

The Ptiliidae of Sant Llorenç del Munt, Catalunya, with a commented checklist of the Ptiliidae of Spain (Coleoptera: Staphylinoidea)

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Abstract

The fauna of Ptiliidae (Coleoptera: Staphylinoidea) of (continental) Spain is poorly known. During the spring and summer of the years 2019 and 2020, a survey of the Coleoptera of Sant Llorenç del Munt, Catalunya, NE Spain, by use of light traps produced 42 specimens belonging to six species of Ptiliidae, two of which proved to be new to Spain, *viz.* *Pteryx subtruncata* Rey, 1889 and *Acrotichis pumila* (Erichson, 1845). Besides illustrations of both species habitus and female genitalia of *P. subtruncata*, we provide a tabulated checklist of the Ptiliidae of (continental) Spain, referring in each case to the distribution in some neighboring countries, *viz.* Portugal, Morocco, France and Italy. In addition, a systematically arranged overview of the provincial distribution per species is provided, supplemented by at least one critical literature or collection reference per species and province record. Currently, 48 species have been recorded from Spain, three (*Ptenidium gressneri* Erichson, 1845, *P. reitteri* Flach, 1887 and *Microptilium palustre* Kuntzen, 1914) of which are in need of confirmation.

Key words: Ptiliidae, *Pteryx subtruncata*, *Acrotichis*, checklist, catalogue, Catalunya, Spain.

Resumen

Los Ptiliidae de Sant Llorenç del Munt, Catalunya, con una lista comentada de los Ptiliidae de España (Coleoptera: Staphylinoidea)

Existe un conocimiento muy pobre sobre la fauna de Ptiliidae (Coleoptera: Staphylinoidea) de España (continental). Durante la primavera y el verano de los años 2019 y 2020, una campaña coleopterológica centrada en Sant Llorenç del Munt, Catalunya, noreste de España, y basada en trampas de luz, produjo 42 ejemplares pertenecientes a seis especies de Ptiliidae, dos de las cuales han resultado nuevas para España, *viz.* *Pteryx subtruncata* Rey, 1889 y *Acrotichis pumila* (Erichson, 1845). Además de ilustraciones de habitus de ambas especies y de la genitalia femenina de *P. subtruncata*, se proporciona una lista tabulada de los Ptiliidae de España (continental) junto con la distribución de cada especie en los países adyacentes, *viz.* Portugal, Marruecos, Francia e Italia. Asimismo, se ofrece una visión general de la distribución provincial de las especies, ordenadas éstas sistemáticamente y complementándolo con, al menos, alguna bibliografía básica o referencia a colecciones para cada especie y provincia registrada. En la actualidad hay 48 especies registradas en España, si bien tres de ellas (*Ptenidium gressneri* Erichson, 1845, *P. reitteri* Flach, 1887 y *Microptilium palustre* Kuntzen, 1914) requieren confirmación.

Palabras clave: Ptiliidae, *Pteryx subtruncata*, *Acrotichis*, lista, catálogo, Catalunya, España.

Laburpena

Ptiliidae Sant Llorenç del Munt-ekoak, Catalunya, eta zerrenda komentatu bat Espainiako Ptiliidae-rena (Coleoptera: Staphylinoidea)

Urria da Espainia (kontinental)eko Ptiliidae faunaren (Coleoptera: Staphylinoidea) ezagutza. 2019 eta 2020 urteetako udaberri eta udetan zehar, Sant Llorenç del Munt-en (Catalunya, Espainiaren iparekialdea) argi-tranpen bidez garatutako kanpaina koleopterologiko batean Ptiliidae-ren 42 ale harrapatu ziren, sei espezieri dagozkien.

Horietaiko bi Espainiarako berriak suertatu dira, *viz.* *Pteryx subtruncata* Rey, 1889 eta *Acrotichis pumila* (Erichson, 1845). Bi-bien habitusa eta *P. subtruncata*ren emeen genitalia irudizatzeaz gain, Espainia (kontinental)eko Ptiliidae-ren taula-zerrenda bat eratu dugu, kasu bakoitzeko aldameneko herrietako banaketa zehaztuz, *viz.* Portugal, Maroko, Frantzia eta Italiakoak. Halaber, probintziaz probintziako banaketaren ikuspegi orokorra eskaintzen da espezie bakoitzeko, hauek sistematikoki ordenatuta, eta gutxienez funtsezko bibliografiaren batez edo bilduma-erreferentziaren batez osatuta espezie bakoitzeko zein probintzia bakoitzeko. Gaur egun 48 espezie aipatu dira Espainiatik, haietako hiru (*Ptenidium gressneri* Erichson, 1845, *P. reitteri* Flach, 1887 eta *Microptilium palustre* Kuntzen, 1914) berresteke egonik.

Gako-hitzak: Ptiliidae, *Pteryx subtruncata*, *Acrotichis*, zerrenda, katalogoa, Catalunya, Espainia.

Introduction

During a survey of the fauna of Coleoptera of Sant Llorenç del Munt, Catalunya, specimens of the small and enigmatic beetle family Ptiliidae (Col., Staphylinodea) were collected. The material was sent to the first author (MS) for determination. Despite the limited number of specimens, it proved to be of considerable interest due to the presence of two species previously unrecorded from continental Spain (and the Iberian Peninsula). The result of the survey is presented below.

The Iberian fauna of Ptiliidae is still rather poorly known. Sörensson (2015, 2016) listed 41 and 22 species for Spain and Portugal respectively, numbers close to half, or less, the number of nearby France (81) and Italy (78). Since then, this number has increased somewhat. Considering the areal size and biogeographic variation of and within the Iberian Peninsula, certainly many more species remain to be detected. In fact, the catalogue of de la Fuente (1925) mentioned three further species (*Ptenidium gressneri* Erichson, 1845, *P. reitteri* Flach, 1887 and *Acrotichis intermedia* (Gillmeister, 1845)) that were neglected by Johnson (2004) and Sörensson (2015) due to absence of confirmed records. One of them, *viz.* *A. intermedia*, was recently confirmed from Spain (Viñolas and Muñoz-Batet, 2015), the other two being of uncertain origin and awaiting confirmation. In addition, the first author is preparing the description of a new species of *Ptiliolium* Flach, 1888 from the area, and more species are awaiting publication.

