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CONTRIBUTION TO THE KNOWLEDGE OF THE MUTILLIDS (HYMENOPTERA MUTILLIDAE) OF THE AEGEAN ISLANDS

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SUMMARY: The aim of this paper is to provide a first review of the records of Mutillidae for the Aegean Islands, updating the checklist with others from private and museum collections. For 41 species are given distributional data concerning 36 islands. *Tropidotilla semirufa* is recorded for the first time for Greece, while after its recent record *Myrmilla emiliae* is definitively confirmed for the Greek fauna; *Cystomutilla ruficeps*, *Ctenotilla caeca*, *Mutilla europaea*, *Smicromyrme novaki*, *Tropidotilla sareptana* and *Trogaspidia catanensis* are new records for Aegean Islands.

KEY WORDS: Hymenoptera, Mutillidae, Aegean, islands, faunal checklist, new records.

RiASSUNTO: Lo scopo di questo lavoro è quello di fornire una prima rassegna delle segnalazioni di Mutillidae per le Isole Egee, aggiornando la checklist con altri dati provenienti da collezioni private e museali. Per 41 specie vengono forniti dati distributivi relativi a 36 isole. *Tropidotilla semirufa* è segnalata per la prima volta in Grecia, mentre dopo la sua recente segnalazione *Myrmilla emiliae* è definitivamente confermata per la fauna greca; *Cystomutilla ruficeps*, *Ctenotilla caeca*, *Mutilla europaea*, *Smicromyrme novaki*, *Tropidotilla sareptana* e *Trogaspidia catanensis* sono nuove segnalazioni per le isole dell'Egeo.

PAROLE CHIAVE: Hymenoptera, Mutillidae, Egeo, isole, elenco faunistico, nuove segnalazioni.

INTRODUCTION

Within the Mediterranean Basin, the Aegean Sea hosts the larger number of islands (about 7,500), more of 90% of them smaller than 10 km² (Triantis & Mylonas 2009). These islands have become a model for many zoogeographical studies (see for instance Fattorini 2002; Sfenthourakis *et al.* 2004; 2018; Hausdorf & Hennig 2005; Poulikakis *et al.* 2015; Maroulis *et al.* 2021), focusing on taxa for which systematic and distribution are well known.

There are however several taxonomic groups for which are still available only fragmentary or incomplete data. Among these are certainly the Mutillidae, a family of Hymenoptera which counts more than 4,500 species globally (Pagliano *et al.* 2020), 10% of which are insular endemics (Lo Cascio 2015), and at least 62 known for Greece (Lelej *et al.* 2003a; 2003b; Pagliano 2009). The taxonomy of Mutillidae poses several problems still unresolved: due to the strong sexual dimorphism of these insects, for instance, a large number of species is currently known only for one of the two sexes.

During the last decades, the Mutillidae of other Mediterranean islands or archipelagos received an increasing attention (Arnone & Romano 1995; 1998; Generani *et al.* 2001; Lo Cascio & Romano 2004; Pagliano 2011; Pagliano & Strumia 2013; 2019; Romano 2004; 2012; Turrisi 1999; Strumia

& Pagliano 2008; Strumia *et al.* 2012), while the information concerning their faunal assemblages in the Aegean are still scarce and often dated.

The first information were provided by Olivier (1811), who recorded some species as generically occurring in the “archipelago”, but it is since the late 19th and especially during the 20th century that have appeared contributions expressly dedicated to Crete (Raulin 1869; Cecconi 1895; Schultz 1906; Bischoff 1928; Nonveiller 1972) and few other islands (Schulthess 1929; Bischoff 1934; Invrea 1941; 1942; Lo Cascio 2000). Further records are also reported in a wide literature that includes monographs, catalogues, faunal and taxonomic papers (see Data sources).

Although these data have been summarized in the recent worldwide checklist (Lo Cascio 2015), a detailed faunal overview for the Aegean fauna is still lacking. The aim of this contribution is to provide this latter updated with new records, in order to improve the knowledge on this group in a geographic context which has a remarkable importance in terms of biological diversity.

MATERIAL AND METHODS

Study area

The study area covers the islands that lies into the boundaries of the Aegean Sea (Triantis & Mylonas 2009); among those belonging to Pelopon-

nisos region, are here included the Argo-Saronic islands but excluded Kithira and Anthikitira, that usually are considered part of the Ionian archipelago.

Islands are listed in alphabetical order and grouped according to the biogeographical subdivision of the Aegean most widely adopted in the recent literature (see Sfenthourakis & Schmalß in Sfenthourakis *et al.* 2018; Kontopanou & Panitsa 2020), with the following abbreviations: Pe = Peloponnisos (Argo-Saronic islands), NAe = N Aegean (Thasos, Samothraki, Limnos, Ag. Efstratios islands), WAe = N Sporades and Evvoia, Kik = Cyclades, EAe = E Aegean, KK = Crete / Karpathos group.

Data sources and faunal checklist

The checklist includes the records given by the contributions concerning the study area (Bischoff 1928; 1934; Cecconi 1895; Invrea 1941; 1942; Lo Cascio 2000; Nonveiller 1972; Schulthess 1929; Raulin 1869; Schultz 1906) as well as those from the literature containing data explicitly referred to examined specimens (André 1899-1903; Berland 1925; Bischoff & Nonveiller 1965; Gogala 2017; Grandi 1954; Invrea 1940; Lelej *et al.* 2003a; Ljubomirov 2011; Lo Cascio 2015; Lucas 1853-1854; Matteini Palmerini 1992; Nagy 1972; Nonveiller 1979; Pagliano, 2005; Pagliano & Agnoli 2018; Pagliano & Scaramozzino 2021; Pagliano & Strumia 2007; Petersen 1988; Sichel & Radoszkowski 1869-1870; Skorikov 1927; Suárez 1975; 1988). Other data have been gathered: from the list of the specimens kept in the Zoological Museum of the University of Copenhagen (ZMUC) and identified by the late B. Petersen (available at www.zmuc.dk/EntoWeb/collections-databaser/Hymenoptera); from the list of mullids collected on Crete and Gavdos and kept in the Natural History Museum of Crete (NHMC), that have been identified by the late G. Nonveiller (A. Trichas, pers. comm. to P. Lo Cascio, 20.i.1999: see Lo Cascio 2015); from naturalistic and entomological web forum, such inaturalist.org and entomologiitaliani.net, taking into account only the records for which it was possible to confirm a proper determination.

Lastly, the checklist includes unpublished data from private or museum collections, indicated with the following acronyms: ACCI (A. Cartini private collection, Modena, Italy); DBCUK (D. Baldock private coll., Milford, UK); DSCI (D. Sechi private coll., Cagliari, IT); IZCI (I. Zappi private coll., Casalecchio di Reno, Italy); PLCI (P. Lo Cascio private coll., Lipari, Italy); MRCI (M. Romano private coll., Capaci, Italy); MSNV (Museo Civico di Storia Naturale di Venezia, Italy); RLCI (R. Lisa private coll., Florence, Italy); SNMS (Staatliches Museum für Naturkunde Stuttgart, DE). Since toponymic transcriptions are often variable, data from labels are

reported in their original form; a forward slash (/) separates different lines of data.

Systematic placement, taxonomy and nomenclature follow the recent world catalogue of Mutilidae (Pagliano *et al.* 2020).

Pictures were made using Panasonic LumixDMC-GS digital camera mounted on a Zeiss optical microscope equipped with objective lenses "Nikon 2x Plan" and "Lomo 3.7x"; images were then processed with Zerene Stacker 1.0.32 software.

RESULTS

Faunal checklist

SUBFAMILY MYRMOSINAE

Fox, 1894

***Paramyrmosa brunnipes* (Lepeletier, 1845)**

DATA FROM LITERATURE. EAe: Rhodes (Suárez 1988).

KK: Crete (Suárez 1988).

EXAMINED MATERIAL. KK: Crete: "Km. 10 a sud di Iraklion / 27.v.64 / Valle-Bianchi leg.", 1♀ (MRCI); "Is. or. / Dikti Oros 28.v.03 / Exo Potami / J. Simandl lgt.", 1♀ (MRCI); "Rethymno pref. / Platania env. / vi.2008 leg. J. Simandl", 1♀ (MRCI).

REMARKS. A record of *Myrmosa ephippium* given by Schulthess (1929) for Rhodes could be referred to this taxon.

SUBFAMILY PSEUDOPHOTOPSISIDINAE

Bischoff, 1920

***Pseudophotopsis syriaca* (André, 1900)**

DATA FROM LITERATURE. Kik: Tinos (Lelej *et al.* 2003a).

OTHER DATA. EAe: Rhodes: 36.339054N-28.09413E, 25.v.2020, photo by K. Kalaentzis, 1♀, <https://www.inaturalist.org/observations/61481572>. Samos: 37.715696N-26.943634E, 4.viii.2021, photo by K. Kalaentzis, 1♀, <https://www.inaturalist.org/observations/93563579>.

REMARKS. First records for the East Aegean Islands.

SUBFAMILY SPHAEROPHTHALMINAE

Schuster, 1949 (1903)

***Cystomutilla ruficeps* (Smith, 1855)**

OTHER DATA. KK: Crete: Plakias env., 20.v.2004, 1♀, <http://www.entomologiitaliani.net/public/forum/phpBB3/viewtopic.php?f=85&t=43416>.

REMARKS. First records for the Aegean Islands.

SUBFAMILY DASYLABRINAE

Invrea, 1964

***Dasylabris (Craspedopyga) manderstiernii cypria* (Sichel & Radoszkowski, 1870)**

DATA FROM LITERATURE. EAe: Rhodes (Petersen 1988). KK: Crete (Lucas 1853-1854 as *Mutilla*

maura; Raulin 1869 as *Mutilla maura*; Cecconi 1895 as *Mutilla maura*; Bischoff 1928 as *D. maura*; Nonveiller 1972 as *D. maura* ssp. *cypria*; Petersen 1988). *Gavdos* (Lo Cascio 2015).

