leg. Assing (cAss); 4 exs., NW-Tunisia, Ghardimaou Forest, El Feidja, 700 m, 13.IV.1989, leg. Meregalli (DEI, cAss); 1 ex., Feidja, Ain Soltane, 700 m, 13.IV.1989, leg. Meregalli (DEI); 1 ex., Teboursouk (IRSNB).

**Algeria:** 1 ex., El Biar, III.1909 (NHMW); 1 ex., Temmapes (?), leg. Théry (cAss); 1 ex., Bols de Bainen, III.1909 (cAss); 3 exs., St. Charles, leg. Théry (IRSNB, NHMW); 1 ex., Algier (DEI); 2 exs., Algier (MHNG, cAss); 1 ex., Laverdure, 6.X.1929, leg. Schatzmayr (UCBA); 1 ex., Bône (IRSNB); 1 ex., Bou Berak, near Dellys (IRSNB); 5 exs., Grand Kabylie, Azazga – Yakouren, 600 m, 14.V.1988, leg. Besuchet, Löbl & Burckhardt (MHNG, cAss); 14 exs., Grande Kabylie, Forêt d'Akfadou, 26 km E Yakouren, 1200 m, 16.V.1988, leg. Besuchet, Löbl & Burckhardt (MHNG, cAss); 1 ex., Grande Kabylie, Yakouren, 730 m, 12.V.1988, leg. Besuchet, Löbl & Burckhardt (MHNG); 2 exs., Oued Sébaou, W Dellys, 20.V.1988, leg. Besuchet, Löbl & Burckhardt (cAss); 4 exs., Grande Kabylie, l'Arbatache sur El Kseur, 300-400 m, 18.V.1988, leg. Besuchet, Löbl & Burckhardt (MHNG, cAss); 13 exs., Grande Kabylie, Oued Aissi, Ouadhia, 200 m, 12.V.1988, leg. Besuchet, Löbl & Burckhardt (MHNG, cAss); 13 exs., Grande Kabylie, Djebel Bou-Berak, 350 m, 19.V.1988, leg. Besuchet, Löbl & Burckhardt (MHNG, cAss); 2 exs., Djurdjura, sur Boghni, 11.V.1988, leg. Besuchet, Löbl & Burckhardt (MHNG); 8 exs., Djurdjura, 4 km SW Tikjda, 1200 m, 7.V.1988, leg. Besuchet, Löbl & Burckhardt (MHNG, cAss); 5 exs., Gorges de la Chiffa, Ruisseau des Singes, 280 - 380 m, 4.V.1988, leg. Besuchet, Löbl & Burckhardt (MHNG, cAss); 3 exs., Larba, 180 m, 4.V.1988, leg. Besuchet, Löbl & Burckhardt (MHNG, cAss).

**Italy:** 14 exs., Pantelleria, Mte. Gibelè, 600m, 12.IX.1986, leg. Sette (cZan, cAss); 2 exs., Pantelleria, 11.1913, leg. Dodero (DEI).





**Figs. 74-94.** *Medon piceus* (Kraatz) (74-78), *M. cauchoi* Jarrige (79-84; 84: holotype), *M. despectus* (Fairmaire) (85-89), and *M. mirei* Coiffait, holotype (90-94): forebody (74); head and pronotum (75, 80); habitus (85, 86, 79, 90); male sternite VII (76, 81, 87, 91); aedeagus in lateral and in ventral view (77-78, 82-84, 88-89, 92-94). Scale bars: 74-75, 79-80, 85-86, 90: 1.0 mm; 76-78, 81-84, 87-89, 91-94: 0.2 mm.

**Locality not specified or ambiguous:** 1 ex. (IRSNB); 1 ex., with several locality labels (IRSNB).

**Diagnosis:** External characters as in *M. cauchoi*, except for the paler average coloration, the slightly lower average size, and the mostly shorter elytra (Figs. 85-86). Wing-dimorphic species; elytra at suture in macropterous specimens 1.05 - 1.10 times as long as pronotum (Fig. 85), in submacropterous specimens approximately as long as pronotum (Fig. 86).

♂: secondary sexual characters as in *M. cauchoi* (Fig. 87). Aedeagus smaller and more slender than in *M. cauchoi*, apically rounded both in lateral and in ventral view (Figs. 88-89).

**Comparative notes:** Among Western Mediterranean *Medon*, *M. despectus* is most similar to *M. cauchoi*, from which it is reliably separated only by the different shape of the aedeagus. *Medon mirei*, which, too, occurs in Northwest Africa, has much smaller eyes, completely reduced hind wings, and it lacks the palisade fringe at the posterior margin of the abdominal tergite VII. From the closely related, highly variable *M. semiobscurus* (Fauvel) from the Eastern Mediterranean, whose aedeagus has a similar shape, *M. despectus* is distinguished by lower average size, shorter antennae with shorter and less oblong antennomeres III - VI, as well as by a smaller and less massive aedeagus.

**Distribution and bionomics:** The known distribution of this species is confined to Tunisia, Algeria, and the Italian island Pantelleria (Map 10), from where it was previously recorded as *M. brumeus* (CICERONI & ZANETTI 1995). For some additional records see NORMAND (1935). The material examined was collected at altitudes of 180-1200 m in autumn (September, October), winter (December, February), and in spring (March through May). At least 52 Tunisian specimens were sifted from the leaf litter of an oak forest.

### 3.19. *Medon mirei* Coiffait, 1980 (Figs. 90 - 94)

*Medon mirei* Coiffait, 1980 (COIFFAIT 1980: 40f).

*Medon giachinoi* Bordoni, 1988 (BORDONI 1988: 343ff) syn. n.

**Types examined:** *Medon mirei*: Holotype ♂: Ft. de Guerrouch, Alg. P. de Mire / TYPE / Muséum Paris Ex Collection J. Jarrige 1976 / Fagete / *Medon mirei* H. Coiffait 1979 (MNHNP).

*Medon giachinoi*: Holotype ♂: Algeria - Juel, Ft. de Guerrouch, 4/10 - XI - 1984 / M. R. S. N. Spedizione "Algeria '84" Boffa - Casale - Cavazzuti - Gavetti - Giachino - Levi / Holotypus / *Medon giachinoi* Bordoni det. 1987 / *Medon mirei* Coiffait det. V. Assing 2003

(MRSNT). Paratypes: 12 exs.: same data as holotype (MRSNT, cBor, cAss).

**Comments:** The locality on the label of the type specimen of *M. mirei* is not identical with the type locality indicated in the original description: "gorges de Kedaia, Algérie" (COIFFAIT 1980). The description and the collector, however, are in agreement with the above type specimen, and Coiffait's citation of type labels is not always reliable (see *M. siculus*).

The original description of *M. giachinoi* is based on 23 specimens collected in the same locality as the holotype of *M. mirei*. As was expected, the examination of the holotype and 12 paratypes of *M. giachinoi* revealed that it is conspecific with the holotype of *M. mirei*; hence the synonymy indicated above. BORDONI (1988) compares *M. giachinoi* with various congeners, but does not mention *M. mirei*.

**Diagnosis:** Small species, 3.3 mm. Habitus as in Fig. 90. Coloration uniformly ferrugineous, appendages testaceous.

Head of almost subcircular shape, approximately as wide as long; eyes of distinctly reduced size, in dorsal view about one fourth the length of postocular region, and not projecting from lateral outline of head; puncturation coarse, dense, and areolate; interstices reduced to narrow ridges and microsculptured; dorsal surface matt.

Pronotum distinctly narrower than head, approximately 0.9 times its width, and slightly longer than wide; puncturation coarse, dense, areolate, and partly confluent; interstices and median line with distinct shine, microsculpture absent.

Elytra only slightly wider (about 1.1 times) than and at suture only 0.75 times as long as pronotum; puncturation moderately dense; interstices distinctly shining. Hind wings reduced. Palisade fringe at posterior margin of abdominal tergite VII reduced.

♂: posterior margin of sternite VII of similar shape and chaetotaxy as in *M. cauchoi* (Fig. 91); sternite VIII posteriorly with rather broad and not very deep emargination. Aedeagus of similar general morphology (shape and internal structures) as in *M. cauchoi*, but in ventral view apically with converging lateral margins and without subapical dilatation, and in lateral aspect apically rounded (Figs. 92-94).

**Comparative notes:** *Medon mirei* is readily distinguished from its Western Palaearctic congeners by the small eyes, the small body size, the short elytra and reduced hind wings, and by the male sexual characters.

**Distribution and bionomics:** The species is known only from the type locality in Algeria. The adaptive re-



ductions of eye size, pigmentation, and wings suggest that it has a subterranean habitat.

### 3.20. *Medon fuscus* (Mannerheim, 1830) (Map 11)

*Rugilus fuscus* Mannerheim, 1830 (MANNERHEIM 1830: 40).

*Lithocharis fuscus* Lacordaire, 1835 (LACORDAIRE 1835: 431).

*Lithocharis testaceus* Lacordaire, 1835 (LACORDAIRE 1835: 432).

*Lithocharis rufus* Mulsant & Rey, 1853 (MULSANT & REY 1853: 66).

*Lithocharis auranitica* Sauley, 1864 (SAULCY 1864: 40).

*Lithocharis infuscatus* Baudi, 1870 (BAUDI 1870: 392).

*Medon deficiens* Hubenthal, 1911 (HUBENTHAL 1911: 188).

*Medon abchasicus* Bernhauer, 1922 (BERNHAEUER 1922: 124).

*Medon bulgaricus* Coiffait, 1970b (COIFFAIT 1970b: 105f).

*Medon gajaci* Coiffait, 1973a (COIFFAIT 1973a: 114ff).

*Medon paradobrogicus* Decu & Georgescu, 1994 (DECU & GEORGESCU 1994: 49f).

**Types examined:** See ASSING (2004a).

**Additional material examined** (total: 216 exs.; for additional material examined see ASSING (2004a)):

**France:** **Aquitaine:** 2 exs., Gironde, Cambes, 18.XII.1936, leg. Giraud (MHNG, cAss); 3 exs., Cambes, 20.XI.1936 (MHNG). **Picardie:** 1 ex., Oise, Laigneville, IX.1908, leg. Mequignon (MHNG); 11 exs., Laigneville, 24.IV.1924 (MHNG); 1 ex., Laigneville (MHNG); 2 exs., Oise, Noyon, leg. de Brunier (MHNG). **Champagne-Ardenne:** 2 exs., Les Grandes Loges (MHNG); 2 exs., Les Grandes Loges, VIII.1918 (MHNG). **Île-de-France:** 1 ex., Fontainebleau (MHNG). **Rhône-Alpes:** 1 ex., Haute-Savoie, Malagny, 14.XII.1963, leg. Comellini (MHNG); 1 ex., Rhône, Iri-gny, Rhône inundation, XII.1954 (MHNG); 1 ex., Isère, Grenoble, 12.VII.1902 (MHNG); 1 ex., Ain, Poncin, I.1948 (MHNG). **Alsace:** 2 exs., Strasbourg, VIII.1953, IV.1954 (MHNG). **Lorraine:** 2 exs., Metz (MHNG). **Locality not specified, ambiguous, or not identified:** 2 exs., locality not specified (NHMW); 1 ex., "IN Cendrieux Bourlet", III.1960 (MHNG); 1 ex., "Cussac" (MHNG).

**England:** 1 ex. [aedeagus and male sternite VII teratological], East Sussex, Rye, 14.II.1999, leg. Hance (cOwe).

**Italy: Friuli-Venezia Giulia:** 1 ex., Villotta, 19.II.1973, leg. Zanetti (cBor); 1 ex., W Carnia, bank of Fella river, 45°23N, 13°07E, 250 m, flood debris, 12.IX.1998, leg. Schülke (cSch); 2 exs., bank of Isonzo river SE Villesse, 45°51N, 13°27E, 10 m, flood debris, 13.IX.1998, leg. Schülke (cSch); 2 exs., Villotta (PN), 19.II.1973, leg. Zanetti (UCBA, cZan); 3 exs., Sacile (PN), mole nest, 6.III.1974, leg. Osella & Zanetti (cZan); 5 exs., Gemona del Friuli (UD), mole nest, 6.III.1974, leg. Osella & Zanetti (cZan); 1 ex., Monfalcone, 21.III.1948, leg. Springer (UCBA); 1 ex., Udine (MHNG).

