

The Ptiliidae of Sardinia – new records, distribution and zoogeography, with a checklist of Italian species (Coleoptera)*

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ABSTRACT

The fauna of Ptiliidae (Coleoptera: Staphylinoidea) in Sardinia is documented and analyzed. Altogether, 26 species are recorded, including previous and new species records. Three species are new to Sardinia: *Ptenidium nitidum* (Heer, 1841), *P. punctatum* (Gyllenhal, 1827) and *Ptilium fuscum* (Erichson, 1845). Most species of Ptiliidae of Sardinia recorded up to now are more or less common and widely spread in Europe and the western Palaearctic, the exception being *Ptenidium ponteccianum* Strassen, 1955, a presumed endemic to Corsica, Sardinia and Pantelleria Island (Sicily). At least 15–20 further ptiliid species are expected to occur in Sardinia. General and Italian geographic distribution, chorotype, Sardinian localities listed according to the administrative division and ecological notes are given for each species. *Ptenidium doderoi* Flach in Bertolini (1904) [*nomen nudum*] is referred to *P. ponteccianum*. This latter species is firstly recorded from Pantelleria Island (Sicily). Corrections of the latest Italian checklists brings the total number of Ptiliidae known from Italy to 77.

Key words: Ptiliidae, Sardinia, Sicily, Italy, checklist, *Ptenidium ponteccianum*, *Acrotrichis rossothoeni*, biogeography, endemics.

RIASSUNTO

Gli Ptiliidae (Coleoptera) della Sardegna – nuove segnalazioni, distribuzione e zoogeografia, con una checklist delle specie italiane

La fauna a Ptiliidae (Coleoptera: Staphylinoidea) della Sardegna è elencata e analizzata. Complessivamente, includendo dati di letteratura e inediti, sono segnalate 26 specie. Tre specie sono nuove per la Sardegna: *Ptenidium nitidum* (Heer, 1841), *P. punctatum* (Gyllenhal, 1827) e *Ptilium fuscum* (Erichson, 1845). La maggior parte delle specie di Ptiliidae sinora segnalate della Sardegna sono più o meno comuni ed ampiamente distribuite in Europa e nella Paleartide occidentale; l'unica eccezione è *Ptenidium ponteccianum* Strassen, 1955, un presunto endemita di Corsica, Sardegna e Isola di Pantelleria (Sicilia). Si ritiene che almeno altre 15–20 specie di Ptiliidae siano presenti in Sardegna. *Ptenidium doderoi* Flach in Bertolini (1904) [*nomen nudum*] è riferito a *P. ponteccianum*. Quest'ultima è inoltre segnalata per la prima volta per l'Isola di Pantelleria (Sicilia). Di ogni specie è riportata la distribuzione geografica generale e in Italia, il corotipo di appartenenza, le località di raccolta in Sardegna e le preferenze ambientali. Correzioni alle più recenti checklist italiane portano il numero di Ptiliidae conosciuti in Italia a 77 specie.

INTRODUCTION

The Ptiliidae (featherwing beetles) are a rather small family of terrestrial staphylinoid beetles related to the Leiodidae, Hydraenidae and Agyrtidae. Externally, they are immediately recognizable by their minute body size (0.3–4.0 mm; European species usually 0.5–1.0 mm), feather-like alae (flight-wings), thin clavate antennae and seemingly unsegmented tarsi (in reality 3-segmented). Most species dwell in litter and in rotting organic matter in shady sites (woodland) feeding on spores and hyphae of fungi. Other

species occur in ephemeral habitats such as compost, dung and rotting fungi, occasionally in kelp on sea beaches, hollow trees or in bracket fungi (Johnson 1982; Dybas 1990; Hall 2005). Most species have a wide geographical distribution, probably due to a high dispersal capacity. Although it could be assumed that due to their high local abundance they probably play a certain role in the degradation of litter and microfungi, we know almost nothing of the effect of their activities.

In Europe, ca 140 species of Ptiliidae are known, depending on the inclusion or exclusion of the Cauca-

sian region (Johnson 2004; Polilov 2004). For Italy, Johnson (2004) listed 73 species while Angelini et al. (1995) claimed 75 and Angelini & Sörensson (1997) 76. The varying number is partly due to inconsistencies of nomenclature and different views on synonyms and species properties. In order to settle the most recent species number for Italy the latest nomenclatural changes have been applied (see Johnson 2001, 2003, 2004) in combination with an updating of known records. Thus, adding the missing species for Italy [= "IT"] in the recent Palaearctic catalogue (Johnson 2004) the number of Italian ptiliid species should be corrected to 77. An updated checklist of Italian Ptiliidae is presented as an Appendix below. According to Angelini et al. (1995) the number of Sardinian Ptiliidae is 23. Three additional species are here recorded from Sardinia for the first time.

As far as is known, no serious surveys focusing on the Ptiliidae of Sardinia have ever been performed. However, several entomologists, Italian as well as foreign, have collected the odd specimen or small amounts of specimens on the island, that are now scattered among various museums, historical and modern collections in Italy and Europe. The main exception to this pattern is the Genoan entomologist Roberto Poggi, who during several visits in the 1970's and 1980's collected large amounts of Ptiliidae from various parts of Sardinia (including the smaller off-shore islands). This material was identified by the present author and is now housed in the Natural History Museum of Genoa. The material of Ptiliidae from the survey by the Centro Nazionale per lo Studio e la Conservazione della Biodiversità Forestale "Bosco Fontana" of Verona (CNBFVR) may thus be labelled as the second effort towards a survey of Sardinian ptiliids.

STUDY AREA

The field-work carried out by the CNBFVR staff was geographically restricted to certain parts of SW Sardinia (cf. Mason et al. 2006; Cerretti et al. 2009; Bardiani 2011). This survey produced only a comparatively small number of Ptiliidae, all previously known from the island. Since the author was aware of many more species records from Sardinia, either from the literature or from his own investigations of museum collections containing material from Sardinia, it seemed appropriate to extend this work into a complete faunistic treatment of the Sardinian ptiliid fauna. Thus, in this chapter all of Sardinia is encompassed, including the smaller islands.

MATERIAL AND METHODS

Data collection

Capital works (national faunas and checklists) and some regional references (*vide* "References" below) pertaining to Italian Ptiliidae were scanned for information on Italian and Sardinian records. Except for Angelini & Sörensson (1997), these sources usually lack specific information on Sardinian Ptiliidae as to localities, habitats, collectors, dates etc. Therefore, previously unpublished records were added when available (*vide* "Material examined" below) and they are presented here for the first time. These records are based on material mainly preserved in Italian collections, determined by the author since the mid-1980's and gathered in hand-written notes preserved in Lund.

Nomenclature and classification

The ptiliid nomenclature as applied here mainly follows the recent Palaearctic catalogue (Johnson 2004), but not necessarily providing all available synonyms. Synonyms are given if they directly or indirectly relate to the latest checklist of Italian Ptiliidae (Angelini et al. 1995) or if they present new information, or are otherwise well established.

Faunistic list

For single species, references are given to literature sources pertaining to that particular species and its distribution in Italy and Sardinia (if available). Older distribution records cited as "Tutta Italia" ["All of Italy"] were interpreted as also including Sardinia. Under "Material examined", when more detailed distributions are known, Sardinian provinces are underlined. The following data are provided under "Material examined": locality of collection, date, abbreviation of collector/s, possible method or habitat of collection, number of specimens, abbreviation of depository in brackets. All localities of collection are listed alphabetically according to their administrative province. In 2005, following a re-arrangement of the Sardinian administration, four new provinces (Carbonia-Iglesias, Medio Campidano, Ogliastra, Olbia-Tempio) were introduced. This change also involved many of the sites here considered. For practical reasons only the new provinces are given in the list of localities even in cases where the old provinces (or their abbreviations) are given on the labels. The Italian distribution is given at regional level; administrative regions are listed from north to south and from west to east. Brief remarks on life history and ecology are given under all species. Under "Notes", specific recommendations for certain species are given as to

their identification, nomenclature etc. Possible interpolations are made in square brackets.