EXAMINED MATERIAL. **EAe:** *Kos*: "Agios Fokas env., / 8 – 20.ix.2003, / Ilja Trojan leg.", 1♀ (MRCI). *Lesvos*: "pr. Chiesa di Ag. Ioanni 300 m / Vafeios (Mithimna) / 17-25.vi.03 M. Berra leg.", 4♀ (MRCI). *Samos*: "Mesokampo - Baia Mikali / 9-13.vi.2013, R. Lisa leg.", 1♀ (MRCI). **KK:** *Crete*: "Sitia / 30.v.1983 / B. Massa leg.", 1♀ (MRCI); "Oros Idi v.84 / leg. Dr. Schurmann", 1♀ (MRCI); "Askifou / 4.vi.1984 / B. Massa leg.", 1♀ (MRCI); "Rethimnon, Idi Oros / Skinakas cross, m 1450 / 7.v.1996 / D. Baiocchi leg.", 1♀ (MRCI); "Chania, Omalos 1100 m / 9.v.1996 / D. Baiocchi leg.", 1♀ (MRCI); "Palmizio di Vai s.l.m. / 21-22.vi.01 M. Berra", 1♀ (MRCI); "Is. Mer. / Plakias env. 5-7.vii.2001 / J. Simandl lgt.", 1♀ (MRCI); "Is. occ. / Lefka Ori Mts. 25.v.2002 / Omalos plateau / J. Simandl lgt.", 1♀ (MRCI); "Isl. occ. / Chania pref / Georgioupoli 30.v.2002 / J. Simandl lgt.", 1♀ (MRCI); "Idi Oros 31.v.2002 / Fourfouras vill. / J. Simandl lgt.", 1♀ (MRCI); "Is. or. / Dikti Oros 28.v.03 / Exo Potami / J. Simandl lgt.", 1♀ (MRCI); "Balos / 20.vi.2005 / Coll. R. Mourglia", 1♀ (MRCI); "Rethymno pref. / Plakias / 7.vi.2008 leg. J. Simandl", 1♀ (MRCI); "Spiaggia di Balos / 8.vii.2010 / M. Romano leg.", 1♀ (MRCI); "Rodakino, Agia Marina / 9.vii.2010 / M. Romano leg.", 1♀ (MRCI); "Is. c., 6.vi.12 / Rethymno Pref, Idi Ori Mts. / 1200m, Nidha plateau / J. Simandl leg.", 1♀ (MRCI); "Mithi, Sarakinas R. / earth bank / 6.x.2012 / L. C. Cross leg.", 1 (DBCUK); "Rethymno Pref. / Agios Vasileios / Paralia Pristerés / 35°10'50" N 24°17'35" E / 29.v.16. M. Romano leg.", 2♀ (MRCI); "Rethymno / Ideon Andron (Plateau m 1370) / 35°12'18" N 24°50'08" E / 14/15.v.2018 L. Saltini leg.", 1♀ (MRCI); "Selakáno /v.2019 / V. Nemec lgt.", 1♀ (MRCI).

REMARKS. New record for Kos, Lesvos and Samos.

***Dasylabris (Dasylabris) maura maura* (Linnaeus, 1758)**

DATA FROM LITERATURE. **NAe:** *Thasos* (Petersen 1988). **WAe:** *Evvoia* (Petersen 1988; Matteini Palmerini 1992). **Kik:** *Syros* (Petersen 1988).

EXAMINED MATERIAL. **NAe:** *Thasos*: "Ins. Thasos / August 1966 / leg. Ellwanger" 1♀ (PLCI). **EAe:** *Rhodes*: "30.v.1978", 1♀ (MSNV). **Kik:** *Kythnos*: "Agh. Stephanou/ 37°23'49" N 24°27'25" E / 24.iii.2016 G. Ruzzante leg.", 1♀ (MRCI); "Apokrissi / 37°24'39" N 24°23'50" E / 25.iii.2016 G. Ruzzante leg.", 2♀ (MRCI). *Milos*: "Agh. Athanasios m 80 / 36°40'46" N 24°28'00" E / 4.iv.2016 G. Ruzzante leg.", 1♀ (MRCI).

OTHER DATA. **Kik:** *Serifos*: 15.v.2016, photo by P. Mazzei, 1♀, <http://www.entomologitaliani.net/>

public/forum/phpBB3/viewtopic.php?f=85&t=71160.

REMARKS. Generically recorded by Olivier (1811 as *Mutilla*) "dans les iles de l'Archipel"; the records for Crete given by Pagliano (2005), Pagliano & Strumia (2007) and Pagliano *et al.* (2020) need to be confirmed. First record for the East Aegean Islands (Rhodes); new record for Kythnos, Milos and Serifos.

***Dasylabris (Inbaltilla) biblica* Invrea, 1950**

DATA FROM LITERATURE. **EAe:** *Rhodes* (Lo Cascio 2015). **KK:** *Crete* (Bischoff 1928 as *D. italica*; Nonveiller 1972 as *D. italica* [sic!] ssp. *biblica*; Lo Cascio 2015).

EXAMINED MATERIAL. **KK:** *Crete*: "Idi Oros occ. / Platania env. / vii.2005 leg. J. Simandl", 1♀ (MRCI); "Rethymno Pref. / Agios Vasileios / Paralia Peristerés / 35°10'50" N 24°17'35" E / 29.v.2016, M. Romano leg.", 1♀ (MRCI); "Plakias beach, dunes / J. Halada, 12.6.2017", 1 (MRCI). *Karpathos*: "Afrodite Bay / 23.vii.2011 / A. Cartini leg.", 1♀ (ACCI).

REMARKS. Also recorded for Rhodes by Lelej & Yildirim (2009) without indication of examined material; new record for Karpathos.

***Dasylabris (Inbaltilla) scutila* Skorikov, 1935**

DATA FROM LITERATURE. **KK:** *Crete* (Lo Cascio 2015). *Gavdos* (Lo Cascio 2015).

REMARKS. The above records are based on specimens kept at NHMC and so identified by the late G. Nonveiller, but not directly verified by us; the distribution of this species includes Armenia, Georgia (Lelej 1985), Azerbaijan (Lelej 2002), Turkey (Petersen 1988; Özbek *et al.* 1999; Lelej 2002; Yildirim 2006; Lelej & Yildirim 2009) and Greece (Lelej *et al.* 2003b).

***Stenomutilla bizonata* (Smith, 1856)**

DATA FROM LITERATURE. **WAe:** *Evvoia* (Petersen 1988 as *S. shelkovnikovi*). **EAe:** *Rhodes* (Petersen 1988 as *S. shelkovnikovi*).

EXAMINED MATERIAL. **EAe:** *Rhodes*: "Apolakia-Monolithos / 28.iv.1990 / leg. D. Lange & T. Osten", 1♀ (PLCI).

REMARKS. A record of *S. argentata* var. *bifasciata* given by Invrea (1941) for Rhodes could be referred to this taxon.

SUBFAMILY MYRMILLINAE

Bischoff, 1920

***Myrmilla (Eurygnathilla) emiliae* (Dalla Torre, 1897) (Fig. 1)**

DATA FROM LITERATURE. **KK:** *Crete* [Pagliano & Scaramozzino 2021 as *Eurygnatilla* (sic!)].

EXAMINED MATERIAL. **KK:** *Crete*: "Elos vi.84 / leg. Dr. Schurmann", 1♀ (MRCI); "Pr. F. Geropotamos / (Rethimnon) s.l.m. / 26.vi.2001 M. Berra leg.",



Figure 1. *Myrmilla (Eurygnathilla) emiliae* (Dalla Torre, 1897), Crete (photo by Marcello Romano).

1♀ (MRCI); "Plakias env. 5-7.vii.2001 / J. Simandl lgt.", 1♀ (MRCI); "Lefka Ori Mts. / Omalos plateau 25.v.2002 / J. Simandl lgt.", 2♀♀ (MRCI); "Idi Oros 25.v.03 / Nidha 1300m / J. Simandl lgt.", 1♀ (MRCI); "Dikti Oros 4.vi.03 / Selekan 1200 m / J. Simandl lgt.", 1♀ (MRCI); "Idi Oros occ. / Platania env. / vii.2005 leg. J. Simandl", 3♀♀ (MRCI); "Rethymno pref. / Platania env. / vi.2008 leg. J. Simandl", 1♀ (MRCI); "Plakias env. 1.vi.2012 / J. Simandl lgt.", 1♀ (MRCI); "Elafonisi / 8.iv.2016", 1♀ (MRCI); "Plakias / 26.v.2016 / M. Sárovec leg.", 1♀ (MRCI); "Chania Pref. / Kantanos – Selino: Tourli / 35°20'18"N 23°51'11"E / 2.vi.2016 M. Romano leg." 1♀ (MRCI); "Ida mts. Nida / v.2019 / Némec lgt.", 1♀ (MRCI).

REMARKS. Known for Armenia, Azerbaijan, Iraq, Turkey and Turkmenistan (Pagliano *et al.* 2020); recently recorded for Crete (Pagliano & Scaramozzino 2021).

Myrmilla (Myrmilla) calva (Villers, 1789)

DATA FROM LITERATURE. EAe: Rhodes (Invrea 1941; Pagliano & Strumia 2007). KK: Crete (Schulz 1906

sub *M. calva distincta*; Nonveiller 1972; Pagliano 2005; Pagliano & Strumia 2007).

EXAMINED MATERIAL. Kik: Milos: "Ag. Konstantinos / 36°45'01"N 24°29'23"E / 5.iv.2016 / G. Ruzzante leg.", 1♀ (MRCI). EAe: Lesvos: "pr. Chiesa di Ag. Ioanni 300 m / Vafeios (Mithimna) / 25.vi.2003, M. Berra leg.", 12♀♀ (MRCI); "Ipsilometopo 350 m / (Mithimna) / 18.vi.2003 M. Berra leg.", 9♀♀ (MRCI); "Sopra Skalochori / 350 m 24.vi.2003 / M. Berra leg.", 1♀ (MRCI). Rhodes: "Psinthos env. / 11.vii.2006 / J. Simandl leg." 1♀ (MRCI); "Haraki / Gaidouras river / 22-23.vi.2001 / leg. Rosa" 1♀ (MRCI); Lindos (spiaggia) / Baia di S. Paolo / 28.viii.2000 / M. Berra leg.", 1♀ (MRCI). Samos: "pr. Stagno salato di / Psili Ammos / 26-30.viii.03 M. Berra leg.", 1♀ (MRCI). KK: Crete: "14.iv.1967 / Florida beach bei / Heraklion, Kreta / Griechenland", 1♀ (PLCI); "Therisos / 3 km N v. / Iraklion / 14.x.1972 / A.C. & W.N. Ellis", 1♀ (PLCI); "N Irakliou / Gortys / 26.iv.1973 / W.H. Gravestein", 1♀ (PLCI); "Scavi di Festo / 17.vii.81 / F. Cassola", 1♀ (MRCI); "Stia / 30.v.1983 leg. B. Massa", 1♀ (MRCI); "Askyfou v.84 / leg. Dr. Schurmann", 1♀ (MRCI); "Lasithi v.84 / leg. Dr. Schurmann", 1♀ (MRCI); "(Chania) / Omalos m. 1200-1400 / 21/24.vi.1989 / G. Magnani leg.", 11♀♀ (MRCI); "Chania / Omalos m. 1000/1500 / G. Sama leg. 22.vi.89", 1♀ (MRCI); Ay Nikolaos mt. 1000 / Piana Lassitni / 17.iv.1995 leg. Lisa", 1♀ (MRCI); "Palmizio di Vai s.l.m. / 21-22.vi.2001 M. Berra leg.", 3♀♀ (MRCI); "Koutsounari s.l.m. / (Ierapetra) / 24.vi.2001 M. Berra leg.", 2♀♀ (MRCI); "Lago Kournas / 02-04.vii.2001 / M. Berra leg.", 3♀♀ (MRCI); "Agia Galini s.l.m. / Riva dx T. Platys / 3.vii.2001 M. Berra leg.", 4♀♀ (MRCI); "Omalos 1100 m / 25.viii.2001 M. Berra leg.", 1♀ (MRCI); "Agia Irini 650-700 m / 26.viii.2001 M. Berra leg.", 1♀ (MRCI); "Valico Nord / all'altopiano di / Omalos 900 m / 27.viii.2001 M. Berra leg.", 1♀ (MRCI); "Theriso 500 m / 30.viii.2001 M. Berra leg.", 1♀ (MRCI); "Exo Potami 800 m / 2.ix.2001 M. Berra leg.", 1♀ (MRCI); "Spiaggia costa Est / Spinalonga / 5.ix.2001 / M. Berra leg.", 1♀ (MRCI); "Lefka Ori Mts. / Imbros valley 24.v.2002 / J. Simandl lgt.", 6♀♀ (MRCI); "Lefka Ori Mts. / Omalos plateau 25.v.2002 / J. Simandl lgt.", 5♀♀ (MRCI); "Chania pref. / Georgioupoli 30.v.2002 / J. Simandl lgt.", 2♀♀ (MRCI); "Idi Oros 25.v.03 / Nidha 1300 m / J. Simandl leg.", 1♀ (MRCI); "Dikti Oros 28.v.03 / Exo Potami / J. Simandl lgt.", 1♀ (MRCI); "Rethymno pref. / Agia Fotini / 1.vi.03 J. Simandl lgt.", 4♀♀ (MRCI); "Dikti Oros 4.vi.03 / Selekan 1200 m / J. Simandl lgt.", 1♀ (MRCI); "23.v.2004 / Platania NW / M. Sárovec", 1♀ (MRCI); "Idi Oros occ. / Platania env. / vii.2005 leg. J. Simandl", 1♀ (MRCI); "Rethymno pref. / Platania env. / vi.2008 leg. J. Simandl", 5♀♀ (MRCI); "Rethymno pref. / Plakias env. 1.vi.2012 / J. Simandl leg.", 1♀ (MRCI); "Is. c. 6.vi.12 / Rethymno Pref., Idi Ori Mts. /