**Germany: Niedersachsen:** 1 ex., Hameln, Königsförde, garden, V.1988, leg. Sprick (cAss). **Nordrhein-Westfalen:** 1 ex. [with worker of *Lasius brunneus* attached to the pin], Kölner Bucht, Pulheim, Stommelerbusch, 4.V.1984, leg. Köhler (cKöh). **Rheinland-Pfalz:** 2 exs., Bacharach, bank of Rhine river, flood debris, I-II.2001, leg. Hetzel (cFel); 3 exs., Bacharach, Steeg, vineyard, 56.VI.1996, leg. Köhler (cKöh); 1 ex., same data, but 14.VII.1996 (cKöh); 2 exs., Oppenheim, 14.X.1989, leg. Höhner (cKöh); 1 ex., Schloßböckelheim, 25.IV.1994, leg. Köhler (cKöh); 3 exs., same data, but 31.V.1996; 1 ex., same data, but 28.VII.1996 (cKöh); 2 exs., Monzingen, 18.-19.V.1991, leg. Köhler (cKöh). **Baden-Württemberg:** 1 ex., Kaiserstuhl, Durbach, 14.VII.1971 (MHNG). **Hessen:** 1 ex., Groß-Gerau, 6.II.1988, leg. Höhner (cKöh). **Berlin/Brandenburg:** 13 ex., Rüdersdorf, Kalkberge (DEI, cSch); 1 ex., Glambeck (DEI); 9 exs., Berlin, Hohen Neuendorf (DEI); 4 exs., Oderberg (DEI).

**Austria: Vorarlberg:** 1 ex., Feldkirch (NHMW). **Niederösterreich/Wien:** 27 exs., Wien, several localities (DEI, MHNG, NHMW); 6 exs., Wiener Wald, Rüdersdorf (NHMW); 1 ex., Wien, Donauauen, 29.XI.1952, leg. Malicky (MHNG); 4 exs., Stockerau (NHMW); 1 ex., Albern (NHMW); 1 ex., Metzendorf (NHMW); 1 ex., Rodaun (NHMW); 1 ex., Mödling, Eichkogel (NHMW); 1 ex., Laxenburg (NHMW); 1 ex., Bisamberg (NHMW); 4 exs., Bisamberg, 27.III.1953, leg. Malicky (MHNG); 1 ex., Ulrichskirchen (NHMW); 1 ex., Wechselgebiet (NHMW). **Steiermark:** 1 ex., Graz (MHNG); 1 ex., "Süd-Steiermark" (NHMW).

**Czech Republic:** 10 exs., Moravia, Bulhary, 25.VI.1984, leg. Prudek (cSch, cAss).

**Bulgaria:** 1 ex., Asenovgrad (MHNG).

**Croatia:** 1 ex., Mlini [42°37N, 18°12], 29.IX.-4.X.1958, leg. Benick (MHNG); 3 exs., Brela [43°22N, 16°56E], 16.-26.IX.1958, leg. Benick (cAss).

**Bosnia-Herzegovina:** 1 ex., Montenegro, Budva, leg. Hummler (MHNG); 4 exs., Montenegro, Herzeg-Novi (MHNG).

**Serbia-Montenegro:** 1 ex., Zvonačka Banja, 28.IV.2002, leg. Hlaváč (cAss).

**Greece:** 8 exs., Voiotia, Levadia, wet moss, 4.IX.1964, leg. Puthz (MHNG); 2 exs., Makedhónia, Nomós Kavála, 10 km W Eleftherópoli, Pangéo, 900 m, beechforest, 10.IV.1994, leg. Schawaller (SMNS); 2 exs., Makedhónia, Nomós Kavála, 10 km N Paleá Kavála, 600 m, macchia & chestnut forest, 20.IV.1994, leg. Schawaller (SMNS, cAss); 1 ex., Makedhónia, Nomós Kavála, Nestos delta S Khrisópoli, floodplain forest, 26.IV.1994, leg. Schawaller (SMNS); 2 exs., Thrakia, Nomós Xánthi, Nestos near Toxótes, 25.IV.1994, leg. Schawaller (SMNS, cAss); 3 exs., Pelopónnisos, Kalavrita, 800 m, 3.IV.1971, leg. Löbl (MHNG); 1 ex., Pelopónnisos, Taygetos, Meligalás, Dhervénion, 600 m, 26.III.1992, leg. Frisch (MNHUB); 1 ex., Corfu, leg. Hummler (MHNG).

**Turkey: Tokat:** 6 exs., Tokat – Almus, 1200 m, 21.V.1967, leg. Besuchet (MHNG). **Adana:** 2 exs., Kozan, 600 m, 5.V.1967, leg. Besuchet (MHNG); 1 ex., Kozan, 300 m, 5.V.1967, leg. Besuchet (MHNG). **Konya:** 1 ex., Çamlık env., Toroslar mts., 1345–1380 m, 6.–8.VI.2003, leg. Smatana (cSch). **Adiyaman:** 1 ex., Gölbaşı, 900 m, 10.V.1967, leg. Besuchet (MHNG).

**Ukraine:** 1 ex., Odessa (NHMW).

**Locality not specified or illegible:** 10 exs. (MHNG).

**Diagnosis:** See ASSING (2004a).

**Distribution and bionomics:** *Medon fuscus* is a widespread Ponto-Mediterranean element (Map 11), its distribution ranging from the Middle East, eastern Anatolia, West Caucasus, and Ukraine in the southeast and east to the southwest of France, southern England, and southern Norway, southern Sweden, and Lithuania in the west, northwest, and north (material examined; ASSING 2004a). For a selection of additional records see BOHÁČ (1985), BRUGE et al. (2001), DRUGMAND (1989), FOWLER (1888), HORION (1965), HUGENTHOBLE (1966), KOCH (1968), KÖHLER (2000), KÖHLER & KLAUSNITZER (1998), LINKE (1907), SCHOLZE & JUNG (1993), SILFVERBERG (1992), SZUJECKI (1968), TERLUTTER (1995), and UHLIG & VOGEL (1981). On the whole, *M. fuscus* is much more common in the south-east of its range (Turkey, Greece) than in the northwest, where it is rather rare. In France, it is absent from the Pyrénées-Orientales (TRONQUET 2001). In the British Isles, it is local and confined to the southern parts of England (FOWLER 1888). According to HANSEN (1996), it is absent from Denmark. In Sweden, it is known only from Södermanland (LUNDBERG 1995), but this record

is somewhat 'doubtful' (M. SÖRENSON, Lund, pers. comm. 2003). OUTERELO (1980) reports a record from southern Spain (Andalucía), adding that the species is known from Spain and Portugal. As can be inferred from the general distribution and the abundant *Medon* material examined from the Iberian Peninsula, however, *M. fuscus* is absent from the Iberian Peninsula and these records are most likely to be based on misidentifications (probably confusion with *M. ripicola*). *Medon fuscus* has been reported from various regions in Italy, including Sardinia and Sicily (CICERONI & ZANETTI 1995; HORION 1965; LUIGIONI 1929; PORTA 1926), but the results of the present revision suggest that all the records, except for those from the northeast (Friuli-Venezia Giulia), are probably erroneous.

*Medon fuscus* has been collected from various kinds of substrates, especially leaf litter, nests of mammals (mole, fox, vole, rabbit), compost, hollow trees, and flood debris in forests, gardens, gravel pits, river banks, etc. (ASSING 2004a; BOHÁČ 1985; FRANZ 1938; HORION 1933, 1965; WAGNER 2002; ZERCHE 1980). Many records are from mole nests; OSELLA & ZANETTI (1974) repeatedly found the species in this habitat, partly in larger numbers. On the other hand, STROUHAL & BEIER (1918) found only six specimens in 118 nests examined. According to NOWOSAD (2000) only very few specimens were collected in a total of 7000 nests studied in Poland; NOWOSAD (1990) had not found more than two specimens in 5000 mole nests dug up all over Poland. MEYBOHM (1997) reports two flight records (car-net); on one occasion 15 flying specimens were collected.

Adult beetles have been collected throughout the year. DRUGMAND (1989) states that the species is bivoltine, but there is no evidence supporting this. Based on the material examined here, *M. fuscus* is univoltine. According to BOHÁČ (1985), teneral specimens were observed in March.

In the male seen from England, the male sternite VII and the aedeagus were teratologically malformed.

### 3.21. *Medon sardous* Doderó, 1922 (Figs. 95–99)

*Medon sardous* Doderó, 1922 (DODERO 1922: 67f).

**Material examined** (total: 18 exs.):

**Italy, Sardegna:** 6 exs., NNW Villaputzu, Salto di Quirra, 400 m, 9.X.1989, leg. Wunderle (cWun, cAss); 3 exs., grotta S. Puddu near Villaputzu, 17.VIII.1973 (cBor); 6 exs., Flumini (NHMW, cAss); 1 ex., Lanusei (NU), 12.V.1980, leg. Torchia (cZan); 1 ex., NW Lanusei (NU), 650 m, 21.IV.1992, leg. Schawaller (SMNS); 1 ex., N Domusdemaria, 38°58'N, 8°52'E, 23.X.1981, leg. Malicky (cAss).





**Map 11:** Distribution of *Medon fuscus* (Mannerheim) (filled circles: revised records; open circles: selected literature records).

**Diagnosis:** In external appearance similar to *M. fuscus*. 4.5-5.5 mm. Coloration reddish brown to dark brown, with the head usually slightly darker; legs and antennae yellowish brown to ferrugineous.

Head about as wide as long or weakly transverse and 1.10-1.15 times as wide as pronotum (Fig. 95); eyes relatively large, in dorsal view more than half the length of temples; puncturation dense, coarse, well-defined, and areolate; interstices with noticeable shine.

Pronotum approximately as wide as long or weakly transverse (Fig. 95); puncturation on the whole similar to that of head, but usually shallower, slightly less dense, and less well-defined; usually with, more rarely without impunctate median line.

Elytra relatively large, 1.20-1.25 times as wide and at suture about 1.1 times as long as pronotum (Fig. 95); puncturation much finer and less dense than that of head and pronotum; interstices shining. Hind wings apparently fully developed. Protarsomeres I - IV without sexual dimorphism, transverse in both sexes; tarsi relatively short, metatarsomeres III and IV less than twice as long as broad.

Abdomen finely and densely punctate; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of sternite VII of similar morphology and chaetotaxy as in other species of the *M. fuscus* group, deeply and broadly concave (not distinctly trapezoid), with two lateral combs of palisade setae and on either side of middle with a distinct tuft composed of very long dark setae (Fig. 96); sternite VIII similar to that of *M. fuscus* and related species (Fig. 97); aedeagus of distinctive shape (Figs. 98-99).

**Systematics and comparative notes:** Based on external similarities (relatively large size, puncturation of head and pronotum), the male secondary sexual characters, especially the characteristic shape and chaetotaxy of sternite VII, and on the morphology of the aedeagus, *M. sardous* doubtlessly belongs to the *M. fuscus* group. From all the species of this group, none of which occurs in Sardinia (but see notes on *M. ripicola* below), it is distinguished especially by the distinctive shape of the aedeagus. From *M. fuscus*, the only geographically close congener of the *fuscus* group, it is additionally distinguished by the more well-defined puncturation and more shining interstices of the head and pronotum, by

the shorter tarsi (metatarsomeres III and IV in *M. fuscus* more than twice as long as broad), transverse protarsomeres I - IV, the concave (not trapezoid) posterior excavation of the male sternite VII, and by the much more distinct and longer tufts of setae at the posterior margin of the male sternite VII.

**Distribution and bionomics:** *Medon sardous* is endemic to Sardinia and – together with *M. fuscus*, *M. ripicola*, and *M. kabylicus* – one of the westernmost representatives of the *M. fuscus* group. Additional Sardinian localities are summarized by BORDONI (1981), all of them are in the southern half of the island. The species was sifted from leaf litter and found in caves.

### 3.22. *Medon ripicola* (Kraatz, 1854) (Fig. 100, Map 12)

*Lithocharis ripicola* Kraatz, 1854 (KRAATZ 1854: 127).

*Lithocharis kellneri* Kraatz, 1875 (KRAATZ 1875: 123).

*Medon pectiniventris* Donisthorpe, 1932 (DONISTHORPE 1932: 252).

**Types examined:** See ASSING (2004a).

**Material examined** (total: 379 exs.; for additional material see ASSING (2004a)):

**Tunisia:** 2 exs., Aïn Drahem (= Ayn ad Darahim; 36°47'N, 8°42'E), leg. Bodemeyer [1 paralectotype of *M. bodemeyeri* Bernhauer] (DEI, MHNG); 2 exs., Aïn Drahem, IX.1944, leg. Demoflys (cTro); 2 exs., Aïn Drahem, VIII.1945, leg. Demoflys (cTro).

**Algeria:** 2 exs., Grande Kabylie, Oued Sébaou, W Dellys, 20.V.1988, leg. Besuchet, Löbl & Burckhardt (MHNG, cAss).

**Morocco:** 3 exs., Salé, leg. Thery (NHMW); 2 exs., Haute Atlas, Oukaimeden, leg. Franz (cAss); 1 ex., Oued Sebou, IV.1961, leg. Comellini (MHNG).

