

GIANLUCA NARDI (\*) and DAVID MIFSUD (\*\*)

THE ADERIDS OF THE MALTESE ISLANDS  
(CENTRAL MEDITERRANEAN)  
(Coleoptera, Aderidae)

INTRODUCTION

The Aderidae is a small family of beetles within the Heteromera with about 1200 species worldwide (Lawrence et al., 1990). All genera are in need of revision and their phylogenetic relationships within the family are unknown (cf. Lawrence & Newton, 1995). Little information is available on their biology, and only a few larvae have been described (Hayashi, 1972; Lawrence et al., 1990; Young, 1991; Yanega & Leschen, 1995).

Only one species has been recorded from the Maltese Islands (Cameron & Caruana Gatto, 1907). The study of recently collected material, confirmed the presence of this species and adds a new record.

The following works were consulted for species identifications: Báguena Corella (1948), Borowiec & Tarnawski (1983), Kaszab (1956, 1969), Pic (1903), Porta (1934) and Werner (1990).

The classification and sequence of species follow the checklist of the Italian Fauna (Angelini et al., 1995). All material was collected by one of us (DM), and is deposited in the collections of the authors.

FAUNISTIC LIST

**Aderus populneus** (Creutzer in Panzer, 1796)

*Euglenes populneus* Panz.: Cameron & Caruana Gatto, 1907: 399

*Hylophilus (Hylophilus) populneus* Panz.: Luigioni, 1929: 668; Porta, 1934: 18

*Hylophilus populneus* Panz.: Cilia, 1989: 124

DATA FROM MALTA: Cameron & Caruana Gatto (1907) recorded this species from Malta "Ta Baldu"; the citations of Luigioni (1929 "Mal."), Porta (1934 "Malta") and Cilia (1989 "rare locally?") are based on this record.

(\*) Via Galileo Galilei, 14 - 04012 Cisterna di Latina (LT), Italy.

(\*\*) Naturhistorisches Museum, Augustinergasse, 2 - CH-4001, Basel, Switzerland.

MATERIAL EXAMINED. MALTA: Buskett, 2.VII.1996, 1 ex., 12.II.2000, 1 ex.; Ghammieri (Marsa), 14.XII.1993, 1 ex., under bark of *Eucalyptus*, 4.I.1994, 1 ex., on *Ficus* (?) *nitida*, 19.II.2000, 1 ex., under bark of *Eucalyptus*; Girgenti, 8.X.1996, 3 exs.; Wied Badù, 17.IV.1994, 1 ex., on *Pistacia lentiscus*; Zejtun, 2.I.1990, 1 ex., 5.VI.1991, 1 ex., 19.IX.1996, 1 ex.

CHOROTYPE AND DISTRIBUTION. Turano-Europeo-Mediterranean species (sensu Vigna Taglianti et al., 1999), introduced and established in North America. It is recorded from Albania, Austria, Byelorussia, "Caucasus", Czech Republic, Denmark, Estonia, Germany, Finland, France (including Corsica), Georgia, Greece, England, Hungary, Italy (including Elba, Sardinia, Sicily and Pantelleria Islands), Latvia, Lithuania, Malta, The Netherlands, Norway, Poland, Portugal, Rumania, European Russia, Spain (including Balearic Islands and Gibraltar), Slovakia, Sweden, Switzerland, European Turkey, Ukraine, former Yugoslavia; Algeria, Egypt, Morocco, Tunisia; Anatolia, Israel, Kazakhstan, Lebanon, Syria, Turkmenistan, Uzbekistan; Canada and U.S.A. (cf. Ragusa, 1875; Favre, 1890; Heyden, 1893; Ragusa, 1898; Pic, 1903; Montandon, 1908; Jacobson, 1915; Luigioni, 1929; Fuente, 1933; Porta, 1934; Depoli, 1938; Báguena Corella, 1948; Buck, 1954; Horion, 1956; Kaszab, 1956; Medvedev, 1965; Brakman, 1966; Alfieri, 1976; Tóth, 1981; Borowiec & Tarnawski, 1983; Lucht, 1987; Werner, 1990; Jelínek, 1993; Lundberg, 1995; Alexandrovitch et al., 1996; Barševskis, 1996; Nikitsky et al., 1996).

