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The Spheciform Wasps of Portugal (Hymenoptera: Apoidea: Ampulicidae, Sphecidae & Crabronidae)

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The Spheciform Wasps of Portugal (Hymenoptera: Apoidea: Ampulicidae, Sphecidae & Crabronidae)

Abstract: The present paper provides a list of records, both from literature and from recent collections, of 299 species of Spheciform wasps from Portugal. There are remarkably few recent published accounts of the Portuguese wasps. However, in the last 15 years there has been a considerable amount of collecting, especially in the Algarve, which has added many species to those known to occur in the country. Despite this, further recording is needed, especially in the centre and north. Three genera: *Ampulex*, *Encopognathus* and *Isodontia* and 29 species are introduced as new to the Portuguese list.

Key words: Hymenoptera, Ampulicidae, Sphecidae, Crabronidae, biodiversity, faunistics, endemics, Portugal.

As vespas esfeciformes de Portugal (Hymenoptera: Apoidea: Ampulicidae, Sphecidae e Crabronidae)

Resumo: Apresenta-se uma lista de registos, baseada em fontes bibliográficas e amostragens recentes, de 299 espécies de vespas esfeciformes de Portugal. A fauna de vespas de Portugal tem sido objeto de poucas publicações recentes. Contudo, nos últimos 15 anos foram realizadas importantes amostragens, sobretudo no Algarve, que adicionaram numerosas espécies à lista portuguesa. Ainda assim, é necessário um maior esforço de amostragem, especialmente no centro e norte. Três gêneros – *Ampulex*, *Encopognathus* e *Isodontia* – e 29 espécies são apresentados como novos para a fauna portuguesa.

Palavras-chave: Hymenoptera, Ampulicidae, Sphecidae, Crabronidae, biodiversidade, faunística, endemismos, Portugal.

Las avispas esfeciformes de Portugal (Hymenoptera: Apoidea: Ampulicidae, Sphecidae y Crabronidae)

Resumen: Se presenta una lista de registros, basada en fuentes bibliográficas y muestreos recientes, de 299 especies de avispas esfeciformes de Portugal. El número de publicaciones recientes sobre las avispas portuguesas es notablemente escaso. Sin embargo, en los últimos 15 años se ha desarrollado una importante labor de muestreo, sobre todo en el Algarve, que ha añadido numerosas especies a la lista de las que se conocen del país. Aun con todo, resulta necesario un mayor nivel de muestreos, especialmente en el centro y norte. La lista incluye tres géneros – *Ampulex*, *Encopognathus* e *Isodontia* – y 29 especies que se citan de Portugal por primera vez.

Palabras clave: Hymenoptera, Ampulicidae, Sphecidae, Crabronidae, biodiversidad, faunística, endemismos, Portugal.



The Spheciform Wasps of Portugal (Hymenoptera: Apoidea: Ampulicidae, Sphecidae & Crabronidae)

Introduction

The hunting wasps were once regarded as forming a single superfamily: the Sphecoidea. However, for some time it has been recognised that this convenient arrangement was untenable and that they, in fact, form a paraphyletic assemblage within the Apoidea, along with the bees. This position is recently highlighted in BRANSTETTER *et al.*, 2017, where they are indeed referred to as the “Apoid Wasps”. The classification of the Spheciforms is liable to be in a state of flux for some time before their status and arrangement is settled. However, the concept of “hunting wasps”, as opposed to bees, is too useful to be hastily discarded and the Spheciforms are likely to be treated as a single, if artificial, group well into the future. A parallel situation exists in the Lepidoptera, where the division into moths and butterflies persists - at least in the English-speaking entomological community - and shows no signs of disappearing. This is despite the long-established recognition that the term “Moth” has little meaning beyond simply referring to any Lepidopteran that is not a butterfly. Thus, the Spheciforms, as used here, are still felt worthy of discussing in one work.

There is, as yet, no consensus as to which vernacular name to apply to this group. “Hunting wasps” is concise and descriptive but has two disadvantages: it could equally be applied to many other aculeate wasp groups, such as the Pompilidae; and is only really understood within the English-speaking world. “Apoid Wasps” (as used in BRANSTETTER *et al.*, 2017) has a certain logic as it derives from the superfamily name. However, rules for derivation of names of taxa do not apply to vernacular names. Furthermore, the most recent publication in the Faune de France series (BITSCH *et al.*, 2020) has opted for “Sphéciformes”. As that work is likely to become the standard European reference for this group for a generation, it was decided to adopt “Spheciform Wasps” for this account.

Portugal is a small country, about one seventh the size of Spain and slightly smaller than England but, being on the extreme western edge of the Palaearctic, it has an interesting wasp fauna. Many species are restricted to the Iberian Peninsula and some are found elsewhere only in North

Africa. Published records for the country are few, the main ones either being old, (e.g. SAUNDERS, 1881; DUSMET Y ALONSO, 1921, 1931 and 1932; ANDRADE, 1949, 1950 and 1954 and the various publications by DINIZ between 1959 and 1973) or referring only to a limited area (e.g. GAYUBO, 1984, KUHLMANN, 1996 and VIEIRA *et al.*, 2013).

This paper is a compilation of all records of wasps known to the authors, both from literature and from unpublished data supplied by various specialists, as well as the recent records of the authors and a number of other recorders. Given the incomplete state of the knowledge of Portuguese wasps it is by no means comprehensive. Therefore, it is hoped that the present list will encourage other recorders who have collected in Portugal to submit either their records or specimens so that the list can be augmented.

The present list covers only the wasps of mainland Portugal: SMIT (2008) has listed the wasps of the Madeira and Selvagens archipelagos.

Material and Methods

Sources

The literature available to the authors was searched. We have endeavoured to consult primary sources where available. Those references that added a species or a new locality to a species are given. All references to Portugal have been included. However, a species has only been accepted in the species count where a specific locality is given, or if the paper is solely concerned with the Portuguese fauna. The localities are as given in the publication, though further information on the locality may be added in round brackets by the authors, where this provides interesting details or clarification, e.g. the specific province involved.

More general reviews of the wider Iberian, European or Western Palaearctic fauna sometimes list species as being found in “Portugal”, without giving further details or a literature reference. Such species are included, but only in square brackets and are regarded as unconfirmed. They do not feature in the overall species totals.

Published distribution maps proved a particular source of dispute, as details of the underlying data points are rarely provided. We have included as Portuguese species where individual records have been marked, with points that clearly, and unambiguously, lie within the boundaries of the country. Species whose maps merely feature entire countries blocked in, though without specific data points, are regarded as unconfirmed and are listed in square brackets.

Numerous specialists were asked to add to the list any species of which they had unpublished records. Many specimens of previously unpublished species that are mentioned in the text have been identified by specialist hymenopterists: these specialists are mentioned in the Acknowledgements section.

Photographic evidence has been accepted where its identity is unequivocal and it forms one of the following: the only record of a species, the first record, or records that represent significant extensions of range (e.g. a new Province). These are often from Biodiversidad Virtual (BV) = <http://www.biodiversidadvirtual.org> - a useful online library of images. “Phot.” stands for the Modern Latin “*photographavit*” = photographed.

Published records

The following have a particular focus on Portugal:

SAUNDERS, 1881: The earliest published records for Portugal feature in a paper concerning species collected by A.E. Eaton during a visit to Portugal from April to June 1880. In a paper that mainly deals with bees, 4 spheciform wasp species are noted.

DUSMET Y ALONSO, 1921: A list of hymenoptera collected by him and his associates on a visit by car from Elvas to Porto, from 19-30 June 1921, containing 9 hunting wasp species

DUSMET Y ALONSO, 1931: Probably the first published attempt at a list of Portuguese aculeates in taxonomic order. This features all bees and wasps known to him from Portugal and contains 47 species of hunting wasp. Some are only recorded down to genus but 40 modern species can be recognised. Among these the first description of *ibericus*, a variety of *Mellinus arvensis* (Linnaeus) is included.

DUSMET Y ALONSO, 1932: A further list of bees and wasps collected on his visit to Portugal in 1921.

ANDRADE, 1949: A major contribution to the knowledge of Portuguese wasps adding 76 new species.

DINIZ, 1959, 1960a, 1960b, 1961, 1965 & 1973: A series of papers that added 39 species.

By 1980, 175 species were known from the Portuguese fauna. Since then the most important contributions have been:

GAYUBO, 1984: Detailing material collected by the author during 1983 in the richest province, the Algarve, this paper added 14 species to the Portuguese list. It is an indication of how little collecting had been conducted in this province up until that year that, of the 99 species included, nearly half were new for the Algarve.

The Faune de France series (BITSCH & LECLERCQ 1993, BITSCH *et al.* 1997, BITSCH *et al.* 2001, BITSCH & LECLERCQ 2009 and BITSCH *et al.* 2020) which added a further 17 species.

KUHLMANN, 1996: A list of aculeates from the Serra da Estrela collected in June 1989 and July/August 1990 which includes 45 species of hunting wasps. This paper added 4 more species to the Portuguese list.

VIEIRA *et al.*, 2013: This paper demonstrated what can be achieved with the intensive use of Malaise traps in hitherto unworked areas of the country. It added 34 species, many of them in poorly recorded groups such as the Pemphredoninae.

Major collections

As well as records from their own collections, the specialists listed in Acknowledgements also supplied records from the collections they had access to. However, prior to this paper, one significant collection had not been researched. This was the Mendoça Collection in the Museu Nacional de História Natural e da Ciência, Lisboa (MNHNC). This comprises about 250 wasp specimens, collected by nine different members of the Mendoça family from numerous sites all over Portugal between 1950 and 2000. D. Baldock was able to borrow and determine these specimens with the assistance of various experts and this data is included.

Recorders

We are grateful to the many recorders who contributed the unpublished records. Their names and the number of records each made are listed in Table I:

Abbreviations used

BV = Biodiversidad Virtual

NHMUK = Natural History Museum UK

MNHNC = Museu Nacional de História Natural e da Ciência, Lisboa

Table I. Recorders and records.