Zoogeography

The biogeographical distribution types (chorotypes) principally follow the system of Vigna Taglianti et al. (1999), mainly based upon the general distributions provided by Johnson (2004).

ABBREVIATIONS

COLLECTORS. AD = A. Doderò; AZ = A.M. Zuppa; CT = C. Torti; DA = D. Avesani; DB = D. Birtele; DW = D. Whitmore; FA = F. Angelini; GG = G. Grifitti [very probably Grafitti]; GK = G. Krüger; GN = G. Nardi; LF = L. Fancello; MB = M. Bardiani; MM = M. Mei; MT = M. Tisato; MZ = M. Zapparoli; PCe = P. Cerretti; PG = P. Gravina; RP = R. Poggi; SC = S. Calabrò; SF = S. Folchini; TP = T. Palm, WS = W. Schawaller.

DEPOSITORIES. CMS = coll. M. Sörensson (Lund, Sweden); CFA = coll. F. Angelini (Francavilla Fontana, Italy); CNBFVR = Centro Nazionale per lo Studio e la Conservazione della Biodiversità Forestale "Bosco Fontana" di Verona (Marmirolo, Italy); MCNG = Museo Civico di Storia Naturale, Genova (Italy); MHNG = Museum d'Histoire Naturelle, Genève (Switzerland); ZMUO = Zoological Museum of the University of Oslo (Norway); NMHB = Naturhistorisches Museum der Humboldt-Universität, Berlin (Germany); SMNS = Staatliches Museum für Naturkunde, Stuttgart (Germany); ZMUH = Zoological Museum of the University of Helsinki (Finland); ZMUL = Zoological Museum of the University of Lund (Sweden).

OTHER ABBREVIATIONS. coll. = collection of; cn = car net; dint. = environs of; ex = specimen/s; sdb = same data but; prov. = province; S.S. = State Road; vers. = slope; wdc = without date of collection.

FAUNISTIC LIST

1. *Ptenidium (Ptenidium) formicetorum* Kraatz, 1851

Ptenidium myrmecophilum (Motschulsky, 1845) nec (Allibert, 1844)
Ptenidium myrmecophilum sensu Auct. [variant spelling]

LITERATURE RECORDS. Sardinia [no precise locality] (Porta 1926; Luigioni 1929; Angelini et al. 1995; Polilov 2004).

CHOROTYPE. Sibero-European.

ITALIAN DISTRIBUTION. Trentino-Alto Adige, Venetia, Friuli-Venezia Giulia, Umbria, Campania, Sardinia (Porta 1926; Luigioni 1929; Horion 1949; Peez & Kahlen 1977; Kahlen et al. 1994; Kahlen & Hellrigl 1996, as *P. myrmecophilum*).

ECOLOGY. A deciduous woodland species usually oc-

curing in regular leaf litter. It is also frequently associated with ants, often encountered in heaps of *Formica* spp. or in rotten wood, tree hollows and under bark infested by various species of *Lasius* Fabricius, 1804.

NOTES. The presence of this species in Sardinia needs confirmation as the records from the literature are old and unreliable.

2. *Ptenidium (Gillmeisterium) insulare* Flach, 1889

Ptenidium nitidum (Heer, 1841) var. *insulare* Flach, 1889

LITERATURE RECORDS. Sardinia [no precise locality] (Luigioni 1929; Angelini et al. 1995; Polilov 2004).

CHOROTYPE. Mediterranean?

ITALIAN DISTRIBUTION. Tuscany, Sardinia (Luigioni 1929; Angelini et al. 1995).

ECOLOGY. Nothing is known about this rarely seen species which was described from Corsica and the Ionian islands (Greece). Possibly a litter species.

NOTES. In most of the literature, it is regarded as a variety of the common *P. nitidum* (Heer, 1841), but it was recently elevated to full species status (Angelini et al. 1995; Johnson 2001, 2004). Its presence in Sardinia needs confirmation as the records from the literature are old.

3. *Ptenidium (Wankowizium) intermedium* Wankowicz, 1869

LITERATURE RECORDS. Sardinia [no precise locality] (Horion 1949; Angelini et al. 1995; Polilov 2004).

CHOROTYPE. Western Palaearctic, excluding the Atlantic islands.

ITALIAN DISTRIBUTION. Trentino-Alto Adige, Tuscany, Basilicata, Calabria, Sicily, Sardinia (Doderò 1908; Vitale 1920; Porta 1926; Luigioni 1929; Horion 1949; Peez & Kahlen 1977; Kahlen et al. 1994; Kahlen & Hellrigl 1996; Angelini & Sörensson 1997).

ECOLOGY. A wetland species usually occurring in damp litter, e.g. in marshes and fens of *Salix* or *Alnus*, often close to the water's edge such as along lakes and streams.

NOTES. The presence of this species in Sardinia needs confirmation as the records from the literature are old.

4. *Ptenidium (Matthewsium) laevigatum* Erichson, 1845

LITERATURE RECORDS. Sardinia [no precise locality] (Porta 1926; Horion 1949; Angelini et al. 1995; Polilov 2004).

CHOROTYPE. Western Palaearctic, introduced in New

Zealand.

ITALIAN DISTRIBUTION. Trentino-Alto Adige, Tuscany, Puglia, Basilicata, Calabria, Sicily, Sardinia (Vitale 1920; Porta 1926; Luigioni 1929; Horion 1949; Peez & Kahlen 1977; Angelini & Montemurro 1986; Angelini 1986, 1991; Angelini & Sörensson 1997).

ECOLOGY. A synanthropic species occurring in gardens, barns, stables etc. in compost, old manure, hay and other mouldy vegetable remnants. It frequently also occurs in burrows and nests of small mammals and birds, occasionally in caves.

NOTES. The presence of this species in Sardinia needs confirmation as the records from the literature are old. In addition, the risk of confusion with the closely related *P. pontelegianum* Strassen, 1955 (see below) is high, and all unchecked literature records from Sardinia (and Corsica) should be checked and re-evaluated. While both Porta (1926) and Horion (1949) cite "Tirol" (Italy and Austria) or "Süd-Tirol" (Italy), the ptiliid check-lists of Peez & Kahlen (1977), Kahlen (1987) and Angelini et al. (1995) do not record this species from Südtirol or northern Italy (N). Undoubtedly, this rather common and widely spread species also occurs in the north of Italy (although precise data are currently lacking); thus, Porta's and Horion's data are most probably correct and "N" should be added to the Italian check-list (Angelini et al. 1995).

5. *Ptenidium (Gillmeisterium) nitidum* (Heer, 1841)

MATERIAL EXAMINED. **Ogliastra prov.:** south of Bari Sardo, 20.IV.1992, WS, 4 ex (SNMS).

CHOROTYPE. Western Palaearctic, introduced in eastern North America (Sörensson 2003a).

ITALIAN DISTRIBUTION. Trentino-Alto Adige, Tuscany, Basilicata, Calabria (Luigioni 1929; Peez & Kahlen 1977; Angelini & Montemurro 1986; Kahlen et al. 1994; Bordoni 1995; Kahlen & Hellrigl 1996; Angelini & Sörensson 1997), Sardinia.