The generic citations for Europe, Asia and Africa (Pic, 1910) and for "Reg. pal." (Winkler, 1927) are arbitrary generalizations.

*Aderus populneus* var. *biskrensis* (Pic, 1893) described from Biskra (Algeria) was listed by Jacobson (1915) as a valid subspecies, but this opinion was not followed by other authors (cf. Winkler, 1927; Normand, 1936; Báguena Corella, 1948; Kocher, 1956). This taxon was also recorded from Tunisia (Normand, 1936) and Morocco (Kocher, 1956) in sympatry with the typical form.

ECOLOGY. *A. populneus* was collected in vegetable debris, under bark of different tree species, in rotten wood, on the leaves of trees (mainly broadleaf trees: *Quercus*, *Fagus*, *Acer*, *Populus*, *Ulmus*, *Platanus*, *Tilia*, etc.), and by sweeping (cf. Horion, 1956; Koch, 1989; Nikitsky et al., 1996). The larvae develop in rotten wood (Pic, 1903, 1905; Nikitsky et al., 1996), "particularly the red wood mould often found in the middle of decaying trees" (cf. Buck, 1954), feeding on fungi (Deuteromycetes or Ascomycota) (Nikitsky et al., 1996). Pic (1903: 75, footnote; 1905: 282) hypothesized that the larva could be a parasite of xylophagous Cossoninae (Coleoptera, Curculionidae), but this hypothesis was not later confirmed (cf. Young, 1991). Böving & Craighead (1931: 39, footnote) reared the larva, but no description was published.

NOTE. Most Maltese specimens are darker in colour than the material examined from the continent, with a few having the head somewhat darker than the rest of the body. In any case, this feature falls within the range of variation of the species (cf. Werner, 1990), and no differences were found in the male genitalia.

### **Otolelus flaveolus** (Mulsant & Rey, 1866)

MATERIAL EXAMINED. MALTA: Buskett, 2.VII.1996, 1 ex.

CHOROTYPE AND DISTRIBUTION. South European species (sensu Vigna Taglianti et al., 1999), recorded from Spain (Jacobson, 1915; Fuente, 1933), France, Italy, Sardinia, Sicily, Pantelleria Island (Ragusa, 1898; Pic, 1903; Jacobson, 1915; Luigioni, 1929; Porta, 1934), Istria, Dalmatia (Pic, 1903; Jacobson, 1915; Depoli, 1938; Tóth, 1981), Greece (Oertzen, 1886; Jacobson, 1915) and Crete (Jacobson, 1915). The record for Switzerland (Favre, 1890 as *Xylophilus testaceus* Kolenati, 1846) and for "Turcia" (Reitter, 1906: 439) were not confirmed (cf. Pic, 1910; Jacobson, 1915). The species is absent in Austria (cf. Horion, 1956; Lucht, 1987), and the citation for Tyrol (Jacobson, 1915: 1019 "Tir") very probably concerns Pic's (1903) record from Southern Tyrol in Italy, whereas the records from Cyprus and Syria (Baudi, 1877a, 1877b both as *X. testaceus* Kolenati), later cited by Jacobson (1915) and Winkler (1927), have to refer to another species (Pic, 1903).

ECOLOGY. Little information is available on the biology of this species. It was collected under bark of acacias (Mulsant & Rey, 1866), in vegetable debris, under stones and plants (Sparacio, 1997), at light (Depoli, 1938), and in human habitations (Ragusa, 1898; Zangheri, 1969). Patrizi (1954) found "*Hylophilus* (?*flaveolus*) Muls." living and reproducing in bat guano in a cave in Latium (central Italy). This observation is presumed to be reliable, since many species of non-troglobitic Aderidae from tropical regions have been regularly collected in caves (cf. Báguena Corella, 1948; Werner, 1962).