**Portugal:** 2 exs., Coimbra (NHMW); 1 ex., Algarve, Praia de Faro, 37°02'N, 07°59'W, 5 m, laguna, 26.III.2002, leg. Meybohm (cAss); 1 ex., Algarve, Serra de Monchique, Portela Viuva, 20.II.1999, leg. Meybohm (cAss); 1 ex., Lagoa da Casa, 28.III.1986, leg. Winkelmann-Klöck (cSch). **Madeira:** 2 exs., above Seixal, Rib. do Seixal, 550m, bank of stream, 31.III.1996, leg. Lompe (cAss); 1 ex., locality not specified, leg. Franz (cAss). **Azores:** 6 exs., São Miguel, Lagoa do Congo, 27.VIII.2003 (cAss).

**Spain:** **Cataluña:** 1 ex., Seo de Urgel, leg. Franz (cAss); 5 exs., Seo de Urgel, Arfa, V.-VI.1962, leg. Fagel (IRSNB); 4 exs., Seo de Urgel, V.-VI.1962, leg. Fagel (IRSNB); 4 exs., Gerona, Figueres, 10.VII.1965, leg. Comellini (MHNG, cAss). **Galicia:** 1 ex., Lugo, Linares, 1000 m, 27.V.1996, leg. Starke (cAss); 1 ex., Orense, Manzaneda, VII.1956, leg. Gonzales (MHNG).

**Asturias:** 1 ex., Playa de Concho de Artedo, 3 km W Cudillero, 43°34'N, 06°11'W, 14.VI.2000, leg. Wrase (cSch); 2 exs., W Puerto de Pajares, Puerto de la Cubilla – Sotiello, 500 - 1400 m, car-net, 8.VI.1991, leg. Wunderle (cWun); 4 exs., Covadonga, VI.1965, leg. Fagel (IRSNB); 2 exs., Cudillero, Conche de Ariedo, 43°34'N, 6°11'W, 14.VI.2000, leg. Starke (cFel). **Aragón:** 1 ex., Sierra de Albarracín, V.1953, leg. Comellini (cBor). **Andalucía:** 2 exs., Sierra Nevada (GR), Lanjaron, 400 - 600 m, 23.III.1994, leg. Assing, Wunderle (cAss, cWun); 8 exs., Lanjaron, 26.IV.-18.V.1961, leg. Fagel (IRSNB).

**British Isles: Wales:** 1 ex., Powys, Brecon, 26.VI.1994, leg. Owen (cOwe).

**Sweden:** 1 ex., Halland, Dagsås, 4.IX.1986, leg. Gillerfors (cGil).

**France:** **Bourgogne:** 2 exs., Côte d'Or, Montigny sur [illegible] (NHMW). **Nord-Pas-de-Calais:** 2 exs., Lille (DEI, NHMW). **Picardie:** 3 exs., Laigneville (Oise), 1.IV.1930, leg. Mequignon (MHNG); 1 ex., Laigneville, leg. Mequignon (MHNG); 3 exs., Laigneville, 12.IV.1926 (MHNG); 1 ex., Baillevall (Oise), 24.IV.1927 (MHNG). **Île-de-France:** 2 exs., Sucy-en-Brie, leg. Mequignon (MHNG); 1 ex., Sucy-en-Brie, leg. Mequignon (MHNG). **Aquitaine:** 1 ex., Arette, 29.III.1960, leg. Jeanne (cBor); 1 ex., Castets, 30.VI.1938, leg. Gaudin (UCBA); 1 ex., Gironde, Cambes (MHNG); 3 exs., Cambes, 11.III.1939, leg. Giraud (MHNG); 1 ex., Gironde, locality illegible (MHNG); 4 exs., Bordeaux, bank of Garonne, 16.III.1930, leg. Tempère (MHNG); 1 ex., Gironde, Taussat-les-Bains, 10.IX.1934, leg. Tempère (MHNG); 1 ex., Gironde, Cubzac-les-Ponts, 23.III.1935, leg. Tempère (MHNG); 1 ex., Gironde, Langoiran, 15.IV.1946, leg. Tempère (MHNG). **Midi-Pyrénées:** 2 exs., Hautes-Pyrénées, locality not specified, leg. Pandellé (NHMW, UCBA); 1 ex., locality illegible, 25.V.1943, leg. Giraud (MHNG). **Languedoc-Roussillon:** 1 ex., Mollit les Bains, 550 m, 2.IX.2001, leg. Tronquet (cTro); 1 ex., Mollit les Bains, 600 m, oak leaf litter, 10.IV.2002, leg. Tronquet (cTro). 7 exs., Carcassonne (NHMW); 1 ex., Cevennes, Villefort, Bresis, 9.III.2002, leg. Aßmann (cAss). **Auvergne:** 1 ex., Cantal, Thiézac, 28.VIII.1947, leg. Tempère (MHNG). **Rhône-Alpes:** 1 ex., Savoie, Belmont-Tramonet (NHMW); 3 exs., Haute-Savoie, Vougy, 6.IV.1965, leg. Comellini (MHNG, cAss); 1 ex., Ain, Divonne-les-Bains (MHNG); 1 ex., Ardèche, Mauves, 18.III.1906 (cSch); 3 exs., Haute-Savoie, Malagny, 14.XII.1961, leg. Comellini (cAss). **Provence:** 1 ex., Var, Roquebrune sur Argens, leg. Demoflys (cTro); 1 ex., Var, Gapeau inundation [near La Garde], X.1958 (MHNG); 1 ex., Var, Hyères, X.1958 (MHNG); 1 ex., Var, Vésubie inundation [near Lantosque], VI.1957 (MHNG); 1 ex., same locality, VI.1958 (MHNG); 1 ex., same locality, XI.1947 (MHNG); 1 ex., same locality,



IV.1956 (MHNG); 2 exs., Argens (Le Muy), II.1937 (MHNG); 1 ex., Var, Dardennes, II.1956 (MHNG); 1 ex., Var, E Vidauban, Aille inundation, I.1955 (MHNG); 2 exs., Var, Loup inundation (W Cagnes), leg. Ochs (MHNG); 8 exs., Loup inundation, III.1951 (MHNG); 1 ex., Nice, I.1960 (MHNG); 3 exs., Alpes Maritimes, St.-Vallier-de-Thiery, V.1975, leg. Toumayeff (MHNG); 1 ex. [teneral], same locality, X.1975, leg. Toumayeff (MHNG); 1 ex., Eyguières, leg. Perrot (MHNG). **Alsace:** 1 ex., Strasbourg, Rhine inundation, IX.1954 (MHNG). **Corse:** 1 ex., S Galeria, Col Palmarella, 5.VI.1987, leg. Tronquet (cTro); 2 exs., E Ajaccio, Gravone inundation, X.1960 (MHNG). **Locality illegible or ambiguous:** 1 ex., Vilue (?), leg. Falcoz (MHNG); 2 exs., Touxadons, Canarive (?), XII.1960 (MHNG); 1 ex., Cussac, VI.1913 (MHNG); 2 exs., IX.1903, leg. Mequignon (MHNG).

**Germany: Nordrhein-Westfalen:** 3 exs., Südlöhn, chalk quarry, 21.IV.2001, leg. Scharf (cFel); 1 ex., Hürth, Tagebau Ville, 26.III.1989, leg. Köhler (cKöh); 3 exs., Wesseling, Berzdorf, Kiesgrube, 24.IV.1991, leg. Köhler (cKöh); 4 exs., Vadrup, Emsufer, Hof Schulte-Bisping, 25.V.1997, leg. Köhler (cKöh); 1 ex., Troisdorf, Kiesgrube Eschaar, 27.IV.1991, leg. Köhler (cKöh). **Hamburg:** 6 exs., locality not specified (NHMW). **Rheinland-Pfalz:** 2 exs., Eifel, Cochem, Bengel, 5.VI.1992, leg. Köhler (cKöh); 1 ex., Sinzig, 26.IV.1991, leg. Köhler (cKöh); 2 exs., Schaidt Bienwald, NWR Stuttpferch, 30.V.1996, leg. Köhler (cKöh); 1 ex., Wiltingen, car-net, 7.VI.1996, leg. Köhler (cKöh). **Bayern:** 1 ex., München, V.1930, leg. Pfandler (MHNG). **Berlin/Brandenburg:** 1 ex., Eisenhüttenstadt, 9.IX.1980, leg. Pütz (cSch); 1 ex., Eisenhüttenstadt, 2.VII.1984, leg. Pütz (cSch); 13 exs., Sperenberg (DEI). **Thüringen:** 1 ex., locality not specified (NHMW). **Sachsen:** 1 ex., Klitten, 30.V.1978, leg. Vogel (cWun); 1 ex., Oberlausitz, Daubitz, flood debris, 23.IV.1994, leg. Schülke (cSch); 1 ex., Oberlausitz, Kreis Bautzen, Gutttau, edge of pond, 26.V.1985, leg. Schülke (cSch); 2 exs., Gutttau, car-net, 25.V.1985, leg. Schülke & Heinig (cSch); 2 exs., Gutttau, 22.V.1983, leg. Schülke (cSch).

**Switzerland:** 1 ex., Morges (NHMW); 3 exs., shore of Lac de Neuchâtel, Vaumarcus, 26.VII.1992, leg. Zanetti (cZan); 1 ex., Bressigny (MHNG).

**Austria: Vorarlberg:** 5 exs., locality not specified, leg. Müller (NHMW); 1 ex., Lustenau/Lauterach, 400 m, flood debris, 13.V.1991, leg. Möseneder & Brandstetter (cSch). **Niederösterreich/Wien:** 2 exs., Wien (NHMW); 1 ex., Stockerau (NHMW); 1 ex., Klosterneuburg (?), leg. Scheerpeltz (NHMW); 1 ex., Lobau, leg. Mandl (NHMW); 1 ex., Ysper, 16.IV.1992, leg. Peschel (cSch). **Steiermark:** 1 ex., Graz, leg. Strupi (NHMW).

**Italy: Trentino-Alto Adige:** 1 ex., Trento, Storo, 28.V.1977 (cAss); 5 exs., Adige ("Etsch-Au"), leg. Breit (NHMW). **Lombardia:** 2 exs., 10 km E Mantova, Barbassolo, IX.1976, leg. Carpacchia (cBor); 9 exs., Val Camonica, Cogno, leg. Krüger (NHMW, cAss); 1 ex., Solferino (MN), 24.X.1971, leg. Cormacchio (cZan); 1 ex., Sondrio, mole nest, 7.XI.1971, leg. Zanetti (cZan); 1 ex., Bergamo, Buco d. Como, 9.VIII.1976, leg. Rossi (cZan); 1 ex., Ostiglia, Palude del Busatello, 12.III.1981, leg. Zanetti (cZan); 2 exs., Torbiere d'Iseo (BS), 28.III.1982, leg. Zanetti (cZan); 1 ex., Pozzolengo (BS), 15.IV.1984, leg. Zanetti (cZan); 1 ex., Mantova, Ponti sul Mincio, 27.I.1980, leg. Zanetti (cZan); 1 ex., Monte Marenzo (BG), 200m, 23.II.1997, leg. Tagliapietra & Zanetti (cZan); 5 exs., Pavia, bank of Ticino river, 3.XI.1958, leg. Rosa (UCBA); 2 exs., Cogno near Bienno, leg. Krüger (MHNG). **Piemonte:** 2 exs., Vercelli, 5.&12.IV.1964, leg. Olmi (cBor); 6 exs., Leini (TO), mole nest, 8.II.1966, leg. Osella (cBor); 5 exs., Leini, in *Salix* litter with *Lasius fuliginosus*, 25.IV.1964 (cZan); 14 exs., Leini, 20.-21.II.1965, leg. Osella (UCBA, cZan); 6 exs., Locana (TO), inundation, X.1960 (MHNG). **Liguria:** 4 exs., Altare, VIII.1968 & VII-IX.1974, leg. Bordoni (cBor, cTro); 1 ex., Arenzano (GE), 12.XI.1977, leg. Parodi (UCBA); 1 ex., same locality, 20.X.1969, leg. Briganti (UCBA); 1 ex., same locality, 15.II.1960, leg. Gardini (UCBA); 5 exs., NW Albenga, Leca, 15.IV.1973, leg. Briganti, Zoia (UCBA); 4 exs., Genova, 1920, leg. Mancini (UCBA). **Veneto:** 2 exs., NW Monselice, Colli Euganei (NHMW); 7 exs., NW Villafranca di Verona, Custoza, 22.I.1972, leg. Zanetti (cZan); 1 ex., Nogara (VR), Ponte Molino, V.1974, leg. Zanetti (cZan); 1 ex., Montecchia di C. (VR), mole nest, 22.II.1976, leg. Zanetti (cZan); 1 ex., Gazzo (VR), Palude del Busatello, caricetum, 12.III.1981, leg. Zanetti (cZan); 3 exs., Pellegrina (VR), mole nest, 3.II.1980 (cZan); 1 ex., Pellegrina, mole nest, 26.II.1999, leg. Zanetti (cZan); 1 ex., S Vicenza, Fimon, Lago di Fimon, 31.X.1982, leg. Zanetti (cZan); 1 ex., San Martino Buon Albergo (VR), Musella, Ferrazzetta, mole nest, 28.II.1991, leg. Zanetti (cZan); 1 ex., Cavaion Veronese (VR), Palude Canova, 13.III.1994, leg. Zanetti (cZan); 1 ex., Piombino Dese (PD), 20.III.1994, leg. Zanetti (cZan); 1 ex., Feltre (BL), Anzù, 240 m, mole nest, 11.I.1998, leg. Zanetti (cZan); 1 ex., Lovadina near Spresiano, VI.1939, leg. Burlini (MHNG). **Friuli-Venezia Giulia:** 13 ex., Tagliamento, Fella estuary, 46°22'N, 13°07'E, 250 m, 12.-13.IX.1998, leg. Schülke (cSch, cAss); 6 exs., bank of Tagliamento river near Codroigo, 45°57'N, 12°55'E, flood debris, 12.IX.1998, leg. Schülke (cSch, cAss); 5 exs., Venezia, Tagliamento, Foce fiume, 19.IV.1973 & 20.IV.1990, leg. Zanetti (cZan); 1 ex., bank of Isonzo river, SE Villesse, 45°51'N, 13°27'E, flood debris, 13.IX.1998, leg. Schülke (cSch); 1 ex., Frisanco (PN), I.V.1990, leg. Zanetti (cZan). **Toscana:** 2 exs., "Toscana" (NHMW); 1 ex.,