Recorder	Records	Recorder	Records
Abraham, J. & Horoscek, L.	1	Jacinto, V.	2
Albernez-Valente, A.	32	Jenner, M.	17
Allen, G.W.	3	Jones, N.P.	2
Andrade, N.F.	1	Keen, D.	12
Andrade, R.	59	Kuijken, W.	2
Anon.	7	L'Homme, P.	3
Baldock, D.W.	178	Livory, A. & Coulomb, R.	419
Carvalho, P. de	1	Mendoça family	66
Castro, L.	5	Penado, A.	41
Cross, I.C.	970	Pennicamp & Pereira	1
Gardiner, A.	2	Schmid-Egger, C.	33
Gonçalves, A.	4	Smit, J.	50
Gros, E.	10	Teunissen	2
Guichard, K.	1	Tussac, H.	1
Haeseleer, J.	1	Whiteley, H.	10
Howe, M. & E.	167	Wood, T.	164
Ismay, J.W.	8	Total	2275

The systematic list

Arrangement

Families, subfamilies, tribes, subtribes and genera are those used in the Family Group Names and Classification section of the Catalog of Sphecidae (PULAWSKI, 2020). Families and subfamilies are listed in upper case, tribes and subtribes in lower case. Subfamilies, tribes, subtribes, genera and species are each listed alphabetically within each family. Subspecies names are only included where the subspecies is relevant to Portugal or Iberia.

Species accounts

For each species the following information is given:

- *Species name*

An asterisk * indicates a probable first published record for Portugal. There are first records for Portugal for **3** genera and **29** species in the list.

Square brackets [] are used for:

- Species where there is reason to believe that they may occur in Portugal (e.g. species with a wide distribution in the Iberian Peninsula) but where no Portuguese material is available and there is no specific reference to Portugal in the literature.
- References to “Portugal” in wider regional faunas, where no source for the Portuguese reference is given.
- Species shown in distribution maps without precise data points or reference to sources with detailed records.
- Recently established synonyms, which mean that a familiar and hitherto widely recognised name is no longer valid.
- Specimens where the identity is provisional, or almost certainly the result of misidentification.

Such species do not figure in the overall species total.

- *Wider geographic distribution*

Immediately below the species name is a brief note of its wider geographic distribution, to draw attention to the broader context of the Portuguese fauna. A select few species have a very restricted range, being endemic to Portugal or known only from Iberia. Some have an interesting distribution, with their world range being confined to Iberia and the Maghreb. The latter is the northwest corner of Africa that includes Morocco, Algeria and Tunisia. These are the so-called “Ibero-Maghrebian” species. Species listed as “West-Mediterranean” are known only from Iberia, France, Italy, Morocco, Algeria and Tunisia, including the Balearic Islands and the islands of Corsica, Sardinia and Sicily. For introduced species, both the native locality and introduced range is given.

Unless otherwise stated, distributions are drawn from the four volumes and single supplement of the Faune de France: BITSCH & LECLERCQ 1993, BITSCH *et al.* 1997, BITSCH *et al.* 2001, BITSCH & LECLERCQ 2009 and BITSCH *et al.* 2020.

- *Portuguese distribution*

For all species, a Portuguese distribution is also given. Portugal is divided into three sections, Northern, Central and Southern Portugal, based roughly on the course of the two major rivers of Portugal: the Douro and the Tejo. In common with previous Portuguese faunal publications (e.g. CORLEY, 2015, BALDOCK *et al.*, 2020), we use the 1936 administrative divisions (Figure 1). Consequently, Minho, Trás-os-Montes e Alto Douro and Douro Litoral comprise Northern Portugal; Beira Litoral, Beira Alta, Beira Baixa, Estremadura and Ribatejo comprise Central Portugal; and Alto Alentejo, Baixo Alentejo and Algarve comprise Southern Portugal.

For frequent or common species a list of the historic provinces from which the species has been recorded is given at the end of the species account. This is in descending geographical basis, from north to south and west to east. To save space Trás-os-Montes e Alto Douro is simply given as Trás-os-Montes.



Map 1. The 1936 provinces of Continental Portugal (Source: Wikipedia, adapted.)

- *Status*

Species are grouped into four categories based on the number of unpublished records: **rare**, up to 5 records; **scarce**, up to 15 records; **frequent**, up to 30 records and **common**, over 30 records.

Where there are no unpublished records, a species is automatically given the status of **rare**. This is because it was felt that, if any species had not been refound despite recent survey work, this could most reasonably be ascribed to general rarity.

- *Number of records*

Following the status the number of unpublished records is given.

Immediately after the number of unpublished records the following information is noted where this is available:

- *General biology*

Information on general biology - habitat, nesting behaviour etc. - as available.

- *Prey records*

A general summary of recorded prey is given under each **genus** heading. This is based on the literature and usually comprises just the prey class or order, often followed by the relevant families.

For individual **species**, information on prey that refers directly to Portugal is included. Unfortunately, published information on prey choices that specifically refer to Portugal are rare and where available, these are cited. In some cases, published data on prey used in Spain, or even more widely in Europe, is referenced. This is included for comparison with the limited data from Portugal. Occasionally personal observations from adjoining Spanish provinces are introduced as, they will shed light on probable prey choices in Portugal.

- *Host records*

A similar pattern is followed for the hosts of cleptoparasitic species, with general information under the **genus** heading and detailed host records listed under the relevant **species**. It must be noted that host records are very sketchy and often based on a vague “association” of cleptoparasite and host – often at nectar sources. Detailed breeding records, or even just observations at nest sites, are virtually absent for Portugal.

Unless otherwise stated, prey and host records are all original observations by the senior author.

- *Floral preferences*

Unlike the situation found in Bees and the Pollen Wasps (Vespidae, Masarinae), flowers are only visited for nectar, as a potential locality to find prey or as a meeting place to encounter possible mates. Therefore, close and specific associations have generally not evolved between Spheciform Wasps and particular plant families. Lists of flowers visited are not given systematically for every species, as this would become a repetitive account of the favoured nectar resources that attract a wide range of wasps. Aculeate field workers are generally experienced in which are the most productive blossoms to search.

However, for some rare and easily-overlooked species, focusing on particular nectar sources can sometimes greatly narrow the area of search. For this reason floral preferences are listed where these may be of interest.

- *Published records*

Significant literature sources are listed in chronological order, starting with the first record of the species. Localities are as published, usually without further comment. Occasionally, further details may be added in round brackets () where this clarifies certain points, for example the province.

- *List of records*

For each species we have listed the known localities in Portugal, with dates, number and sex of the specimens, the name of the collector and, in many cases, the name of the determiner. Where the collector or determiner is one of the authors the initials are omitted.

All records are listed for rare and scarce species. These are listed by province in the same descending geographical order. For frequent and common species the records are omitted and only the provinces are listed. Because much of the published work refers simply to a locality without specific dates or information on collectors and determiners, all mentions of 'records' in this paper refer specifically to unpublished material that either we or experts have seen ourselves.

Discussion

The Portuguese fauna

The fauna of Portugal comprises 299 species of Spheciform wasps. This compares well with the one Mediterranean country for which comprehensive data was available, namely Italy. That country has 391 species (PAGLIANO 2009) but has over three times the area (301,338 km², compared to 92,212 km² for Portugal).

Endemism in Portuguese spheciform wasps

Portugal nestles closely alongside its larger neighbour, Spain, and shares a long land border with that country, which wraps round it on two sides. Furthermore, the border is not marked by imposing physical boundaries - at least not on the scale of the Pyrenees, which separate the Iberian Peninsula from the rest of the European continent. Moreover, Portugal lacks such extensive areas of mountainous terrain as are found in its neighbour.

This means that the two countries share most of their wasp species and that the Portuguese fauna is, in some respects, a subset of the Spanish one. As a proportion of the total fauna, three species of Spheciform Wasp (1.0%) are endemic to Portugal. This compares favourably with the situation in Portuguese bees, in which there is an endemism rate of 0.6% (4 out of 712 species in mainland Portugal, WOOD *et al.* 2020).

Two of the Portuguese endemics, *Miscophus andradei* and *M. portoi* (fig. 34), are associated with the coastal sands and dune systems of Portugal's west coast. *Miscophus* is a genus of small, ground-hugging wasps which are infrequently recorded unless with the intervention of terrestrial pan traps. It is therefore not surprising that two of the endemics are found among this relatively little-known group. However, one habitat in which Portugal does excel above Spain, is in extensive coastal sands that endure the full force of the Atlantic climate. Therefore, it may well be that these two are genuine endemics, as this habitat is not replicated to the same extent in Spain.

The third endemic, *Oxybelus lusitanicus* (fig. 38), was initially thought to belong to this group of coastal dune species. However, it is only recently described (CROSS 2020) yet has already been

found more widely in a hilly area of northern Portugal. Further recording will probably reveal this species to be more widespread in the peninsula and it will lose its Portuguese endemic status.

Portugal also has one endemic subspecies: the attractive *Cerceris flaviventris lusitana* (fig. 45). Females of this subspecies are very variable in the relative extent of yellow, orange-red and black markings. Moreover, intermediates have been described from near Cadiz, so the Portuguese subspecies may eventually prove not to be a discrete entity but simply one extreme of a spectrum of variation.

The wider picture

A further 17 species (5.7%) are endemic to Iberia. Combined with the three Portuguese endemics, this gives a total of 20 species (6.7%) of the Portuguese fauna which are found only in the Iberian Peninsula. Curiously, Iberian Endemics are strongly represented in such genera as *Nysson* (three endemics out of 11 Portuguese species) and *Miscophus* (three out of 13). Whilst the two most speciose Portuguese genera, *Tachysphex* and *Cerceris* (with 25 and 19 species respectively) have no endemics. This probably reflects the situation that “difficult” genera are generally poorly recorded and thus more likely to be perceived to have restricted distributions.

Eight species (2.7%) are Ibero-Maghrebian, while 19 (6.4%) are restricted to the Western Mediterranean.

The bulk of the Portuguese fauna is composed of species that are found more widely in the Western Palearctic (112 species, 37.5%) or wider still across the Palearctic (119 species, 39.5%). Thirteen species (4.3%) have a Holarctic distribution and, finally, nine species (3.0%) have a distribution that embraces more than one zoogeographic region. The latter includes species whose distributions have been artificially inflated by the activities of man in the form of numerous introductions. Typical of these is *Isodontia mexicana*.