### DISCUSSION

Sixteen species of Aderidae have been recorded from Maghreb (Báguena Corella, 1948: 522) and six species from Sicily (Angelini et al., 1995), whereas only the above two species were recorded from the Sicilian Channel Islands (cf. Ragusa, 1875, 1898; Luigioni, 1929; Porta, 1934; Lo Valvo & Massa, 1995). Nevertheless, aderids are generally sporadic and marginally studied, and the presence of other widespread species in these islands is not excluded.

ACKNOWLEDGEMENTS. We wish thank the following persons who helped us in various ways during the preparation of this paper: Donald S. Chandler (University of New Hampshire, Durham, USA), Andrea Di Giulio (Roma), Maurizio Mei, Emanuele Piattella and Augusto Vigna Taglianti (Università degli Studi di Roma, "La Sapienza"), Paolo Maltzeff (Roma), Dmitry Telnov (Riga, Latvia), Xavier A. Vázquez (Universitat de Barcelona, Spain), Vincenzo Vomero and Alberto Zilli (Museo Civico di Zoologia, Roma).

#### SUMMARY

The Authors record *Aderus populneus* (Creutzer in Panzer, 1796) and *Otolelus flaveolus* (Mulsant & Rey, 1866) from Malta, the latter being new to the Maltese fauna.

#### RIASSUNTO

*Gli Aderidi delle Isole Maltesi (Mediterraneo centrale) (Coleoptera, Aderidae).*

Gli autori segnalano *Aderus populneus* (Creutzer in Panzer, 1796) e *Otolelus flaveolus* (Mulsant & Rey, 1866) di Malta; il secondo è nuovo per la fauna maltese.

#### REFERENCES

- ALEXANDROVITCH, O. R., I. K. LOPATIN, A. D. PISANENKO, V. A. TSINKEVITCH & S. M. SNITKO. 1996. A Catalogue of Coleoptera (Insecta) of Belarus [in Russian]. Fund of Fundamental Investigations of the Republic of Belarus, Minsk, 103 pp.
- ALFIERI, A. 1976. The Coleoptera of Egypt. Mem. Soc. Entomol. Egypte, 5: XVI + 1-362.
- ANGELINI, F., P. AUDISIO, M. A. BOLOGNA, A. DE BIASE, M. E. FRANCISCOLO, G. NARDI, E. RATTI & M. F. ZAMPETTI. 1995. Coleoptera Polyphaga XII (Heteromera esl. Lagriidae, Alleculidae, Tenebrionidae). In: A. Minelli, S. Ruffo & S. La Posta (eds.), Checklist delle specie della fauna italiana. 57. Calderini, Bologna, 30 pp.
- BÁGUENA CORELLA, L. 1948. Estudio sobre los Aderidae. Consejo Superior de Investigaciones Científicas, Instituto de Estudios Africanos, Madrid, 549 pp.
- BARŠEVSKIS, A. 1996. The aderids (Coleoptera: Aderidae) in fauna of Latvia [in Latvian]. Latv. Entomol., 35: 5-8.
- BAUDI, F. 1877a. Eteromeri delle famiglie susseguenti a quella dei Tenebrioniti nei limiti della fauna europea e circummediterranea. Atti R. Accad. Sci. Torino, 12 (1876-1877): 571-729.
- BAUDI, F. 1877b. Europaeae et Circummediterraneae Faunae Heteromerorum specierum, quae Comes Dejean in suo Catalogo, edito 3<sup>a</sup>, consignavit, ex ejusdem collectione in R. Taurinensi Musaeo asservata, cum auctorum hodiernae recepta denominatione collatio. Pars. Quarta. Dtsch. Entomol. Z., 21: 385-416.
- BOROWIEC, L. & D. TARNAWSKI. 1983. Hylophilidae, Scraphiidae. Klucze Do Oznaczenia Owadów Polski, 19 (78-79) n. 128: 1-15.
- BÖVING, A. G. & F. C. CRAIGHEAD. 1931. An illustrated synopsis of the principal larval forms of the order Coleoptera. Entomol. Am., 11 (1930-1931): 1-351 (reprint ed. 1954).
- BRAKMAN, P. J. 1966. Lijst van Coleoptera uit Nederland en het omliggend gebied. Monogr. Neder. Ent. Ver., Amsterdam, 2: 219 pp.