ECOLOGY. In Europe a very common and widely spread species, primarily occurring in all kinds of rotting organic matter (litter, dung, carcasses, rotting fungi, bird and mammal nests), often also caught in flight. It appears to be partly synanthropic, occurring in garden refuse, stables, compost, hay and similar.

NOTES. Not recorded from Sardinia by Angelini et al. (1995), but the record "Tutta Italia" [= all of Italy] by Porta (1926) includes also this island (cf. Penati 2009: 200).

6. *Ptenidium (Matthewsium) pontelegianum* Strassen, 1955

Ptenidium doderoi Flach, *in litt.*: Angelini et al. (1995, as *species propria*).

LITERATURE RECORDS. Sardinia [no precise locality] (Bertolini 1904, as "*P. Doderoi* Flach"; Angelini et al. 1995, as "*Ptenidium doderoi* Flach, *in litt.*"); Johnson 2004). Sardinia? (Luigioni 1929: 1016, as *Ptenidium ?Doderoi* Flach). **Nuoro prov.:** Aritzo, Monte Gennargentu (Johnson 2003).

MATERIAL EXAMINED. **Carbonia-Iglesias prov.:** Iglesias, loc. "Mamenga", 610 m, 12.II.2002, LF, 1 ex (CMS); sdb 1.III.2006 (CNBFVR). **Nuoro prov.:** Aritzo, Mte [= Monte] Gennargentu, wdc, GK, 1 ex (MHNG); Gennargentu, sotto Punta Marcusa, 1200 m, 24.IX.1980, RP, 3 ex (MCNG); Supramonte di Orgosolo, For. Deman. [= Foresta Demaniale] Montes, East of [Monte] Novo S. Giovanni, 1000 m, 29.IV.1983, RP, "al vaglio lecceta" [= by sieving in a *Quercus ilex* forest], 18 ex (MCNG). **Ogliastra prov.:** Lanusei, S.S. 198 km 89, 2.VII.1984, CT, "lecceta su granito" [= *Q. ilex* forest on granite], 1 ex (MCNG), 5 ex (CMS) [fig. 1]; Villanova Strisàili, S.S. 389 km 173, 30.VI.1984, CT, "lecceta" [= *Q. ilex* forest], 1 ex (MCNG). **Oristano prov.:** Monte Ferru, 1891, AD, 2 ex (NMHB), 2 ex (CMS); Monte Ferru, vers. S, 600 m, 26.IX.1980, RP, 1 ex (MCNG). **Sassari prov.:** Isola Asinara, pend. [= slopes of] Monte Scmunica, 12.X.1989, RP, "lecceta" [= *Q. ilex* forest], 4 ex (MCNG); Laerru, Tanca Manna, "Grotta su Colero" "1077 L. Sard." [= cave cadastral number], 4.III.1989, GG, 2 ex (MCNG).

CHOROTYPE. W-Mediterranean, seemingly restricted to Sardinia, Corsica and Pantelleria Island (Sicily) in the Mediterranean Sea.

ITALIAN DISTRIBUTION. Sardinia and Pantelleria Island (Sicily) (Angelini et al. 1995).

ECOLOGY. A little-known species (fig. 1). The type specimen from Corsica was found in a cave in droppings of bats (Strassen 1955). Most Sardinian specimens were found in "lecceta" [= *Quercus ilex* wood], i.e. in oak woodland (*Quercus* spp.) or by "vaglio" [= by sieving].

NOTES. Recorded from Sardinia by Johnson (2003, 2004) without, however, referring to *Ptenidium doderoi in litt.* The manuscript name "*Ptenidium doderoi*" (currently a *nomen nudum*), as used for example in Angelini et al. (1995), is almost certainly synonymous to *P. pontelegianum*. The examined specimens collected in Sardinia by A. Dodero and bearing the handwritten, old labels "*Ptenidium Doderoi* Flach" are conspecific with *P. pontelegianum*. The species is here firstly recorded also from Sicily: Trapani province, Pantelleria Island, Piano di Ghirlanda, 3.XII.1992, MM RP AZ, 1 ex (MCNG).

7. *Ptenidium (Ptenidium) punctatum* (Gyllenhal, 1827)



Fig. 1. *Ptenidium (Matthewsius) ponteleanum* from Lanusei (Sardinia). Body length: 0.8 mm (photo by C. Hansson).

MATERIAL EXAMINED. **Olbia-Tempio prov.:** Isola Molara, 28.IX.1985, PG, "fra Posidonia spiaggiata" [= amongst stranded *Posidonia*], 1 ex (MCNG).

CHOROTYPE. Western Palearctic, Australia.

ITALIAN DISTRIBUTION. Piedmont, Trentino-Alto Adige, Liguria (Porta 1926; Luigioni 1929), Sardinia. **ECOLOGY.** Primarily a coastal, salt-tolerant species occurring on or near the beach in heaps of seaweed and *Posidonia*, sometimes also in nearby heaps of fermenting grass and compost. Very rare occurrences are known from saline European inland localities (e.g. Neusiedler See, Austria) (Horion 1949).

NOTES. Previously not recorded from Sardinia (cf. Angelini et al. 1995).

8. *Ptenidium (Ptenidium) pusillum* (Gyllenhal, 1808)

LITERATURE RECORDS. Sardinia [no precise locality] (Bargagli 1871; Krausse 1913; Porta 1926; Luigioni 1929; Angelini et al.

1995; Polilov 2004).

MATERIAL EXAMINED. **Cagliari prov.:** S. Giorgio, 8–10.V.1967, TP, 1 ex (ZMUL). **Carbonia-Iglesias prov.:** Isola S. Antioco, Sa Scrocca Manna, 11.V.1988, RP, 1 ex (MCNG); Isola S. Antioco, Cala Lunga, 12.VI.1989, RP, 6 ex (MCNG); sdb 13.VI.1989, 8 ex (MCNG). **Medio Campidano prov.:** Villacidro, Serbatoio, dint. P.ta piscina Argiolas, 282 m, 12.IX.2006, DB GN DA MB, "rigagnolo, light trap" [= light trap on a small brook], 1 ex (CNBFVR). **Olbia-Tempio prov.:** Isola La Maddalena, Case Fangotto, 4.VII.1990, RP, "fragmiteto" [= *Phragmites* bed], 3 ex (MCNG); Santa Teresa [Gallura], VI.1968, TP, 13 ex (ZMUL). **Sassari prov.:** Isola Asinara, Diga Ruda, 16.VI.1989, RP, "*Juncetum*", 3 ex (MCNG); Isola Asinara, Estala, 1904, SF, 1 ex (MCNG).

CHOROTYPE. Western Palearctic, including the Atlantic islands. Introduced in North America and in the Australian and Oriental regions.

ITALIAN DISTRIBUTION. Probably all of Italy ("Tutta Italia") (cf. Luigioni 1929; Porta 1926; Angelini et al. 1995). Specifically recorded from Trentino-Alto Adige (Peez & Kahlen 1977; Kahlen & Hellrigl 1996), Lombardy (Sörensson 2004), Venetia (Ratti 2007), Friuli-Venezia Giulia (Marzuttini 1955), Emilia-Romagna (Zangheri 1969), Liguria (cf. Bordoni 1982, as *P. pusillum* [sic] Gyll.; Angelini & Sörensson 1997), Latium (Carpaneto & Vigna Taglianti 1995), Apulia, Basilicata, Calabria, Sicily (cf. Angelini & Sörensson 1997; Angelini 1998).