An unusual feature of the distribution of some Portuguese Spheciform Wasps is a phenomenon which might be called “northern ingression”. This is where essentially northern species penetrate to the far south of the country. This is achieved by occupying the cooler, moister, coastal zone. This becomes particularly marked in steep-sided, west-facing valleys of rivers at the point where they flow into the sea on the west coast of the Algarve. This type of distribution is exemplified by species such as *Mellinus arvensis* (fig. 42).

This may be a widespread feature taxonomically. The authors have noted how the Vespid wasp, *Vespa crabro* L. also frequents these valleys.

Systematic Account

The number of species recorded in Portugal, both from literature and from recent collections, is shown in Table II:

Table II. Species recorded in Portugal.

Ampulicidae	4
Sphecidae	31
Crabronidae	264
Total	299

Species endemic to Portugal

Miscophus andradei

Miscophus portoi

Oxybelus lusitanicus

Subspecies endemic to Portugal

Cerceris flaviventris lusitana

AMPULICIDAE

AMPULICINAE

Genus *Ampulex* JURINE, 1807

1 species. Prey: a European species, *Ampulex fasciata* Jurine, 1807, preys on the cockroach *Ectobius lividus* Fabricius (PICARD 1911). Nothing is known about the prey of the single Portuguese species, *Ampulex ruficollis*, but it probably also hunts *Ectobius*.

**Ampulex ruficollis* CAMERON, 1888

Northern Morocco and Iberian Peninsula (GAYUBO *et al.* 1998).

Southern Portugal, rare, 2 records. Until now, all Spanish specimens have been found by means of various traps or artificial nests (GAYUBO *et al.* 2006). By contrast, the Portuguese specimens were found live, on the trunks of Almond and Cork Oak trees (Fig. 1).

Algarve, Salema, 29.x.2016, 1♀, *det. & leg.* Cross.

Algarve, Vilarinha, 21.ix.2018, 1♂, *det. & leg.* Cross.

DOLICHURINAE

Genus *Dolichurus* LATREILLE, 1809

3 species. Prey: small cockroaches (BITSCH *et al.* 1997).

Dolichurus bicolor LEPELETIER, 1845

Euro-atlantic.

Northern & Central Portugal, rare, 2 records.

GAYUBO *et al.* 2002: Baixo Alentejo, Troia, 31.vii.1992 to 12.viii.1992.

VIEIRA *et al.* 2013: Portugal 2002; Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002, total, 1♂, 7♀.

Estremadura, Lisboa, 20.vii.1962, 1, *det.* Baldock, *leg.* J. Abraham & L. Horoscek. NHMUK.

Alto Alentejo, Évora, 30.viii.2016, 1♀, *det.* Baldock, *leg.* A. Albernez Valente.

Dolichurus corniculus (SPINOLA, 1808)

Mediterranean.

Widespread, scarce, 8 records.

GAYUBO 1984: Algarve, 1983: Algoz; Carrapateira; Paderne; Pêra; Quarteira, 26.vii.1983, 2♂ Minho, Braga, Vila do Gerês, 31.vii.2001, 2♂, 1♀, *leg.* Schmid-Egger.

Trás-os-Montes, Bragança, Alfândega da Fé, pans, 29.v-26.vii.2015, 30♂, *det.* Baldock & Schmid-Egger, *leg.* A. Penado.
Trás-os-Montes, Serra do Montesinho, Barragem da Serra Serrada, 4.vii.2016, 1♂, *det. & leg.* Wood.
Beira Alta, Manteigas, Rota da Carvão, 19.viii.2015, 2♀, *det. & leg.* A. Livory & R. Coulomb.
Beira Alta, Manteigas, Rota da Carvão, 28.viii.2015, 2♀, *det. & leg.* A. Livory & R. Coulomb.
Beira Alta, Serra da Estrela, Folgosinho, 2.viii.2001, 1♀, *leg.* Schmid-Egger.
Algarve, Lagos, Ponta da Piedade, 9.iv.2015, 1♂, *det. & leg.* Cross.
Algarve, Tavira, 23-25.v.2012, 1♀, *det. & leg.* A. Livory & R. Coulomb.

****Dolichurus haemorrhous* COSTA, 1886**

Mediterranean.

Widespread, scarce, 11 records. There is only one recorded prey item for Portugal: Algarve, 9.viii.2015, the cockroach *Loboptera decipiens* (Germar, 1817). This matches observations elsewhere in southern Europe, eg. CASSAR *et al.* 2020a.

Trás-os-Montes, Bragança, Alfândega da Fé, pans, 13.viii.2014, 1♂, *det.* Baldock, *leg.* A. Penado.
Trás-os-Montes, Bragança, Alfândega da Fé, pans, 25/26.vi.2015, 1♂; 23/25.vii.2015, 2♀, *det.* Baldock, *leg.* A. Penado.
Estremadura, Lisboa, Sintra, Almargem do Bispo, 21.viii.2013, 2♂, *det.* Baldock, *leg.* R. Andrade.
Alto Alentejo, Montemor-o-Novo, 18.viii.2016, 1♂, 1♀, *det.* Baldock, *leg.* A. Albernez Valente.
Baixo Alentejo, Zambujeira do Mar, 6.vii.2019, 1♂, *det. & leg.* A. Livory & R. Coulomb.
Algarve, Carrapateira, 9.viii.2001, 6♂, *det. & leg.* Schmid-Egger.
Algarve, Sagres, 8.viii.2001, 3♂, 1♀, *det. & leg.* Schmid-Egger.
Algarve, Salema, 22 Carriços, 9.viii.2015, 1♀, *det. & leg.* Cross.
Algarve, Silves, 10.vi.2011, 1♂; 24.vi.2014, 1♀, both *det. & leg.* Baldock.

SPHECIDAE

AMMOPHILINAE

Genus *Ammophila* KIRBY, 1798

7 species. Prey: larvae of Lepidoptera or Hymenoptera: Tenthredinidae (BITSCH *et al.* 1997). Distributions are from DOLLFUSS 2013.

***Ammophila campestris* LATREILLE, 1809**

Europe, Central and East Asia.

Northern & Central Portugal, rare, 2 records.

ANDRADE 1949: Serra de Gerês, 1♀.
KUHLMANN 1996: Serra da Estrela, Vale do Zêzere, viii.1987, *det.* K. Schmidt.
Trás-os-Montes, Moimenta, 2.vii.2016, 1♂, 1♀, *det. & leg.* Wood.
Trás-os-Montes, Serra do Montesinho, Alto do Falgueirão, 30.vi.2016, 2♂, *det. & leg.* Wood.

***Ammophila heydeni* DAHLBOM, 1845**

Mediterranean Region to Pakistan and Timor.

Widespread, frequent, 26 records. *Ammophila heydeni* takes a broad range of lepidopteran prey. In Northern Portugal it has been recorded carrying a Geometrid moth larva (Lepidoptera: Geometridae) (Fig. 2) and a final instar butterfly larva (Lepidoptera: Lycaenidae: Polyommataini).

DUSMET Y ALONSO 1931: Mitra, 1921, 1♂.
ANDRADE 1949: many localities including Lisboa, Estoril, Cascais.
KUHLMANN 1996: Serra da Estrela, Vale do Zêzere, viii.1987; Unhais, 30.vii.1990, *det.* K. Schmidt.
GAYUBO 1984: Algarve, 1983: Cachopo; Odeleite; Camacho; Vaqueiro.
Minho, Trás-os-Montes, Douro Litoral, Beira Alta, Estremadura, Ribatejo, Alto Alentejo, Algarve.

***Ammophila hungarica* MOCSÁRY, 1883**

Central and Southern Europe to Central Asia.

Widespread, rare, 3 records.

DUSMET Y ALONSO 1931: (as *Ammophila fallax* Kohl) 1921, 1♀, no locality cited.
ANDRADE 1949: (as *Ammophila fallax* Kohl) Évora, Monfurado, São João de Estoril, Paço de Queirã
DINIZ 1960a: Portugal.

“Torfum”, (we have been unable to trace this locality but it may be a mistranscription of Torpim in Guarda District) 11.v..1968, 1♂, *det.* Baldock. MNHNC (coll. Mendoça 246).
Trás-os-Montes, Bragança, Alfândega da Fé, pans, 19.v.2014, 1♂, *det.* Baldock, *leg.* A. Penado.
Algarve, Silves, 20.iv.2012, 1♀, *det.* Schmid-Egger, *leg.* Baldock.

***Ammophila laevicollis* ANDRÉ, 1886**

Spain, Portugal and Southern France.

Widespread, frequent, 29 records. *Ammophila laevicollis* has a particularly strong association with sandy substrates, even for an *Ammophila*, and is the dominant species of coastal dunes in Portugal. In neighbouring provinces of Spain the authors have recorded it taking the larvae of a Geometrid moth (Lepidoptera: Geometridae) (Fig. 3).

DUSMET Y ALONSO 1921: Porto, 1921, 1♂, 1♀; Évora, 1♂.

ANDRADE 1949: Lisboa. Trafaria, Estoril. Cascais, Évora, Porto.

DINIZ 1965: Serra da Estrela.

GAYUBO 1984: Algarve, 1983: 9 localities.

Douro Litoral, Beira Alta, Estremadura, Ribatejo, Algarve.

***Ammophila modesta* MOCSÁRY, 1883**

Portugal, Spain and France.

Northern & Central Portugal, rare.

ANDRADE 1949: Torre de Marinha, 24.iv.1947, 2♂.

DOLLFUSS 2013: Portugal.

VIEIRA *et al.* 2013: Serras de Aire e Candeeiros NP, 2002, 3♂, 1♀.

***Ammophila sabulosa* (LINNAEUS, 1758)**

Europe and Central Asia to Mongolia.

Widespread, frequent, 17 records.

DUSMET Y ALONSO 1921: Bussaco, 1921, 1♂.

ANDRADE 1949: many localities including Lisboa, Porto, Estoril, Sintra.

KUHLMANN 1996: Serra da Estrela, Zêzere, viii.1987, *det.* K. Schmidt.

Minho, Douro Litoral, Beira Alta, Alto Alentejo, Algarve.

***Ammophila terminata* SMITH, 1856**

Canary Islands, Western, Central and Southern Europe to China.

Central & Southern Portugal, rare, 1 record.