Toscana, S. Altopascio, Vallino di Macchia (PI), 16.IX.1995, leg. Bordini (cBor); 1 ex., Mte. Argentario, macchia, 29.III.1921, leg. Moczarski & Scheerpeltz (NHMW). **Campania:** 2 ex., Capriati al Volturno, 21.VII.1975, leg. Rossi (cZan). **Basilicata:** 1 ex., Lago-negro, Rivello Fiume Noce, 40°03'N, 15°46'E, 250 m, 10.V.2002, leg. Wunderle (cWun); 1 ex., Episcopia (PZ), bank of Sinni, 500m, 22.VII.1993, leg. Zanetti (cZan). **Sicilia:** 1 ex., M. Iblei, Noto (SR), F. Manghisi, 25.VII.1994 (UCBA); 1 ex., M. Iblei, Noto, 25.VII.1993 (UCBA); 2 exs., Peloritani, F.ra di Floresta, Santa Venera del Bosco, Frascianida (ME), 450 m, 23.VI.1995, leg. Adorno (UCBA); 1 ex., M. Iblei, Isola Ardito (near Palazzolo) (SR), Valle d'Ánapo, 5.III.1997 (cAss). **Locality ambiguous:** 2 exs., Fiume, leg. Meyer (NHMW).

**Czech Republic:** 1 ex., Bohemia, Doudleby nad Orlicí, 1944, leg. Roubal (MHNG).

**Polish or Czech territory:** 1 ex., Cieszyn ("Teschen"), leg. Wanka (MHNG).

**Croatia:** 2 exs., Istria, Rabac Luka, 15.-17.V.1990, leg. Wrase (cSch).

**Locality not indicated or illegible:** 9 exs. (MHNG).

**Diagnosis:** See ASSING (2004a); habitus as in Fig. 100.

**Distribution and bionomics:** *Medon ripicola* is an expansive Atlanto-Mediterranean element (Map 12). Based on the revised material and reliable literature records, its distribution extends from the Azores, Madeira, Northwest Africa, and the Iberian Peninsula in the west to southern England and southern Scandinavia in the north and northwest, and to Poland, Romania, Croatia, Bulgaria, and Montenegro in the east and southeast (material examined; ASSING 2004a). It has also been recorded from Lithuania (SILFVERBERG 1992). In Scandinavia, it is known only from Halland (material examined), Malmö, and Öland in southern Sweden (BARANOWSKI 1982; LUNDBERG 1995), as well as from Denmark (HANSEN 1996; HANSEN et al. 1994; V. HANSEN 1964). For a selection of additional records see ALLEN (1969), BERNHAUER (1940), BOHÁČ (1985), BRUGE et al. (2001), DRUGMAND (1989), FOWLER (1888), GILLERFORS (1986), HORION (1965), HUGENTHOBLE (1966), KOCH (1968), KÖHLER & KLAUSNITZER (1998), LUNDBLAD (1958), NORMAND (1935), SCHILLER (1989), TERLUTTER (1995), VOGEL (1979), and WITTEWIT (1988). According to CICERONI & ZANETTI (1995), the species has been recorded from Sardinia, where the closely related endemic *M. sardous* occurs, but I have seen no material from there.

In the north of its range, *M. ripicola* was repeatedly found in coastal habitats (ALLEN 1969; BARANOWSKI 1982; HANSEN 1964; HORION 1965). Frequently, it was

collected from flood debris (spring and winter) and in other habitats near or at the banks of rivers and streams (material examined; see also HORION (1965), KOCH (1968), and LINKE (1913)). In northern Italy, it is very common and abundant in mole nests, especially near rivers and streams; in this habitat it excludes *M. perniger*, which inhabits mole nests in drier places (OSELLA & ZANETTI 1974). In a very comprehensive study of mole nests in Poland, however, NOWOSAD (1990) did not find a single specimen of *M. ripicola*. On many occasions, the species was sifted from the leaf litter of various kinds of – mostly deciduous – forests and even of macchia. As can be inferred from the examined material with precise altitude specification, *M. ripicola* occurs at lower and intermediate elevations; none of these specimens was collected above 1000 m.

Adult beetles have been observed throughout the year (material examined), though most specimens were found in spring. Flying specimens were caught by car-net in May and June. One examined specimen collected in October was teneral. According to DRUGMAND (1989), the species is bivoltine, but there is no evidence supporting this. Based on the material examined here, it is univoltine. *Medon ripicola* is the host of the endoparasitic tylenchid nematode *Parasitylenchus medonis* Wachek (WACHEK 1955).

### 3.23. *Medon kabylicus* sp. n. (Figs. 101-105, Map 12)

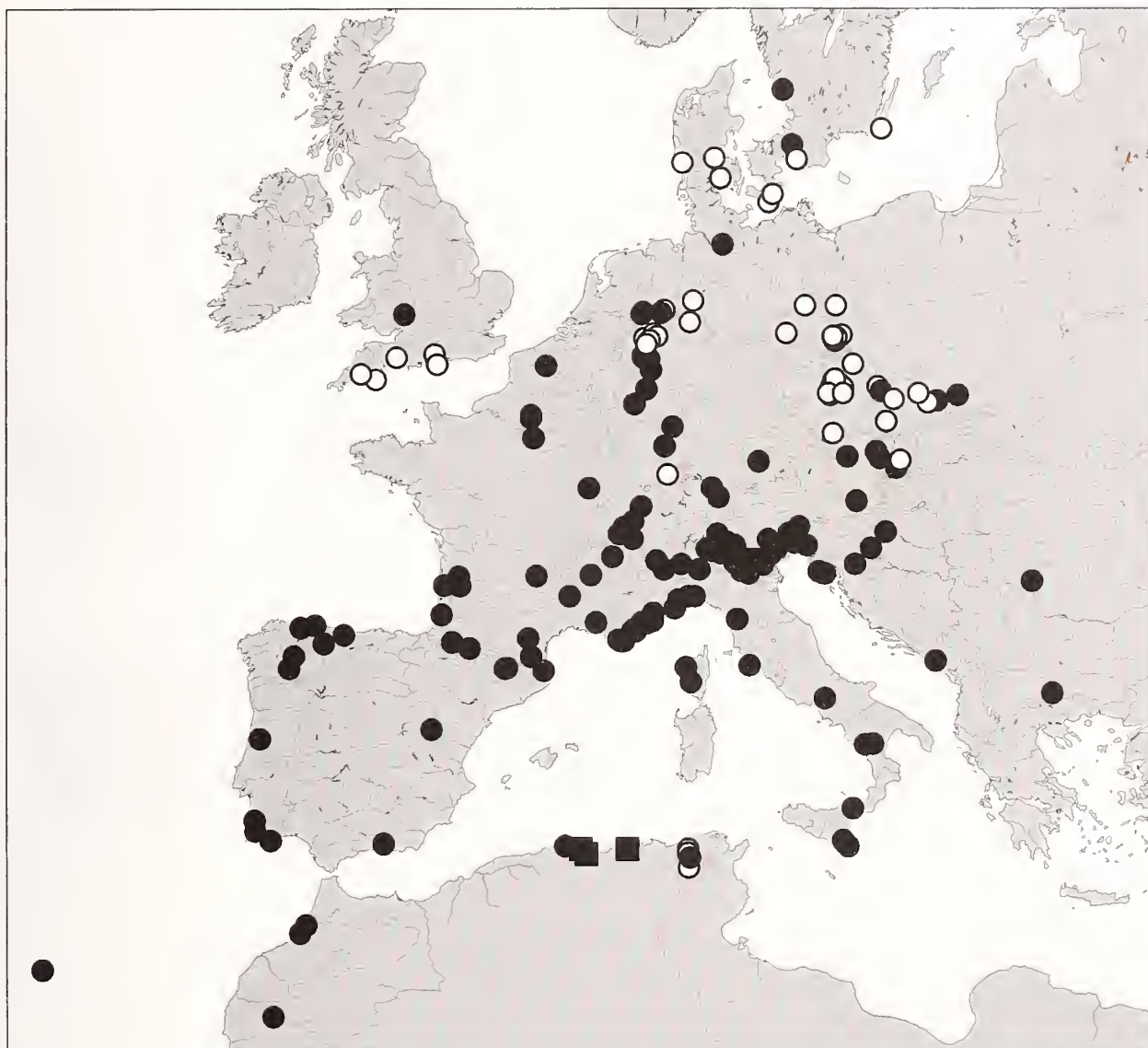
**Types:** Holotype ♂: Gde Kabylie: Yakouren, forêt Beni-Ghobri, 800m, V.1953, G. Fagel / G. Fagel det., 1954, *Medon ripicola* / Holotypus ♂ *Medon kabylicus* sp. n. det. V. Assing 2003 (IRSNB). Paratypes: 2♂♂, 3♀♀: same data as holotype (IRSNB, cAss); 1♂, 3♀♀: Gde Kabylie: Yakouren, ravine au-dessus Tala Teg-zirine, 860m, V.1953, G. Fagel (IRSNB); 5♀♀: Gde Kabylie: Yakouren, forêt Beni-Ghobri, Bois Sacré, 750m, V.1953, G. Fagel (IRSNB, cAss); 1♂: Gde Kabylie: forêt d'Akfadou, Tala Kitan, 1100m, 18V.1953, G. Fagel (cAss).

**Description:** 3.9-5.5 mm. Facies as in Fig. 101. Aside from the slightly wider protarsomeres I-IV (both sexes) and the male sexual characters, externally indistinguishable from *Medon ripicola*.

Usual coloration: head blackish brown to black, with the mouth parts lighter; pronotum and elytra rufous to yellowish, the elytra usually slightly lighter than the pronotum; abdomen reddish brown; legs and antennae rufous.

Head of subquadrate shape, approximately as wide as long; puncturation very dense, coarse, and areolate; surface almost without shine; interstices reduced to narrow ridges; eyes large, approximately 2/3 the length of post-genae in dorsal view.





**Map 12:** Distributions of *Medon ripicola* (Kraatz) (filled circles: revised records; open circles: selected literature records) and of *M. kabylicus* sp. n. (filled squares); the record of *M. ripicola* from the Azores is omitted.

Pronotum approximately as wide as long and at least slightly narrower than head; posteriorly weakly tapering; puncturation as in *M. ripicola* highly variable, ranging from fine and indistinct to relative coarse and well-defined.

Elytra distinctly wider than and at suture at least about 1.1 times as long as pronotum; puncturation very dense, slightly granulose, and not very well defined. Hind wings apparently fully developed. Protarsomeres I-IV slightly dilated in both sexes; protarsomere II distinctly transverse.

Abdomen with very fine and very dense puncturation; posterior margin of tergite VII with palisade fringe.