ECOLOGY. In Europe a very common and widely spread species, primarily occurring in all kinds of rotting organic matter (litter, dung, carcasses, rotting fungi, bird and mammal nests), often also caught in flight. It appears to be partly synanthropic, occurring in garden refuse, stables, compost, hay and similar.

NOTES. As puncturation and pubescence often vary, this species has been redescribed several times under various names. For a complete list of synonyms, see Johnson (2004).

9. *Actidium aterimum* (Motschulsky, 1845)

LITERATURE RECORDS. Sardinia [no precise locality] (Bertolini 1904; Porta 1926; Luigioni 1929; Horion 1949; Angelini et al. 1995; Polilov 2004).

CHOROTYPE. European (except North Europe) with extension to Turkey.

ITALIAN DISTRIBUTION. Campania, Sicily, Sardinia (Ragusa 1883; Flach 1889; Bertolini 1904; Luigioni 1929; Porta 1926; Lundberg et al. 1987b; Angelini & Sörensson 1997).

ECOLOGY. Occurring in the sun-exposed littoral zone

in muddy sand and shingle along rivers and streams.

NOTES. The presence of this species in Sardinia and in Italy (see Angelini & Sörensson 1997) needs confirmation as the records from the literature are old. In addition, there is a high risk of confusion with closely related species.

10. *Actidium coarctatum* (Haliday, 1855)

LITERATURE RECORDS. Sardinia [no specific locality] (Porta 1926; Luigioni 1929; Lundberg et al. 1987b; Angelini et al. 1995; Polilov 2004). **Carbonia-Iglesias prov.:** Porto Pino, Stagno di Foxi, canale di bonifica, 16.IV.1978, SC, 1 ex (Pisano et al. 1982).

CHOROTYPE. Western Palaearctic coastlines, including the Atlantic islands and the Arabian Peninsula.

ITALIAN DISTRIBUTION. Probably along the coasts of all of Italy. Specifically recorded from Liguria, Campania, Apulia, Sicily, Sardinia (Porta 1926; Luigioni 1929; Lundberg et al. 1987a, 1987b; Angelini et al. 1995; Angelini & Sörensson 1997; Angelini 1999).

ECOLOGY. A coastal, salt-tolerant species occurring on or near the beach in heaps of seaweed and *Posidonia*, sometimes also in nearby heaps of fermenting grass and compost, rarely more distant from the coast.

11. *Oligella foveolata* (Allibert, 1844)

LITERATURE RECORDS. Sardinia [no precise locality] (Luigioni 1929; Angelini et al. 1995; Polilov 2004).

CHOROTYPE. Western Palaearctic, excluding the Atlantic islands. Introduced in North America.

ITALIAN DISTRIBUTION. Piedmont, Liguria, Latium, Sicily, Sardinia (Luigioni 1929; Lundberg et al. 1987b; Angelini et al. 1995).

ECOLOGY. Anthropophilic. Primarily confined to rotting organic matter in habitats influenced or made by man, e.g. compost heaps, garden refuse, stables, old hay, occasionally also in manure, on carcasses, rotting fungi etc.

NOTES. The presence of this species in Sardinia is probable but needs confirmation as the records from the literature are old.

12. *Millidium minutissimum* (Ljungh, 1804)

Ptilium exaratum Auctt. nec Allibert, 1844

LITERATURE RECORDS. Sardinia [no precise locality] (Bertolini 1904; Porta 1926; Luigioni 1929; Horion 1949; Angelini et al. 1995).

MATERIAL EXAMINED. **Olbia-Tempio prov.:** Santa Teresa [Gallura], VI.1968, TP, 2 ex (ZMUL).

CHOROTYPE. Western Palaearctic, excluding the Atlantic islands. Introduced in North America.

ITALIAN DISTRIBUTION. Liguria, Lombardy, Venetia, Trentino-Alto Adige, Friuli-Venezia Giulia, Emilia-Romagna, Tuscany, Campania, Apulia, Basilicata, Sicily, Sardinia (Fiori 1915; Porta 1926; Luigioni 1929; Zangheri 1969; Peez & Kahlen 1977; Angelini & Montemurro 1986; Kahlen et al. 1994, as *P. exaratum*; Angelini et al. 1995; Kahlen & Hellrigl 1996, as *P. exaratum*; Kahlen & Hellrigl 1996, as *P. canaliculatum* (Erichson, 1845) [= *exaratum* sensu Auct.]; Angelini & Sörensson 1997).

ECOLOGY. Anthropophilic. Usually associated to barns and stables, in dung-hills, old hay mixed with horse or cow dung, in stable manure, occasionally in compost, dung and other rotting organic matter, or in flight.

NOTES. Lohse (1989) erroneously mixed up *Ptilium exaratum* (Allibert, 1844), its junior synonym *P. canaliculatum* Erichson, 1845 and the quite different *Millidium minutissimum* (Ljungh, 1804) with each other (Johnson 2001, 2004). Unfortunately, his conclusion was adopted by Angelini et al. (1995), viz. by using *Ptilium exaratum* as a valid name for *M. minutissimum* Auctorum. These two names have nothing to do with each other and belong, in fact, to different genera (cf. Johnson 2001, 2004). The misconception is here corrected (see also Appendix below).

13. *Ptilium affine* Erichson, 1845

LITERATURE RECORDS. Sardinia [no precise locality] (Porta 1926; Luigioni 1929; Horion 1949; Angelini et al. 1995; Polilov 2004).

CHOROTYPE. Central European with scattered occurrences in adjacent parts of Europe.

ITALIAN DISTRIBUTION. Piedmont, Trentino-Alto Adige, Tuscany, Latium, Sardinia (Porta 1926; Luigioni 1929; Horion 1949; Peez & Kahlen 1977; Kahlen et al. 1994; Bordoni 1995; Angelini et al. 1995; Kahlen & Hellrigl 1996).

ECOLOGY. A wetland species occurring in litter in marshes and bogs, and along banks of lakes and streams.

NOTES. The presence of this species in Sardinia needs confirmation as the records from the literature are old, and due to the high risk of confusion with closely related species. It was overlooked for Italy by Johnson (2004).

14. *Ptiliolium (Ptiliolium) fuscum* (Erichson, 1845)

MATERIAL EXAMINED. **Olbia-Tempio prov.:** Golfo Aranci, wdc, AD, 1 ex (ZMUH). **Cagliari prov.:** bivio Chia, 14.V.1995, FA, 5 ex (CFA; CMS).

CHOROTYPE. Holarctic.

ITALIAN DISTRIBUTION. Trentino-Alto Adige, Friuli-Venezia Giulia, Apulia, Basilicata, Sicily (Porta 1926; Luigioni 1929; Horion 1949; Peez & Kahlen 1977; Angelini & Montemurro 1986; Lundberg et al. 1987a; Kahlen & Hellrigl 1996; Angelini & Sörensson 1997) and Sardinia.

ECOLOGY. In all kinds of rotting organic matter, e.g. compost, dung, manure, carcasses, fungi etc., especially in woodland.

NOTES. Previously not recorded from Sardinia (Angelini et al. 1995; Polilov 2004).

15. *Ptiliolium (Ptiliolium) spencei* (Allibert, 1844)

LITERATURE RECORDS. Sardinia [no precise locality] (Porta 1926; Luigioni 1929; Angelini et al. 1995; Polilov 2004).

CHOROTYPE. Western Palaearctic, introduced in North America.