1200m, Nidha plateau / J. Simandl leg.", 2 ♀♀ (MRCI); "Kalamaki / vii.2013 / leg. Fancello", 1 ♀ (MRCI); "Chania Pref. / Kantanos – Selino: Tourli / 35°20'18"N 23°51'11"E / 2.vi.2016 M. Romano leg." 5 ♀♀ (MRCI).

REMARKS. Generically recorded by Olivier (1811 as *Mutilla*) "dans les îles de l'Archipel". First record for the Cyclades (Milos); new record for Lesvos and Samos.

***Myrmilla (Myrmilla) caucasica* (Kolenati, 1846) (Fig. 2)**

DATA FROM LITERATURE. EAe: Kos (Ljubomirov 2011). Nisyros (Lo Cascio 2015). Rhodes (Ljubomirov 2011).

EXAMINED MATERIAL. EAe: Kos: "Antimachia Castle / 36°48'10"N 27°07'40"E / 27.iv.2013 / leg. M. Uliana", 1 ♀ (MRCI). Lesvos: "Fiume Tsiknias / (Arisvi) 13-16.vi.2003 / M. Berra leg.", 9 ♀♀ (MRCI); "pr. Chiesa di Ag. Ioanni 300 m / Vafeios (Mithimna) / 17-25.vi.2003, M. Berra leg.", 8 ♀♀ (MRCI); "Ipsilometopo 350 m / (Mithimna) / 18.vi.2003 M. Berra leg.", 2 ♀♀ (MRCI); "Sopra Skalochori / 350 m 24.vi.2003 / M. Berra leg.", 1 ♀ (MRCI). Rhodes: "Lindos / 30.iv.1990 / D. Lange & T. Osten" 1 ♀ (PLCI); "Kamiros / 19.x.1996 / R. Grimm" 1 ♀ (PLCI); "Psinthos env. / 11.vii.2006 / leg. J. Simandl", 1 ♀ (MRCI).

***Myrmilla (Myrmilla) corniculata* (Sichel & Radoszkowski, 1869)**

DATA FROM LITERATURE. WAe: Skopelos (Ljubomirov 2011). Kik: Syros (Sichel & Radoszkowski 1869-1870 as *Mutilla*; André 1899-1903 as *M. erythrocephala* var. *corniculata*). Tinos (Skorikov 1927 as *M. corniculatina*; Ljubomirov 2011). KK: Crete (Ljubomirov 2011).

[*Myrmilla (Myrmilla) erythrocephala* (Latreille, 1792)]

DATA FROM LITERATURE. EAe: Rhodes (Invrea 1941; Berland 1925). KK: Crete (Bischoff 1928). REMARKS. Generically recorded by Olivier (1811 as *Mutilla cornuta*) "dans les îles de l'Archipel" and by Morawitz (1865) for "griechischen inseln"; according to Ljubomirov (2011), the records for Crete e Rhodes must be referred to *M. caucasica* or *M. corniculata*.

***Myrmilla (Myrmilla) lezginica* (Radoszkowski, 1885)**

DATA FROM LITERATURE. EAe: Rhodes (Invrea 1941 as *M. lezginica* var. *nigrifrons*).

EXAMINED MATERIAL. EAe: Rhodes: "Prof. Ilias / Salakos 19.iv.1990 / leg. D. Lange" 1 ♀ (PLCI); "Lindos / 20.iv.1990 / D. Lange leg." 1 ♀ (PLCI); "Apolakia-Monolithos / 27.iv.1990 / leg. D. Lange & T. Osten" 1 ♀ (PLCI).

REMARKS. Reported by André (1899-1903) and Hammer (1950) for "Cyclades" without detailed information.

***Myrmilla (Myrmilla) mutica* (André, 1903)**

DATA FROM LITERATURE. Kik: Naxos (Bischoff 1934). KK: Crete (Ljubomirov 2011; Lo Cascio 2015).

***Myrmilla (Pseudomutilla) capitata* (Lucas, 1849)**

DATA FROM LITERATURE. Kik: Syros (Sichel & Radoszkowski 1869-1870 as *Mutilla*).

***Myrmilla (Pseudomutilla) glabrata* (Fabricius, 1775) (Fig. 3)**

DATA FROM LITERATURE. WAe: Evvoia (Matteini Palmerini 1992 as *M. cephalica*). Skyros (Petersen 1988). Kik: Pano Koufonissi (Lo Cascio 2015). Syros (Sichel & Radoszkowski 1869-1870 as *Mutilla*; Petersen 1988).

EXAMINED MATERIAL. WAe: Skiathos: "Stagno di / Koukounaries / 31.vii – 3.viii.2007 / M. Berra leg.", 8 ♀♀ (MRCI). EAe: Lesvos: "presso lagune di / Ariana (Kalloni) / 12.vi.2003 / M. Berra leg.", 2 ♂♂ (MRCI); "Fiume Tsiknias / (Arisvi) 13-16.vi.2003 / M. Berra leg.", 5 ♀♀, 12 ♂♂ (MRCI); "pr. Chiesa di Ag. Ioanni 300 m / Vafeios (Mithimna) / 17 e 25.vi.2003, M. Berra leg.", 13 ♀♀, 10 ♂♂ (MRCI); "Ipsilometopo 350 m / (Mithimna) / 18.vi.2003 / M. Berra leg.", 4 ♀♀ (MRCI); "Sopra Skalochori / 350 m 24.vi.2003 / M. Berra leg.", 2 ♀♀ (MRCI);



Figure 2. *Myrmilla (Myrmilla) caucasica* (Kolenati, 1846), Lesvos (photo by Marcello Romano).



Figure 3. *Myrmilla (Pseudomutilla) glabrata* (Fabricius, 1775), Lesvos (photo by Marcello Romano).

"Tzithra (Antissa) / pr. Torr. Voulgaris 50 m / 24.vi.2003, M. Berra leg.", 1 ♀ (MRCI).

REMARKS. New record for the East Aegean Islands (Lesvos); new record for Skiathos.

Myrmilla (Pseudomutilla) vutshetishi Skorikov, 1927 (Fig. 4)

DATA FROM LITERATURE. EAe: Chios (Petersen 1988).

EXAMINED MATERIAL. EAe: Lesvos: "N, 6 km E Molivos / Felsstrand, 18.v.1995 / leg. G. Minksch", 1 ♀ (PLCI); "presso lagune di / Ariana (Kalloni) / 12.vi.2003 / M. Berra leg.", 3 ♀♀, 5 ♂♂ (MRCI); "Fiume Tsiknias / (Arisvi) 13-16.vi.2003 / M. Berra leg.", 2 ♂♂ (MRCI); "pr. Chiesa di Ag. Ioanni 300 m / Vafeios (Mithimna) / 17 e 25.vi.2003, M. Berra leg.", 7 ♀♀, 8 ♂♂ (MRCI); "Ipsilometopo 350 m / (Mithimna) / 18.vi.2003 / M. Berra leg.", 4 ♀♀, 2 ♂♂ (MRCI). Samos: "Torr. Tsakalorema / (Pythagorion) / 22.viii – 3.ix.03 M. Berra leg.", 4 ♀♀, 1 ♂ (MRCI); "pr. Stagno salato di / Psili Ammos / 26-30.viii.03 M. Berra leg.", 1 ♀ (MRCI).

REMARKS. New record for Lesvos and Samos.

Platymyrmillia quinquefasciata (Olivier, 1811)

DATA FROM LITERATURE. Kik: Andros (Bischoff & Nonveiller 1965). Syros (Sichel & Radoszkowski 1869-1870 as *Mutilla*; André 1903-1908 as *Mutilla*; Bischoff & Nonveiller 1965). EAe: Rhodes (Invrea 1941). KK: Crete (Pagliano 2005; Pagliano & Strumia 2007). Karpathos (Grandi 1954).

EXAMINED MATERIAL. EAe: Kos: "Tigaki env. / 5-15.vi.2018 / lgt J. Kadlec, 1 ♀ (MRCI). Lesvos: "Fiume Tsiknias (Arisvi) / 13-16.vi.2003 / M. Berra leg.", 17 ♀♀ (MRCI); "Ipsilometopo (Mithimna) 350 m / 18.vi.2003 / 19 ♀♀ (MRCI); "Fiume Evergetoulas, Keramia 50 m / 19.vi.2003 / M. Berra leg.", 1 ♀ (MRCI); "Skalochori 400 m / 22.vi.2003 / M. Berra leg.", 1 ♀ (MRCI); "pr. Chiesa di Ag. Ioanni 300 m / Vafeios (Mithimna) / 25.vi.2003 / M. Berra leg.", 9 ♀♀ (MRCI); Rhodes: "vi/vii.1984 / E. Ratti leg.", 1 ♀ (MSNV). KK: Crete: "Rethymno Pref, Agia Fotini / 1.vi.2003 / J. Simandl leg.", 1 ♀ (MRCI); "Idi Oros, Fourfouras env. / 2.vi.2003 / J. Simandl leg.", 1 ♀ (MRCI). Karpathos: "20.viii.2002 / A. Cartini leg.", 1 ♀ (ACCI).

REMARKS. New record for Kos and Lesvos.