- BUCK, F. D. 1954. Coleoptera (Lagriidae, Alleculidae, Tetratomidae, Melandryidae, Salpingidae, Pythidae, Mycteridae, Oedemeridae, Mordellidae, Scaptidae, Pyrochroidae, Rhipiphoridae, Anthicidae, Aderidae and Meloidae). Handbk. Ident. Br. Insects, 5 (9): 30 pp.
- CAMERON, M. & A. CARUANA GATTO. 1907. A list of the Coleoptera of the Maltese Islands. Trans. Entomol. Soc. London, 59 (3): 383-403.
- CILIA, J. L. 1989. Coleoptera: 105-128. In: P. J. Schembri & J. Sultana (eds.), Red Data Book for the Maltese Islands. Dept. of Information, Valletta, Malta, 142 pp.
- DEPOLI, G. 1938. I Coleotteri della Liburnia. Parte V. Fiume, Riv. Soc. Stu. Fiumani, 13-14 (1935-1936): 196-268.
- FAVRE, E. 1890. Faune des Coléoptères du Valais et des régions limitrophes. Zurcher & Furrer, Zürich, XLIV + 448 pp.
- FUENTE (DE LA), J. M. 1933. Catalogo sistematico geografico de los Coleopteros observados en la Peninsula Iberica, Pirenos propiamente dichos y Baleares. Bol. Soc. Esp. Hist. Nat., nn. 4799-4806 [Hylophilidae].
- HAYASHI, N. 1972. On the larvae of some species of Colydiidae, Tetratomidae and Aderidae occurring in Japan (Coleoptera: Cucujoidea). Kontyû, 40 (2): 100-111.
- HEYDEN (VON), L. 1893. Catalog der Coleopteren von Sibirien, mit Einschluss derjenigen des östlichen Caspi-Gebietes, von Turcmenien, Turkestan, Nord-Thibet und des Amur-Gebietes. Mit specieller Angabe der einzelnen Fundorté und genauer Citirung der darauf bezüglichen Literatur. Nachtrag I. A. W. Scade's Buchdruckerei (L. Schade), Berlin, 224 pp.
- HORION, A. 1956. Faunistik der mitteleuropäischen Käfer. Band V: Heteromera. Entomologische Arbeiten aus dem Museum G. Frey, Tutzing bei München, XVI + 336 pp.
- JACOBSON, G. G. 1915. Zhuki Rosii i zapodnoj Evropy. A. F. Devrien, St.-Petersburg (1905-1915), 1024 pp.
- JELÍNEK, J. 1993. Aderidae: 114. In: J. Jelínek (ed.), Check-list of Czechoslovak Insect IV (Coleoptera) Seznam českolovenskych brouků. Folia Heyrovskyana Suppl., 1: 172 pp.
- KASZAB, Z. 1956. Felemás Lábfejízes bogararak III. Heteromera III. Fauna Hungariae, 15, 9 (Coleoptera 4): 1-108.
- KASZAB, Z. 1969. 74. Fam. Aderidae: 103-106. In: H. Freude, W. Harde & G. A. Lohse (eds.), Die Käfer Mitteleuropas Band 8. Goecke & Everts, Krefeld, 388 pp.
- KOCH, K. 1989. Die Käfer Mitteleuropas. Ökologie Band 2. Goecke & Evers, Krefeld, 382 pp.
- KOCHER, L. 1956. Catalogue commenté des Coléoptères du Maroc. V. Hétéromères (Ténébrionides exceptés). Trav. Inst. Sci. Chérifien, Sér. zool., 10: 1-107.
- LAWRENCE, J. F., D. H. KISTNER & J. M. PASTEELS. 1990. A new genus and three new species of termitophilus Aderidae (Coleoptera) from Australia, Papua New Guinea and the Philippines, with notes on their biology. Invertebr. Taxon., 4 (3): 643-654.
- LAWRENCE, J. & A. F. JR. NEWTON. 1995. Families and Subfamilies of Coleoptera (with selected genera, notes, references and data on family-group names): 779-1006. In: J. Pakaluk & S. A. Slipinski (eds.), Biology, Phylogeny, and Classification of Coleoptera: Papers Celebrating the 80th Birthday of Roy A. Crowson. Museum i Instytut Zoologii, PAN, Warszawa.
- LO VALVO, F. & B. MASSA. 1995. Indice e checklist degli Artropodi terrestri di Lampedusa, Lampiona, Linosa e Pantelleria: 871-909. In: B. Massa (ed.), Arthropoda di Lampedusa, Linosa e Pantelleria (Canale di Sicilia, Mar Mediterraneo). Naturalista sicil., 19 (suppl.), VIII + 909 pp., 3 tavv.
- LUCHT, W. H. 1987. Die Käfer Mitteleuropas. Katalog. Goecke & Evers, Krefeld, 342 pp.
- LUIGIONI, P. 1929. I Coleotteri d'Italia, Catalogo Sinonimico, Topografico, Bibliografico. Mem. Pont. Accad. Sci., I Nuovi Lincei (2), 13: 1-1160.
- LUNDBERG, S. 1995. Catalogus Coleopterorum Sueciae. Naturhistoriska Riksmuseet Entomologiska Föreningen, Stockholm, 214 pp.