In order to facilitate future research on Iberian Ptiliidae, we here provide a brief historical exposé of the previous literature on this topic, also including an updated checklist for (continental) Spain with species references to Portugal, Morocco, France and Italy. In addition, we provide a partly commented list of ptiliid species recorded from Spain, ordered by pro-

vinces, including literature references for each species and, occasionally, brief notes on ecology and global distribution.

History:

Apparently, the first person recording Ptiliidae from the Iberian Peninsula seems to be Rosenhauer (1856). In his book on the animals of Andalusia, he briefly listed «*Ptenidium apicale* Erichson». Today, this species is known as *Ptenidium pusillum* (Gyllenhal, 1808), a common compost species in the Palaearctic and seemingly introduced to North America and other areas on the globe by man (Sörensson, 2003, 2016).

Cuní y Martorell and Martorell y Peña (1876) catalogued the Coleoptera fauna of Catalunya, and thereby included a second ptiliid species, «*Ptilium Kunzei* Heer», nowadays known as *Ptiliola kunzei* (Heer, 1841). Although pre-1960 literature records and identifications of Ptiliidae should be viewed with greatest caution due to high risk of confusion with closely related species, both *Ptenidium pusillum* and *Ptiliola kunzei* belong to the group of species which surely are prevalent in the Iberian Peninsula. In fact, their presence in Spain has later been confirmed. Carl Flach's classical work on European Ptiliidae (Flach, 1889) included a few species records from Valencia and Andalusia.

In 1925, de la Fuente catalogued the Ptiliidae of the Iberian Peninsula, including the Balearic Islands. The catalogue also provided detailed province records in some instances. Altogether, 22 species were listed, and the catalogue became the most important data source for Iberian Ptiliidae for decades. During the rest of the 20th century few species of Ptiliidae were added to the Iberian list and it was not until Colin Johnson began the preparatory work of a completely revised edition of the Palaearctic Coleoptera catalogue [CPC] that further species new for Iberia became known (Johnson, 2001, 2003, 2004). In the second,

revised edition of the CPC a decade later, further Iberian species were added (Sörensson, 2015, 2016). Between these catalogue editions, an important faunistic work on Gipuzkoan beetles appeared which included some ptiliid species new to Spain (Vorst, 2013). Those publications certainly indicated that more investigations including Ptiliidae are needed in order to uncover the Iberian ptiliid fauna. This work, obviously, underscores such a statement.

Material and methods

During 2019 and 2020, several light traps consisting of ultraviolet cathodes, powered by 12V batteries, were installed in the Natural Park of Sant Llorenç del Munt. The traps ran between twilight and (approximately) midnight during spring and summer. Except for three specimens caught using vinegar-baited pitfalls, the remaining Ptiliidae were collected by light traps. It should be noted that this collecting technique is effective as to alate (flying) Ptiliidae but fails to capture apterous species and species not prone to swarming and dispersal by winds (Solbreck *et al.*, 2021).

The most intensively studied area was the Serra de les Garses, along the Torrent de la Vall. This area harbours a torrent bed, which remains dry for most of the year, although it accumulates water in some cavities. The vegetation consists of *Quercus ilex*, accompanied by *Pinus nigra salzmannii* and small shrubs. Other areas studied were La Barata, El Marquet de les Roques and Les Teixoneres, the latter with the presence of oak trees and more humid than the aforementioned areas.

The new checklist of the Ptiliidae of continental Spain as presented here (Table 2) builds on data extracted from previous literature (see References section below), supplemented by previously unpublished data gathered by the first author (MS) during processing of collections and samples of undetermined Ptiliidae from various sources. Additionally, some previously unpublished species data appear in the list of distribution below. It should be noted that not all Iberian ptiliid species are listed in Table 2. In Portugal alone, at least one further species has been recorded, *viz.* *Acrotrichis williamsi* Johnson, 2007; see Sörensson (2016). This species certainly also occurs in Spain and should be sought for. Further species have been found in southern France (Sörensson, 2014) some of which probably also occur in the Iberian Peninsula. In addition, several unpublished species records are known from Andorra (Sörensson, pers. obs.).

Results

The total number of Ptiliidae collected during the survey at Sant Llorenç del Munt 2019-2020 amounts to six species and 42 specimens (Table 1). More than fifty percent was made up by a single species, *Acrotrichis fascicularis* (Herbst, 1793). This is a common Palaearctic species, subsequently introduced into the Australian realm (Sörensson, 2016) and possibly in other areas. It occurs in all kinds of moist litter and rotting organic matter. The remaining species represent a spectrum of different habitats, which suggests an ecologically varied area of investigation.

The lightly coloured *Ptinella aptera* (Guerin-Mèneville, 1839) and *Pteryx subtruncata* Rey, 1889 are associated with decaying wood and bark, while the four dark species of the genus *Acrotrichis* Motschulsky, 1848 are litter-dwellers, often occurring in somewhat moist or damp situations. *Acrotrichis thoracica* (Waltl, 1838) is generally attracted by compost, dung-heaps and other rotting organic matter, while *A. pumila* (Erichson, 1845) mainly occurs in more or less damp litter at fresh-water margins, occasionally also in compost, and *A. rosskotbeni* Sundt, 1971 in damp leaf litter.