SUBFAMILY MUTILLINAE

Latreille, 1802

Ctenotilla caeca (Radoszkowski, 1880)

EXAMINED MATERIAL. NAe: Thasos: "Pachis / 23.vi.2000 / M. Berra leg." 1 ♀ (MRCI). EAe: Lesvos: "Presso Lagune di Ariana (Kalloni) / 12.vi.2003 / M. Berra leg." 1 ♀ (MRCI); "Fiume Tsiknias (Arisvi) / 13-16.vi.2003 / M. Berra leg." 1 ♀ (MRCI). Samos: "Presso stagno salato di Psili Ammos / 26-30.viii.2003 / M. Berra leg." 2 ♀♀ (MRCI).

REMARKS. First records for the Aegean Islands.

Dentilla curtiventris (André, 1901)

DATA FROM LITERATURE. Pe: Poros (Lelej et al. 2003a as *D. erronea*). WAe: Evvoia (Matteini Palmerini as *Smicromirme errana*; Lo Cascio 2015). Kik: Mykonos (André 1899-1903 as *Smicromyrme erronea*). Paros (Petersen 1988 as *Smicromyrme*). Syros (André 1899-1903 as *Smicromyrme erronea*). EAe: Rhodes (Petersen 1988 as *Smicromyrme*; Lelej et al. 2003a). KK: Crete (Nonveiller 1972 as *Smicromyrme erronea* ssp. *cretica*; Petersen 1988 as *Smicromyrme*; Matteini Palmerini 1992 as *Smicromyrme erronea* ssp. *cretica*; Pagliano & Strumia 2007). Gavdos (Petersen 1988 as *Smicromyrme*).

EXAMINED MATERIAL. Kik: Syros: "Syros / 9-'75" 1 ♀ (PLCI). EAe: Nisyros: "spiaggia di Lyes – leg. P. / Lo Cascio & C. Moreno / 30.iv-1.v.1999" 1 ♀ (PLCI). Rhodes: "Apolakia-Monolithos / 27.iv.1990 / leg. D. Lange & T. Osten" 1 ♀ (PLCI); "Kolimbia / Loutani river / 18/19.vi.2001 Leg. Rosa", 1 (MRCI). Samos: "Torr. Tsakalorema / (Pythagorion) / 22.viii – 3.ix.03 M. Berra leg.", 1 ♀ (MRCI); KK: Crete: "Palekastro / 8.viii.1985 / G. Zappi leg.", 1 ♀ (MRCI); "Presso foce F. Petres / (Rethimnon) s.l.m. / 28.vi.2001 M. Berra leg.", 1 ♀ (MRCI); "Kourtaliotiko s.l.m. / 1.vii.2001 M. Berra leg.", 1 ♀ (MRCI); "Agia Galini s.l.m. / Riva dx T. Platys / 3.vii.2001 M. Berra leg.", 1 ♀ (MRCI); "Koutsomatados / (To-

polia) 300 m / presso il F. Typhlos / 23.viii.2001 M. Berra leg.", 82 ♀♂ (MRCI); "Plokamiana / (Vathi) 100 m / 28.viii.2001 M. Berra leg.", 1 ♀ (MRCI); "Altopiano di Lasithi / Mesa Lasithi 750 m / 3.ix.2001 M. Berra leg.", 3 ♀♂ (MRCI); "Altopiano di Omalos / 1000 m / 29.vii.2004 / M. Berra leg." 1 ♀ (MRCI); "Rethymno pref. / Platania env. / vi.2008 / leg. J. Simandl", 2 ♂♂ (MRCI); "Rethymno Pref. / Plakias env. 1.vi.2012 / J. Simandl lgt.", 1 ♀ (MRCI); "Rethymno Pref. / Idi Mts. Occ., Platania / 5.vi.2012 / J. Simandl leg.", 2 ♀♀, 1 ♂ (MRCI); "Rethymno Pref. / Agios Vasileios / Paralia Peristerés / 35°10'50"N 24°17'35"E / 29.v.2016 / M. Romano leg." 4 ♀♂ (MRCI); "Chania Pref. / Chania : Daratsos / 35°30'58"N 23°58' 54"E / 2.vi.2016 / M. Romano leg." 2 ♀♂ (MRCI).

REMARKS. New record for Nisyros and Samos.

Nemka viduata viduata (Pallas, 1773)

DATA FROM LITERATURE. **NAe:** Samothraki (Petersen 1988 as *Smicromyrme*). **WAe:** Evvoia (Petersen 1988 as *Smicromyrme*; Matteini Palmerini 1992 as *Smicromyrme*). Skiathos (Petersen 1988 as *Smicromyrme*). **Kik:** Kea (Petersen 1988 as *Smicromyrme*). Naxos (Petersen 1988 as *Smicromyrme*). Pano Koufonissi (Lo Cascio 2015). **EAe:** Kos (Petersen 1988 as *Smicromyrme*). Pserimos (or Kappari) (Petersen 1988 as *Smicromyrme*). Rhodes (Invrea 1942 as *Smicromyrme*; Petersen 1988 as *Smicromyrme*). **KK:** Karpathos (Schultess 1929 as *Mutilla*).

EXAMINED MATERIAL. **NAe:** Thasos: "spiaggia di / Chrysi Ammoudia / 22-25.vi.00 M. Berra leg.", 2 ♀♂ (MRCI). **WAe:** Skiathos: "Mandraki Elias Beach / 12.viii.2008 / D. Sechi leg.", 1 ♀ (DSCI); "loc. Kalivia / 13-26.vi.2010 / leg. R. Lisa", 1 ♀ (MRCI); "Koukounaries env. / 30.vi-9.vii.2012 / P. Bulirsch lgt.", 1 ♀ (MRCI). **Kik:** Milos: "Paliochori 29.vii.07 / Leg. Cartini A.", 1 ♀ (MRCI). **EAe:** Kos: "Marmari – di notte ai / lampioni 16.vii.2012 / F. Turchetti leg.", 3 ♂♂ (MRCI); "Limnionas / 20.vii.2013 / Leg. Cartini A.", 1 ♀ (MRCI). Lesvos: "Aya Paraskevi, Kulturland / leg. G. Miksch / 12.v.1995" 1 ♀ (PLCI); "presso lagune di / Ariana (Kalloni) / 12.vi.2003 / M. Berra leg.", 1 ♀ (MRCI); "Fiume Tsiknias / (Arisvi) 13-16.vi.2003 / M. Berra leg.", 8 ♀♂ (MRCI); "pr. Chiesa di Ag. Ioanni 300 m / Vafeios (Mithimna) / 17.vi.2003, M. Berra leg.", 1 ♀ (MRCI); "Presso Parakila / (Spiaggia) / 23.vi.2003 / M. Berra leg.", 1 ♀ (MRCI). Rhodes: "Theologos 27.x.1996 / R. Grimm" 1 ♀ (PLCI); "Kolimbria / Loutani river / 18/19.vi.2001 Leg. Rosa", 1 ♂, 1 ♀ (MRCI); "Haraki / Gaidouras river / 22/23.vi.2001 Leg. Rosa", 1 ♀ (MRCI). Samos: "pr. Stagno salato di / Psili Ammos / 26-30.viii.03 M. Berra", 9 ♀♂ (MRCI); "Mesokampo / Baia Mikelaki / 9-13.vi.2013 / R. Lisa leg.", 1 ♂, 1 ♀ (MRCI). **KK:** Karpathos: "Karpathos Isol. / 20.viii.2002 / A. Cartini leg.", 1 ♀ (ACCI).

OTHER DATA. **Kik:** Serifos, 24.viii.2012, photo P. Mazzei, 1 ♀, <http://www.entomologiitaliani.net/public/forum/phpBB3/viewtopic.php?f=85&t=71169>.

REMARKS. Generically recorded by Olivier (1811 as *Mutilla coronata*) "dans les iles de l'Archipel". New record for Thasos, Milos, Serifos, Lesvos and Samos.

Nemka viduata macquarti (Lepeletier, 1845)

DATA FROM LITERATURE. **KK:** Crete (Cecconi 1895 as *Mutilla stridula*; Schulz 1906 as *Mutilla sungora*; Bischoff 1928 as *Smicromyrme*; Nagy 1972 as *Smicromyrme*; Nonveiller 1972 as *Smicromyrme*; Petersen 1988 as *Smicromyrme*; Matteini Palmerini 1992 as *Smicromyrme*; Pagliano 2005 as *Nemka viduata*; Pagliano & Strumia 2007 as *Nemka viduata*; Gogala 2017 as *Nemka viduata*). Gavdos (Lo Cascio 2015).

EXAMINED MATERIAL. **KK:** Crete: "Vai / 6.viii.1985 / G. Zappi leg.", 1 ♀ (IZCI); "Agia Galini / 25-ix-10.x.1985 / T. Osten" 3 ♀♂ (PLCI); "Palmizio di



Figure 4. *Myrmilla (Pseudomutilla) vutshetitshi* (Skorikov, 1927), Samos (photo by Marcello Romano).

Vai s.l.m. / 21-22.vi.2001 M. Berra leg.", 2♀♀ (MRCI); "Gola di / Kourtaliotiko s.l.m. / 1.vii.2001 M. Berra leg.", 1♀ (MRCI); "Agia Galini s.l.m. / Riva dx T. Platys / 3.vii.2001 M. Berra leg.", 1♀ (MRCI); "Is. Mer. / Plakias env. 5-7.vii.2001 / J. Simandl lgt.", 6♂♂, 9♀♀ (MRCI); "Gerani (Chania) s.l.m. / 23.viii.2001 M. Berra leg.", 1♀ (MRCI); "Plokamiana / (Vathi) 100 m / 28.viii.2001 M. Berra leg.", 5♀♀ (MRCI); "Iraklion / 17-28.viii.2002 / Martin Némec leg.", 1♀ (MRCI); "27.vi.2003/ Rethymno pref. / Plakias / J. Simandl lgt.", 6♂♂, 19♀♀ (MRCI); "Idi Oros occ. / Platania env. / vii.2005 leg. J. Simandl", 5♀♀ (MRCI); "Rethymno pref. / Plakias / 7.vi.2008 / J. Simandl lgt.", 7♂♂, 3♀♀ (MRCI); "Rodokino, Agia Marina / 9.vii.2010 / M. Romano leg.", 2♀♀ (MRCI); "Malia Palace / 26.ix.2012 / L. C. Cross leg.", 1♀ (DBCUK); "Georgioupoli / vii.2013 / leg. Fancello", 1♀ (MRCI); "Kalamaki / vii.2013 / leg. Fancello", 5♀♀ (MRCI); "Plakias beach, dunes / J. Halada 12.6.2017", 3♂♂ (MRCI).

Physetopoda pusilla (Klug, 1835)

DATA FROM LITERATURE. **EAE:** Rhodes (Pagliano & Agnoli 2018). **KK:** Crete (Schulz 1906 as *Mutilla*).

REMARKS. The only record for Crete given by Schulz (1906) has not been confirmed successively (see Nonveiller, 1972); it should be noted that this species was longer misidentified by authors until the contribution of Bischoff (1933).