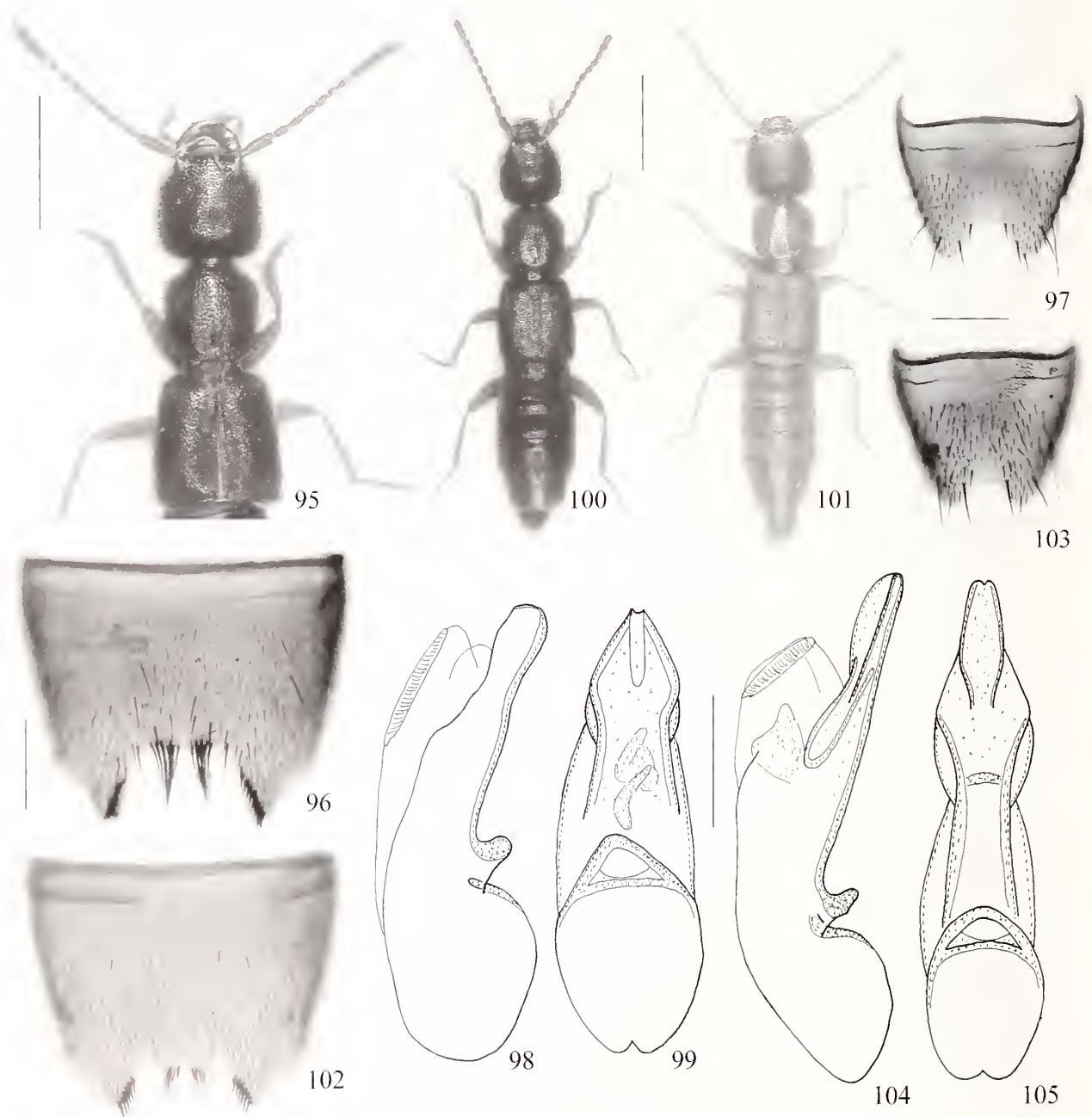
♂: posterior margin of sternite VII with broad trapezoid excavation (not shaped like a very wide V as in *M. ripicola*), with lateral combs of approximately 6 palisade setae and on either side of middle with tuft of several stout black setae (Fig. 102); sternite VIII similar to that of *M. ripicola* (Fig. 103); aedeagus very distinctive (Figs. 104 - 105), in lateral view apically wider and straight (in *M. ripicola* slightly bent dorsad) and in ventral apically shallowly incised, not deeply bifid as in *M. ripicola*.

**Etymology:** The name (adj.) is derived from the name of the Algerian mountain range, where the types were collected.

**Comparative notes and systematics:** *Medon kabylicus* and *M. ripicola* are doubtlessly adelphotaxa, as can be

inferred from the synapomorphic highly derived morphology of the aedeagus. Both species can be distinguished only by the width of the protarsi (slightly dilated in *M. kabylicus*), by the morphology and chaetotaxy of the male sternite VII, and by the shape of the distinctive aedeagus.

**Distribution and bionomics:** *Medon kabylicus* is currently known only from Grande Kabylie, Algeria, where it apparently replaces *M. ripicola*. As far as is known today, both species seem to have an allo- or parapatric distribution (Map 12). Apart from the altitude (750–1100 m) and the fact that the types were collected in forests, no further bionomic data are available.



**Figs. 95-105.** *Medon sardous* Doderö (95-99), *M. ripicola* (Kraatz) (100), and *M. kabylicus* sp. n. (101-105); forebody (95); male sternite VII (96, 102); male sternite VIII (97, 103); aedeagus in lateral and in ventral view (98-99, 104-105); habitus (100, 101). Scale bars: 95, 100, 101: 1.0 mm; 96-99, 102-105: 0.2 mm.



**3.24. *Medon indigena* (Wollaston, 1857)**

(Figs. 106-110)

*Lithocharis indigena* Wollaston, 1857 (WOLLASTON 1857: 93).**Material examined** (total: 133 exs.):

**Madeira: Porto Santo:** 11 exs., Pico do Castelo, 400m, mixed laurel and pine wood, 1.IV.1993, leg. Assing, Wunderle (cAss, cWun); 1 ex., Pico do Castelo, 300-430m, 11.IX.1998, leg. Schuh (cAss); 105 exs., Pico Juliana, 400m, mixed laurel and pine wood, 1.IV.1993, leg. Assing, Wunderle (cAss, cWun); 12 exs., same locality, 1.IV.1996, leg. Lompe, Zerche (DEI, cAss, cSch); 4 exs., Pico Facho, 500m, pine wood with scattered laurel trees, 1.IV.1996, leg. Assing (cAss).

**Diagnosis:** 4.2-5.0 mm. Habitus as in Fig. 106. Coloration variable, castaneous with blackish abdomen to blackish with slightly lighter elytra; legs light brown; antennae of variable coloration, light brown to dark brown, often with the central antennomeres slightly darker than the basal and apical ones.

Head weakly oblong, approximately 1.1 times as long as wide (Fig. 107); eyes small, less than half the length of postocular region in dorsal view and not projecting from lateral outline of head; puncturation distinct, relatively sparse, non-areolate, and rather fine; interstices on average wider than punctures; microsculpture usually absent from central dorsal area, visible only in posterior and lateral areas.

Pronotum approximately as wide as head or slightly narrower, weakly oblong; puncturation non-areolate, finer and denser than that of head, interstices narrower than punctures; microsculpture shallow, present at least in lateral areas of pronotum (Fig. 107).

Elytra small, only slightly wider than pronotum and at suture only approximately 0.8 times as long as pronotum; puncturation densely coriaceous; surface almost without shine (Fig. 107). Hind wings reduced.

Abdomen with very fine and dense puncturation, with distinct microsculpture, and with subdued shine; posterior margin of tergite VII without palisade fringe. Protarsomeres dilated in both sexes, with weak sexual dimorphism.

♂: protarsomeres I - IV slightly more dilated than in ♀; posterior margin of sternite VII very weakly concave, in the middle with fringe of weakly modified, long black setae (Fig. 108); sternite VIII posteriorly with deep emargination; aedeagus very distinctive (Figs. 109-110).

**Comparative notes:** This highly distinctive species is readily distinguished from its Western Palearctic congeners by the sparse, fine, and non-areolate puncturation

of the head, the reduced wings, the coriaceous elytra, and especially by the male sexual characters: the absence of palisade setae or distinctly modified setae at the almost truncate posterior margin of sternite VII, as well as the morphology of the aedeagus.

**Comments:** The types were not examined, but in view of the distinctive external morphology, sexual characters, and the restricted distribution, there are no doubts regarding the identity and interpretation of the species.

Based on the male primary and secondary sexual characters, *M. indigena* is most closely related to *M. feloi* Assing from the Canary Islands (see below). A closer relationship to the Madeiran endemic *M. vicentensis* Serrano, in contrast, is unlikely, based on the differences in the shape and chaetotaxy of the male sternite VII.

**Distribution and bionomics:** *Medon indigena* is endemic to the Madeiran archipelago and has been recorded from both Madeira proper and Porto Santo. While there are no recent records from the former, the species has repeatedly been found in Porto Santo in the past decade. Numerous specimens were sifted from leaf litter and rotting wood on the northern slopes of Pico Juliana, Pico do Castelo, and Pico Facho.

**3.25. *Medon feloi* Assing, 1998 (Fig. 111)***Medon feloi* Assing, 1998 (ASSING 1998: 143f).**Type examined:** See ASSING (1998).

**Diagnosis:** For a more detailed description see ASSING (1998).

4.1 mm. Coloration of whole body uniformly ferruginous. Head large (Fig. 111), weakly oblong; eyes reduced to minute rudiments, without ommatidia; puncturation fine and relatively sparse, interstices much wider than punctures; surface with pronounced microreticulation and almost matt.

Pronotum distinctly narrower than head; weakly, but noticeably oblong; puncturation very fine and sparse, barely noticeable; microreticulation pronounced (Fig. 111).

Elytra widest near posterior margin, anterior external angles almost obsolete; only slightly wider and at suture somewhat shorter than pronotum; puncturation more distinct and microsculpture much weaker than on head and pronotum; dorsal surface with distinct shine. Hind wings completely reduced.

Abdomen with moderately dense and very fine puncturation; posterior margin of tergite VII without palisade fringe.

♂: posterior margin of sternite VII of similar shape and chaetotaxy as in *M. indigena*; aedeagus as illustrated by ASSING (1998).

**Comparative notes:** This highly distinctive cave-dwelling species is readily distinguished from other Western Palearctic congeners by the completely reduced eyes, the reduced pigmentation and wings, and by the male sexual characters. The latter are highly similar to those of *M. indigena*, its presumable sister species. The only other species with (almost) completely reduced eyes known from the Western Palearctic region are *M. vicentensis* Serrano from Madeira and *M. antricola* from El Hierro.

**Distribution and bionomics:** *Medon feloi* is a true troglobite and endemic to La Palma, Canary Islands.

### 3.26. *Medon subterraneus* Coiffait, 1970

*Medon subterraneum* Coiffait, 1970a (COIFFAIT 1970a: 703f).

**Comments:** The holotype of this species, whose description is based on a single male from Ibiza without indication of the type depository, was looked for, but not found in the Coiffait collection and in the Zoological Museum in Barcelona. COIFFAIT (1970c) corrected the locality data, but failed to specify the whereabouts of the holotype. Until this specimen becomes available, an interpretation of the species must rely on the original description; additional material has not become known.

According to COIFFAIT (1970a), *M. subterraneus* is characterized especially by adaptive reductions resulting from a subterranean habitat and by the male sexual characters. The eyes are only one fourth the length of the postocular region, the hind wings are of reduced length, the abdominal tergite VII lacks a palisade fringe, and the posterior margin of the male sternite VII is shallowly concave and has a row of sparse, weakly modified marginal setae; the aedeagus is of similar general morphology as that of *M. dilutus*, *M. pocifer*, and related species.

## 4. KEY TO THE MEDON SPECIES OF THE WESTERN MEDITERRANEAN

In the key below, *M. subterraneus* (described from Spain: Ibiza) and *M. spelaeus* (southeastern Spain) are not accounted for, since no material has become available for study. *Medon angur* from Corsica is tentatively included in the key, although its male sexual characters are unknown. Based on external characters, this doubtful species is close to *M. rufiventris* and *M. dilutus*, so that even if it should prove to be a valid species, it can be expected to have similar male secondary sexual characters.