Two species, *viz.* *Pteryx subtruncata* Rey, 1889 (Fig. 1) and *Acrotrichis pumila* (Erichson, 1845) (Fig. 2), have not been recorded from Spain previously and are new national records, in addition also new to the Iberian Peninsula. While *Acrotrichis pumila* is widespread in Europe, *Pteryx subtruncata* seems to be a local species of south-western European distribution, possibly primarily associated with stumps and rotting wood of pine (*Pinus* sp.). In the canton of Valais, SW Switzerland, it has been sifted from pine stumps (MS, pers. obs.). These interesting finds suggest that more species may be found in the investigation area.

Distribution of Ptiliidae in Spain:

Below, we provide a list of ptiliid species with their preliminary Spanish distribution detailed as compiled from various literature sources (1856-2016) and private collections (some previously not published; see Abbreviations below). Province and locality names from published sources are surrounded by citation signs, while previously unpublished data are not. References are listed consecutively by annual order. Spanish provinces are given in bold. Province names within square brackets are added by us and do not occur in the original texts. Provinces (or ancient regional areas, *e.g.* «Bajos Pirineos») are separated by a semicolon sign. Two or more localities within the same province are separated by a comma sign. A reference

****Pteryx subtruncata* Rey, 1889** – 2 ex.

SPAIN: Catalunya, Serra de les Garses (trampa de luz) 20.VI.2020 – 1 ♀.

SPAIN: Catalunya, Pantà de la Vall (trampa de luz) 10.VII.2020 – 1 ♀.

***Ptinella aptera* (Guérin-Méneville, 1839)** – 8 ex.

SPAIN: Catalunya, Serra de les Garses (trampa de luz) 15.VIII.2020 – 5 ♀♀.

SPAIN: Catalunya, Pantà de la Vall (trampa de luz) 10.VII.2020 – 3 ex.

***Acrotrichis fascicularis* (Herbst, 1793)** – 24 ex.

SPAIN: Catalunya, La Barata (trampa de luz) 28.IX.2019 – 1 ♂.

SPAIN: Catalunya, Pantà de la Vall (trampa de luz) 16.VII.2020 – 1 ♀.

SPAIN: Catalunya, Serra de les Garses (trampa de luz) 15.VIII.2020 – 3 ex.

SPAIN: Catalunya, Serra de les Garses (pitfall, vinagre) 21–28.VII.2020 – 1 ♀.

SPAIN: Catalunya, Serra de les Garses (pitfall, vinagre) 28.VII–4.VIII.2020 – 1 ♀.

SPAIN: Catalunya, Serra de les Garses (pitfall, vinagre) 27.VIII–2.IX.2020 – 1 ♀.

SPAIN: Catalunya, Serra de les Garses (trampa de luz) 22.VII.2020 – 3 ♂♂ 2 ♀♀.

SPAIN: Catalunya, Serra de les Garses (trampa de luz) 20.VI.2020 – 1 ♂.

SPAIN: Catalunya, Camí Pantà de la Vall (trampa de luz) 27.VI.2020 – 1 ♀.

SPAIN: Catalunya, Carena de la Vall (trampa de luz) 8.VI.2019 – 1 ♀.

SPAIN: Catalunya, Casa de la Vall (trampa de luz) 23.VIII.2019 – 1 ♀.

SPAIN: Catalunya, Marquet de les Roques (trampa de luz) 29.VII.2020 – 2 ♂♂ 2 ♀♀.

SPAIN: Catalunya, Les Teixoneres (trampa de luz) 22.VI.2019 – 1 ♂ 2 ♀♀.

****Acrotrichis pumila* (Erichson, 1845)** – 2 ex.

SPAIN: Catalunya, Serra de les Garses (trampa de luz) 22.VII.2020 – 1 ♀.

SPAIN: Catalunya, Les Teixoneres (trampa de luz) 22.VI.2019 – 1 ♀.

***Acrotrichis rosskotheni* Sundt, 1971** – 5 ex.

SPAIN: Catalunya, Serra de les Garses (trampa de luz) 20.VI.2020 – 1 ♂.

SPAIN: Catalunya, Camí Pantà de la Vall (trampa de luz) 27.VI.2020 – 1 ♀.

SPAIN: Catalunya, Casa de la Vall (trampa de luz) 23.VIII.2019 – 2 ♀♀.

SPAIN: Catalunya, Les Teixoneres (trampa de luz) 22.VI.2019 – 1 ♂.

***Acrotrichis thoracica* (Waltl, 1838)** – 1 ex.

SPAIN: Catalunya, Serra de les Garses (trampa de luz) 20.VI.2020 – 1 ♀.

TABLE 1. Species of Ptiliidae and their collection data from Sant Llorenç del Munt, Catalunya: province of Barcelona (Spain) 2019-2020 (*leg.* S. Trócoli; *det.* M. Sörensson); see section «Material and methods» for collection localities and details of techniques. Taxonomic nomenclature follows the Palearctic catalogue of Coleoptera (Sörensson, 2015). (Abbreviations: ex. = specimen(s) (not sexed); ♂ = male(s); ♀ = female(s); * = New to Spain!).

simultaneously citing two or more provinces is only given once (at the end). Comments are provided for selected species.

Although the famous Coleoptera catalogue of de la Fuente (1925) also included some province records, recent revisions of European ptiliid nomenclature, taxonomy and distribution made interpretations of older catalogue names difficult, necessitating revision of historical collections. In general, only reliable species records, based on determination via modern keys and comparison of genitalia, should be included

in such a list. Fortunately, it seems that the Spanish occurrence of most of the ptiliid species listed by de la Fuente (1925) have been subsequently confirmed by modern records. Only the presence in Spain of two species remains to be verified, *viz.* *Ptenidium* (*Gressnerium*) *gressneri* Erichson, 1845 and *Ptenidium* (*Gillmeisterium*) *reitteri* Flach, 1887. They are both widely distributed in continental Europe, though rather local and rare, and with a few records from the northern parts of South Europe. Their presence in Spain is highly likely but needs confirmation. In addition,