Smicromyrme (Astomyrme) cristinae Lo Cascio, 2000

DATA FROM LITERATURE. **Kik:** Pano Koufonissi (Lo Cascio 2000).

Smicromyrme (Eremotilla) nigriceps Nonveiller, 1959 (Fig. 5)

DATA FROM LITERATURE. **KK:** Crete (Nonveiller 1972 as *S. orientalis* and *S. orientalis f. afasciata*). Gavdos (Lo Cascio 2015).

EXAMINED MATERIAL. **KK:** Crete: "Palmizio di Vai s.l.m. / 21-22.vi.2001 M. Berra leg.", 1♀ (MRCI); "Koutsounari s.l.m. / (Ierapetra) / 24.vi.2001 M. Berra leg.", 2♀♀ (MRCI); "Mirtos s.l.m. / (Ierapetra) / 25.vi.2001 M. Berra leg., 1♀ (MRCI); "Kourtaliotiko s.l.m. / 1.vii.2001 M. Berra leg.", 2♀♀ (MRCI); "Agia Galini s.l.m. / Riva dx T. Platys / 3.vii.2001 M. Berra leg.", 11♀♀ (MRCI); "Omalos 1000 m / (presso la grotta) / 22.viii.2001 M. Berra leg., 1♀ (MRCI); "Gerani (Chania) s.l.m. / 23.viii.2001 M. Berra leg.", 1♀ (MRCI); "Koutsomatados / (Topolia) 300 m / presso il F. Typhlos / 23.viii.2001 M. Berra leg.", 1♀ (MRCI); "Omalos 1100 m / 25.viii.2001 M. Berra leg.", 1♀ (MRCI); "Plokamiana / (Vathi) 100 m / 28.viii.2001 M. Berra leg.", 1♀ (MRCI); "Askifou 700 m / 29.viii.2001 M. Berra leg.", 8♀♀ (MRCI); "Theriso 500 m / 30.viii.2001 M. Berra leg.", 1♀ (MRCI); "Exo Potami 800 m / 2.ix.2001 M. Berra leg.", 1♀ (MRCI);



Figure 5. *Smicromyrme (Eremotilla) nigriceps* Nonveiller, 1959, Crete (photo by Marcello Romano).

(MRCI); "Altopiano di Lasithi / Mesa Lasithi 750 m / 3.ix.2001 M. Berra leg.", 1♀ (MRCI); "Ierapetra, Mirtos / hard clay bank / 28.ix.2012 / L. C. Cross leg.", 1♀ (DBCUK).

Smicromyrme (Eremotilla) novaki Invrea, 1954

EXAMINED MATERIAL. **EAE:** Rhodes: "Genadi-Apolakia / 26.iv.1990 / leg. D. Lange & T. Osten" 1♀ (PLCI); "Apolakia-Monolithos / 27.iv.1990 / leg. D. Lange & T. Osten" 1♀ (PLCI); "Kritina / 2.v.1990 / leg. D. Lange & T. Osten" 1♀ (PLCI).

REMARKS. First record for the Aegean Islands; this species has been recently reported for Greece by Lelej et al. (2003a as *S. nonveilleri*).

Smicromyrme (Eremotilla) vladani Nonveiller, 1972 (Fig. 6)

DATA FROM LITERATURE. **KK:** Crete (Nonveiller 1972)

EXAMINED MATERIAL. **KK:** Crete: "Palmizio di Vai s.l.m. / 21-22.vi.2001 M. Berra leg.", 1♀ (MRCI); "Koutsounari s.l.m. / (Ierapetra) / 24.vi.2001 M. Berra leg.", 11♀♀ (MRCI); "Gola di / Kourtaliotiko s.l.m. / 1.vii.2001 M. Berra leg.", 5♀♀ (MRCI); "Omalos 1000 m / (presso la grotta) / 22.viii.2001 M. Berra leg.", 2♀♀ (MRCI); "Koutsomatados / (Topolia) 300 m / presso il F. Typhlos / 23.viii.2001 M. Berra leg.", 7♀♀ (MRCI); "Omalos 1100 m / 25.viii.2001 M. Berra leg.", 1♀ (MRCI); "Agia Irini 650-700 m / 26.viii.2001 M. Berra leg.", 1♀ (MRCI); "Valico Nord / all'altopiano di / Omalos 900 m / 27.viii.2001 M. Berra leg.", 1♀ (MRCI);



Figure 6. *Smicromyrme (Eremotilla) vladani* Nonveiller, 1972, Crete (photo by Marcello Romano).

"Chania pref. / Georgioupoli 30.v.2002 / J. Simandl lgt.", 1 ♀ (MRCI); "Idi Oros 31.v.2002 / Fourfouras vill. / J. Simandl lgt.", 9 ♀♀ (MRCI); "1.vi.2003 / Rethymno pref. / Agia Fotini / J. Simandl lgt.", 3 ♀♀ (MRCI); "Idi Oros occ. / Platania env. / vii.2005 leg. J. Simandl", 1 ♀ (MRCI).

***Smicromyrme (Erimyrmel) pulawskii* Suárez, 1975**
DATA FROM LITERATURE. EAe: Rhodes (Suárez 1975).

***Smicromyrme (Smicromyrme) ruficollis* (Fabricius, 1793)**

DATA FROM LITERATURE. EAe: Kos (Petersen 1988).
REMARKS. Old records of *S. rufipes* for Rhodes (Invrea 1941) and Crete (Bischoff 1928 as *S. rufipes* f. *nigra*) could be referred to this taxon.

***Smicromyrme partitus partitus* (Klug, 1835)**

DATA FROM LITERATURE. KK: Crete (Bischoff 1928).

***Smicromyrme turanicus* (Morawitz, 1893) (Fig. 7)**

DATA FROM LITERATURE. EAe: Rhodes (Lo Cascio 2015). KK: Crete (Nonveiller 1972 as *S. arameana*).

EXAMINED MATERIAL. Kik: Kythnos: "Agh. Stephanou / 37°23'49"N 24°27'25"E / 24.iii.2016 G. Ruzzante leg.", 2 ♀♀ (MRCI); "Apokrisi / 37°24'39"N 24°23'50"E / 25.iii.2016 G. Ruzzante leg.", 2 ♀♀ (MRCI). EAe: Kos: "env. Agios Fokas / 36°51'45"N 27°21'14"E / 25.IV.2013 / M. Uliana leg.", 1 ♀ (MRCI). Lesvos: "Ayia Paraskevi, Kulturland / leg. G. Miksch / 12.v.1995" 1 ♀ (PLCI); "Fiume Tsiknias / (Arisvi) 13-16.vi.2003 / M. Berra leg.", 2 ♀♀ (MRCI); "pr. Chiesa di Ag. Ioanni 300 m / Vafeios (Mithimna) / 17.vi.2003, M. Berra leg.", 1 ♀ (MRCI); "Ipsilometopo 350 m / (Mithimna) / 18.vi.2003 / M. Berra leg.", 1 ♀ (MRCI). Rhodes: "Moni Th [...] / Asklepion 12.iv.1990 / D. Lange leg." 1 ♀ (PLCI); "Apolakia-Monolithos / 27-28.iv.1990 / leg. D. Lange & T. Osten" 2 ♀♀ (PLCI); "Eloussa / 30.v.2003 / P. Lo Cascio" 1 ♀ (PLCI). Samos: "Torr. Tsakalorema / (Pythagorion) / 22.viii – 3.ix.03 M. Berra leg.", 3 ♀♀ (MRCI); "Torrente Kakorema / (Ag. Konstantinos) / 25.viii.03 M. Berra lg.", 1 ♀ (MRCI). KK: Crete: "S Krete / Timbaki-Pitsidia / Sandgebiet / 10.iv.88 / leg. Schmid-Egger" 1 ♀ (PLCI); "Chanion / altopiano di Omalos / 1050-1150 m / 17-19.vi.97 M. Berra leg.", 1 ♀ (MRCI); "Palmizio di Vai s.l.m. / 21-22.vi.2001 M. Berra leg.", 1 ♀ (MRCI); "Lefka Ori Mts. 25.v.2002 / Omalos plateau / J. Simandl lgt.", 1 ♀ (MRCI); "Rethymno pref. / Agia Fotini / 1.vi.03 J. Simandl lgt.", 3 ♀♀ (MRCI); "Rethymno / Oros Idi, 6 km Wolskinakas / 17.v.2008 / F. Izzillo leg." 1 ♀ (RLCI); "Rethymno pref. / Plakias env. 1.vi.2012 / J. Simandl leg.", 2 ♀♀ (MRCI); "Is. c., 6.vi.12 / Rethymno Pref., Ida Ori Mts. / 1200m, Nidha plateau / J. Simandl leg.", 2 ♀♀ (MRCI); "Kalamaki / vii.2013 / leg. Fancello", 1 ♀ (MRCI); "Chania Pref. / Platania : Omalos / 35°20'58"N 23°54'30"E / 1040 m. – 28.v.2016 / M. Romano leg." 1 ♀ (MRCI); "Chania Pref. / Kantanos - Selino / Selinotikos Giros 1161 m / 35°19'24"N 23°51'38"E / 28.v.2016 M. Romano leg." 1 ♀ (MRCI); "Chania Pref. / Kantanos - Selino / 1161 m / 35°21'25"N 23°44'40"E / 30.v.2016 M. Romano leg." 1 ♀ (MRCI); "Chania Pref. / Kissamos / Strovels – Aligi / 35°21'35"N 23°40'19"E / 30.v.16 I. Sparacio leg." 1 ♀ (MRCI); "Heraklion Pref. / Gortyna: Dasos Rouva / 35°09'23"N 24°56'30"E / 1325 m. 1.vi.2016 M. Romano leg." 1 ♀ (MRCI); "Chania Pref. / Kantanos – Selino: Tourli / 35°20'18"N 23°51'11"E / 2.vi.2016 M. Romano leg." 3 ♀♀ (MRCI); "Rethymno / tra Spili & Aman / L. Saltini leg. 13.v.2018", 1 ♀ (MRCI); "Selakáno / v.2019 / V. Nemec lgt.", 1 ♀ (MRCI). Karpathos: "Is. Karpathos / luglio 1996 / leg. C. Grossi di Triana" 1 ♀ (PLCI).

REMARKS. New record for the Cyclades (Kythnos), Kos, Lesvos, Samos and Karpathos.

Mutilla europaea Linnaeus, 1758

EXAMINED MATERIAL. **KK:** Crete: "Omalos 6.1991 / Halada leg." 1♀ (MRCI); "Analipsi env. / 20.6.2011 / lgt. J. Kadlec" 2♂♂ (MRCI).

REMARKS. First record for the Aegean Islands.

Mutilla quinquemaculata Cyrillus, 1787

DATA FROM LITERATURE. **WAe:** Evvoia (Matteini Palmerini 1992). **Kik:** Andros (Gogala 2017). **Astypalea** (Lo Cascio 2015). **EAe:** Rhodes (Invrea 1941; Pagliano & Strumia 2007). **KK:** Crete (Cecconi 1895; Schulz 1906; Bischoff 1928; Nonveiller 1972; Pagliano 2005; Pagliano & Strumia 2007). Gavdos (Lo Cascio 2015). Kassos (Lo Cascio 2015).