ITALIAN DISTRIBUTION. Piedmont, Lombardy, Trentino-Alto Adige, Friuli-Venezia Giulia, Liguria, Tuscany, Latium, Abruzzi, Campania, Apulia, Basilicata, Sicily, Sardinia (Porta 1926; Luigioni 1929; Horion 1949; Lundberg et al. 1987a; Angelini et al. 1995; Bordoni 1995; Angelini & Sörensson 1997).

ECOLOGY. In all kinds of rotting organic matter, e.g. compost, dung, manure, carcasses, fungi etc., particularly in man-made habitats.

16. *Ptiliola kunzei* (Heer, 1841)

Ptiliola depressa (Motschulsky, 1845)

LITERATURE RECORDS. Sardinia [no precise locality given] (Luigioni 1929; Angelini et al. 1995, as *Ptiliolium depressum* (Motschulsky, 1845); Polilov 2004).

CHOROTYPE. Holarctic.

ITALIAN DISTRIBUTION. "Tutta Italia" [= all of Italy] (Bertolini 1904; Porta 1926). Specifically recorded from Trentino-Alto Adige, Tuscany, Abruzzi, Apulia, Basilicata, Sicily, Sardinia (Luigioni 1929; Peez & Kahlen 1977; Angelini & Montemurro 1986; Angelini 1987; Kahlen & Hellrigl 1996; Angelini & Sörensson 1997).

ECOLOGY. In all kinds of rotting organic matter, e.g. compost, dung, manure, carcasses, fungi etc.

NOTES. The synonymy as given above refers to Johnson (2004).

17. *Ptinella aptera* (Guérin-Méneville, 1839)

Ptinella aptera subsp. *formicoxena* Menozzi, 1923

LITERATURE RECORDS. Sardinia [no precise locality given] (Luigioni 1929; Angelini et al. 1995; Polilov 2004).

CHOROTYPE. Holarctic (western Palaearctic and eastern North America).

ITALIAN DISTRIBUTION. Piedmont, Trentino-Alto Adige, Friuli-Venezia Giulia, Liguria, Emilia-Romagna, Tuscany, Latium, Campania, Basilicata, Calabria, Sardinia (Luigioni & Tirelli 1911; Menozzi 1923, as *P. aptera* ssp. *formicoxena*; Porta 1926; Luigioni 1929; Peez & Kahlen 1977; Angelini & Montemurro 1986; Angelini et al. 1995; Bordoni 1995; Sparacio 1995; Kahlen & Hellrigl 1996; Angelini & Sörensson 1997).

ECOLOGY. A hollow tree species occurring in ancient deciduous woodland. It is usually found in hollows or under bark, often also in flight. The pupal cell was described by De Marzo (2008b).

NOTES. Due to the high probability of confusion with closely related species, the record from Sardinia needs confirmation. For further synonyms, see Johnson (2004).

18. *Ptinella denticollis* (Fairmaire, 1858)

LITERATURE RECORDS. Sardinia [no precise locality given] (Luigioni 1929; Angelini et al. 1995; Angelini & Sörensson 1997; Polilov 2004).

CHOROTYPE. Western Palaearctic.

ITALIAN DISTRIBUTION. Piedmont, Liguria, Trentino-Alto Adige, Tuscany, Apulia, Basilicata, Sicily, Sardinia (Luigioni 1929; Peez & Kahlen 1977; Lundberg et al. 1987b; Kahlen & Hellrigl 1996; Angelini & Sörensson 1997).

ECOLOGY. An arboreal species, in most of Europe confined to *Quercus* woodland. It usually occurs under loose bark or in stumps. In northern parts of Europe it is confined to aspen (*Populus tremula*).

NOTES. In Angelini et al. (1995: 9) the year of description should be corrected to 1858 (not 1857).

19. *Actinopteryx fucicola* (Allibert, 1844)

LITERATURE RECORDS. Sardinia [no precise locality given] (Porta 1926; Luigioni 1929; Horion 1949; Angelini et al. 1995; Angelini & Sörensson 1997).

CHOROTYPE. Atlantic-western Palaearctic coasts, western Indian Ocean coasts.

ITALIAN DISTRIBUTION. Liguria, Venetia, Friuli-Venezia Giulia, Campania, Apulia, Sicily, Sardinia (Porta 1926; Luigioni 1929; Marzuttini 1955; Angelini et

al. 1995; Sparacio 1995; Angelini & Sörensson 1997; Angelini 1999; De Marzo 2008a).

ECOLOGY. A coastal, halophilous species where both larvae and adults occur on or near the beach in heaps of seaweed and *Posidonia*, sometimes in numbers.

20. *Nephanes titan* (Newman, 1834)

LITERATURE RECORDS. Sardinia [no precise locality given] (Luigioni 1929; Angelini et al. 1995; Polilov 2004).

CHOROTYPE. Holarctic (Western Palaearctic, North America).

ITALIAN DISTRIBUTION. "Tutta Italia" [= all of Italy] (Porta 1926). Specifically recorded from Trentino-Alto Adige, Tuscany, Campania, Apulia, Basilicata, Sicily, Sardinia (Ragusa 1883; Porta 1926; Luigioni 1929; Angelini & Montemurro 1986; Angelini 1987; Lundberg et al. 1987b; Angelini et al. 1995; Sparacio 1995; Kahlen & Hellrigl 1996; Angelini & Sörensson 1997). ECOLOGY. Anthropophilic. It occurs in all kinds of rotting organic matter, e.g. compost, dung, manure, carcasses, fungi etc., particularly in man-made habitats.

21. *Acrotrichis (Acrotrichis) atomaria* (De Geer, 1774)

LITERATURE RECORDS. Sardinia [no precise locality] (Bargagli 1871, as *Trychopteryx atomaria*; Krause 1913, as *Trichopteryx atomaria*; Luigioni 1929; Angelini et al. 1995; Polilov 2004).

CHOROTYPE. Western Palaearctic, excluding the Atlantic islands.

ITALIAN DISTRIBUTION. Liguria (Bordoni 1982), Friuli (Marzuttini 1955), Trentino-Alto Adige, Emilia-Romagna, Tuscany, Campania, Apulia, Basilicata, Calabria, Sicily, Sardinia (Luigioni 1929; Peez & Kahlen 1977; Angelini et al. 1995; Sparacio 1995; Kahlen & Hellrigl 1996; Angelini & Sörensson 1997; Rocchi & Bordoni 2004).

ECOLOGY. A wetland species confined to moist litter and wet moss in or along marshes, bogs and fens as well as along the banks of lakes and streams, often in shady sites.

NOTES. Due to the high risk of confusion with closely related species, all older Italian records (before 1975) of this species for which the genitalia were not checked should be re-studied and re-checked for their identity. The record from Sardinia is old and needs confirmation.

22. *Acrotrichis (Acrotrichis) fascicularis* (Herbst, 1793)

LITERATURE RECORDS. Sardinia [no precise locality] (Luigioni 1929; Angelini et al. 1995; Polilov 2004). **Nuoro prov.:** near

Sorgono (Krause 1914: 98, as *Trichopteryx fascicularis* H.).

MATERIAL EXAMINED. **Cagliari prov.:** Lago Mulargia, 400 m, 21.IX.1980, RP, 1 ex (MCNG). **Carbonia-Iglesias prov.:** Domusnovas, dint. sa Duchessa (strada per Perda Niedda), 350 m, 8.VI.2004, GN, "torrentello in lecceta, raccolta diretta" [= small brook in a *Quercus ilex* forest, direct collecting], 1 ex (CNBFVR); Iglesias, Case Marganai dint., 660 m, 7.VI.2004, DB PCe GN MT DW, cn, 19 ex (CNBFVR), 1 ex (CMS); sdb 8.VI.2004, 37 ex (CNBFVR), 5 ex (CMS); sdb 9.VI.2004, 4 ex (CNBFVR). **Olbia-Tempio prov.:** Telti, 26.V.1976, RP, "sotto [= under] *Cistus monspeliensis*", 1 ex (MCNG). **Nuoro prov.:** NE of Lula, 23.IV.1992, WS, 2 ex (SMNS); Sorgono [without further data], 1 ex (ZMUO).