TAXON	SP	PT	MO	FR	IT
PTILIIDAE Erichson, 1845					
Ptiliinae Erichson, 1845					
Ptenidiini Flach, 1889					
<i>Ptenidium (Gillmeisterium) matthewsi</i> Flach, 1889	■	■	-	■	-
<i>Ptenidium (Gillmeisterium) nitidum</i> (Heer, 1841)	■	-	-	■	■
<i>Ptenidium (Gillmeisterium) reitteri</i> Flach, 1887	?	■	-	■	■
<i>Ptenidium (Gressnerium) gressneri</i> Erichson, 1845	?	-	-	■	■
<i>Ptenidium (Matthewsium) laevigatum</i> Erichson, 1845	■	■	■	■	■
<i>Ptenidium (Matthewsium) laevipenne</i> Abeille, 1904	■	■	■	■	■
<i>Ptenidium (s. str.) fuscicorne</i> Erichson, 1845	■	-	-	■	■
<i>Ptenidium (s. str.) heydeni</i> Flach, 1887	■	■	■	-	-
<i>Ptenidium (s. str.) longicorne</i> Fuss, 1868	■	■	-	■	■
<i>Ptenidium (s. str.) myrmicophilum</i> (Motschulsky, 1845)	■	-	-	■	■
<i>Ptenidium (s. str.) punctatum</i> (Gyllenhal, 1827)	■	■	-	■	■
<i>Ptenidium (s. str.) pusillum</i> (Gyllenhal, 1808)	■	■	■	■	■
<i>Ptenidium (Wankowizium) brenskei</i> Flach, 1887	■	-	-	■	■
<i>Ptenidium (Wankowizium) intermedium</i> Wankowicz, 1869	■	-	-	■	■
Actidiini Portevin, 1929					
<i>Actidium aterrimum</i> (Motschulsky, 1845)	■	-	-	■	■
<i>Actidium coarctatum</i> (Haliday, 1855)	■	-	■	■	■
<i>Actidium kraatzi</i> Flach, 1889	■	-	-	■	■
Ptiliini Erichson, 1845					
<i>Actinopteryx fucicola</i> (Allibert, 1844)	■	-	■	■	■
<i>Euryptilium gillmeisteri</i> Flach, 1889	■	-	-	■	■
<i>Oligella foveolata</i> (Allibert, 1844)	■	-	-	■	■
<i>Ptiliola brevicollis</i> (Matthews, 1860)	■	-	-	■	■
<i>Ptiliola kunzei</i> (Heer, 1841)	■	-	■	■	■
<i>Ptiliolium (s. str.) africanum</i> Peyerimhoff, 1917	■	■	■	-	■
<i>Ptiliolium (s. str.) fuscum</i> (Erichson, 1845)	■	■	■	■	■
<i>Ptiliolium (s. str.) spencei</i> (Allibert, 1844)	■	-	■	■	■
<i>Ptilium vexans</i> Flach, 1889	■	-	-	■	■
Ptinellini Reitter, 1906					
<i>Microptilium palustre</i> Kuntzen, 1914	?	-	-	-	-
<i>Pteryx oraniensis</i> Normand, 1934	■	■	■	-	-
* <i>Pteryx subtruncata</i> Rey, 1889	■	-	-	■	-
<i>Pteryx suturalis</i> (Heer, 1841)	■	-	-	■	■
<i>Ptinella aptera</i> (Guérin-Méneville, 1839)	■	■	■	■	■
<i>Ptinella denticollis</i> (Fairmaire, 1858)	■	-	■	■	■
<i>Ptinella mekura</i> Kubota, 1943	■	-	-	■	■
Acrotrichini Reitter, 1909					
<i>Acrotrichis (s. str.) atomaria</i> (DeGeer, 1774)	■	-	-	■	■
<i>Acrotrichis (s. str.) brevipennis</i> (Erichson, 1845)	■	-	-	■	■
<i>Acrotrichis (s. str.) danica</i> Sundt, 1958	■	-	-	■	■
<i>Acrotrichis (s. str.) dispar</i> (A. Matthews, 1865)	■	-	-	■	■
<i>Acrotrichis (s. str.) fascicularis</i> (Herbst, 1793)	■	■	■	■	■
<i>Acrotrichis (s. str.) intermedia</i> (Gillmeister, 1845)	■	-	-	■	■
<i>Acrotrichis (s. str.) montandonii</i> (Allibert, 1844)	■	■	■	■	■
* <i>Acrotrichis (s. str.) pumila</i> (Erichson, 1845)	■	-	-	■	■
<i>Acrotrichis (s. str.) rosskotheni</i> Sundt, 1971	■	■	-	■	■
<i>Acrotrichis (s. str.) rugulosa</i> Rosskothén, 1935	■	-	-	-	-
<i>Acrotrichis (s. str.) sericans</i> (Heer, 1841)	■	■	■	■	■
<i>Acrotrichis (s. str.) thoracica</i> (Waltl, 1838)	■	■	■	■	■
<i>Acrotrichis (Ctenopteryx) grandicollis</i> (Mannerheim, 1844)	■	■	■	■	■
<i>Baeocrara variolosa</i> (Mulsant & Rey, 1861)	■	-	-	■	■
<i>Nephanes titan</i> (Newman, 1834)	■	■	■	■	■

TABLE 2. Checklist of Ptiliidae of continental Spain, with reference to neighbouring countries (Portugal, Morocco, France, Italy) for particular species. Taxonomy, nomenclature and classification principally follow Sörensson (2015, 2016) and Sörensson and Delgado (2019), with species listed by alphabetical order. (Abbreviations: SP = Spain; PT = Portugal; MO = Morocco; FR = France; IT = Italy; ■ = confirmed species presence; ? = old, unconfirmed literature record; - = species absent; * = New to Spain!).

the small, common compost species *Nephanes titan* (Newman, 1834), although certainly present in Spain, seems to lack detailed published records.