EXAMINED MATERIAL. **Kik:** Milos: "Paliochori 29.vii.07 / Leg. Cartini A.", 1♀ (MRCI); "Trypiti m 150 / 36°44'17"N 24°25'35"E / 6.iv.2016 G. Ruzzante leg.", 1♀ (MRCI). Mykonos: "9-12.vii.1985 / E. Ratti leg.", 1♀ (MSNV). Serifos: "Agios Minas m 230 / 37°11'31"N 24°30'18"E / 28.iii.2016 G. Ruzzante leg.", 1♀ (MRCI). **EAe:** Lesvos: "Fiume Tsiknias / (Arisvi) 13-16.vi.2003 / M. Berra leg.", 1♀ (MRCI); "pr. Chiesa di Ag. Ioanni 300 m / Vafeios (Mithimna) / 25.vi.2003, M. Berra leg.", 1♀ (MRCI). Samos: "Samos / Sept. '75" 1♀ (PLCI); "Kokkari / 25.viii.-3.ix.1992 / S. Graziosi leg." 1♀ (MRCI); "Torr. Tsakalorema / (Pythagorion) / 22.viii – 3.ix.03 M. Berra leg.", 1♀ (MRCI); "città

/ 8.ix.2003 M. Berra leg.", 1♀ (MRCI). **KK:** Crete: "Sitia / 30.v.1983 / B. Massa leg.", 1♀ (MRCI); "Aghios Nikolaos / Boni Bartalucci 1988" 1♀ (PLCI); "Dint. di Koumas Lake / 7.v.1996 / D. Baiocchi leg.", 1♀ (MRCI); "Pr. F. Geropotamos / (Rethimnon) 26.vi.2001 / M. Berra leg.", 3♀♀ (MRCI); "Lago Kournas / 02-04.vii.2001 / M. Berra leg.", 7♀♀ (MRCI); "Plakias, env. / 5-7.vii.2001 / J. Simandl leg.", 1♀ (MRCI); "Gerani (Chania) / 23.viii.2001 / M. Berra leg." 1♀ (MRCI); "Omalos 1100 m / 25.viii.2001 / M. Berra leg." 1♀ (MRCI); Plokamiana (Vathi) 100 m / 28.viii.2001 / M. Berra leg." 1♀ (MRCI); "Askyfou 700 m / 29.viii.2001 / M. Berra leg." 1♀ (MRCI); "Chania pref., Georgioupoli / 30.v.2002 / J. Simandl leg." 1♀ (MRCI); "(Rethimno) Rodakino / Agia Marina beach / 35°10'87"N 24°17'67"E / 17-26.v.2008 Liberto Ig.", 1♀ (MRCI); "(Rethymno) / Myrthios m 170/190 / N 35.12 E 24.24 / 1/3.v.2015 – E Colonnelli", 1♀ (MRCI); "Rethymno Pref. / Agios Vasileios / Paralia Peristerés / 35°10'50"N 24°17'35"E / 29.v.2016, M. Romano leg.", 1♀ (MRCI). Karpathos: "20.viii.2002 / A. Cartini leg.", 1♀ (ACCI).

REMARKS. Generically recorded by Olivier (1811) "dans les îles de l'Archipel". New record for Milos, Mykonos, Lesvos, Samos and Karpathos.

Ronisia brutia brutia (Petagna, 1787)

DATA FROM LITERATURE. **WAe:** Evvoia (Matteini Palmerini 1992 as *R. barbara* f. *brutia*; Lo Cascio 2015). **Skiathos** (Petersen 1988). **Kik:** Andros (Gogala 2017). **Folegandros** (Lo Cascio 2015). **Milos** (Invrea 1940 as *Mutilla barbara* var. *calva*). **Naxos** (Lo Cascio 2015). **Paros** (Petersen 1988). **Syros** (Petersen 1988). **Thira** (Petersen 1988). **EAe:** Kastellorizo (Invrea 1941 as *Mutilla barbara* var. *brutia*). **Rhodes** (Invrea 1941 as *Mutilla barbara* var. *brutia*).

EXAMINED MATERIAL. **WAe:** **Skiathos:** "Ftelia / 13-26.vi.2010 / R. Lisa leg.", 1♀ (RLCI). **Kik:** Milos: "Paliochori 29.vii.07 / Leg. Cartini A.", 1♀ (ACCI); "Kekini m 170/ 36°41'37"N 24°23'13"E / 4.iv.2016 G. Ruzzante leg.", 1♀ (MRCI). **Serifos:** "Pano Chora m 300 / 37°09'13"N 24°30'21"E / 30.iii.2016 G. Ruzzante leg.", 1♀ (MRCI). **EAe:** Lesvos: "pr. Chiesa di Ag. Ioanni 300 m / Vafeios (Mithimna) / 17.vi.2003, M. Berra leg.", 3♀♀ (MRCI). **Rhodes:** "Kolimbia / Loutani river / 18-19.vi.2001, Rosa leg.", 1♀ (MRCI). **Samos:** "Torr. Tsakalorema / (Pythagorion) / 22.viii – 3.ix.03 M. Berra leg.", 4♀♀, 7♂♂ (MRCI); "25.vi.2003 / V. Vigli leg." 1♀ (MRCI).

REMARKS. New record for Skiathos, Serifos, Lesvos and Samos.

Ronisia brutia minoensis Nonveiller, 1972

DATA FROM LITERATURE. **Kik:** **Astypalea** (Lo Cascio 2015). **KK:** Crete (Lucas 1853-1854 as *Mutilla maculata*; Raulin 1869 as *Mutilla maculata*; Cecconi 1895 as *Mutilla brutia*; Schulz 1906 as *Mutilla*



Figure 7. *Smicromyrme turanicus* (Morawitz, 1893), Crete (photo by Marcello Romano).

barbara and *Mutilla barbara* f. *brutia*; Bischoff 1928 as *Mutilla barbara* f. *brutia*; Nonveiller 1972; Petersen 1988; Pagliano & Strumia 2007). **Karpathos** (Petersen 1988).

EXAMINED MATERIAL. **KK:** Crete: "Makryialis / 24.vii.1999 / A. Cartini leg.", 1♀ (MRCI); "Palmizio di Vai / 21-22.vi.2001 / M. Berra leg.", 1♀ (MRCI); "Pr. F. Geropotamos (Rethimnon) / 26.vi.2001 / M. Berra leg.", 1♀ (MRCI); "Presso Foce T. Gerani / (Rethimnon) / 29.vi.2001 / M. Berra leg.", 2♀♀ (MRCI); "Kourtaliotiko s.l.m. / 1.vii.2001 M. Berra leg.", 1♀ (MRCI); "Lefka Ori Mts. / Imbros valley / 24.v.2002 / J. Simandl leg.", 2♀♀ (MRCI); "Chania pref. / Georgioupoli 30.v.2002 / J. Simandl lgt.", 1♀ (MRCI); "Idi Oros 31.v.2002 / Fourfouras vill. / J. Simandl lgt.", 1♀ (MRCI); "Rethymno pref. / Agia Fotini / 1.vi.2003 / J. Simandl lgt.", 1♀ (MRCI); "Idi Oros, Fourfouras env. / 2.vi.2003 / J. Simandl leg." 1♀ (MRCI); "Rethymno pref., Plakias / 4.vii.2003 / J. Simandl leg.", 1♀ (MRCI); "Theriso VW / 25.v.2004 / M. Šárovec leg. / 1♀ (MRCI); "Rethymno pref., Platania / vi.2008 / J. Simandl leg." 2♀♀ (MRCI); "Rethymno pref. / Plakias env. 1.vi.2012 / J. Simandl lgt.", 1♀ (MRCI); "S. Astroussia / Ori, SW of Vasiliki / J. Halada, 6.vi.2017", 1♀ (MRCI); "Hania / Kalikratis m. 700 / 35°14'25"N 24°15'089"E / 16.v.2018 L. Saltini leg.", 1♀ (MRCI); "Ano Rodakino / v.2019 / V. Nemec lgt.", 1♀ (MRCI). **Dragonada:** "28.v.1983 / B. Massa leg.", 1♀ (MRCI).

REMARKS. New record for Dragonada.

[*Ronisia ghilianii* (Spinola, 1843)]

DATA FROM LITERATURE. **Kik:** Amorgos (Bischoff 1934 as *Mutilla barbara* var. *decoratifrons*). Seriphos (Bischoff 1934 as *Mutilla barbara* var. *decoratifrons*). **KK:** Crete (Bischoff 1928 as *Mutilla barbara* f. *brutia* – *decoratifrons*; Pagliano 2005; Pagliano & Strumia 2007).

REMARKS. This species is widely distributed in W Mediterranean (Petersen 1988; Lelej 2002); as the above records concern localities considerably outside of its geographical range, its occurrence in the Aegean Islands needs to be confirmed.

Tropidotilla grisescens (Lepeletier, 1845)

DATA FROM LITERATURE. **KK:** Crete (Nonveiller 1972 as *T. littoralis* f. *grisescens*).

Tropidotilla littoralis (Petagna, 1787)

DATA FROM LITERATURE. **WAe:** Evvoia (Matteini Palmerini 1992). **Kik:** Mykonos (Sichel & Radoszkowski 1869-1870 as *Mutilla*). Syros (Sichel & Radoszkowski 1869-1870 as *Mutilla graeca*; André 1899-1903 as *Mutilla littoralis* var. *graeca*). **EAe:** Rhodes (Invrea 1941). **KK:** Crete (Nonveiller 1972). Kos (Schulthess 1929 as *Mutilla*).

EXAMINED MATERIAL. **NAe:** Thasos: "Ins. Thasos / August 1966 / leg. Ellwanger" 1♀ (PLCI). **Kik:**

Milos: "Plaka, Kastro m 170 / 36°44'36"N 24°25'19"E / 5.iv.2016 G. Ruzzante leg.", 1♀ (MRCI). Sifnos: "Theologos Mongout m 200 / 36°58'23"N 24°42'41"E / 2.iv.2016 G. Ruzzante leg.", 1♀ (MRCI). **EAe:** Lesvos: "5 km NW Ayasos / *Pinus* wald – Bach, leg. / G. Miksch 20.v.1995" 1♀ (PLCI); "S Kalomis / 18.v.1996 / R. Grimm" 1♀ (PLCI); "Fiume Tsiknias / (Arisvi) 13-16.vi.2003 / M. Berra leg.", 2♀♀ (MRCI); "Ipsilometopo 350 m / (Mithimna) / 18.vi.2003 / M. Berra leg.", 1♀ (MRCI); "Sopra Filia 450 m / (Mithimna) / 21.vi.2003 M. Berra leg.", 1♀ (MRCI); "Tzithra (Antissa) / pr. Torr. Vouglaris 50 m / 24.vi.2003, M. Berra leg.", 1♀ (MRCI); "pr. Chiesa di Ag. Ioanni 300 m / Vafeios (Mithimna) / 25.vi.2003, M. Berra leg.", 1♀ (MRCI). Rhodes: "Apolakia-Monolithos / 27.iv.1990 / leg. D. Lange & T. Osten" 1♀ (PLCI); "Feraklos / 18- 25.vi.2001 / leg. L. Fancello", 1♀, 1♂ (MRCI); "Kolimbia / 18- 25.vi.2001 / leg. L. Fancello", 1♀ (MRCI); "Kolympia / Cape Vagia / 14-25.vi.2011 / R. Lisa leg.", 2♀♀ (MRCI). Samos: "Torr. Tsakalorema / (Pythagorion) / 22.viii – 3.ix.03 M. Berra" 5♀♀, 2♂♂ (MRCI); "Mesokampos / Baia Mikali / 9-13.vi.2013 leg. R. Lisa", 1♀ (MRCI). **KK:** Crete: "Lefka Ori Mts. 25.v.2002 / Omalos plateau / J. Simandl lgt.", 1♀ (MRCI).