ANDRADE 1949: (as *Ammophila apicalis* Brullé) Lisboa, Areeiro, 1.vii.1947, 1♂; Quinta do Mato, 19.vi.1946, 1♂; 14.ix.1948, 1♀.

DINIZ 1960B: (as *Ammophila apicalis* Brullé) Portugal.

Algarve, Carrapateira, 28.vi.2015, 1♀, *det.* & *leg.* Cross.

Genus *Podalonia* FERNALD, 1927

4 species. Prey: larvae of Lepidoptera, with a preference for hairless species of Noctuidae (BITSCH *et al.* 1997).

***Podalonia affinis* (KIRBY, 1798)**

Palaeartic.

Northern Portugal, rare.

VIEIRA *et al.* 2013: Portugal 1965; Douro International NP, 2001, 4♂.

***Podalonia hirsuta* (SCOPOLI, 1763)**

Eurasian.

Northern & Central Portugal, scarce, 15 records.

DUSMET Y ALONSO 1931: Coimbra, 1921, 1♂1♀.

ANDRADE 1949: many localities including Lisboa, Sintra, Cascais, Coimbra.

KUHLMANN 1996: Serra da Estrela: 4 localities, common, 1990, *det.* K. Schmidt.

Trás-os-Montes, Bragança, Alfândega da Fé, pans, 30.vi.2014, 1♂, *det.* Baldock, *leg.* A. Penado.

Trás-os-Montes, Bragança, Espinhosela, 1.vii.2016, 1♂, 1♀, *det.* & *leg.* Wood.

Trás-os-Montes, Bragança, Fontes, 1.vii.2016, 1♂, *det.* & *leg.* Wood.

Trás-os-Montes, Portello-Montesinho road, 29.vi.2016, 1♂, *det.* & *leg.* Wood.

Trás-os-Montes, Serra do Montesinho, Barragem da Serra Serrada, 29.vi.2016, 1♂, *det.* & *leg.* Wood.

Trás-os-Montes, Vila Real, Mascoselo, 31.viii.2018, 1♂, *det. & leg.* Cross.
Trás-os-Montes, Vila Real Norte 28.vi.2016, 1♂, *det. & leg.* Wood.
Beira Alta, Gouveias, Tarouca, 2.viii.2009, 1♀, P. L'Homme.
Beira Alta, Manteigas, Rota da Carvão, 28.viii.2015, 1♀, *det. & leg.* A. Livory & R. Coulomb.
Beira Alta, Manteigas, Vale do Zêzere, 14.vi.2016, 1♂, *det. & leg.* A. Livory & R. Coulomb.
Beira Alta, Serra da Estrela, Paços da Serra, 29.vii.1975, 1♂; 11.vii.1977, 1♀, *det.* Baldock. MNHNC coll. Mendonça.
Beira Baixa, Caramulo, 27.vii.2018, 1♀, *det.* Cross, *leg.* M. & E. Howe.
Estremadura, São Pedro de Moel, 14.iv.1997, 1♂, 1♀, *det.* Baldock, *leg.* M. Jenner.
Ribatejo, Fátima, 8.vi.1972, 1♀, *det.* Baldock., coll. Mendonça.

***Podalonia luffii* (SAUNDERS, 1903)**

Euroasiatic species (GAYUBO *et al.* 2006)

Northern and Central Portugal, rare.

GAYUBO *et al.* 2002: distribution map: Minho, Douro Litoral, Estremadura. First record for the Iberian Peninsula.

***Podalonia tydei* (LE GUILLOU, 1841)**

Eurasian.

Widespread, common, 40 records (Fig 4).

DUSMET Y ALONSO 1931: Coimbra, 1921, 2♂.

ANDRADE 1949: many localities including Lisboa, Estoril, Cascais.

GAYUBO 1984: Algarve, 1983 abundant: 19 localities.

Douro Litoral, Beira Litoral, Estremadura, Baixo Alentejo, Algarve.

SCELIPHURINAE

Genus *Chalybion* DAHLBOM, 1843

2 species. Prey: spiders (BITSCH *et al.* 1997).

***Chalybion femoratum* (FABRICIUS, 1781)**

Southern and central Europe to Turkey and Central Asia.

Northern Portugal, rare.

DINIZ 1965: Resende, Santo Tirso.

***Chalybion flebile* (LEPELETIER, 1845)**

Southern Palaearctic from Portugal to Pakistan. North Africa.

Southern Portugal, rare.

DINIZ 1965: Aljustrel.

Genus *Sceliphron* DAHLBOM, 1843

5 species. Prey: small spiders of diverse families (BITSCH *et al.* 1997).

***Sceliphron caementarium* (DRURY, 1773)**

A native of northern and central America; accidentally introduced to parts of the Caribbean, Peru, Chile, some Pacific archipelagoes, Japan, Australia, Madeira, the Canaries and continental Europe (BITSCH *et al.* 1997, updated).

Central Portugal, scarce, 6 records.

LECLERCQ 1976: 371: Portugal.

Beira Baixa, Freimoninho, 23.vii.2018, 24.vii.2018, 2♀, *det.* Cross, *leg.* M. & E. Howe.

Estremadura, Lisboa, 12.vi.1970, 1♀; 5.viii.1975, 18.ix.1975, 2♀, *det.* Baldock. MNHNC, coll. Mendonça.

Estremadura, Nazaré, praia norte, 23.viii.2015, 2♀, *det. & leg.* A. Livory & R. Coulomb.

***Sceliphron curvatum* (F. SMITH, 1870)**

Originally found only in Central Asia and northern India; accidentally introduced to Europe, Turkey, Chile and Argentina. It was widely established in eastern Spain by 2010, though not by then in Portugal (CASTRO 2010).

Widespread, scarce, 9 records.

CASTRO 2020: Various records throughout Portugal.

Trás-os-Montes, Bragança, Rua Amália Rodrigues, 4.vii.2016, 1♀, *det. & leg.* Wood .

Beira Baixa, Freimoninho, 27.vii.2018, 1♂, 1♀, 29.vii.2018, 1♀, all *det.* Cross, *leg.* M. & E. Howe .

Baixo Alentejo, Cercal Janeirinha de Cima, 20.vii.2016, 21.vii.2016, 2♀, *det.* Cross, *leg.* M. & E. Howe.

Algarve, Burgau, Barrancão, 1.x.2017 1♀, *det. & leg.* Cross.

Algarve, Faro, 1.vi.2015 & 21.vii.2016, 2♀, *phot.* V. Jacinto, *det.* Castro (BV).

Algarve, Portimão, 5.vi.2018, 1♂, *det.* Baldock, *leg.* D. Keen.

***Sceliphron destillatorium* (ILLIGER, 1807)**

Palaeartic (North-west Africa and Iberia to Central Asia and China).

Central & Southern Portugal, frequent, 17 records.

MEDINA 1898: 153: (as *Pelopaeus pensilis* Illiger) São Mamede de Recezinhos, 1♀, *leg.* A. Nobre.

DUSMET Y ALONSO 1931: 6: Costa da Caparica, 1♀.

ANDRADE 1949: Caparide, Lisboa, Soure.

DINIZ 1959: 27: Mata de Lavos.

DINIZ 1965: Portugal (ten localities).

GAYUBO 1984: 354: Algarve, 1983: Burgau; Monchique.

KUHLMANN 1996: 220: Serra da Estrela: Vale do Zêzere, 1987; Penhas da Saúde, 1990, *det.* K. Schmidt.

DOLLFUSS 2016: Algarve, 5 km SE Vila do Bispo, 18.v.1995, *leg.* J. Gusenletner.

Beira Baixa, Estremadura, Alto Alentejo, Baixo Alentejo, Algarve.

***Sceliphron madraspatanum tubifex* (LATREILLE, 1809)**

A Southern Palaeartic (Mediterranean) and Oriental species.

Central & Southern Portugal, scarce, 14 records (Fig. 5).

ANDRADE 1949: Lagos, Vale de Gaio.

DINIZ 1965: Coimbra, Évora.

GAYUBO 1984: 355: Algarve, 1983: Bensafirim; Burgau; S. Bartolomeu de Messines; S. Marcos da Serra.

Beira Baixa, Castelo Branco, Ladoeiro, 8.vii.2017, 1♀, *det. & leg.* Castro.

Alto Alentejo, Montargil, 21.ix.1975, 1♀, *det.* Baldock. MNHNC, coll. Mendoga.

Baixo Alentejo, Moura, 27.ix.2014, 1♀, *det. & leg.* A. Livory & R. Coulomb.

Baixo Alentejo, Porto Covo, 24.ix.2014, 1♂, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Barragem da Bravura, 23.ix.2016, 31.x.2016, 2♀, *det. & leg.* Cross.

Algarve, Bordeira, 18.ix.2014, 1♀, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Boca do Rio, 20.ix.2016, 21.ix.2016, 2♀, 10.ix.2016, 1♀, *det. & leg.* Cross.

Algarve, Boca do Rio, 10.x.2016, 1♀, *det. & leg.* Cross.

Algarve, Carrapateira, 30.x.2017, *det.* Cross.

Algarve; Pêra dunes, 18.ix.2015, 1♂, *det.* Baldock, *leg.* Wood.

Algarve, Quinta de São Roque, 27.x.2017, 1♀, *det.* Cross.

***Sceliphron spirifex* (LINNAEUS, 1758)**

Southern Palaeartic and Afro-tropical region.

Southern Portugal, rare, 5 records.

ANDRADE 1949: Faro, Bela Salema.

DINIZ 1965: Conceição de Faro, Miranda do Corvo, Poiares.

GAYUBO 1984: 355: Algarve, 1983: Bensafirim; Praia da Luz.

Alto Alentejo, Évora, Mora, viii.2013, 1♀, *det.* Baldock, *leg.* A. Albernaz Valente.

Alto Alentejo, Portalegre, Vila Fernando, 7.vii.2017, 1♀, *det. & leg.* Castro.

Algarve, Bordeira, Faro, 20.ix.2010, 1♀, *det.* Baldock, *leg.* H. Whiteley.

Algarve, Mexilhoeira Grande, iii.1993, 2♀, *det.* Baldock, *leg.* A. Gardiner.