1. Eyes strongly to almost completely reduced, at most 1/5 the length of postocular region in dorsal view, without pigmentation or ommatidia. Atlantic Islands. .... 2
- Eyes at least 1/4 the length of postocular region, composed of at least some ommatidia. .... 4
2. Large species of at least 5 mm. Eye less strongly reduced, approximately 1/5 the length of temples in dorsal view; head distinctly oblong and posteriorly tapering. Legs and antennae very long and slender. ♂: posterior margin of sternite VII as in Fig. 42, with a tuft of long black setae on either side of middle; aedeagus as in Figs. 44-45. Endemic to El Hierro, Canary Islands; troglobite. .... *M. antricola* sp. n.
- Eyes reduced to minute rudiments. Smaller species. Sexual characters different. .... 3
3. Head about as wide as long (Fig. 71). Antennae long and slender; antennomere VII distinctly oblong (Fig. 72). Pronotum approximately as wide as long, distinctly tapering caudad, and with shallow, but rather well-defined and distinct puncturation (Fig. 71). Pro-tarsomeres I - IV dilated in both sexes. Elytra shorter. Posterior margin of ♂ sternite VII distinctly concave and with two combs of palisade setae; aedeagus: SERRANO (1993). Madeira: São Vicente. .... *M. vicentensis* Serrano
- Head noticeably oblong (Fig. 111). Antennae shorter; antennomere VII not oblong. Pronotum distinctly oblong, weakly tapering caudad, and with extremely fine, barely noticeable puncturation (Fig. 111). Pro-tarsomeres not distinctly dilated. Elytra longer. Posterior margin of ♂ sternite VII almost truncate, with two clusters of long black setae in the middle, but without palisade setae; aedeagus: ASSING (1998). Canary Islands: La Palma. .... *M. feloi* Assing
4. Posterior margin of ♂ sternite VII with more or less pronounced clusters of long black setae, but without combs of palisade setae. .... 5
- Posterior margin of ♂ sternite VII with two combs of palisade setae. .... 9
5. Head shining, with sparse, well-defined, non-areolate puncturation (Fig. 107). Elytra at suture distinctly shorter than pronotum (Fig. 107); hind wings reduced. Abdominal tergite VII without palisade fringe. ♂: posterior margin of sternite VII truncate to weakly concave, with a cluster of rather sparse black setae on either side of middle (Fig. 108); aedeagus broadly truncate apically (Figs. 109-110). Endemic to Madeira proper and Porto Santo. .... *M. indigena* (Wollaston)



- Head matt or nearly so due to very dense puncturation and/or pronounced microsculpture. Elytra at suture longer than pronotum; hind wings not reduced. Abdominal tergite VII with palisade fringe. ♂: posterior margin of sternite VII at least weakly bisinuate, with much more numerous black setae, and, in addition to lateral clusters, also with central cluster of black setae; aedeagus with bifid or with narrowly elongated apex (ventral view). The *M. apicalis* group. .... 6
- 6. Head with shallower and less coarse puncturation (Fig. 13). Puncturation of pronotum very fine, barely noticeable. Pronotum almost completely without shine due to pronounced microsculpture (Fig. 13). ♂: posterior margin of sternite VII with rather few and very slender black setae (Fig. 14); aedeagus with very long and slender ventral process of distinctive shape (Figs. 15-16). Canary Islands: Gran Canaria. .... *M. oronii* sp. n.
- Head with coarser puncturation. Puncturation of pronotum fine and often shallow, but dense and distinct. Pronotum with at least subdued shine. ♂: posterior margin of sternite VII in the middle with more numerous and stouter black setae (e.g. Fig. 3); with much shorter and apically bifid ventral process. .... 7
- 7. Head on average with slightly more distinct puncturation (Fig. 1). ♂: posterior margin of sternite VII in the middle with distinct convex projection (i.e. distinctly bisinuate) and, especially in the middle, with darker, stouter, and longer modified setae (Figs. 2-3); aedeagus with ventral process of distinctive morphology: deeply bifid, apices widely separated, and subapically dentate (Figs. 5-7). Italy, southern Switzerland, southeastern France (Map 3). .... *M. penniger* Coiffait
- Puncturation of head usually ill-defined and confluent. ♂: posterior margin of sternite VII in the middle weakly convex (i.e. more weakly bisinuate) or concave, with shorter and more slender modified setae. .... 8
- 8. ♂: posterior margin of sternite VII in the middle weakly convex; aedeagus compact and apically bifid (ASSING 2004a, figs. 1-3). Widespread in the Western Palearctic region, from the Atlantic Islands to Croatia and Bosnia-Herzegovina in the southeast (Map 2). .... *M. apicalis* (Kraatz)
- ♂: posterior margin of sternite VII in the middle weakly concave (Fig. 10); aedeagus with very long and apically acute ventral process (Figs. 11-12). N-Algeria, NW-Tunisia (Map 2) .... *M. sericellus* (Fairmaire)
- 9. Posterior margin of ♂ sternite VII with very deep and broad, trapezoid or concave emargination, with two combs of palisade setae, and, except for one species (*M. ripicola*), additionally with numerous long black setae on either side of the middle, usually grouped in more or less distinct tufts. Protarsi at most weakly dilated and without sexual dimorphism. Aedeagus either with apically truncate or with distinctly elongated ventral process of highly distinctive shape. Elytra distinctly wider and at suture longer than pronotum. The *M. fuscus* species group ..... 10
- Posterior margin of ♂ sternite VII with shallower excavation and – except for one species from the Canary Islands – without (tufts of) long black setae on either side of the middle; sternite VIII usually with smaller emargination posteriorly. .... 13
- 10. Posterior margin of ♂ sternite VII with deep excavation of distinctly trapezoid shape and on either side of middle with long thin setae not arranged in distinct tufts. Aedeagus apically truncate (ASSING 2004a, figs. 66-71). Widespread species; distribution ranging from Great Britain to the Middle East, but absent from the southwestern Mediterranean (Map 11). .... *M. fuscus* (Mannerheim)
- Posterior excavation of ♂ sternite VII either shallower or not distinctly trapezoid, on either side of middle either without or with tufts of stout black setae. Aedeagus with apically distinctly elongated ventral process. .... 11
- 11. Larger and on average darker species (Fig. 95), forebody brown to dark brown; head only slightly darker than pronotum. Posterior margin of ♂ sternite VII as in Fig. 96. Aedeagus as in Figs. 98-99. Endemic to Sardinia. .... *M. sardous* Doderò
- Smaller and more distinctly bicoloured species, pronotum usually rufous and distinctly contrasting with the blackish or blackish brown head. ♂ sexual characters different. .... 12
- 12. Protarsomeres I-IV not dilated, protarsomere II approximately as wide as long; posterior margin of sternite VII in the middle obtusely angled, on either side of middle without tufts of stout black setae; aedeagus distinctive (ASSING 2004a, figs. 118-120), apically in ventral view narrowly and deeply incised. Widespread from NW-Africa, the Canary Islands and the Azores to southern Scandinavia, Lithuania, Poland, Bulgaria, and Montenegro (Map 12). .... *M. ripicola* (Kraatz)
- Protarsomeres I-IV slightly dilated, protarsomere II much wider than long; posterior margin of sternite VII with trapezoid excavation, in the middle trun-

- cate, on either side of middle with a tuft of stout black setae (Fig. 102); aedeagus distinctive (Figs. 104-105), apically in ventral view without narrow deep incision. Algeria (Map 12). *M. kabylicus* sp. n.
13. ♂: protarsi I-IV unmodified, in one species weakly dilated; aedeagus apically rounded, truncate, or with obtuse or rounded apico-lateral angles. .... 14
- ♂: protarsi I-IV more or less strongly dilated; aedeagus apically either incised or with the apical and the lateral margins meeting at an acute angle; ventral process not strongly elongated. .... 18
14. Eyes very small, about one fourth the length of temples in dorsal view (Fig. 90). ♂: aedeagus as in Figs. 92-94. Known only from one locality in northern Algeria. .... *M. mirei* Coiffait
- Eyes larger, more than one third the length of temples in dorsal view. Aedeagus different. More widespread species. .... 15
15. Head with finer puncturation (Figs. 74-75). Head and pronotum usually blackish. ♂: aedeagus as in Figs. 77-78. From the south of the Iberian Peninsula to southern England and Central Europe. Absent from NW-Africa, the Balkans, and apparently also from Austria and from central and southern Italy (Map 9). .... *M. piceus* (Kraatz)
- Head with very coarse puncturation. Head and pronotum usually (but not always!) rufous to dark brown. ♂: aedeagus of different shape. .... 16
16. Of larger average size and often with relatively larger head (though these characters are subject to considerable intraspecific variation). Elytra usually shorter, at suture approximately as long as pronotum. ♂: aedeagus larger (ASSING 2004a, figs. 40-41). From the Bosphorus, Greece, and southern mainland Italy in the south and southeast to southern Scandinavia, southern England, western France in the north and west (Map 8). Distribution in the Iberian Peninsula limited to the northeast (Cataluña). ...  
..... *M. brunneus* (Erichson)
- On average smaller and with relatively smaller head. Elytra at suture usually at least slightly longer than pronotum, only in brachypterous morph of *M. despectus* as long as pronotum. ♂: aedeagus smaller and of different shape. NW-Africa, Iberian Peninsula, and SW-France. .... 17
17. ♂: ventral process of aedeagus of trapezoid shape in ventral view (Figs. 82-84). Distribution: Morocco to SW-France. .... *M. cauchoisi* Jarrige
- ♂: ventral process of aedeagus apically rounded in ventral view (Figs. 88-89). Confirmed records only from Tunisia and Algeria. *M. despectus* (Fairmaire)
18. Head and pronotum with conspicuously coarse and well-defined puncturation; punctures of head areolate and very dense, interstices reduced to narrow ridges. Abdomen with rather sparse puncturation. ♂: aedeagus as figured by ASSING (2004a). Predominantly Eastern Mediterranean species, ranging from eastern Anatolia to southeastern Austria, the Czech Republic, and Slovakia. . *M. ferrugineus* (Erichson)
- Head and pronotum with finer puncturation; punctures of head not areolate. Abdomen with very dense and fine puncturation. ♂: aedeagus of different shape. .... 19
19. Very large species, body length usually >6.0 mm. Legs and antennae very slender; metatarsi almost as long as metatibiae. Sexual dimorphism of protarsi distinct, protarsomeres I - IV more strongly dilated in male than in female. ♂: aedeagus very long and slender. .... 20
- Smaller species, body length in normal preparation usually <6.0 mm. Legs and antennae not conspicuously long and slender; metatarsi much shorter than metatibiae. ♂: aedeagus much shorter and less slender. .... 21
20. Largest species in the Western Palaearctic region, 7.0-9.0 mm (Fig. 53). Coloration uniformly ferruginous. Head very large and of ellipsoid shape, lateral margins convex and posterior angles almost obsolete (Fig. 54). Length of metatibia 1.7 - 1.8 mm. ♂: sternite VII more oblong and posterior concavity shallower in relation to length of sternite (Fig. 55); aedeagus longer and with longer and more slender ventral process (Figs. 56-57). Known only from caves near Madrid. .... *M. procerus* (Perez Arcas)
- Usually smaller, 6.0-8.0 mm (Fig. 46). Head, most of pronotum, and anterior segments of abdomen blackish. Head of subquadrangular shape and with more distinct posterior angles (Fig. 47). Length of metatibia at most 1.4 mm. ♂: sternite VII less oblong and posterior concavity relatively deeper (Fig. 48); aedeagus shorter and with less slender ventral process (Fig. 49-52). Widespread from the south of the Iberian Peninsula to southern England, southern Scandinavia, and Central Europe (Map 6). ....  
..... *M. castaneus* (Gravenhorst)
21. Protarsomeres I - IV strongly dilated in both sexes (Fig. 59); meso- and metatarsomeres III and IV at least weakly transverse and almost cordiform. Head relatively large, weakly transverse, and somewhat flattened (Fig. 58). ♂: sternite VII and aedeagus as figured by ASSING (2004a). Confined to the coasts (under shingles and sea-weed) of western Europe, eastwards to Montenegro. .... *M. pocofer* (Peyron)



- Protarsomeres I - IV less strongly dilated; meso- and metatarsomeres III and IV oblong and not cordiform. Head not flattened. ♂: aedeagus of different shape. Species not usually occurring in coastal habitats. .... 22
- 22. Head distinctly oblong (Figs. 33-34); head and pronotum with pronounced microsculpture and very fine puncturation (Fig. 34). ♂: posterior margin of sternite VII with distinct tufts of long dark setae on either side of middle (Fig. 35); aedeagus as in Figs. 36-37. Endemic to Canary Islands. .... *M. subcoriaceus* (Wollaston)
- Head at most weakly oblong; head and pronotum usually with very shallow microsculpture and with coarser puncturation; exceptionally the microsculpture may be pronounced. ♂: posterior margin of sternite VII without distinct tufts of long dark setae on either side of middle; aedeagus of different shape. .... 23
- 23. Puncturation of head coarser, in dorso-median area sparser than in lateral areas. On average smaller species, 3.5 - 5.0 mm. .... 24
- Puncturation of head finer and evenly distributed, in dorso-median area as dense as in lateral areas. On average larger species, 4.0 - 6.0 mm. Aedeagus as in Figs. 24-28. .... 26
- 24. Large species of about 5.0 mm. Eyes smaller, weakly prominent and less than one third the length of postocular region in dorsal view (Fig. 73). Corsica. .... *M. augur* Fauvel
- Smaller species of 3.5-4.5 mm. Eyes larger, distinctly projecting from lateral outline of head and about half the length of postocular region in dorsal view. .... 25
- 25. Head on average more transverse and often slightly dilated posteriorly. ♂: aedeagus with apical incision (ASSING 2004a, figs. 57-58). Widespread, from Caucasus region and Anatolia to Spain; confirmed records from NW Africa absent (Map 7). .... *M. rufiventris* (Nordmann)
- Head on average less transverse and usually not dilated posteriorly (Figs. 62-65). ♂: aedeagus without apical incision (Figs. 67-69). Known only from Tunisia and Algeria (Map 7). .... *M. africanus* (Fauvel)
- 26. Coloration of body more or less uniformly rufous to ferrugineous. Eyes slightly smaller. Elytra at suture approximately as long as pronotum (Figs. 17-21, 25-26). Unknown from North Africa and the Atlantic Islands. .... 27
- Head, usually at least the central part of the pronotum, and abdominal segments III - VII blackish.