REMARKS. New record for North Aegean Islands (Thasos), Mykonos, Sifnos, Lesvos and Samos.

Tropidotilla sareptana (André, 1901)

EXAMINED MATERIAL. **EAe:** Samos: "pr. Stagno salato di / Psili Ammos / 26-30.viii.03 / M. Berra leg." 1♀ (MRCI).

REMARKS. First record for the Aegean Islands.

Tropidotilla semirufa (André, 1893)

EXAMINED MATERIAL. **Pe:** Poros: "Poros / Graecia" (SMNS).

REMARKS. So far known for Armenia, Azerbaijan, Iran, Jordan and Turkey (Lelej 2002; Lelej & Yildirim 2009; Pagliano *et al.* 2020); first record for Greece.

Artiotilla biguttata (Costa, 1858)

DATA FROM LITERATURE. **EAe:** Rhodes (Nonveiller 1979, in the map but not in the text).

EXAMINED MATERIAL. **EAe:** Rhodes: "Apolakia-Monolithes / 28.iv.1990 / leg. D. Lange & T. Osten" (PLCI).

Trogaspidia catanensis (Rossi, 1794)

EXAMINED MATERIAL. **EAe:** Kos: "Tigaki env. / 5-15.vi.2018 / lgt. J. Kadlec" 2♀♀ (MRCI). Lesvos: "Vasilika / 22.iii.2014 / G. Ruzzante leg." 1♀ (MRCI). Samos: "Marathocampos / 1.iv.1988 / leg. D. Lange" 1♀ (PLCI); "canneti di Potokaki / (Pythagorion) / 21-28.viii.03 M. Berra leg." 2♀♀ (MRCI); "Presso stagno salato di Psili Ammos / 26-30.viii.2003 / M. Berra leg." 4♀♀ (MRCI).

REMARKS. First record for the Aegean Islands.

DISCUSSION

The checklist includes 41 species (with two infraspecific taxa: *Ronisia brutia* ssp. *minoensis* and *Nemka viduata* ssp. *macquarti*); 2 of them (*Myrmilla erythrocephala* and *Ronisia ghilianii*) are doubtful records, as both are remarkably out of their distributional range.

The faunal data concern 36 islands, including 6 for which the occurrence of Mutillidae was not yet reported (Samos, Lesvos, Kythnos, Dragonada, Serifos and Sifnos). The finding of *Ronisia brutia* ssp. *minoensis* on the small islet of Dragonada (surface: 0.028 km²; maximum elevation: 125 m a.s.l.) has particular interest, because these hymenopterans are usually lacking or rare in the micro-insular habitats.

Tropidotilla semirufa is recorded for the first time for Greece, while after its recent record *Myrmilla emiliae* is definitively confirmed for the Greek fauna; *Cystomutilla ruficeps*, *Ctenotilla caeca*, *Mutilla europaea*, *Smicromyrme novaki*, *Tropidotilla sareptana* and *Trogaspidia catanensis* are new records for Aegean Islands.

The Aegean fauna seem to include only a small number of endemics. It sounds strange especially for Crete, that usually is characterized by an high level of endemism due to its long term isolation and topographical heterogeneity (Legakis & Kypriotakis 1994). Instead, this latter island and Rhodes host the highest number of species (respectively 20 and 19).

Although the checklist is not exhaustive and for many islands the available data offer presumably an underestimated faunal framework, an average linkage cluster analysis (UPGMA) using Jaccard's coefficient was performed to evaluate the similarity among islands' groups (Fig. 8). The obtained dendrogram shows a certain affinity be-

tween the Western Aegean, the Cyclades and, secondarily, the Eastern Aegean, while the North Aegean and the Argo-Saronic are clustered in a rather isolated position.

LITERATURE CITED

- André E. 1899–1903. Species de Hyménoptères d'Europe & d'Algérie. Tome Huitième. Les Mutillides. V. Duboscld & Hermann, Paris, 480 pp.
- Arnone M. & Romano M. 1995. Hymenoptera Mutillidae e Apterognidae, pp. 739–752 in: Massa B. (ed.). Arthropoda di Lampedusa, Linosa e Pantelleria (Canale di Sicilia, Mar Mediterraneo). Il Naturalista siciliano, (4) 19 (suppl.).
- Arnone M. & Romano M. 1998. Nuovi reperti di Chrysidae e Mutillidae in Sicilia e Sardegna (Hymenoptera). Il Naturalista siciliano, (4) 22 (1–2): 19–24.
- Berland L. 1925. Faune de France 10. Hyménoptères vespiiformes. I (Sphegidae, Pompilidae, Scoliidae, Sapygidae, Mutillidae). Lechevalier, Paris, 364 pp.
- Bischoff H. 1928. VII. Hymenoptera (Vespidae, Scoliidae, Mutillidae, Chrysidae und Evanidae), pp. 85–90. In: Roewer C.F. (Ed.), Zoologische Streifzüge in Attika, Morea und besonders auf der Insel Kreta. II. Abhandlungen Naturwissenschaftlicher Verein Bremen, 27.
- Bischoff H. 1933. Remarks on *Smicromyrme pusilla* (Klug). Stylops, 2: 73–74.
- Bischoff H. 1934. Mutillidae, p. 64 in: Werner F. (Ed.), Ergebnisse einer zoologischen Studien- und Sammelreise nach Griechenland, namentlich nach den Inseln des Ägäischen Meeres. III. Hymenopteren. Sitzungsberichte der Akademie der Wissenschaften in Wien, Mathematisch-Naturwissenschaftliche Klasse, 143.
- Bischoff H. & Nonveiller G. 1965. Beschreibung des vermutlichen männchen von *Platymyrilla 5-fasciata* Ol. (Hymenoptera, Mutillidae). Bollettino della Società entomologica italiana, 95: 22–26.
- Cecconi G., 1895. Ricordi zoologici di un viaggio all'Isola di Candia. Bulletttino della Società entomologica italiana, 27: 169–222.
- Fattorini S. 2002. Biogeography of the tenebrionid beetles (Coleoptera, Tenebrionidae) of the Aegean Islands (Greece). Journal of Biogeography, 29: 49–67.
- Generani M., Pagliano G., Scaramozzino P.L. & Strumia F. 2001. Gli Imenotteri delle isole di Capraia, Giglio, Gorgona, Pianosa e Montecristo (Arcipelago Toscano) (Insecta: Hymenoptera). Frustula Entomologica, (n.s.) 24 (37): 51–74.
- Gogala A. 2017. Ose mravljarice Slovenije (Hymenoptera: Mutillidae). Scopolia, 90: 1–39.
- Grandi G. 1954. Contributi alla conoscenza degli Imenotteri Aculeati. XXVI. Bollettino dell'Istituto di Entomologia agraria dell'Università di Bologna, 20: 81–255.
- Hammer K. 1950. On the insect fauna of Cyprus. Results of the expedition of 1939 by Harald, Hakan and P.H. Lindberg VI. Hymenoptera aculeata. II. Chrysidae, Scoliidae und Mutillidae der Insel Cypern.

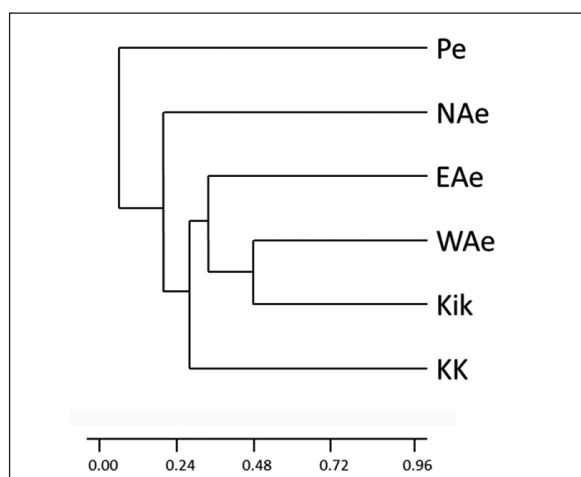


Figure 8. Dendrogram obtained by UPGMA clustering for the Aegean islands' regions according to Jaccard's index similarity matrix.