Algarve, Silves, 22.vi.2014, 1♀, *det. & leg.* Baldock.

SPHECINAE

Tribe: Prionychini

Genus *Palmodes* KOHL, 1890

3 species. Prey: Orthoptera: Tettigoniidae (BITSCH *et al.* 1997).

***Palmodes melanarius* (MOCSÁRY, 1883)**

Spain, Greece and Asia Minor. North Africa from Morocco to Libya.
Central Portugal, rare.

KUHLMANN 1996: Serra da Estrela: Penhas da Saúde, 23.vii.1990, 1♀, *det.* K. Schmidt.
BITSCH *et al.* 2020: Portugal.

***Palmodes occitanicus ibericus* (ROTH, 1963)**

Found as various subspecies widely across the southern Palaearctic from Portugal and Morocco to China.
The endemic Iberian subspecies, *ibericus* is entirely black.
Central & Southern Portugal, scarce, 12 records.

ANDRADE 1949: Mata da Leiria; Lisboa., 1.ix.1947, 1♂; Sintra; Parque da Pena; Massorra, 18.viii.1948, 1♀.
Beira Litoral, Pedras Negras, Leiria, 22.ix.1998, 1♂, *det.* Baldock, *leg.* M. Jenner.
Beira Alta, Serrada Estrela, Paços da Serra, 27.vii.1986, 1♂, *det.* Baldock. MNHNC, coll. Mendoça Estremadura, “San Tomfer” (possibly San Tomar), 9.vii.1978, 1♀, *det.* Baldock. MNHNC coll. A. Serrano. 885.
Baixo Alentejo, Santo André, 25.vii.2016, 31.vii.2016, 1.viii.2018, 2.viii.2018, 3.viii.2018, 2♂, 6♀, *det.* Baldock, *leg.* M. & E. Howe.
Baixo Alentejo, Sines, 18.vi.1970, 1♀, *det.* Baldock. MNHNC, coll. Mendoça.
Algarve, Carrapateira, 25.v.2017, 11♀, *det.* & *leg.* Cross.
Algarve, Praia da Figueira, 13.ix.2018, 1♀, *det.* & *leg.* Cross.
Algarve, Salema, 29.v.2017, 1♀, *det.* & *leg.* Cross.

****Palmodes strigulosus* (COSTA, 1858)**

Southern Europe from Portugal to Greece, Turkey and central Asia.
Northern Portugal, rare, 1 record.

Trás-os-Montes, Bragança, Alfândega da Fé, pans, 7.viii.2014, 1♀, *det.* Wood/Baldock, *leg.* A. Penado.

Genus *Prionyx* VANDER LINDEN, 1837

4 species. Prey: Orthoptera: Acrididae (BITSCH *et al.* 1997). *Prionyx kirbii* has also been recorded as a facultative cleptoparasite of *Stizus continuus* (POLIDORI *et al.* 2006).

***Prionyx kirbii* (VANDER LINDEN, 1827)**

Widely across the southern Palaearctic from Portugal to China. Widespread in Africa.
Widespread, common, 61 records (Fig. 6).

DUSMET Y ALONSO 1921: (as *Prionyx albisectus* Lepeletier) Porto, 2♂.
ANDRADE 1949: (as *Prionyx albisectus* Lepeletier) Lisboa, Estoril, Cascais, Trafaria, Valer de Gaio, Mata do Urso, Massorra, Valença do Minho.
GAYUBO 1984: Algarve, 1983: 9 localities.
KUHLMANN 1996: Serra da Estrela: Vale do Zêzere, 1987, 1♀; Cortes do Maio, 31.vii.1990, 1♂, *det.* K. Schmidt.
Minho, Trás-os-Montes, Douro Litoral, Beira Litoral, Beira Alta, Beira Baixa, Estremadura, Ribatejo, Baixo Alentejo, Algarve.

***Prionyx lividocinctus* (COSTA, 1858)**

Iberian Peninsula, Italy and southeast Europe. Russia and Asia Minor to China. North Africa.
Central & Southern Portugal, rare, 1 record.

ANDRADE 1949: Soure.; São João de Estoril, 9.x.1947, 1♀.
GAYUBO 1984: Algarve, Cachopo, 27.vii.1983.
Algarve, Monchique, 29.vii.2010, 1♀, *det.* Baldock, *leg.* A. Livory.

***Prionyx subfuscatus* (DAHLBOM, 1845)**

Widespread in the southern Palaearctic from Portugal to China and Korea. North Africa.
Central & Southern Portugal, scarce, 9 records. There are no published prey records for Portugal but the female photographed at Carrapateira, 19.ix.2018 was carrying an adult of the grasshopper *Calliptamus italicus* (Linnaeus, 1758) Orthoptera: Acrididae (Fig. 7).

DUSMET Y ALONSO 1931: Soure, 1921, 1♂.
ANDRADE 1949: Lisboa, Vale de Gaio, Soure, Quinta do Mato, Massorra.
Beira Alta, Serra da Estrela, Loriga, 2.viii.2001, 1♀, *leg.* Schmid-Egger.

Estremadura, Pataias, Praia do Ouro, 16.ix.2007, 1♀, *det.* Baldock, *leg.* M. Jenner.
Algarve, Carrapateira, 2.x.2014, 1♀ on *Helichrysum italicum*; 15.ix.2016, 3.x.2016, 2♀, *det.* & *leg.* Cross.
Algarve, Carrapateira, 10.x.2017, 1♀, 24.x.2017, 2♀, *det.* & *leg.* Cross.
Algarve, Carrapateira, 19.ix.2018, 1♀, *phot.* with prey, *det.* Cross.
Algarve, Pêra dunes, 7.x.2010, 1♂, *det.* & *leg.* Baldock.

***Prionyx viduatus* (CHRIST, 1791)**

Widespread in southern Europe, Asia and Africa.

Southern Portugal, rare.

DUSMET Y ALONSO 1931: Pinhal dos Medos, 1921, 1♀.

ANDRADE 1949: Pinhal dos Medos.

Tribe: Sphecini

Genus *Isodontia* PATTON, 1880

1 species. Prey: Orthoptera: Tettigoniidae and Gryllidae (BITSCH *et al.* 1997).

****Isodontia mexicana* (SAUSSURE, 1867)**

Native to the western hemisphere but widely introduced in Europe, the Middle East and Central Asia.

Widespread, rare, 3 records.

Douro Litoral, Amarante, Ribeira, 4.ix.2019, 1♀, *det.* & *leg.* Cross.

Beira Litoral, Aveiro, Estarreja, Canelas, 7.viii.2016, 1♂, *det.* Baldock, *leg.* R. Andrade & A. Gonçalves.

Algarve, Lagos, Quinta de São Roque, 22.v.2017, 1♂, *det.* & *leg.* Cross.

Genus *Sphex* LINNAEUS, 1758

5 species. Prey: Orthoptera: mainly Tettigoniidae, occasionally Gryllidae (BITSCH *et al.* 1997).

***Sphex atropilosus* KOHL, 1885**

Portugal, through southern and central Europe to Kazakhstan.

Portugal, rare.

ANDRADE 1949: (as *S. atrohirtus* Kohl) Serra do Poio 1000m, 6.ix.1946, 1♀.

***Sphex flavipennis* FABRICIUS, 1793**

Southern Palaearctic from Portugal to the Middle East and Central Asia. North Africa..

Widespread, rare, 2 records.

DINIZ 1965: Coimbra.

GAYUBO 1984: Algarve, Junqueira, 22.vii.1983, 1♂.

VIEIRA *et al.* 2013: Portugal 1965; Douro International NP, 2001, 3♂, 1♀.

Algarve, Lagos, Barragem da Bravura, 25.vii.2015, 1♀; 26.vii.2015, 1♂, on *Mentha suaveolens*; *det.* & *leg.* Cross.

***Sphex funerarius* GUSSAKOWSKIJ, 1934 = *S. maxillosa* FABRICIUS, 1793 = *S. rufocinctus* BRULLÉ, 1833**

Southern Palaearctic from Portugal to China. North Africa.

Widespread, common, 51 records. Recorded prey in Portugal have all been adult ♀ *Phaneroptera nana* Fieber Orthoptera: Tettigoniidae (Fig. 8).

DUSMET Y ALONSO 1921: Porto, 1921, 1♀.

DUSMET Y ALONSO 1931: Mata da Leiria, 1921, 2♀ Andrade, 1949: (as *S. maxillosus*) many localities including Lisboa, Alfeite, Trafaria, Estoril, Évora.

DINIZ 1965: Monchique; Portimão; Serra da Estrela.

GAYUBO 1984: Algarve, 1983: Aljezur; Bensafirim; Burgau; Monte Clérigo, Praia da Luz.

KUHLMANN 1996: (as *S. rufocinctus*) Serra da Estrela: Vale do Zêzere, 1987; Penhas da Saúde, 1990, common, *det.* K. Schmidt.

DOLLFUSS 2008: Minho, S. Celerio, 17 km N Fafe, 30.vii.1995, 1♂, 2♀, *leg.* Walter.

Minho, Trás-os-Montes, Douro Litoral, Beire Baixa, Estremadura, Alto Alentejo, Baixo Alentejo, Algarve.

***Sphex leuconotus* BRULLÉ, 1833**

Mediterranean region from Portugal to Cyprus. Southeast Europe, Middle East and Central Asia.
Portugal, rare.

BITSCH *et al.* 2020: Portugal.

***Sphex pruinosus* GERMAR, 1817**

Southern Palaearctic from Portugal to India. North Africa.
Central & Southern Portugal, rare.

DINIZ 1965: Évora; Soalheira.

GAYUBO 1984: Algarve, 1983: Benafim; Odeleite; Vaqueiro.

CRABRONIDAE

ASTATINAE

Genus *Astata* LATREILLE, 1796

11 species. Prey: late instar nymphs of Hemiptera: Heteroptera of various families (BITSCH *et al.* 2001).

****Astata affinis* VANDER LINDEN, 1829**

Iberian Peninsula, Italy and North Africa.

Southern Portugal, rare, 4 records.

Algarve, Burgau, 13.v.2017, 1♂, *det. & leg.* Cross.

Algarve, Salema, 22 Carriços, 22.v.2018, 1♂, *det. & leg.* Cross.