Abbreviations:

- cMS = collection of Mikael Sörensson (Sweden)
 cRO = collection of Raimundo Outerelo (Spain)
 (det. M. Sörensson)
 cAS = collection of Alexey Shavrin (Latvia)
 (det. M. Sörensson)
 ZMUL = Zoological Museum of the University of Lund
 (det. M. Sörensson)
 * = New to Spain!

***Ptenidium (Gillmeisterium) matthewsi* Flach, 1889**

REF: «Valencia» (as «*P. nitidum* (Heer) var. *Matthewsi* m.») (Flach, 1889: 499); «**Zaragoza**: Zuera; **Valencia**: Puig» (Franz, 1965: 245); «Sümpfe der Balearen und Ost-Spaniens» (Besuchet, 1971: 318); «**Baleares**: Mallorca, La Albufera; **Madrid**: Aranjuez; **Valencia**; **Barcelona**: Prat de Llobregat; **Huesca**: Fraga» (Besuchet, 1976: 53).

COMMENT: A local western Palaearctic species, restricted to fens, marshland and fresh water littorals in south-western France and the Iberian Peninsula (Sörensson, 2014).

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

REF: «**Asturias**: Colombres» (Johnson, 2003: 60).

***Ptenidium (Gillmeisterium) reitteri* Flach, 1887**

REF: «Bajos Pirineos, Borde» (de la Fuente, 1925: 71).

COMMENT: Old or doubtful record which needs confirmation. Collection of new material is needed.

***Ptenidium (Gressnerium) gressneri* Erichson, 1845**

REF: «Bajos Pirineos, Borde» (de la Fuente, 1925: 70).

COMMENT: Old or doubtful record which needs confirmation. Collection of new material is needed.

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

REF: «Spanien» (Horion, 1949: 227); «**Sevilla**] Venta

del Alto» (Franz, 1965: 241); **Girona**: Lloret de Mar (ZMUL); **Granada**: Órgiva (cMS, cAS).

***Ptenidium (Matthewsium) laevipenne* Abeille, 1904**

REF: «Bajos Pirineos, Borde; Pirineos orientales» (de la Fuente, 1925: 70); [**Baleares**] Mallorca: Font de Sa Cala» (Johnson, 2003: 60).

***Ptenidium (s. str.) fuscicorne* Erichson, 1845**

REF: «**Gipuzkoa**: Oyarzun» (Johnson, 2003: 60).

***Ptenidium (s. str.) heydeni* Flach, 1887**

REF: «**Pontevedra**; [**La Coruña**] San Saturnino, Sierra del Barbanza; [**Gipuzkoa**] Puerto de Campanzar; **Lugo**: Valle de Lozava, Samos; **Asturias**: Covadonga, Monte Montera bei Puente de los Fierros; **Barcelona**: Montseny» (Franz, 1965: 244).

COMMENT: Only known from the Iberian Peninsula and possibly endemic.

***Ptenidium (s. str.) longicorne* Fuss, 1868**

REF: «**Navarra**: Otxondo, Elvetea, Río Baztan; **Gipuzkoa**: Oyarzun» (Johnson, 2003: 60).

***Ptenidium (s. str.) myrmicophilum* (Motschulsky, 1845)**

REF: «Logroño [**La Rioja**], Valle de Valvanera» (Franz, 1965: 244).

***Ptenidium (s. str.) punctatum* (Gyllenhal, 1827)**

REF: «Pirineos orientales» (de la Fuente, 1925: 49); «**Cantabria**: Santander; Cádiz» (Johnson, 2003: 60).

***Ptenidium (s. str.) pusillum* (Gyllenhal, 1808)**

REF: «Pirineos orientales; **Barcelona**; **Badajoz**; **Ciudad Real**; **Sevilla**» (de la Fuente, 1925: 71); «**Madrid**: Madrid-Chamartín; **Granada**: Almuñécar; **Málaga**: Estepona; **Cádiz**: Ventorro südwestlich von Algeciras, Tarifa; **Granada**: Güéjar-Sierra; [**Baleares**] Ibiza, San Miguel» (Franz, 1965: 242); «**Gipuzkoa**: Enirio» (Vorst, 2013: 160).

***Ptenidium (Wankowizium) brenskei* Flach, 1887**

REF: «Bajos Pirineos, Borde» (de la Fuente, 1925: 49); «**Navarra**: Elvetea, Río Baztan; **Gipuzkoa**: Oyarzun» (Johnson, 2003: 60), «Enirio» (Vorst, 2013: 160).

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

REF: «Bajos Pirineos, Borde» (de la Fuente, 1925: 71); «**Navarra**: Elvetea, Río Baztan; **Gipuzkoa**: Oyarzun» (Johnson, 2003: 60), «Enirio» (Vorst, 2013: 160).

***Actidium aterrimum* (Motschulsky, 1845)**

REF: «**Lleida**: Martinet» (Lott, 1995: 205).

COMMENT: This record was overseen by Johnson (2004) and Sörensson (2015). The occurrence in Spain is the most south-westerly in the Palaearctic realm.

***Actidium coarctatum* (Haliday, 1855)**

REF: «Spanien» (Horion, 1949: 240); «**Cádiz**» (Johnson, 2003: 59).

***Actidium kraatzi* Flach, 1889**

REF: «**Zaragoza**: Laguna la Playa, near Bujaraloz; [**Baleares**] Mallorca: Playa de Canyamel, Puerto de Pollensa, S'Avall» (Johnson, 2003: 59).

***Actinopteryx fucicola* (Allibert, 1844)**

REF: «[**Cantabria**] Santander; [**Baleares**] Mallorca: Deia» (Johnson, 2003: 59).

***Euryptilium gillmeisteri* Flach, 1889**

REF: «**Barcelona**: Montseny, Santa Fe» (Besuchet, 1976: 64).

***Oligella foveolata* (Allibert, 1844)**

REF: «**Teruel**: Albarracín» (Sörensson, 2016: 263).