- Societas Scientiarum Fennica Commentationes biologicae, 10: 1–17.
- Hausdorf B. & Hennig C. 2005. The influence of recent geography, palaeogeography and climate on the composition of the fauna of the central Aegean Islands. Biological Journal of the Linnean Society, 84: 785–795.
- Invrea F. 1940. Mutillidi dell’isola di Cipro raccolti dal Sig. G.A. Mauromoustakis. Bollettino della Società entomologica italiana, 72: 118–122.
- Invrea F. 1941. Mutillidi raccolti dal Principe Della Torre e Tasso nelle isole italiane dell’Egeo. Bollettino della Società entomologica italiana, 73: 38–40.
- Invrea F. 1942. Nuovi contributi alla conoscenza della fauna delle isole italiane dell’Egeo. 17. Mutillidae e Chrysididae (Hymenoptera). Bollettino del Laboratorio di Zoologia generale e agraria di Portici, 32: 104–117.
- Kontopanou A. & Panitsa M. 2020. Habitat islands on the Aegean islands (Greece): elevational gradient of chasmophytic diversity, endemism, phytogeographical patterns and needs for monitoring and conservation. Diversity, 12: 33.
- Lelej A.S. 1985. Osy-nemki (Hymenoptera, Mutillidae) fauny SSSR i sopredelnykh stran [Mutillids (Hymenoptera, Mutillidae) of the URSS and neighboring countries]. Nauka, Leningrad, 268 pp. (in Russian).
- Lelej A.S. 2002. Catalogue of the Mutillidae (Hymenoptera) of the Palaearctic region. Dalnauka, Vladivostok, 172 pp.
- Lelej A.S. & Yildirim E. 2009. A review of the Mutillidae (Hymenoptera) of Turkey. Zootaxa 2160: 1–28.
- Lelej A.S., Standfuss L. & Standfuss K. 2003a. To the knowledge of the mutillid wasps of Greece (Hymenoptera, Mutillidae). Entomofauna, 24: 121–140.
- Lelej A.S., Standfuss L. & Standfuss K. 2003b. To the knowledge of the mutillid wasps of Greece (Hymenoptera, Mutillidae): Addition. Entomofauna, 24: 305–308.
- Legakis A. & Kypriotakis Z. 1994. A biogeographical analysis of the island of Crete, Greece. Journal of Biogeography, 21: 441–445.
- Ljubomirov T. 2011. Range re-evaluation and morphological recognition in two West Palaearctic species of *Myrmilla* Wesmael, 1851 (Insecta: Hymenoptera: Mutillidae). Annalen der Naturhistorischen Museums in Wien, (B) 112: 19–72.
- Lo Cascio P. 2000. A new species of *Smicromyrme* from the Cyclades Islands (Hymenoptera, Mutillidae). Fragmenta entomologica, 32: 305–311.
- Lo Cascio P. 2015. Worldwide checklist of the island mutillid wasps. Biodiversity Journal, 6: 529–592.
- Lo Cascio P. & Romano M. 2004. Mutillid wasps of the Italian minor islands (Hymenoptera Mutillidae). Bollettino della Società entomologica italiana, 136: 227–250.
- Lucas H. 1853–1854. Essai sur les animaux articulés qui habitent l’île de Crète. Revue et Magasin de Zoologie pure et appliquée, (2) 5 [1853]: 418–424, 461–468, 514–531, 565–576; 6 [1854]: 28–44, 165–170, 278–285, 487–491, 562–571.
- Maroulis L., Mylonas M. & Vardinoyannis K. 2021. Species-area relationships of the Aegean, a comparative approach between six taxa. Frontiers in Biogeography, 13 (4), e52929.
- Matteini Palmerini M. 1992. Mutillidae del Museo civico di Storia naturale di Verona (Hymenoptera) (Contributo alla conoscenza dei mutillidi paleartici). Bollettino del Museo civico di Storia naturale di Verona, 16 [1989]: 187–226.
- Morawitz A. 1865. Über eine neue, oder vielmehr bekannte Form von Männchen unter den Mutilliden, nebst einer Übersicht der in Europa beobachteten Arten. Bulletin de l’Académie impériale des sciences de St.-Pétersbourg, (3) 8: 82–141.
- Nagy C.G. 1972. Records on the genus *Smicromyrme* Thoms. from Greece (Hym. Mutillidae). Biologia Gallo-Hellenica, 4: 27–31.
- Nonveiller G. 1972. Mutillides de l’Île de Crète, récoltées lors d’un voyage en automne 1959 (Quatrième contribution à la connaissance des mutillides, Hyménoptères). Acta entomologica Jugoslavica, 7: 3–23.
- Nonveiller G. 1979. La *Glossomyrme mervensis* (Radoszkowski) 1893 (*Smicromyrme fertoni* Invrea 1953) est-elle l’autre sexe de l’*Artiotilla biguttata* (Costa) 1858? (Hymenoptera, Mutillidae). Neuvième contribution à la connaissance des Mutilides paléarctiques. Acta entomologica Jugoslavica, 15: 5–18.
- Olivier M. 1811. Encyclopédie Méthodique. Histoire naturelle. Insectes. Tome huitième. H. Agasse, Paris, 722 pp.
- Özbek H., Yildirim E. & Osten T. 1999. A contribution to the knowledge of the fauna of the families Myrmecidae and Mutillidae (Hymenoptera, Aculeata) in Türkiye. Türkiye Entomoloji Dergisi, 23: 15–26.
- Pagliano G. 2005. I Mutillidae della collezione Spinola (Hymenoptera). Bollettino del Museo regionale di Scienze naturali di Torino, 23: 267–322.
- Pagliano G. 2009. *Physetopoda rameli*, nuova specie di Mutillidae di Grecia (Hymenoptera). Bollettino della Società entomologica italiana, 141: 179–186.
- Pagliano G. 2011. Ricerche imenotterologiche nell’isola di Lampedusa con descrizione di una nuova specie di mutillide (Hymenoptera, Mutillidae). Fragmenta entomologica, 43: 215–224.
- Pagliano G. & Agnoli G.L. 2018. Note sugli Imenotteri Mutillidi dell’Italia meridionale con chiave dicotomica dei maschi delle specie mediterranee di *Physetopoda* Schuster 1949 (Hymenoptera, Vespoidea: Mutillidae). Bollettino della Società entomologica italiana, 150: 127–137.
- Pagliano G. & Scaramozzino P.L. 2021. La collezione di Mutillidae e Bradynobaenidae (Hymenoptera) di Guido Pagliano. Bollettino del Museo regionale di Scienze naturali di Torino, 38: 63–147.
- Pagliano G. & Strumia F. 2007. Contributo alla conoscenza dei Mutillidae italiani (Hymenoptera, Scolioidea). Bollettino del Museo regionale di Scienze naturali di Torino, 24: 25–110.
- Pagliano G. & Strumia F. 2013. *Smicromyrme corriasi* n. sp. from Sardinia and new data on some Italian *Smicromyrme* and *Stenomutilla* (Hymenoptera, Mutillidae). Il Naturalista valtellinese, Atti del Museo civico di Storia naturale di Morbegno, 24: 55–66.

- Pagliano G. & Strumia F. 2019. Il genere *Smicromyrme* in Sardegna con descrizione di una nuova specie (Insecta: Hymenoptera: Mutillidae). Quaderni di studi e notizie di Storia naturale della Romagna, 49: 253–261.
- Pagliano G., Brothers D.J., Cambra R., Lelej A.S., Lo Cascio P., Matteini Palmerini M., Scaramozzino P.L., Williams K.A. & Romano M. 2020. Checklist of names in Mutillidae (Hymenoptera), with illustrations of selected species. Bollettino del Museo regionale di Scienze naturali di Torino, 36: 5–425.
- Petersen B. 1988. The Palaearctic Mutillidae of I.C. Fabricius and some related material (Insecta, Hymenoptera, Aculeata). Steenstrupia, 14: 129–224.
- Poulakakis N., Kapli P., Lymberakis P., Trichas A., Vardinojannis K., Sfenthourakis S. & Mylonas M. 2015. A review of phylogeographic analyses of animal taxa from the Aegean and surrounding regions. Journal of Zoological Systematics & Evolutionary Research, 53: 18–32.
- Raulin V. 1869. Description physique de l'île de Crète, publiée sous les auspices de M. le ministre de l'instruction publique. Tome Second. A. Bertrand, Paris, pp. viii + 463–1078 pp.
- Romano M. 2004. *Smicromyrme agusii* è il maschio di *Smicromyrme (Eremotilla) perisii* (Hymenoptera, Mutillidae). Bollettino della Società Entomologica Italiana, 136: 173–178.
- Romano M. 2012. *Nanomutilla vaucherii* in Sardegna, prima segnalazione per l'Italia (Hymenoptera Mutillidae). Bollettino della Società entomologica italiana, 144: 23–27.
- Schulthess A. [de] 1929. Hyménoptères, pp. 263–271. In: Ghigi A., Issel R., Brian A., Santucci R., Citterio V. & Alzani F. (Eds.), Ricerche faunistiche nelle isole italiane dell'Egeo. Archivio zoologico italiano, 12–13 (7).
- Schulz W.A. 1906. Die Hymenopteren der Inseln Creta, pp. 8–75 in: Schulz W.A. (Ed.), Spolia hymenopterologica. A. Pape, Paderborn.
- Sfenthourakis S., Giokas S. & Tzanatos E., 2004. From sampling stations to archipelagos: investigating aspects of the assemblage of insular biota. Global Ecology & Biogeography, 13: 23–35.
- Sfenthourakis S., Pafilis P., Parmakelis A., Poulakakis N. & Triantis K.A. (Eds.), 2018. Biogeography and Biodiversity of the Aegean. In honour of Prof. Moysis Mylonas. Broken Hill, Nicosia, 300 pp.
- Sichel J. & Radoszkowski O. 1869–1870. Essai d'une monographie des Mutilles de l'ancien continent. Horae Societatis Entomologicae Rossicae, 6: 139–172; 173–309.
- Skorikov A.S. 1927. Sur la sousfam. des Myrmillini (Myrmosidae, Hymenoptera) dans la région Paléarctique. Ezhegodnik Zoologicheskogo Muzeya Akademii Nauk SSSR, 28: 33–47. (in Russian)
- Suárez F.J. 1975. Especies nuevas o poco conocidas de la fauna Mediterránea. IV. Tres nuevas *Smicromyrme* de la zona oriental (Hymenoptera, Mutillidae). Archivos del Instituto de Aclimatación, 20: 155–171.
- Suárez F.J. 1988. Mirmosidos de la Península Ibérica (Hymenoptera, Myrmosidae). Graellsia, 44: 81–158.
- Strumia F. & Pagliano G. 2014. Imenotteri Mutillidae dell'Arcipelago Toscano, pp. 250–254. In: Lenzi A., Leoni L., Baldacci C., Brizzi B., De Santi C., Dell'Agnello P., Domenici V., Ferri E., Lenzi P., Montesarchio E., Piombanti P.P. & Santinelli M. (Eds.), Codice Armonico 2014 – Quinto congresso di Scienze naturali – Ambiente Toscano. ETS, Pisa.
- Strumia F., Pagliano G. & Wolf H. 2008. Mutillidae, Chrysididae e Pompilidae dell'isola dell'Asinara (Sardegna, Italia) (Hymenoptera). Frustula entomologica, (n.s.) 30 (43): 47–53.
- Triantis K.A. & Mylonas M. 2009. Greek islands, Biology, pp. 388–392. In: Gillespie R. & Glaguer D.A. (Eds.), Encyclopedia of Islands. University of California Press, Berkeley-Los Angeles-London.
- Turrisi G.F. 1999. Contributo alla conoscenza dei Mutillidae di Sicilia ed isole circumsiciliane (Hymenoptera, Scolioidea). Bollettino dell'Accademia Gioenia di Scienze naturali, 31 (354): 119–155.
- Yıldırım E. 2006. The present situation of the Mutillidae-fauna (Hymenoptera, Aculeata) in Turkey. Entomofauna, 27 (22): 277–284.

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Studies dedicated to Norma Chapman

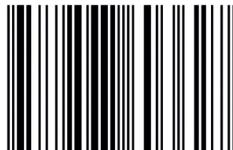


Εῦδονσι δ' ὄρέων κορυφαί τε καὶ
φάραγγες πρώτονές τε καὶ χαράδραι φύλά
τ' ἐρπέτ' ὅσα τρέφει μέλαινα γαῖα θήρες τ'
ὄρεσκῷοι καὶ γένος μελισσᾶν καὶ κνῶ
δαλ' ἐν βένθεσσι πορφυρέας ἀλός εῦδονσι
δ' οἰωνῶν φῦλα τανυπτερύγων

"end the mountain-peaks are asleep and the ravines,
the headlands and the torrent-beds,
all the creeping tribes that the black earth nourishes,
the wild animals of the mountains, the race of bees
and the monsters in the depths of the surging sea;
and the tribes of long-winged birds are asleep".

(Alcman, 7th century B.C.)

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