Algarve, Sesmarias, Lagoa, 20.v.1995, 1♂, *det.* Baldock, *leg.* D. Keen.

Algarve, Vilamoura, 30.v.1988, 1♀, *det.* Baldock, *leg.* N. Jones.

***Astata apostata* MERCET, 1910**

Southern and central Europe to Russia and Kazakhstan. Morocco.

Widespread, scarce, 6 records.

KUHLMANN 1996: Serra da Estrela, Unhais, 30.vii.1990, 2♂, *det.* K. Schmidt.

VIEIRA *et al.* 2013: Douro International NP, 2001, 2♂.

Minho, Rua Nova, 7.ix.2019, 1♂, *det. & leg.* Cross.

Douro Litoral, Amarante, Gatão, 10.ix.2019, 1♀, *det. & leg.* Cross.

Douro Litoral, Vilarinho, 12.ix.2019, 1♀, *det. & leg.* Cross.

Estremadura, Lisboa, Torres Vedras, 22.viii.2013, 1♂, *det.* Cross *leg.* R. Andrade.

Algarve, Praia do Vale da Lama, 29.v.2018, 1♀, *det. & leg.* Cross.

Algarve, Silves, 10.vi.2011, 1♀, *det.* Cross, *leg.* Baldock.

***Astata boops* (SCHRANK, 1781)**

Palaearctic.

Widespread, scarce, 8 records. Where the subspecies has been noted, the recent records all refer to subspecies *picea*. It may be that all Portuguese material, at least in the south, is referable to this form.

GAYUBO 1984: Algarve, Santo Estêvão, 24.vii.1983, 1♀.

KUHLMANN 1996: Serra da Estrela, Penhas da Saúde, 20.vii.1990, 1♂; Unhais, 30.vii.1990, 2♀, *det.* K. Schmidt.

Estremadura, Nazaré, 23.viii.2015, 1♀, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Bordeira, Faro, 20.ix.2010, 1♀, *det.* Jozan, *leg.* H. Whiteley.

- subsp. *picea* A. COSTA, 1867

Minho, Lamoso, 9.ix.2019, 1♀, *det. & leg.* Cross.

Trás-os-Montes, Pardelhas, 11.vi.2017, 1♀, *det. & leg.* Cross.

Baixo Alentejo, Porto Covo, 24.ix.2014, 1♀, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Burgau, 13.v.2017, 2♂2♀, *det. & leg.* Cross.

Algarve, Carrapateira, 15.ix.2016, 1♂, *det. & leg.* Cross.

Algarve, Lagos, Barragem da Bravura, 27.vii.2015, 1♂, *det. & leg.* Cross.

***Astata cobosi* GINER MARI, 1946**

Iberian Peninsula, France, Italy and northwest Africa.

Central & Southern Portugal, scarce, 15 records (Fig. 9).

BITSCH *et al.* 2001: Portugal.

VIEIRA *et al.* 2013: Serras de Aire e Candeeiros NP, 2002, 4♂, 4♀

Baixo Alentejo, Mértola, 5.vi.2016, 4♂, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Amoreira, 15.vi.2018, 1♀, *det. & leg.* Cross.

Algarve, Bensafrim, 30.ix.2014, 1♂, *det. & leg.* Cross.

Algarve, Boca do Rio, 6.x.2016, 1♀, *det. & leg.* Cross.

Algarve, Carrapateira, 8.vi.2015, 1♂; 9.vi.2015, 1♂; 14.ix.2016, 1♂; all *det. & leg.* Cross.

Algarve, Castro Marim, 14.ix.2011, 1♂, *det. & leg.* Cross.

Algarve, Faro, Bordeira, 20.ix.2010, 1♀, *det.* Cross, *leg.* H. Whiteley.

Algarve, Lagos, Barragem da Bravura, 27.vii.2015, 1♂; 23.ix.2016, 1♀, *det. & leg.* Cross.

Algarve, Pêra, Praia Grande, 27.iii.2015, 1♂; 17.vi.2015, 1♂; 23.vi.2015, 1♀; all *det. & leg.* Cross.

Algarve, Vilarinha, 21.ix.2018, 1♀, *det. & leg.* Cross.

***Astata costae* COSTA, 1867**

Mediterranean.

Central & Southern Portugal, scarce, 14 records.

GAYUBO 1984: Algarve, 1983: Algez; Aljezur; Odeleite; Olhão; S. Bartolomeu de Messines.

KUHLMANN 1996: Serra da Estrela, Unhais, 30.vii.1990, 2♂, 1♀, *det.* K. Schmidt.

Minho, Viana do Castelo, 14.vii.2019, 2♂, 1♀, 2♂, 1♀, *det. & leg.* A. Livory & R. Coulomb.

Beira Litoral, São Jacinto, 8.vi.2016, 1♂, *det. & leg.* A. Livory & R. Coulomb.

Estremadura, Batalha, 19.ix.2019, 1♂, *det. & leg.* Cross.

Baixo Alentejo, Mina de São Domingos, 3.vi.2016, 1♂, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Amoreira, 25.viii.2013, 1♂; 6.vi.2015, 1♂; 21.vii.2015, 1♂; all *det. & leg.* Cross.

Algarve, Barragem da Bravura, 25.vii.2015, 1♂, *det. & leg.* Cross.

Algarve, Carrapateira, 14.ix.2014, 1♀, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Carrapateira, 14.ix.2016, 1♀, *det.* Cross, *leg.* Baldock.

Algarve, Carrapateira, Beiçudo, 16.ix.2016, 1♂, *det. & leg.* Cross.

Algarve, Guia, 2.v.2008, 1♂, *det.* Jozan, *leg.* Baldock.

Algarve, Silves, 12.x.2010, 1♀, *det.* Cross; 10.vi.2011, 1♂, *det.* Baldock, 1♀, *det.* Cross, all *leg.* Baldock.

***Astata gallica* BEAUMONT, 1942**

Mediterranean.

Widespread, rare, 4 records.

GAYUBO 1984: Algarve, 1983: Santo Estêvão, 24.vii.1983, 1♂.

KUHLMANN 1996: Serra da Estrela, Vale do Zêzere, 25.vii.1990, 1♀, *det.* K. Schmidt.

Trás-os-Montes, Vila Real, Mascoselo, 31.viii.2018, 1♂, *det. & leg.* Cross.

Alto Alentejo, Évora, 26.ix.2014, 1♀, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Amoreira, 1.vi.2017, 1♀, *det. & leg.* Cross.

Algarve, Cabanas, 24.vii.2012, 1♀, *det.* Livory/Baldock, *leg.* A. Livory & R. Coulomb.

***Astata kashmirensis* NURSE, 1909**

Palearctic.

Central & Southern Portugal, rare, 3 records.

GAYUBO 1984: Algarve, 1983: Benafim, 28.vii.1983; Cascais.

VIEIRA *et al.* 2013: Serras de Aire e Candeeiros NP, 2002, 1♀.

Alto Alentejo, Évora, 26.ix.2014, 1♀, *det. & leg.* A. Livory.

Algarve, Pêra, Praia Grande, 5.vi.2017, 1♂, *det. & leg.* Cross.

Algarve, Silves, 12.x.2010, 1♀, *det.* Z. Jozan, *leg.* Baldock.

***Astata lusitanica* PULAWSKI, 1974**

Southern Iberia.

Central and Southern Portugal, rare, 5 records.

BITSCH *et al.* 2001: Sines; Lagoa de Albufeira.

GAYUBO *et al.* 2002: Beira Alta: Casteleiro, 10.viii.1994, 1♀, Estremadura: Pataias, 17.viii.1994, 1♀, *leg.* J. García.

Algarve, Amoreira, 6.viii.2015, 1♂, *det. & leg.* Cross.

Algarve, Carrapateira, 4.x.2014, 1♂; 8.vi.2015, 1♂, all *det. & leg.* Cross.

Algarve, Lagos, Meia Praia, 2.vi.2016, 1♂, 1♀; 29.v.2018, 1; all *det. & leg.* Cross.

****Astata miegii* DUFOR, 1861**

Southern Europe from Iberia to Greece, Russia, Armenia and Turkey.

Southern Portugal, rare, 1 record. Since BITSCH *et al.* 2001 cite *Astata miegii* as being found in the Iberian Peninsula but give no specific reference to Portugal this is the first published record for the country. There are no published prey records for this species. The Pêra female was carrying a final instar nymph of *Dicranocephalus albipes* (Fabricius, 1781) Hemiptera: Stenocephalidae (Fig. 10).

(BITSCH *et al.* 2001: cited as “Péninsule Ibérique” but without particular reference to Portugal).

Algarve, Pêra, Praia Grande, 26.v.2018, 1♀, *det. & leg.* Cross.

***Astata minor* KOHL, 1884**

Mediterranean.

Central & Southern Portugal, rare, 2 records.

DUSMET Y ALONSO 1931: M. do Escaropim, 1021, 1♀.

DINIZ 1960b: Portugal.

Algarve, Carrapateira, 1.vi.2018, 1♀, *det. & leg.* Cross.

Algarve, Ponta da Atalaia, 17.v.2017, 2♀, *det. & leg.* Cross.

***Astata rufipes massiliensis* MOCSÁRY, 1883**

Mediterranean.

Northern Portugal, rare.

VIEIRA *et al.* 2013: Douro International NP, 2001, 3♂.

Genus *Dryudella* SPINOLA, 1843

1 species. Prey: Hemiptera: Heteroptera, principally Pentatomidae, Scutelleridae and Lygaeidae (BITSCH *et al.* 2001).

***Dryudella tricolor* (VANDER LINDEN, 1829)**

Various subspecies across southern and central Europe from the Iberian Peninsula to Russia and Central Asia. Morocco.

The nominate subspecies, *tricolor*, is found in Iberia and Italy (Fig. 11).

Widespread, frequent, 26 records.

GAYUBO 1984: Algarve, 1983: Aljezur, 12.viii.1983, 1♂; S. Bartolomeu de Messines, 1.viii.1983, 1♂.

KUHLMANN 1996: Serra da Estrela, 3 localities, 1990, *det.* K. Schmidt.

Minho, Trás-os-Montes, Douro Litoral, Beira Baixa, Estremadura, Ribatejo, Baixo Alentejo, Algarve.