- MEDVEDEV, L. N., 1965. 64. Fam. Aderidae (Hylophilidae): 340-341. In: E. L. Gurjeva & O. L. Krizhanovsky (eds.), Beetles. In: G. J. Bey-Bienko (ed.), Identification keys of the Insects of the European part of the USSR. 2. [in Russian]. Nauka ed., Moscow & Leningrad, 668 pp.
- MONTANDON, A. L. 1908. Notes sur la faune entomologique de la Roumanie. Additions au Catalogue des Coléoptères. Bull. Soc. Sci. Bucarest, 17 (1-2): 67-122.
- MULSANT, E. & C. REY. 1866. Histoire naturelle des Coléoptères de France. Colligères. F. Savy, Libraire-éditeur, Paris, 4 + 187 pp., 3 tavv.
- NIKITSKY, N. B., I. N. OSIPOV, M. V. CHEMERIS, V. B. SEMENOV & A. A. GUSAKOV. 1996. The Beetles of the Prioksko-Terrasny Biosphere Reserve - xylobiontes, mycetobiontes, and Scarabaeidae (with the review of the Moscow region fauna of the groups) [in Russian]. Arch. Zool. Mus. Moscow Univ., 36: 1-199.
- NORMAND, H. 1936. Contribution au catalogue des Coléoptères de la Tunisie (9<sup>e</sup> fascicule). Bull. Soc. Hist. Nat. Afr. Nord, 27: 144-164.
- OERTZEN (VON), E. 1886. Verzeichniss der Coleopteren Griechenlands und Cretas, nebst einigen Bemerkungeng über ihre geographische Verbreitung und 4 die Zeit des Vorkommens einiger Arten betreffenden Sammelberichten. Berl. Ent. Z., 30 (2): 189-293.
- PATRIZI, S. 1954. Materiali per un primo elenco della fauna cavernicola del Lazio e delle regioni limitrofe (Toscana esclusa). Not. Circ. Speleol. Romano, 7: 22-34, 1 tav.
- PIC, M. 1893. Xylophilides et Anthicides recueillis en Algerie en Avril et Mai, 1893. Revue Scient. Bourb. Cent. Fr., 6: 155-162.
- PIC, M. 1903. Contribution a l'étude générale des Hylophilidae. Ann. Soc. Entomol. Fr., 72: 65-107.
- PIC, M. 1905. Contribution à l'étude générale des Hylophilidae. Deuxième partie. [Faune d'Asie, Afrique, Amérique et Océanie]. Ann. Soc. Entomol. Fr., 74: 181-286, 1 tav.
- PIC, M. 1910. Hylophilidae, 1-15. In: W. Junk (ed.), Coleopterorum Catalogus, vol. 17 (1910-1934) pars 14. S. Schenklig, Berlin.
- PORTA, A. 1934. Fauna Coleopterorum Italica. IV. Heteromera, Phytophaga. Stabilimento Tipografico Piacentino, Piacenza, 415 pp.