Eyes slightly larger and more prominent. Elytra at suture distinctly longer than pronotum (Figs. 30-32). Azores, Canary Islands, NW-Africa, Sicily (Maps 4, 5). .... *M. dilutus quadriceps* (Wollaston)

- 27. ♂: apex of aedeagus (ventral view) with subparallel lateral margins, pronounced apico-lateral angles, and with small median incision (Figs. 27-29). Southern mainland Italy and Central Europe. Unconfirmed records also from southern Scandinavia (Maps 4, 5). .. *M. dilutus dilutus* (Erichson)

- ♂: apex of aedeagus (ventral view) with convex lateral margins, indistinct apico-lateral angles, and with large median incision (Figs. 22-23). Southwestern Europe, Sardinia, southern England (Maps 4, 5). ..... *M. dilutus cephalus* Koch

## 5. THE *MEDON* SPECIES OF THE EASTERN MEDITERRANEAN AND ADJACENT REGIONS: ADDENDA

Below, the material that has become available since the submission of the first part of the revision is listed. The records are commented on only when they are outside the known range of the species (see ASSING 2004a, 2004b).

### *Medon marouitus* (Saulcy, 1864)

#### Additional material examined:

**Macedonia:** 6 exs., Vardar plain, leg. Schatzmayr (NHMW, cAss). **Israel:** 12 exs., Galilee, Safad, 500 m, 30.V.1973, leg. Löbl (MHNG, cAss); 5 exs., Galilee, Mt. Meron, 900 m, 27.V.1973, leg. Löbl (MHNG, cAss). **Azerbaijan:** 2 exs., Talysh mts., road Lenkoran-Lerik km 14-18, 30.IV.-9.V.2001, leg. Lackner (cAss); 1 ex., Talysh mts., Masalli – Isti Su, 10.-13.V.2001, leg. Lackner (cAss).

### *Medon bucharicus* Bernhauer, 1902 (Figs. 112-116)

*Medon bucharicus* Bernhauer, 1902 (BERNHAUER 1902: 244).

**Types examined:** Lectotype ♂, present designation: ♂ / Buchara Staudinger / bucharicus Brh. Centralasien Type / Dr. M. Bernhauer donavit 29.IV.1942 / ex coll. Scheerpeltz / Typus *Medon bucharicus* Dr. Bernhauer / Lectotypus *Medon bucharicus* Bernhauer desig. V. Assing 2003 (NHMW). Paralectotypes: 1♂: same data as lectotype (NHMW); 1♂: same data, but “♀ / ... / Cotypus *Medon bucharicus* ...” (NHMW).

#### Additional material examined:

**Tajikistan:** 2 exs., Pamir Alai, Hissar Mts., Adshuk-cleft near Warsob, 1200 m, 1.-3.VII.1990, Schülke & Wrase (cSch); 1 ex., Hissar Mts., Warsob Valley, Siddi, 2000 m, 29.VI.1990, leg. Schülke & Wrase (cAss);

1 ex., Seravshan Mts., locality illegible, 1. VI. 1984, leg. Michailov (cSch). **Kirghizia:** 7 exs., Ferganskiy Alatau, Yarodar, 1400-1500 m, 16.-19.V.1993, leg. Schawaller (SMNS, cAss).

**Comments:** The original description is based on an unspecified number of syntypes. In order to secure the present interpretation of the species, one of the syntypes in the collections of the NHMW is here designated as lectotype.

*Medon bucharicus* was previously attributed to *Hypomedon* e.g. by COIFFAIT (1984), who, on p. 15 of the same work, however, mentions the same species as *Medon* in a footnote. As can be inferred especially from the morphology of the male sexual characters, the species doubtlessly belongs to the *Medon apicalis* group.

**Diagnosis:** 3.6-4.4 mm. Habitus as in Fig. 112. Head and pronotum castaneous to dark brown, head sometimes slightly darker than pronotum; elytra rufous to brown; abdomen brown to dark brown with lighter apex; legs and antennae rufous to brown.

Coloration somewhat variable; usual coloration: castaneous to blackish brown, with the head usually slightly darker than pronotum and elytra; legs and antennae testaceous yellowish brown, with the basal antennomeres usually reddish brown to ferrugineous.

Head 1.10 – 1.15 times as long as wide (Fig. 113); eyes of variable size, slightly more than half the length of postocular region in dorsal view, or much smaller, ca. one third the length of postocular region; integument with distinct microreticulation and with moderately dense, relatively shallow, but relatively large punctures. Antennae slender, preapical antennomeres only indistinctly transverse.

Pronotum weakly oblong, approximately as wide as head; microsculpture similar to that of head, but puncturation much finer, sparser, shallower, and ill-defined (Fig. 113).

Elytra at suture slightly longer (large-eyed specimens) (Fig. 112) or shorter (small-eyed specimens) than pronotum; puncturation dense and somewhat granulose; microsculpture indistinct, surface with much more shine than head and pronotum.

Legs relatively slender; metatarsi rather long, all tarsomeres much longer than wide, second tarsomere about 2.5 - 3.0 times as long as wide.

Abdomen with fine and moderately dense puncturation and with pronounced microsculpture; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of sternite VII broadly and shallowly concave, and with cluster of modified black setae (Fig. 114); sternite VIII posteriorly broadly and deeply excavate; aedeagus of similar morphology as in *M. maronitus*, but larger, broader (ventral view), and in lateral view apically more distinctly dentate (Figs. 115-116).

**Comparative notes:** *Medon bucharicus* is somewhat similar to *M. maronitus*, but distinguished by larger body size, more uniform coloration of head and pronotum (in *M. maronitus*, the head is usually much darker than the pronotum), less dense puncturation of the head, clearly longer antennae, a much more strongly microsculptured and less densely punctured pronotum, relatively shorter elytra, longer tarsi (in *M. maronitus* the second metatarsomere is less than twice as long as wide), a different shape and chaetotaxy of the male sternite VII, a much deeper posterior emargination of the male sternite VIII, and a larger and broader aedeagus.

From *M. perniger* and *M. apicalis*, *M. bucharicus* is readily distinguished by less dense and less coarse puncturation of the head, by more pronounced microsculpture of the pronotum, by relatively smaller elytra, shorter metatarsi, and by different male sexual characters.

**Intraspecific variation:** Apparently, there are two morphs: the type specimens from Uzbekistan have relatively large eyes (more than half the length of postocular region in dorsal view) and longer elytra (Figs. 112-113), whereas the material seen from Tajikistan has small and weakly prominent eyes (about one third of the length of postocular region) and shorter elytra. However, the male primary and secondary sexual characters are essentially the same, so that the observed differences are attributed to intra- rather than interspecific variation.

**Distribution and bionomics:** *Medon bucharicus* has become known only from Tajikistan, Kirghizia, and Uzbekistan in Middle Asia. The specimens examined were collected at altitudes of 1200-2000 m during the period from May through July.

#### *Medon cerrutii* Coiffait, 1976

##### **Additional material examined:**

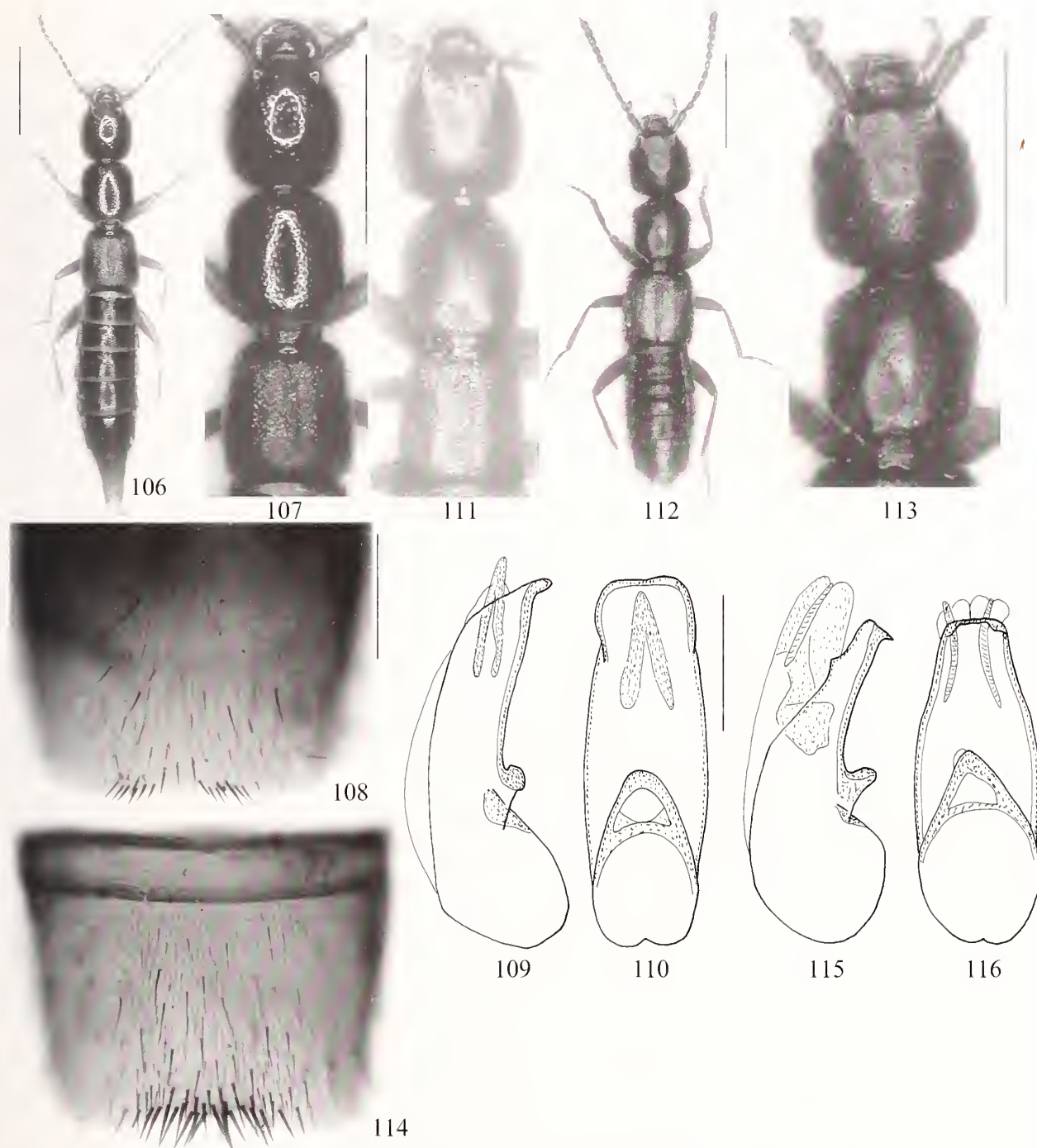
Crete: 6 exs., Zakros, 28.III.1973, leg. Meybohm & Fülischer (MHNG); 1 ex., Zakros, 20.III.1975, leg. Meybohm & Fülischer (MHNG).

#### *Medon subquadratus* Assing, 2004

##### **Additional material examined:**

**Turkey: Adana:** 2 exs., Kozan, 300 m, 5.V.1967, leg. Besuchet (MHNG, cAss).





**Figs. 106-116.** *Medon indigena* (Wollaston) (106-110), *M. feloi* Assing, holotype (111), and *M. bucharicus* Bernhauer (112-116; 112, 113: lectotype): habitus (106, 112); forebody (107, 111); male sternite VII (108, 114); aedeagus in lateral and in ventral view (109-110, 115-116); head and pronotum (113). Scale bars: 106-107, 111-113: 1.0 mm; 108-110, 114-116: 0.2 mm.

***Medon guignoti* Coiffait, 1987**

**Additional material examined:**

**Greece:** 14 exs., Serrai, Hagiai Ioannis, wet moss, 17.VIII.1964, leg. Puthz (MHNG, cAss).

***Medon semiobscurus* (Fauvel, 1875)**

*Medon ruber* Sahlberg, 1908 (SAHLBERG 1908: 33f) **syn. n.**

*Medon sahlbergi* Scheerpeltz, 1933 (SCHEERPELTZ 1933: 1255) [replacement name for *Medon ruber* Sahlberg] **syn. n.**

**Types examined:** *Medon ruber*: Lectotype ♂, here designated: Galilea / Vall. Kison / J. Sahlb. / Spec. typ. / 2410 / Mus. Zool. H:fors Spec. typ. No. 875 *Medon ruber* J. Sb. / Lectotypus *Medon ruber* Sahlberg desig. V. Assing 2003 / *Medon semiobscurus* (Fauvel) det. V. Assing 2003 (ZMH). Paralectotype ♀: same data as lectotype (ZMH).