BEMBICINAE

Tribe: Alyssontini

Genus *Alysson* PANZER, 1806

1 species. Prey: Adults and nymphs of Homoptera: Cicadellidae, Cercopidae and Fulgoroidea (BITSCH *et al.* 1997).

***Alysson spinosus* (PANZER, 1801)**

Euro-atlantic.

Central Portugal, rare.

ANDRADE 1949: (as *A. fuscatus*) Porto de Rei, 3.x.1946, 1♀.

DINIZ 1973: (as *A. bimaculatus*) Coimbra, 1♀.

Genus *Didineis* WESMAEL, 1852

2 species. Prey: Homoptera (BITSCH *et al.* 1997).

***Didineis crassicornis* HANDLIRSCH, 1888**

Euro-atlantic.

Central Portugal, rare, 2 records.

DINIZ 1973: (as *Alysson crassicornis*) Angeiras, 1♀, Elvas, 1♀.

Douro Litoral, Póvoa de Varzim, Estela, 18.vii.2013, 1♀, *det.* Baldock, *leg.* R. Andrade.

Estremadura, Torres Vedras, A dos Cunhados, 19.ix.2013, 2♂, 1♀, *det.* Baldock, *leg.* R. Andrade.

****Didineis lunicornis* (FABRICIUS, 1798)**

Widespread but rare across Europe to European Russia and Georgia. Also found in Mongolia and North Africa.

Northern & Southern Portugal, rare, 3 records.

Douro Litoral, Póvoa de Varzim, Estela, 1.vii.2013, 1♀, *det.* Baldock, *leg.* R. Andrade.

Algarve, Carrapateira, 21.vii.2005, 1♀, *det.* Cross, *leg.* M. & E. Howe.

Algarve, Odeceixe, 26.vii.2010, 1♀, *det.* & *leg.* A. Livory.

Tribe: Bembicini

Subtribe: Bembicina

Genus *Bembix* FABRICIUS, 1775

8 species. Prey: adult Diptera: Brachycera (BITSCH *et al.* 1997).

***Bembix bidentata* VANDER LINDEN, 1829**

Eurasian.

Central & Southern Portugal, rare, 3 records.

ANDRADE 1949: Soure, 1♀, Vale de Gaio.

DINIZ 1973: Lagoa de Albufeira, Monte Gordo, Paialvo, Serra da Estrela, Trafaria, Troia, Vizela, Vouzela; total 7♂, 7♀.

GAYUBO 1984: Algarve, Aldeia da Tôr, 27.vii.1983, 2♂.

Estremadura, Caparica, 20.vi.1964, 1♀.

Estremadura, Fernão Ferro, Fonte de Libateira, 3.viii.2019, 1♂, *det.* & *leg.* Wood.

Alto Alentejo, Évora, 6.vi.1996, 1♂, *det.* Baldock/Schmid-Egger. MNHNC, coll. Mendonça.

***Bembix flavescens bolivari* HANDLIRSCH, 1893**

Europe, North Africa.

Central & Southern Portugal, common, 44 records.

DUSMET Y ALONSO 1931: Coimbra, Mata da Trafaria.

ANDRADE 1949: (as *B. bolivari* Handlirsch) Trafaria, Cascais, Troia, Mata da Leiria, Foz do Liz, etc.

DINIZ 1973: many localities; total 41♂, 33♀.

GAYUBO 1984: Algarve, Carrapateira, 12.viii.1983, 1♀.

Beira Litoral, Beira Baixa, Estremadura, Baixo Alentejo, Algarve.

[*Bembix merceti* PARKER, 1929]

BITSCH *et al.* 1997: “propre à la Péninsule Ibérique” but no definite records for Portugal.

***Bembix oculata* PANZER, 1801**

Mediterranean.

Widespread, common, 63 records.

DUSMET Y ALONSO 1931: Coimbra, Mata da Trafaria.

ANDRADE 1949: many localities.

DINIZ 1973: many localities; total 66♂, 56♀.

GAYUBO 1984: Monte Gordo; Vila Real de Santo António; Algarve, 1983: 18 localities.

Minho, Douro Litoral, Estremadura, Ribatejo, Baixo Alentejo, Algarve.

***Bembix olivacea* FABRICIUS, 1787**

Mediterranean.

Central & Southern Portugal, frequent, 27 records. More than any other *Bembix*, *olivacea* is particularly associated with nesting in sand. It often chooses loose, shifting sand on the sloping faces of dunes, and huge aggregations of hundreds of nests can occur in such situations. There is one prey record from Portugal, a species of *Eristalis* (Diptera: Syrphidae) at Carrapateira 2017 (Fig. 12).

DUSMET Y ALONSO 1931: Lavos.

DINIZ 1959: Mata de Leiria.

DINIZ 1973: (as *B. mediterranea*) Cabo de Sines, Cacela, Cascais, Cova do Vapor, Monte Gordo, Trafaia, Troia; total 34♂, 9♀.

GAYUBO 1984: Algarve, 1983: Monte Clérigo; Pêra; Quarteira.

Estremadura, Baixo Alentejo, Algarve.

***Bembix rostrata* (LINNAEUS, 1758)**

Palearctic.

Central & Southern Portugal, frequent, 23 records.

DUSMET Y ALONSO 1931: Jogueiros.

ANDRADE 1949: Jogueiros, Serra do Gerês, Porto de Rei, Valença do Minho.

DINIZ 1973: Coimbra, Figueira da Foz, Lagoa de Albufeira, Vizela; total 17♂, 16♀.

Beira Litoral, Beira Baixa, Estremadura, Baixo Alentejo, Algarve.

***Bembix sinuata* LATREILLE, 1809**

Mediterranean.

Central & Southern Portugal, scarce, 6 records.

DUSMET Y ALONSO 1931: Coimbra, Val de Coselhas.

ANDRADE 1949: Lisboa, Algés, Soure, Coimbra, Quinta do Mato.

DINIZ 1973: Aljustrel, Coimbra, Estoril, Fundão, Lisboa, Resende; total 23♂, 20♀.

GAYUBO 1984: Algarve, 1983: Casais; Odeleite.

Beira Alta, Manteigas, 27.viii.2015, 1♀, *det. & leg.* A. Livory & R. Coulomb.

Ribatejo, Santarém, 14.viii.1977, 1♀, *det.* Schmid-Egger. MNHNC, coll. Mendoza.

Alto Alentejo, Évora, 26.ix.2014, 2♀, *det. & leg.* A. Livory & R. Coulomb.

Alto Alentejo, Évora, Montemor-o-Novo, 22.viii.2016, 1♂, 1♀, *det.* Cross, *leg.* A. Albernaz Valente.

Baixo Alentejo, Mina de São Domingos, 3.vi.2016, 1♂, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Monchique, 22.vii.2015, 1♂, *det.* Cross, *leg.* M. & E. Howe.

***Bembix tarsata* LATREILLE, 1809 = *Bembix integra* Panzer, 1805**

Southern and central Europe from the Iberian Peninsula to European Russia. Central Asia and North Africa.

Northern Portugal, rare, 5 records.

DUSMET Y ALONSO, 1921: Porto, 1921, 1♀ as *Bembix integra*.

ANDRADE 1949: Massorra, Quinta do Mato as *Bembix integra*.

DINIZ 1960B: Portugal.

DINIZ 1973: Angeiras, Leça da Palmeira, Porto, Resende, Serra do Gerês; 9♂, 13♀ as *Bembix integra*.

Trás-os-Montes, hills east of Moimenta, 2.vii.2016, 1♂, *det. & leg.* Wood.

Trás-os-Montes, Pardelhas, 29.viii.2018, 1♂, 1♀, *det. & leg.* Cross.

Trás-os-Montes, Vila Real, Mascoselo, 31.viii.2018, *det.* Cross.

Douro Litoral, Loivos do Monte, 3.ix.2019, 1♀, *det.* Cross.

Beira Baixa, Caramulo, 27.vii.2018, 1♀, *det.* Cross, *leg.* M. & E. Howe.

[*Bembix wagleri* GISTEL, 1857]

Mapped as present on the Portuguese mainland in Fauna Europea. The source of this may be that it is listed as found in Portugal in BOHART & MENKE 1976. However, we have been unable to find any other reference to this species in a European, or any other, context.

***Bembix zonata* KLUG, 1835**

Mediterranean.

Central & Southern Portugal, scarce, 15 records. There are no published prey records for Portugal. A female has been watched at Carrapateira stalking a Bee fly, *Lomatia* sp (Diptera: Bombyliidae). Bombyliidae feature strongly among prey records for Spain (BALLESTEROS *et al.* 2012).

ANDRADE 1949: Lisboa, Estoril, Vale de Gaio.

GAYUBO 1984: Bensafrim; Quarteira.

Beira Litoral, Cascalheira, 31.vii.2018, 3♂, *det.* Cross, *leg.* M. & E. Howe.

Baixo Alentejo, Praia do Odeceixe, 21.vii.2016, 1♂, *det.* Cross, *leg.* M. & E. Howe.

Baixo Alentejo, Santo André, 20.vii.2016, 2♂; 25.vii.2016, 1♂; 1.viii.2018, 1♂; all *det.* Cross, *leg.* M. & E. Howe.

Baixo Alentejo, Sines, 9.vi.1970, 1♂; Montargil, 29.vii.1973, 1♀; Alcochete, 26.vi.1985, 1♂, *det.*

Baldock/Schmid-Egger. MNHNC coll. Mendoza, 1867, 32323, 32276.

Algarve, Carrapateira, 8.vi.2015, 1♀, *det. & leg.* Cross.

Algarve, Carrapateira, 21.vii.2015, 2♀, *det.* Cross, *leg.* M. & E. Howe.

Algarve, Carrapateira, 6.vi.2016, 1♀, *det.* Cross.

Algarve, Carrapateira, 23.vi.2018, 1♂, 2♀, *det. & leg.* Cross.

Algarve, Odeceixe, 4.vii.2009, 1♀, 24.vii.2010, 1♂, *leg.* A. Livory.

Algarve, Pêra dunes, 23.vii.2014, 1♀, *det.* Schmid-Egger, *leg.* Baldock.