CHOROTYPE. Western Palaearctic, introduced in North America and New Zealand.

ITALIAN DISTRIBUTION. "Tutta Italia" [= all of Italy] (Porta 1926). Specifically recorded from Lombardy, Trentino-Alto Adige, Tuscany, Latium, Campania, Apulia, Basilicata, Calabria, Sicily, Sardinia (Luigioni 1929; Peez & Kahlen 1977; Lundberg et al. 1987a; Angelini et al. 1995; Angelini 1996; Kahlen & Hellrigl 1996; Angelini & Sörensson 1997; Angelini 1998; Sörensson 2003b, 2004; Fanfani et al. 2006; Sörensson 2007).

ECOLOGY. A common and widely spread species in all kinds of rotting vegetation: forest litter, compost, hay etc., occasionally also in nests of birds and mammals, in dung, carcasses and rotting fungi.

NOTES. Due to the high risk of confusion with closely related species, all older Italian records (before 1975) of this species for which the genitalia were not checked should be re-studied and re-checked for their identity.

23. *Acrotrichis (Ctenopteryx) grandicollis* (Mannerheim, 1844)

LITERATURE RECORDS. Sardinia [no precise locality] (Luigioni 1929; Angelini et al. 1995; Polilov 2004).

MATERIAL EXAMINED. **Nuoro prov.:** str. [= road] Fonni-Désulo, su [= on] rio Aratu, 950 m, 8.V.1995, FA, 3 ex (CFA).

CHOROTYPE. Holarctic, introduced in New Zealand.

ITALIAN DISTRIBUTION. Piedmont, Venetia, Trentino-Alto Adige, Friuli-Venezia Giulia, Emilia-Romagna, Tuscany, Latium, Campania, Apulia, Basilicata, Sicily, Sardinia (Vitale 1920, as *Trichopteryx grandicollis*; Porta 1926; Luigioni 1929; Marzuttini 1955; Zangheri 1969; Peez & Kahlen 1977; Angelini & Montemurro 1986; Angelini et al. 1995; Angelini 1996; Kahlen & Hellrigl 1996; Angelini

& Sörensson 1997).

ECOLOGY. Common and widely spread in all kinds of rotting organic matter such as compost, dung, manure, fungi, carcasses and alike.

NOTES. Due to the high risk of confusion with closely related species, all older Italian records (before 1975) of this species for which the genitalia were not checked should be re-studied and re-checked for their identity.

24. *Acrotrichis (Acrotrichis) intermedia* (Gillmeister, 1845)

LITERATURE RECORDS. Sardinia [no precise locality] (Krausse 1913, as *Trichopteryx intermedia*; Luigioni 1929; Angelini et al. 1995; Polilov 2004).

MATERIAL EXAMINED. **Nuoro prov.:** Supramonte di Orgosolo, For. Deman. [= Foresta Demaniale] Montes, top of Monte Novo S. Giovanni, 1250 m, 29.IV.1983, RP, "al vaglio sub *Ribes*" [= by sieving under *Ribes*], 1 ex (MCNG).

CHOROTYPE. Holarctic (Western Palaearctic, North America).

ITALIAN DISTRIBUTION. "Tutta Italia" [= all of Italy] (Porta 1926). Specifically recorded from Lombardy, Venetia, Trentino-Alto Adige, Friuli, Liguria, Emilia-Romagna, Tuscany, Campania, Apulia, Basilicata, Calabria, Sicily, Sardinia (Ravasini & Ravasini 1923; Porta 1926; Luigioni 1929; Porta 1959; Marzuttini 1955; Heyrovsky 1968; Zangheri 1969; Peez & Kahlen 1977; Focarile 1986; Lundberg et al. 1987a; Angelini et al. 1995; Angelini 1996; Kahlen & Hellrigl 1996; Angelini & Sörensson 1997; Sörensson 2003b; Rocchi & Bordoni 2004).

ECOLOGY. A typical woodland litter species occurring in all vegetation zones except the alpine-arctic. It is rarely encountered in man-made habitats such as compost.

NOTES. Due to the high risk of confusion with closely related species, all older Italian records (before 1975) of this species for which the genitalia were not checked should be re-studied and re-checked for their identity.

25. *Acrotrichis (Acrotrichis) rosskotheni* Sundt, 1971

LITERATURE RECORDS. Sardinia [no precise locality] (Angelini et al. 1995; Polilov 2004). **Nuoro prov.:** Monte Albo, 800 m, 24.V.1976, RP, 1 ex (MCNG) (cf. Angelini & Sörensson 1997).

MATERIAL EXAMINED. **Carbonia-Iglesias prov.:** Domusnovas, dint. sa Duchessa, 350 m, 8.VI.2004, GN, "torrentello in lecceta, raccolta diretta" [= small brook in a *Quercus ilex* forest, direct collecting], 3 ex (CNBFVR); Domusnovas, Grotta di San

Giovanni, 325 m, 12.XI.2006, MB GN MZ DW, "vaglio in lecceta" [= sieving in a *Q. ilex* forest], 2 ex (CNBFVR); Iglesias, Case Marganai dint., 660 m, 7.VI.2004, DB PCe GN MT DW, cn, 83 ex (CNBFVR), 2 ex (CMS); sdb 8.VI.2004, 151 ex (CNBFVR), 10 ex (CMS); sdb 9.VI.2004, 1 ex (CNBFVR); Iglesias, Case Marganai, 725 m, 1.IV.2002, LF, 1 ex (CNBFVR); Iglesias, loc. "Mamenga", 610 m 1.III.2006, LF, "vaglio" [= by sieving], 1 ex (CNBFVR). **Nuoro prov.:** Cala Gonone, 19.V.1980, RP, "al vaglio lecceta" [= by sieving in *Q. ilex* forests], 15 ex (MCNG); Monte S. Antonio, 800 m, 3.V.1978, RP, "nel terriccio" [= in the soil], 1 ex (MCNG); Supramonte di Orgosolo, For. Deman. [= Foresta Demaniale] Montes, alto corso del fiume Cedrino, 900 m, 3.V.1983, RP, "al vaglio sub [= by sieving under] *Alnus*", 1 ex (MCNG); Supramonte di Orgosolo, For. Deman. [= Foresta Demaniale] Montes, East of M. Novo S. Giovanni, 1000 m, 3.IV.1983 RP, "al vaglio lecceta" [= sieving in a *Q. ilex* forest], 3 ex (MCNG); sdb 29.IV.1983, 4 ex (MCNG). **Ogliastra prov.:** Lanusei, S.S. 198 km 89, 2.VII.1984, CT, "lecceta su granito" [= *Q. ilex* forest on granite], 8 ex (MCNG), 7 ex (CMS); Tertenia, 20.IV.1987, CT, "lecceta" [= *Q. ilex* forest], 2 ex (MCNG); Villagrande Strisáili, 18.IV.1987, CT, "lecceta" [= *Q. ilex* forest], 3 ex (MCNG); Villagrande Strisáili, loc. S. Barbara, 18.IV.1987, CT, "lecceta" [= *Q. ilex* forest], 2 ex (MCNG); Villagrande Strisáili, S.S. 389 km 173, 30.VI.1984, CT, 1 ex (MCNG). **Olbia-Tempio prov.:** Calangianus, località S. Antonio, 29.IV.1978, RP, 1 ex, "nel terriccio" [= in the soil] (MCNG); Arcipelago de La Maddalena, Isola Caprera, Invaso Ferracciola, 8.IX.1984, RP, 3 ex (MCNG); Arcipelago de La Maddalena, Isola Molara, 8.VI.1989, RP, "vaglio [= by sieving] *Salix*", 1 ex (MCNG); Arcipelago de La Maddalena, Isola S. Stefano, Cola di Villamarina, 17.VI.1989, RP, 1 ex (MCNG); Monti, 300 m, 23.V.1976, RP, 4 ex (MCNG); dint. Telti, 31.V.1976, RP, 1 ex (MCNG).