- RAGUSA, E. 1875. Gita entomologica all'isola di Pantelleria. Bull. Soc. Entomol. Ital., 7: 238-256.
- RAGUSA, E. 1898. Catalogo ragionato dei Coleotteri di Sicilia. Naturalista sicil., 2 (n.s.) (9-12): 197-237.
- REITTER, E. 1906. Hylophilidae (Euglenidae auct.): 438-439. In: L. Heyden (von), E. Reitter & J. Weise (eds.), Catalogus Coleopterorum Europae, Caucasi et Armeniae Rossicae. Editio secunda. Edidit E. Reitter, Berlin, Paskau, Caen, 774 pp.
- SPARACIO, I. 1997. Coleotteri di Sicilia Parte II. Mediterraneo, Guide Naturalistiche, 4. L'Epos ed., Palermo, 206 pp.
- TÓTH, L. 1981. Fundortangaben der Heteromeren (Coleoptera: Heteromera) aus dem Karpathen-Becken. Folia Entomol. Hung., 42 (34) 2: 221-237.
- VIGNA TAGLIANTI, A., P. A. AUDISIO, M. BIONDI, M. A. BOLOGNA, G. M. CARPANETO, A. DE BIASE, S. FATTORINI, E. PIATTELLA, R. SINDACO, A. VENCHI & M. ZAPPAROLI. 1999. A proposal for a chorotype classification of the Near East fauna, in the framework of the Western Palearctic region. Biogeographia, (n.s.) 20: 31-59.
- WERNER, F. G., 1962. The Aderidae of the Batu Caves, Malaya (Coleoptera). Pac. Insects, 4 (1): 111-127.
- WERNER, F. G. 1990. Revision of the Aderidae of eastern North America. J. New York entomol. Soc., 98 (2): 187-232.
- WINKLER, A. 1927. Aderidae: 831-833. In: A. Winkler (ed.), Catalogus Coleopterorum Regionis Palaearcticae. Albert Winkler Verlag, Vol. 2, Pars 7: 753-880.
- YANEGA, O. & LESCHEN, R. B. 1995. Beetles associated with bee nests (Hymenoptera Apidae) in Chiapas, México, with descriptions of the immature stages of *Vanonus balteatus* Werner (Coleoptera: Aderidae, Endomychidae, Meloidae). Coleopt Bull., 48 (4): 355-360.

YOUNG, D. K., 1991 Euglenidae (Tenebrionoidea): 554-555. In: W. F. Stehr (ed.), *Immature Insects*, volume 2. Kendall-Hunt Publishing. Co., Dubuque, 974 pp.

ZANGHERI, P. 1969. Repertorio sistematico e topografico della flora e fauna vivente e fossile della Romagna. Tomo III. Mus. Civ. St. Nat. Verona, Mem. f. s. 1: 855-1414.