***Ptiliola brevicollis* (Matthews, 1860)**

REF: **Madrid**: Navacerrada (cMS, cRO).

***Ptiliola kunzei* (Heer, 1841)**

REF: [**Barcelona**]: «Sarriá, San Gervasio» (Cuní y Martorell and Martorell y Peña, 1876: 108); «**Barcelona**» (de la Fuente, 1925: 72); «**Gipuzkoa**: Amezketa» (Vorst, 2013: 150); **Madrid**: Navacerrada (cMS, cRO).

***Ptiliolium (s. str.) africanum* Peyerimhoff, 1917**

REF: «**Córdoba**, Sierra de Córdoba; Sierra Morena; **Granada**» (Johnson, 2003: 61).

***Ptiliolium (s. str.) fuscum* (Erichson, 1845)**

REF: «**Asturias**: Colombres» (Johnson, 2003: 62); «**Gipuzkoa**: Amezketa» (Vorst, 2013: 150); **Sevilla**: Arroyo de la Plata (cRO).

***Ptiliolium (s. str.) spencei* (Allibert, 1844)**

REF: «**Ciudad Real**» (de la Fuente, 1925: 72).

***Ptilium vexans* Flach, 1889**

REF: «**Castellón**: Peñíscola, Benicarló; **Gerona**: Belcaire; **Baleares**: Mallorca, Playa de Canyamel, La Albufera; Menorca, Playa Tirant Nou» (Besuchet, 1976: 61).

***Microptilium palustre* Kuntzen, 1914**

REF: «Balearen und Ost-Spanien» (Besuchet, 1971: 328).

COMMENT: The occurrence of this stenotopic, hygrophilic marsh species in north-eastern Spain, far apart from the closest known localities much further northwards in the Netherlands and South-West Germany is enigmatic and needs confirmation.

***Pteryx oraniensis* Normand, 1934**

REF: «**Jaén**: Sierra de Cazorla» (Johnson, 2003: 59); **Granada**: Órgiva (cMS, cRO).

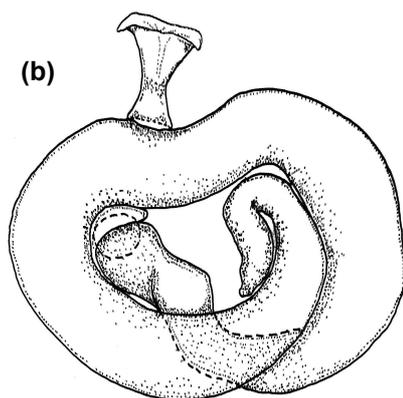
****Pteryx subtruncata* Rey, 1889**

REF: New to Spain! **Barcelona**: Sant Llorenç del Munt (see above).

COMMENT: Spanish records of this Southwest European species have been lacking so far. Originally,



(a)



(b)

FIGURE 1. *Pteryx subtruncata* Rey, 1889: Female found at Serra de les Garses in Catalunya, Spain: (a) Habitus (Photo: C. Fägerström, Biol. Museum, Lund); (b) Spermatheca (Del. M. Sörensson) (Scale bars: (a) = 0.5 mm; (b) = 0.05 mm).

it was described from Var (southern France) and subsequently recorded from Switzerland (Johnson, 2001). Hitherto, *P. subtruncata* has been sparsely collected in Europe and it seems to be somewhat rare. There are no illustrations of the species in the previous literature, which aggravates a proper identification. Externally (Fig. 1a), it comes very close to the common *P. suturalis* (Heer, 1841) but may be distinguished from this and other *Pteryx* species by the unique outline of the female spermatheca (Fig. 1b).

***Pteryx suturalis* (Heer, 1841)**

REF: «Andalusien» (Flach, 1889: 510; Horion, 1949: 246); «[La Rioja] Logroño, Monasterio de Valvanera» (Johnson, 2003: 61).

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

REF: «Spain» (Johnson, 2001: 134); «Barcelona: Capellades» (Español, 1934: 43), Sant Llorenç del Munt (see above).

***Ptinella denticollis* (Fairmaire, 1858)**

REF: «Spain» (Johnson, 2001: 134).

***Ptinella mekura* Kubota, 1943**

REF: «Insel Ibiza» (Besuchet, 1971: 329); «Balears: Ibiza, Santa Eulalia» (Besuchet, 1976: 68).

***Acrotichis* (s. str.) *atomaria* (DeGeer, 1774)**

REF: «Altos Pirineos, Pirineos orientales» (de la Fuente, 1925: 74); «Gerona: Camprodon» (Johnson, 2003: 63); «Lleida: serrat de l'Obaga» (Viñolas *et al.*, 2014: 40).

***Acrotichis* (s. str.) *brevipennis* (Erichson, 1845)**

REF: «Mallorca» (Moragues y de Manzanos, 1889); «Balears» (de la Fuente, 1925: 75); «Balears, Mallorca» (Sörensson, 2016: 266).

***Acrotichis* (s. str.) *danica* Sundt, 1958**

REF: «Spanien» (Sundt, 1971: 342).

COMMENT: The species was briefly mentioned from Spain by Sundt (1971), though without further details. Subsequently, it was neglected in the two editions of the Palearctic beetle catalogue (Johnson, 2004; Sörensson, 2015). Apparently, this is the sole mention of Spanish records in the literature. The presence in northern Spain seems plausible since there are confirmed records from the French Pyrenees (Sörensson, 2014) and southern Italy (Angelini and Sörensson, 1997). The Spanish record needs confirmation.

***Acrotichis* (s. str.) *dispar* (A. Matthews, 1865)**

REF: «Gipuzkoa: Amezketas» (Vorst, 2013: 150).

***Acrotrichis (s. str.) fascicularis* (Herbst, 1793)**

REF: «Pirineos orientales»; «**Ciudad Real**» (de la Fuente, 1925: 75); «**[Madrid]** Madrid»; «**Asturias:** Colombres»; «**[Baleares]** Menorca: Cala'n Porter» (Johnson, 2003: 63); **Barcelona:** Sant Llorenç del Munt (see above).