CHOROTYPE. Western Palaearctic, excluding the Atlantic islands.

ITALIAN DISTRIBUTION. Piedmont, Liguria, Friuli-Venezia Giulia, Emilia-Romagna, Tuscany, Marches, Latium, Abruzzi, Campania, Apulia, Basilicata, Calabria, Sicily, Sardinia (Johnson 1987; Lundberg et al. 1987a; Angelini et al. 1995; Angelini & Sörensson 1997; Bordoni & Rocchi 2000, 2003, 2004; Rocchi & Bordoni 2004; Sörensson 2007).

ECOLOGY. A woodland species confined to leaf litter in more or less shady sites in deciduous forests. The litter is often somewhat moist. Occasionally it also occurs in compost, dung etc. In southern Italy it is common and often dominant in litter samples.

NOTES. Due to the high risk of confusion with closely related species, all older Italian records (before 1975) of this species for which the genitalia were not checked should be re-studied and re-checked for their identity.

26. *Acrotrichis (Acrotrichis) thoracica* (Waltl, 1838)

LITERATURE RECORDS. Sardinia [no precise locality] (Luigioni 1929; Angelini et al. 1995; Polilov 2004). **Nuoro prov.:** near Sorgono (Krausse 1914: 98, as *Trichopteryx thoracica* W.).

MATERIAL EXAMINED. **Cagliari prov.:** bivio Chia, 14.V.1995, FA, 8 ex (CFA; CMS).

CHOROTYPE. Palaearctic, North America (introduced?).

ITALIAN DISTRIBUTION. Trentino-Alto Adige, Friuli-Venezia Giulia, Tuscany, Apulia, Basilicata, Sicily, Sardinia (Porta 1926; Luigioni 1929; Angelini et al. 1995; Angelini 1996; Angelini & Sörensson 1997; Angelini 1998).

ECOLOGY. Rather common and widely spread in all kinds of rotting organic matter such as compost, dung, manure, fungi, carcasses and the likes.

NOTES. Due to the high risk of confusion with closely related species all older Italian records (before 1975) of this species for which the genitalia were not checked should be re-studied and re-checked for their identity.

RESULTS AND DISCUSSION

In total, 26 species of Ptiliidae are hereby recorded from Sardinia. Previous lists and literature included 23 species (e.g. Angelini et al. 1995), hence, three species are added as new to Sardinia (*Ptenidium niti-dum*, *P. punctatum* and *Ptiliolium fuscum*). They are common and widely spread in the western Palaearctic region and were expected to occur in Sardinia. It should be remarked that some species records noted in the list above are solely based on old literature sources. Thus, their presence in Sardinia needs confirmation by re-examination of the original material. In particular, further sampling and field work is much needed.

Most ptiliid species hitherto found in Sardinia possess wide geographic distributions and are considered more or less common. The sole ptiliid species with a much restricted geographical distribution – *Ptenidium pontelegianum*, a species confined to and possibly endemic to Corsica, Sardinia and Pantelleria Island – represents an interesting exception to that pattern. It is closely related to *P. laevigatum* and *P. laevipenne* Abeille, 1904, and is possibly indicative of ongoing or recently finished processes of speciation. As for Ptiliidae, centres of speciation within Europe seem particularly confined to the Mediterranean re-

gion, where more examples are known from the genus *Ptenidium* Erichson, 1845 as well as from other genera (Sörensson, unpublished data).

The two species (*Acrotrichis fascicularis* and *A. rosskotheni*) found in flight by CNBFVR staff by use of the "car-net" method are both widely distributed in southern Europe where they occur in litter and plant components under decomposition. Dispersal of these species usually takes place by active flight during calm, sunny afternoons when literally thousands and thousands of individuals can be seen on the wing, especially along narrow roads in woodland areas (Sörensson, pers. obs.). Since several ptiliid species usually change habitat through active flight, the number of species recovered by car-netting here is considered surprisingly low. For the moment, it cannot be ascertained whether this is due to local conditions or to anomalies such as handling and sorting of instruments and material.

CONCLUSIONS

Although a fair amount of species are known from Sardinia, the investigation of its ptiliid fauna is still in its infancy. At least 15–20 further more or less common and widely spread species are expected to occur on the island. They represent various ecological and life history strategies and almost all are assumed to possess a high dispersal capacity.

The interesting presence of the presumed endemic (to Sardinia, Corsica and Pantelleria Island) species *Ptenidium pontelegianum* suggests that further endemics might be recovered when certain habitats are focused upon, e.g. tree hollows or wetlands (marshes, fens etc.).

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APPENDIX

Angelini et al. (1995) published the latest checklist of Italian Ptiliidae, which included 75 species. Below is presented a revised checklist, principally following Angelini et al. (1995) as to the geographic subdivision (N = northern regions; S = peninsular regions; Si = Sicily and small circumsicilian islands; Sa = Sardinia and small circumsardinian islands) and taxonomical order. The number of valid species names is 77. The checklist further deviates from Angelini et al. (1995) in details such as synonymy, nomenclature, authorship, year of publication, Italian distribution etc. For that reason, taxa which present changes in any aspects of nomenclature, synonymy, taxonomy or distribution when compared to Angelini et al. (1995) are marked with an asterisk (*).

References to name changes and nomenclatural corrections can be found in Johnson (2001, 2003, 2004). Additions and corrections to the Sardinian distribution are specifically commented upon above. References to species additions and corrections of distribution ranges of Ptiliidae in other parts of Italy can be found in Ratti (1978), Kahlen (1987), Angelini & Sörensson (1997) and Sörensson & Johnson (2004).

Without referring to any specific Italian region and without specifying any record data, Johnson (2004) cited *Ptiliola brevicollis* (Matthews, 1860) as recorded from Italy ("IT") in the Palaearctic catalogue. The species is widely distributed in the western Palaearctic region and is here accepted as belonging to the Italian fauna. It is thus included in the checklist, albeit without regional specification.