**Additional material examined:**

**Turkey:** 14 exs., Muğla, Marmaris, V.1969, leg. Fagel (IRSNB); 4 exs., Antalya, Sugözü near Alanya, 15.III.2000, leg. Esser (cEss); 1 ex., Antalya, Akseki, 14.III.2000, leg. Esser (cEss); 1 ex., Antalya, Taşkesigi, 17.III.2000, leg. Esser (cEss); 1 ex., Antalya, Side, 13.III.2000, leg. Esser (cEss); 2 exs., Antalya, Killik, cave entrance, 780 m, 2.-4.VI.2003, leg. Lohaj (cSch); 11 exs., Kilik, 800 m, 3.VI.2003, leg. Smatana (cSch, cAss).

**Syria:** 1 ex., Caifa (?), leg. Simon (NHMW)

**Israel:** 1 ex., Carmel ridge, Dalya/Galed, 19./30.III.1995, leg. Sama (cZan); 3 exs., Mt. Carmel, Little Switzerland, 28.V.1973, leg. Löbl (MHNG).

**Iran:** 1 ex. [macropterous], Central Iran, Shapoor (NHMW).

**Comments:** The original description of *M. ruber* Sahlberg – a preoccupied name later replaced by *M. sahlbergi* Scheerpeltz, 1933 – is based on an unspecified number of syntypes. In order to secure the present interpretation of the name, the male syntype in the collections of the ZMH is here designated as the lectotype. The two type specimens belong to the short-winged, microsculptured and light-coloured morph of *M. semiobscurus* (see ASSING 2004a), so that *M. ruber* and its replacement name *M. sahlbergi* are synonymized with the senior name *M. semiobscurus* (Fauvel).

**Distribution:** *Medon semiobscurus* is here recorded from Syria and Iran for the first time.

***Medon dilutus pythonissa* (Saulcy, 1864)**

*Medon pythonissa* (Saulcy, 1864); ASSING (2004a).

**Additional material examined:**

**Greece: Thrakia:** 3 exs., Nomós Xánthi, Nestos near Toxótes, 25.IV.1994, leg. Schawaller (SMNS, cAss).

**Turkey:** 4 exs., Mersin, Tönük, 380m, 8.VII.1987, leg. Gardini. Rizzo, Zoia (cZan); 5 exs., Balıkesir, Ayvalık, 15.VII.1969, leg. Besuchet (MHNG); 1 ex., Istanbul (NHMW); 2 exs., Antalya, Sugözü near Alanya, 15.III.2000, leg. Esser (cEss); 2 exs., Antalya, Güçlüköy near Akseki, 14.III.2000, leg. Esser (cEss); 3 exs., Antalya, Kilik, 800 m, 3.VI.2003, leg. Smatana (cSch, cAss).

**Ukraine:** 1 ex., Crimea, Jalta (NHMW); 2 exs., Odessa, Lusanwskij forest, rotting leaves, 22.X. 2003, leg. Gontarenko (cAss).

**Jordan:** 1 ex., Amman, 800 m, 25.III.1958, leg. Klapperich (MHNG).

**Caucasus region:** 1 ex., “Kaukas” (NHMW).

This taxon was previously referred to as *M. pythonissa* by ASSING (2004a), but is here regarded as a subspecies of *M. dilutus*. For further details see Section 3.5.

***Medon ferrugineus* (Erichson, 1837)**

**Additional material examined:**

**Austria:** 2 exs., Niederösterreich, Mistelbach, oak forest, 11.V.2002, leg. Zanetti (cZan); 3 exs., Bad Deutsch Altenburg, leg. Blühweiss (MHNG, cAss).

**Locality not identified:** 3 exs., “Hackelsberg” (MHNG).

**Slovakia:** 1 ex., Štúrovo, VI.1963, leg. Rous (cBor); 3 exs., Kováčova, leg. Roubal (MHNG); 2 exs., Nitra, Zobor, 27.IX.1980, leg. Moravec (cKöh); 2 exs., Bratislava, Svatý jur, 220 m, 26.VI.1991, leg. Behne (DEI, cAss); 1 ex., Plášťovce, 14.IV.2000, leg. Hlaváč (cAss).

**Romania:** 1 ex., Comana Vlasca, leg. Montadon (MHNG); 2 exs., Cheile Turzii, 20.IV.1962, leg. Comellini (MHNG, cAss).

**Bulgaria:** 1 ex., Stara planina, VI.1968, leg. Rous (Bor).

**Macedonia:** 1 ex., Keretschkoi, leg. Schatzmayr (MHNG); 1 ex., Vardar plain, leg. Schatzmayr (MHNG).

**Greece:** 1 ex., Thessaloniki, leg. Schatzmayr (MHNG).

***Medon beroni* Coiffait, 1969**

**Additional material examined:**

**Greece, Crete:** 1 ex. [aedeagus teratological], W-Crete, Rethimnon, Dramia, bank of Mouselas river, IV.1997, leg. Feldmann (cFel).

***Medon lindbergi* Scheerpeltz, 1958**

**Additional material examined:**

**Israel:** 49 exs. [partly teneral], Mt. Carmel, Little Switzerland, 28.V.1973, leg. Löbl (MHNG, cAss); 9 exs., Galilee, below Safad, 500 m, 30.V.&14.VI.1973, leg. Löbl (MHNG, cAss); 1 ex., Galilee, Ginosar, 20.-21.V.1973, leg. Löbl (MHNG); 3 exs., 3 km E Ginosar, 24.V.1973, leg. Löbl (MHNG).



*Medon fusculoides* Coiffait, 1969

## Additional material examined:

**Iran:** 1 ex., Fars, Sivand, 30°07'N, 52°58'E, 10.VI.1974, leg. Senglet (MHNG); 1♀ [identification uncertain], Kohkiluyeh, Charam, 30°44'N, 50°44'E, 23.V.1974, leg. A. Senglet (MHNG).

*Medon lamugo* Assing, 2004

## Additional material examined:

**Turkey: Antalya:** 1 ex., ca. 30 km N Akseki, Bademli, Bademli geçidi, 2.-3.V.2001, leg. Lohaj (cAss).  
**Amasya:** 3 exs., Amasya-Ezinepazari, 22.V.1967, leg. Besuchet (MHNG).

The species was previously unknown from Amasya province (ASSING 2004a).

*Medon sparsiventris* Eppelsheim, 1889

## Additional material examined:

**Azerbaijan:** 2 exs., Masally, Istisu W Masally, 300 m, 18.-19.VI.1996, leg. Schawaller (SMNS).

## 6. THE *MEDON* SPECIES OF THE EASTERN MEDITERRANEAN AND ADJACENT REGIONS: CORRIGENDA

The recently published revision of the *Medon* species of the Eastern Mediterranean and adjacent region (ASSING 2004a) is unfortunately based on an early draft of the manuscript and not a revised version submitted to the editorial staff approximately one year prior to publication (18 June, 2003), in which the omission of a paper by COIFFAIT (1987) on two homonymies was corrected. In consequence, the revision contains a number of errors that require emendation. The following corrections (underlined) are proposed:

p. 33, abstract: ll. 5 f.: The previously unknown male sexual characters of *M. guignoti* Coiffait, 1987 are described. ll. 17 ff.: ... = *M. besucheti* Bordoni, 1980, **syn. n.**; *M. lydicus* Bordoni, 1980 = *M. mimulus* Fagel, 1970, **syn. n.**, = *M. rhodicus* Franz, 1987, **syn. n.**, = *M. choparti* Coiffait, 1987, **syn. n.**; *M. fusculoides* Coiffait, 1969 ...

p. 35, 3<sup>rd</sup> paragraph, ll. 1 ff.: Six species groups are present in the studied region: The *M. apicalis* group (3 species), the *M. petrochilos* group (7 species),  
 ... same paragraph, ll. 17 ff.: *M. guignoti*, *M. petrochilos*, *M. seleucus*, *M. cerrutii*, and *M. caricus*, which he referred to four different groups, are evidently closely related and here all included in the *M. petrochilos* group, ...

p. 35, 5<sup>th</sup> paragraph, ll. 2 ff.: ... the Mediterranean region, the *M. petrochilos* and the *M. fuscus* group are confined to the Eastern Mediterranean. The known distribution of the *M. petrochilos* group ...

p. 35, 6<sup>th</sup> paragraph, ll. 8 ff.: ..., e. g. the majority of species of the *M. petrochilos* group (*M. guignoti*, *M. cerrutii*, *M. seleucus*, *M. impar*, *M. subquadratus*).

p. 35, 7<sup>th</sup> paragraph, ll. 1 f.: The distribution patterns within the *M. apicalis* and the *M. petrochilos* group, ...

p. 41, 3<sup>rd</sup> paragraph, ll. 5 f.: *M. cerrutii* is the sole representative of the *M. petrochilos* group in Crete ...

p. 41: **3.6. *Medon guignoti* Coiffait, 1987 (Figs. 20-23, Map 4)**

*Medon coriaceum* Coiffait, 1969: 714f. (preoccupied).

*Medon guignoti* Coiffait, 1987: 497 (replacement name).

p. 42, legend to Figs. 20-23: *Medon guignoti* Coiffait: Aedeagus ...

p. 42, section 3.6, comparative notes, ll. 1 f.: From *M. cerrutii*, *M. petrochilos*, *M. caricus*, and related species, *M. guignoti* is distinguished ...

p. 43, legend to Map 4: Distributions of *Medon petrochilos* Coiffait (filled circles) and *M. guignoti* Coiffait (squares) in the Balkans, except for the type locality of *M. guignoti* based on revised records.

p. 44, Distribution and bionomics, ll. 5 ff.: ... but due to the external similarity of the species of the *petrochilos* group, their identification is uncertain. ..., the species was found together with *M. lydicus*, *M. fuscus*, and *M. semiobscurus*.

p. 45, Comparative notes, ll. 1 ff.: *M. seleucus* is readily separated from *M. cerrutii*, *M. caricus*, *M. guignoti*, *M. petrochilos*, and *M. impar* by the ...

p. 62, Distribution and bionomics, ll. 18 f.: ... the species was found together with *M. lydicus*, *M. caricus*, and *M. semiobscurus*.

p. 63: legend to Map 12: Distributions of *Medon beroni* Coiffait (squares), *M. subfuscus* Fagel (open circles), and *M. lydicus* Bordoni (filled circles) ...

p. 69, legend to Figs. 94-97: *Medon lydicus* Bordoni: Aedeagus ...

- p. 69: 3.24. *Medon lydicus* Bordini, 1980 (Figs. 94-97, Map 12)

*Medon lydicum* Bordini, 1980a: 114ff.

*Medon umbilicatum* Coiffait, 1970: 102ff.; **syn. n.** (preoccupied).

*Medon mimulus* Fagel, 1970: 157f. ; **syn. n.** (preoccupied)

*Medon rhodicum* Franz, 1987: 76ff.; **syn. n.**

*Medon choparti* Coiffait, 1987: 497; **syn. n.** (replacement name for *M. umbilicatus*).

- p. 70, Comparative notes: *M. lydicus* is distinguished from other species of the *fuscus* group only by the ...

- p. 70, Comments: delete last three paragraphs and replace with:

A comparison of the type material indicated above revealed that *M. umbilicatus* and *M. mimulus* are conspecific. The descriptions of both species were published in 1970; that of *M. umbilicatus* was published on June 30 (HERMAN 2001), whereas the date provided on the front cover of the issue containing the description of *M. mimulus* is September 15 (A. SMETANA, Ottawa, pers. comm. 2002). Both names are preoccupied, so that neither of them is eligible as the valid name of the species. *Medon umbilicatus* Coiffait is a primary junior homonym of *M. umbilicatus* Cameron, 1924 and *M. mimulus* Fagel is a secondary junior homonym of *Lithocharis mimulus* Casey, 1886, which is now in *Medon*.

Two species are represented in the type series of *M. lydicus*. The paratype belongs to *M. semiobscurus* (Fauvel); the holotype is conspecific with *M. umbilicatus* and the other names listed above. Since *M. lydicus* is the oldest unpreoccupied name, it is to be regarded as the valid name of the species. *Medon choparti* Coiffait is a replacement name for *M. umbilicatus* Coiffait and consequently a junior synonym of *M. lydicus* Bordini.

An examination of the types of *M. rhodicus* Franz revealed that they are not specifically distinct from *M. umbilicatus*, so that *M. rhodicus* is here synonymized with the senior name *M. umbilicatus*.

- p. 77, Key, couplet 3, ll. 8 f.: ... modified setae. The *M. petrochilos* group.
- p. 78, couplet 9, l. 10: ..... *M. gnignoti* Coiffait
- p. 80, couplet 30, l. 8: ..... *M. lydicus* Bordini

- p. 81, after Coiffait (1984) insert: COIFFAIT H. (1987): *Nouvelles corrections homonymiques* (Col. Staphylinidae). *Nouvelle Revue d'Entomologie* 3 (4) (1986): 497-498.

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**Author's address:** Dr. Volker ASSING, Gabelsbergerstraße 2, D-30163 Hannover, Germany; E-mail: [vassing.hann@t-online.de](mailto:vassing.hann@t-online.de)

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