***Acrotrichis (s. str.) intermedia* (Gillmeister, 1845)**

REF: «Pirineos orientales»; «**Barcelona**» (de la Fuente, 1925: 75); «**Barcelona:** Fogars de Montclús»; «**Girona:** Requesens»; «**Lleida:** Cava» (Viñolas and Muñoz-Batet, 2015: 137).

***Acrotrichis (s. str.) montandonii* (Allibert, 1844)**

REF: «Pirineos orientales»; «**Ciudad Real**» (de la Fuente, 1925: 74).

****Acrotrichis (s. str.) pumila* (Erichson, 1845)**

REF: New to Spain! **Barcelona:** Sant Llorenç del Munt (see above).

COMMENT: This species is quite reminiscent of *A. brevipennis* (Erichson, 1845) but may be differentiated by its more slender, flatter habitus (Fig. 2) and distinct male genitalia (Sundt, 1971). Externally, it reminds of a small *Smicrus* species.

***Acrotrichis (s. str.) rosskotheni* Sundt, 1971**

REF: «**Alicante:** Moncayo»; «**Cádiz:** Sierra de Luna»; «**Baleares:** Mallorca» (Johnson, 2003: 65); «**Barcelona:** бага de Gresolet» (Viñolas *et al.*, 2014: 40), Sant Llorenç del Munt (see above); **Granada:** Fuente Agrilla (cMS, cRO).

***Acrotrichis (s. str.) rugulosa* Rosskothen, 1935**

REF: «**Gipuzkoa:** Amezket» (Vorst, 2013: 150).

***Acrotrichis (s. str.) sericans* (Heer, 1841)**

REF: «Pirineos orientales»; «**Ciudad Real**»; «**Baleares**» (de la Fuente, 1925: 75); «**Gipuzkoa:** Amezket» (Vorst, 2013: 150); «**[Jaén]** Coto Nacional Cazorla» (Johnson, 2003: 65); **Madrid:** Navacerrada (cMS, cRO).



FIGURE 2. *Acrotrichis pumila* (Erichson, 1845): Female, habitus. Collected in South Sweden (Photo: C. Fägerström, Biol. Museum, Lund) (Scale bar = 0.5 mm).

***Acrotrichis (s. str.) thoracica* (Waltl, 1838)**

REF: «**[Baleares]** Menorca: Cala'n Porter» (Johnson, 2003: 66); **Barcelona:** Sant Llorenç del Munt (see above).

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

REF: «**Ciudad Real**»; «**Barcelona**» (de la Fuente, 1925: 74); «**Gipuzkoa:** Amezket» (Vorst, 2013: 150); **Madrid:** Navacerrada (cMS, cRO).

***Baeocrara variolosa* (Mulsant & Rey, 1861)**

REF: «**Gipuzkoa:** Amezket» (Vorst, 2013: 151).

***Nephanes titan* (Newman, 1834)**

REF: Distribution uncertain, needs verification.

COMMENT: Johnson (2004: 131) listed this species for Spain, which Sörensson (2015: 177) repeated. We have, however, not been able to find any published record from Spain, and its presence, although highly likely, therefore needs verification.

Discussion

As stated above, the fauna of Ptiliidae of the Iberian Peninsula is still incompletely known. The fact that two out of six captured species during this survey are new to Spain suggests that intensified sampling will produce further species previously not recorded in the country. Especially, application of sampling techniques (sieve, Berlese funnel, etc.) specifically designed for predominantly litter-dwelling Coleoptera, such as Ptiliidae, will probably prove an effective way of uncovering further species. Currently, 48 species have been recorded from continental Spain, three of which (*Ptenidium gressneri* Erichson, 1845, *P. reitteri* Flach, 1887 and *Microptilium palustre* Kuntzen, 1914) are of uncertain presence and need confirmation.

At least seven species of Ptiliidae of the Iberian Peninsula are of particular biogeographical interest from a western Palaearctic perspective, *viz.* *Ptenidium beydeni* Flach, 1887, *Ptenidium matthewsi* Flach, 1889, *Ptenidium laevipenne* Abeille, 1904, *Actidium kraatzii* Flach, 1889, *Pteryx oraniensis* Normand, 1934, *Pteryx subtruncata* Rey, 1889 and *Acrotrichis williamsi* Johnson, 2007. The first species is so far the only known ptiliid beetle seemingly endemic to the area. *Pteryx oraniensis* is only known from southern Spain and southern Portugal and connects to its westerly North African populations in Morocco and Algeria (Sörensson, 2015). *Acrotrichis williamsi* was recently detected in Madeira and seems to be rapidly spreading in the Iberian Peninsula (Sörensson, 2016), thereby reminding of *Acrotrichis sanctaebelenae* Johnson, 1972, another Atlantic Island immigrant successfully colonizing Europe from the south-west (Sörensson and Johnson, 2004). The remaining four species have a more or less restricted south-western distribution pattern in Europe. Two further species are under description (Sörensson, in prep.). They also seem to belong to this highly interesting group of biogeographically restricted taxa.