CHECKLIST OF ITALIAN PTILIIDAE

	N	S	Si	Sa
<i>Nossidium</i> Erichson, 1845				
<i>flachi</i> Ganglbauer, 1899	N	S		
<i>pilosellum</i> (Marsham, 1802)	N	S		
<i>Ptenidium</i> Erichson, 1845				
* <i>brenskoi</i> Flach, 1887	N?	S		
* <i>formicetorum</i> Kraatz, 1851 (= <i>myrmicophilum</i> (Motschulsky, 1845) nec (Allibert, 1844))	N	S		Sa
<i>fuscicorne</i> Erichson, 1845	N	S		
<i>gressneri</i> Erichson, 1845	N?	S?		
<i>insulare</i> Flach, 1889		S		Sa
<i>intermedium</i> Wankowicz, 1869	N	S	Si	Sa
<i>laevigatum</i> Erichson, 1845		S	Si	Sa
<i>laevipenne</i> Abeille, 1904		S		
<i>longicorne</i> Fuss, 1868 (= <i>brisouti</i> Matthews, 1872)	N	S		
* <i>nitidum</i> (Heer, 1841)	N	S		Sa
* <i>ponteleccianum</i> zur Strassen, 1955 (= <i>doderoi</i> Flach in litt.)			Si	Sa
* <i>punctatum</i> (Gyllenhal, 1827)	N			Sa
<i>pusillum</i> (Gyllenhal, 1808) (= <i>apicale</i> Erichson, 1845 = <i>punctulum</i> Stephens, 1830)	N	S	Si	Sa
<i>reitteri</i> Flach, 1887	N	S		

<i>turgidum</i> Thomson, 1855	N	S		
<i>Actidium</i> Matthews, 1868				
<i>aterrimum</i> (Motschulsky, 1845)		S	Si	Sa
<i>boudieri</i> (Allibert, 1844)	N	S		
(= <i>transversale</i> (Erichson, 1845))				
<i>coarctatum</i> (Haliday, 1855)	N	S	Si	Sa
<i>kraatzi</i> Flach, 1889	N		Si	
<i>Oligella</i> Motschulsky, 1869				
<i>foveolata</i> (Allibert, 1844)	N	S	Si	Sa
(= <i>excavata</i> (Erichson, 1845))				
<i>Micridum</i> Motschulsky, 1869				
* <i>angulicolle</i> (Fairmaire, 1858)	N	S?		
<i>halidaii</i> (Matthews, 1868)			Si	
<i>Ptilium</i> Gyllenhal, 1827				
<i>affine</i> Erichson, 1845	N	S		Sa
<i>caesum</i> Erichson, 1845	N	S	Si	
* <i>exaratum</i> (Allibert, 1844)	N	S		
(= <i>canaliculatum</i> Erichson, 1845)				
<i>latum</i> (Gillmeister, 1845)	N			
<i>modestum</i> Wankowicz, 1869	N			
<i>myrmecophilum</i> (Allibert, 1844)	N?			
<i>tenue</i> Kraatz, 1858	N	S		
<i>vexans</i> Flach, 1889		S		
*<i>Millidium</i> Motschulsky, 1855				
* <i>minutissimum</i> (Ljungh, 1804)	N	S	Si	Sa
(= <i>exaratum</i> Auctt. nec (Allibert, 1844))				
<i>Euryptilium</i> Matthews, 1872				
<i>gillmeisteri</i> Flach, 1889	N	S		
(= <i>saxonicum</i> Auctt. nec (Gillmeister, 1845))				
<i>saxonicum</i> Gillmeister, 1845	N	S	Si	
(= <i>marginatum</i> Auctt. nec (Aubé, 1850))				
<i>Ptiliola</i> Haldeman, 1848				
(= <i>Nanoptilium</i> Flach, 1889)				
* <i>brevicollis</i> (Matthews, 1860)	"IT" (= Italy; see Johnson 2004)			
* <i>kunzei</i> (Heer, 1841)	N	S	Si	Sa

(= *rugulosa* (Allibert, 1844) = *depressa* (Motschulsky, 1845))

***Ptiliolum* Flach, 1888**

<i>africanum</i> Peyerimhoff, 1917		S	Si	
<i>caledonicum</i> (Sharp, 1871)	N	S		
(= <i>croaticum</i> (Matthews, 1872))				
* <i>fuscum</i> (Erichson, 1845)	N	S	Si	Sa
(= <i>flachi</i> Reitter, 1909)				
<i>hopffgarteni</i> Flach, 1888	N	S	Si	
<i>marginatum</i> Aubé, 1850		S		
(= <i>lederi</i> (Flach, 1888))				
<i>oedipus</i> (Flach, 1886)		S		
<i>sahlbergi</i> (Flach, 1888)	N			
<i>schwarzi</i> (Flach, 1887)	N	S	Si	
(= <i>asperum</i> (Britten, 1917))				
<i>spencei</i> (Allibert, 1844)	N	S	Si	Sa
(= <i>angustatum</i> (Erichson, 1845) = <i>meridionale</i> Flach, 1889				
= <i>oblongum</i> (Gillmeister, 1845))				

***Microptilium* Matthews, 1872**

<i>pulchellum</i> (Allibert, 1844)	N	S		
<i>Ptinella</i> Motschulsky, 1845				
<i>aptera</i> (Guérin-Ménéville, 1839)	N	S		Sa
* <i>britannica</i> Matthews, 1858	N	S		
* <i>denticollis</i> (Fairmaire, 1858)	N	S	Si	Sa
* <i>limbata</i> (Heer, 1841)	N	S		
(= <i>testacea</i> (Heer, 1841) = <i>perrini</i> Reitter, 1906				
= <i>rotundicollis</i> (Abeille de Perrin, 1901) nec Motschulsky, 1869)				
<i>mekura</i> Kubota, 1943	N	S		
(<i>solarii</i> Flach <i>in litt.</i>)				
<i>tenella</i> (Erichson, 1845)		S		

***Pteryx* Matthews, 1858**

<i>ganglbaueri</i> Ericson, 1909		S		
<i>suturalis</i> (Heer, 1841)	N	S	Si	

***Astatopteryx* Perris, 1862**

<i>laticollis</i> Perris, 1862	N	S		
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***Nephanes* C. G. Thomson, 1859**

<i>titan</i> (Newman, 1834)	N	S	Si	Sa
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Smicrus Matthews, 1872*filicornis* (Faimaire & Laboulbène, 1855)

N S

Baeocrara C. G. Thomson, 1859**variolosa* (Mulsant & Rey, 1861)

N

(= *littoralis* (C. G. Thomson, 1855) nec (Motschulsky, 1845))**Actinopteryx** Matthews, 1872*fucicola* (Allibert, 1844)

N S Si Sa

***Acrotrichis** Motschulsky, 1848(= *Trichopteryx* Kirby & Spence, 1826 nec Hübner, 1825)**arnoldi* Rosskothen, 1935

S

atomaria (De Geer, 1774)

N S Si Sa

brevipennis (Erichson, 1845)

N S Si

**cephalotes* (Allibert, 1844)

N S

(= *chevrolatii* sensu Auctt. nec (Allibert, 1844))**danica* Sundt, 1958

N S

**dispar* (Matthews, 1865)

N S

fascicularis (Herbst, 1793)

N S Si Sa

**grandicollis* (Mannerheim, 1844)

N S Si Sa

(= *lata* (Motschulsky, 1845))*intermedia* (Gillmeister, 1845)

N S Si Sa

(= *suffocata* (Haliday, 1855))**montandonii* (Allibert, 1844)

N S Si

(= *longicornis* (Mannerheim, 1844) = *pivicornis* (Mannerheim, 1843))**parva* Rosskothen, 1935

N

**pumila* (Erichson, 1845)

N S

(= *longicornis* Auctt. nec (Mannerheim, 1844))*rosskotheni* Sundt, 1971

N S Si Sa

(= *fraterna* Johnson, 1975)*sericans* (Heer, 1841)

N S Si

(= *pivicornis* Auctt. nec (Mannerheim, 1844) = *chevrolatii* (Allibert, 1844))**sanctae-helenae* Johnson, 1975

S

sitkaensis (Motschulsky, 1845)

N S

(= *fratercula* Auctt. nec (Matthews, 1878))*thoracica* (Waltl, 1838)

N S Si Sa

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