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References

- ANGELINI F, SÖRENSON M. 1997. Materiali per una coleotterofauna dell'Italia meridionale e Sicilia. Ptiliidae. *Annali del Museo Civico di Storia Naturale «G. Doria» (Genova)* **91**: 555-587.
- BESUCHET C. 1971. 21. Familie: Ptiliidae (pp.: 311-334). In: Freude H, Harde KW, Lohse GA (Eds.). *Die Käfer Mitteleuropas. Vol. 3, Adepaga 2, Palpicornia, Histeroidea, Staphylinioidea 1*. Goecke & Evers. Krefeld.
- BESUCHET C. 1976. Contribution a l'étude des Ptiliides paléarctiques (Coleoptera). *Bulletin de la Société Entomologique Suisse* **49**: 51-71.
- CUNÍ Y MARTORELL M, MARTORELL Y PEÑA M. 1876. *Catálogo metódico y razonado de los coleópteros observados en Cataluña*. Imprenta de Tomas Gorchs y Comp. Barcelona.
- DE LA FUENTE JM. 1925. Catálogo sistemático-geográfico de los coleópteros observados en la Península Ibérica, Pirineos propiamente dichos y Baleares (continuación). *Boletín de la Sociedad Entomológica de España* **8**: 65-80.
- ESPAÑOL F. 1934. Algunos coleópteros nuevos para la fauna catalana. *Boletín de la Sociedad Entomológica de España* **16(4-6)**: 41-45.
- FLACH C. 1889. Bestimmungstabelle der Trichopterygidae des europäischen Faunengebietes. *Verhandlungen der Kaiserlich-Königlichen zoologisch-botanischen Gesellschaft in Wien* **39**: 481-532, pls. 10-14.
- FRANZ H. 1965. Die mir bekannten westmediterranen Arten der Gattung *Ptenidium* Er. (Col. Ptiliidae). *Eos, Revista Española de Entomología* **41(2-3)**: 239-245.
- HORION A. 1949. *Faunistik der mitteleuropäischen Käfer unter Mitarbeit zahlreicher Koleopterologen. Band II. Palpicornia-Staphylinioidea (ausser Staphylinidae)*. Vittorio Klostermann. Frankfurt am Main.
- JOHNSON C. 2001. Notes on Palaearctic Ptiliidae (Coleoptera). *Entomologist's Gazette* **52**: 129-137.
- JOHNSON C. 2003. Further notes on Palaearctic and other Ptiliidae (Coleoptera). *Entomologist's Gazette* **54**: 55-70.
- JOHNSON C. 2004. Ptiliidae (pp.: 122-131). In: Löbl I, Smetana A (Eds.). *Catalogue of Palaearctic Coleoptera. Vol. 2. Hydrophiloidea – Histeroidea – Staphylinioidea*. Apollo Books. Stenstrup.
- LOTT DA. 1995. Some beetles from mountain areas in Europe. (5) Pyrenées, Spain (p.: 205). In: Hodge PJ. 1994 Annual Exhibition. Imperial College, London

- SW7–22 October 1994. Coleoptera. *British Journal of Entomology and Natural History* **8**: 201-207.
- MORAGUES Y DE MANZANOS F. 1889. Coleópteros de Mallorca. *Anales de la Sociedad Española de Historia Natural* **18**(1): 11-34.
- ROSENHAUER WG. 1856. *Die Thiere Andalusiens nach dem Resultate einer Reise zusammengestellt, nebst den Beschreibungen von 249 neuen oder bis jetzt noch unbeschriebenen Gattungen und Arten*. Theodor Blaesing. Erlangen.
- SOLBRECK C, SÖRENSSON M, LINDELÖW Å. 2021. Skalbaggarna i luften [The beetles in the air]. *Entomologisk Tidskrift* **144**(3): 189-199.
- SÖRENSSON M. 2003. New records of featherwing beetles (Coleoptera: Ptiliidae) in North America. *Coleopterists Bulletin* **57**(4): 369-381.
- SÖRENSSON M. 2014. Ptiliidae Erichson, 1845-48 (45) (pp.: 198-208). In: Tronquet M (Ed.). *Catalogue des Coléoptères de France*. Supplement au Tome XXIII. R.A.R.E. Association Roussillonnaise d'Entomologie. Perpignan.
- SÖRENSSON M. 2015. Family Ptiliidae Erichson, 1845 (pp.: 162-177). In: Löbl I, Löbl D (Eds.). *Catalogue of Palaearctic Coleoptera. Hydrophiloidea–Staphylinoidea. Revised and updated edition. Vol. 2/1*. Brill. Leiden, Boston.
- SÖRENSSON M. 2016. The Palaearctic catalogue of Ptiliidae (Insecta, Coleoptera) – corrections and additions to nomenclature and distribution records, with notes on taxic diversity and distribution patterns. *Studies and Reports. Taxonomical Series* **12**(1): 251-286.
- SÖRENSSON M, DELGADO JA. 2019. Unveiling the smallest – systematics, classification and a new subfamily of featherwing beetles based on larval morphology (Coleoptera: Ptiliidae). *Invertebrate Systematics* **33**(5): 757-806.
- SÖRENSSON M, JOHNSON C. 2004. The first European records of the pantropical genus *Bambara* Vuillet, and a review of the immigrant featherwing beetles in Europe (Coleoptera: Ptiliidae). *Koleopterologische Rundschau* **74**: 287-302.
- SUNDT E. 1971. 19. Gattung: *Acrotichis* Motsch. (pp.: 335-342). In: Besuchet C, Sundt E. 21. Familie: Ptiliidae. In: Freude H, Harde KW, Lohse GA (Eds.). *Die Käfer Mitteleuropas. Vol. 3, Aephaga 2, Palpicornia, Histeroidea, Staphylinoidea 1*. Goecke & Evers. Krefeld.
- VIÑOLAS A, MUÑOZ-BATET J. 2015. Sobre la presencia d'*Acrotichis* (*Acrotichis*) *intermedia* (Gillmeister, 1845), a la península Ibérica (Coleoptera: Ptiliidae: Acrotichinae). *Butlletí de la Institució Catalana d'Història Natural* **79**: 137-139.
- VIÑOLAS A, MUÑOZ-BATET J, BENTANACHS J, MASÓ G. 2014. *Catálogo de los coleópteros del Parque Natural del Cadí-Moixeró, Cataluña, Península Ibérica* (Coleopterological Monographs 5). Asociación Europea de Coleopterología. Barcelona.
- VORST O. 2013. On some Gipuzkoan Coleoptera, including several species new to the Iberian Peninsula. *Heteropterus Revista de Entomología* **13**(2): 147-173.

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