Subtribe: Exeirina

Genus *Argogorytes* PANZER, 1806

3 species. Prey, larvae of Homoptera: Cicadellidae (BITSCH *et al.* 1997).

***Argogorytes fargeii* (SHUCKARD, 1837)**

Eurasian.

Central & Southern Portugal, scarce, 10 records.

DINIZ 1973: Armação de Pêra, Carcavelos, Coimbra, Lisboa, Mata do Fundão, Portimão, Seixal, Setúbal, Vila Real; total 1♂, 32♀.

Ribatejo, Santarém, 25.v.1974, 1♀, *det.* Baldock. MNHNC, coll. Mendocha.

Alto Alentejo, Évora, 3.v.2016, 1♂, *det.* Baldock, *leg.* A. Albernez Valente.

Algarve, Armoreira, 17.iv.2016, 1♀, *det.* & *leg.* Cross.

Algarve, Benafim, 16.v.1996, 1♀, *det.* Baldock, *leg.* D. Keen.

Algarve, Lagos, Ponta da Piedade, 20.iii.2015, 1♀ on *Smyrnum olusatrum*, *det.* & *leg.* Cross.

Algarve, Marmeleite, 18.iv.2017, 2♂, 1♀, *det.* & *leg.* Cross.

Algarve, Sagres, 1.iii.2005, 2♂; 28.11.2005, 1♂; 3.iv.2005, 1♂, 1♀; all *det.* Cross, *leg.* M. & E. Howe.

Algarve, Silves, 5.iv.2005, 1♀, *det.* Cross, *leg.* M. & E. Howe.

****Argogorytes hispanicus* (MERCET, 1906)**

Southern and central Europe. Kazakhstan.

Central & Southern Portugal, scarce, 9 records (Fig. 13).

Ribatejo, Golegã, Paul do Loquilobo, 25.iv.2014, 1♂, *det.* Baldock, *leg.* M. Jenner.

Ribatejo, PN das Serras de Aire e Candeeiros, 27.iv.2014, 1♀, *det.* Baldock, *leg.* M. Jenner.

Algarve, Carrapateira, 24.iv.2017, 1♀, *det.* & *leg.* Cross.

Algarve, Guia, 20.iv.2006, 1♂, *det.* Y. Barbier, *leg.* Baldock.

Algarve, Lagos, Ponta da Piedade, 18.iii.2015, 2♂ on *Smyrnum olusatrum*, *det.* & *leg.* Cross.

Algarve, Pedralva, 15.iv.2017, 1♂, *det.* Cross.

Algarve: Querença, 28.iv.2004, 1♂, *det.* Y. Barbier, *leg.* Baldock.

Algarve, Salema, 13.iv.2016, 1♂, on *Thapsia villosa*, *det.* & *leg.* Cross.

Algarve, Santa Bárbara de Nexe, 20.iv.2005, 1♀, *det.* Y. Barbier, *leg.* Baldock.

***Argogorytes mystaceus* (LINNAEUS, 1761)**

Holarctic.

Central & Southern Portugal, rare, 5 records.

ANDRADE 1949: Lisboa, Soure, Aldeia Nova de S. Bento.

DINIZ 1973: Coimbra, 3♂, 3♀.

Ribatejo, Santarém, 26.v.1974, 1♂, 6.iv.1977, 1♀; 8.iv.1977, 1♂; *det.* Schmid-Egger. MNHNC, coll. Mendocha.

Algarve: Caldas de Monchique, 3.iv.2014, 1♂, *det.* Schmid-Egger, *leg.* Wood.

Algarve, Santa Bárbara de Nexe, 20.iv.2005, 1♀, *det.* Schmid-Egger, *leg.* Baldock.

Subtribe: Gorytina

Genus *Gorytes* LATREILLE, 1804

8 species. Prey: adult Homoptera: Cicadellidae, Fulgoridae, Cercopidae and Membracidae (BITSCH *et al.* 1997). Distributions are from SCHMID-EGGER 2002.

***Gorytes foveolatus dichrous* MERCET, 1906**

Gorytes foveolatus is found from northwest Africa, southern and southeast Europe, Turkey to Ukraine and Russia, also in Syria and Jordan. SCHMID-EGGER 2002 doubts that the West-Mediterranean *dichrous* is really subspecifically distinct but, until its status is settled, it is retained here.

Central & Southern Portugal, rare, 1 record.

ANDRADE 1949: Lisboa, Aldeia Nova de S. Bento.

DINIZ 1959: Algés; Areias.

DINIZ 1973: Lisboa, Peniche, S. Martinho do Porto; total 8♂, 2♀.

Algarve, Salema, 16.v.2017, 1♀, *det.* & *leg.* Cross.

***Gorytes laticinctus* (LEPELETIER, 1832)**

North west Africa, Europe and Turkey to east Asia.

Northern & Central Portugal, rare, 1 record.

DINIZ 1973: Coimbra, Figueira da Foz, Vouzela; total 4♂, 2♀.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♀.

Beira Alta, Serra da Estrela, Paços da Serra, 13.vii.1977, 1♀, *det.* Schmid-Egger. MNHNC coll. Mendouça.

***Gorytes nigrifascies* (MOCSÁRY, 1879)**

Central and southern Europe, to Turkey and Daghestan.

Central & Southern Portugal, rare, 1 record (Fig 14).

DINIZ 1973: Caparica, Carcavelos, Estoril, Lisboa, Montemor-o-Velho; total 24♂, 11♀.

SCHMID-EGGER 2002: Algarve, Albufeira.

Beira Baixa, Castelo Branco, Monforte da Beira, 1♂, *det.* Baldock, *leg.* R. Andrade.

***Gorytes pleuripunctatus* (COSTA, 1859)**

North west Africa, southern and east-central Europe to Turkey and central Asia.

Portugal, rare.

DINIZ 1973: Coimbra, Portalegre; total 2♂, 1♀.

***Gorytes procrustes* (HANDLIRSCH, 1888)**

Southern and east-central Europe to central Asia.

Portugal, rare.

DINIZ 1973: Algarve, Bela Vista, 1♀.

***Gorytes quinquecinctus* (FABRICIUS, 1793)**

The most common species in Europe and central to eastern Asia. Records from northwest Africa are doubtful (SCHMID-EGGER 2002).

Widespread, rare, 4 records.

DINIZ 1973: Coimbra, Guimarães, Lanhelas, Setúbal; total 3♂, 2♀.

Minho, Braga, Esposende, Rio Tinto, 2.vi.2015, 1♂, *det.* Cross, *leg.* R. Andrade.

Ribatejo, Coruche, 12.v.2016, 1♂, *det.* Cross, *leg.* A. Albernez Valente.

Ribatejo, Fátima, 11.vi.1986, 1♂, *det.* Baldock/Schmid-Egger. MNHNC, coll. Mendouça.

Ribatejo, Santarém, 12.v.1972, 1♂, *det.* Baldock/Schmid-Egger. MNHNC, coll. Mendouça.

***Gorytes quinquefasciatus* (PANZER, 1798)**

Europe to east Asia, northwest Africa.

Portugal, scarce, 7 records.

DINIZ 1973: Mata do Fundão, Soalheira; total 1♂, 1♀.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♀.

Douro Litoral, Amarante, Chapa, 19.vi.2016, 1♀, *det.* & *leg.* Cross

Baixo Alentejo, Santo André, 22.vii.2015, 2♂, 1♀; 1.viii.2018, 1♀; 3.viii.2018, 1♀; all *det.* Cross, *leg.* M. & E. Howe.

Algarve, Moncarapacho, Cerro da Cabeça, 25.iv.2016, 1♀, 4♂, *det.* Cross, *leg.* Wood.

Algarve, Monchique, 20.vii.2016, 1♀, *det.* Cross, *leg.* M. & E. Howe.

Algarve, Silves, 10.vi.2011, 2♀, *det.* Schmid-Egger, *leg.* Baldock.

***Gorytes sulcifrons* (COSTA, 1869)**

Central and southern Europe to Turkey, Lebanon and central Asia, northwest Africa.

Widespread, common, 35 records.

ANDRADE 1949: Lisboa, S. João do Estoril, 26.vi.1946, 1♀.

DINIZ 1973: Armação de Pêra, Caparica, Carcavelos, Ceira, Coimbra, Condeixa, Évora, Lago de Albofeira, Lisboa, Pombal, Portimão, Resende, Seixal, Sines, Trafaria, Trofa, Viseu; total 39♂, 22♀.

SCHMID-EGGER 2002 Pampilhosa 1985, Monchique Algarve, 1967.

Trás-os-Montes, Douro Litoral, Beira Litoral, Beira Alta, Estremadura, Baixo Alentejo, Algarve.

Genus *Harpactus* SHUCKARD, 1837

8 species. Prey: adults and nymphs of Homoptera: Cicadellidae and Cercopidae (BITSCH *et al.* 1997).

***Harpactus alvaroi* GAYUBO, 1992**

Mediterranean.

Northern Portugal, rare.

VIEIRA *et al.* 2013; Douro International NP, 2001, 8♂, 11♀.

***Harpactus elegans* (LEPELETIER, 1832)**

Euro-atlantic.

Widespread, rare, 2 records.

DINIZ 1973: Coimbra, 1♂, 2♀.

Minho, Viana do Castelo, 14.vii.2019, 2♂, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Vila Nova de Milfontes, 18-19.v.2012, 1♀, *det.* A. Livory/Baldock, *leg.* A. Livory & R. Coulomb.

***Harpactus exiguus* (HANDLIRSCH, 1888)**

Scattered and rare in southern and central Europe from Portugal to the Balkans and Ukraine.

Central Portugal, rare.

DINIZ 1973: Coimbra, Figueira da Foz; 1♂, 1♀.

***Harpactus formosus* (JURINE, 1807)**

Euro-atlantic.

Widespread, frequent, 18 records.

DINIZ 1973: Cascais, Coimbra, Évora, Figueira da Foz, Lousa, Oeiras, Portalegre, Praia das Macas, Resende, Sines, Tavira (Luz); total 27♂, 29♀.

GAYUBO 1984: Algarve, 1983: Algoz; Benafim; Carrapateira; Santo Estêvão.

KUHLMANN 1996: (as *Dienoplus formosus*) Serra da Estrela, Penhas da Saúde, 29.vii.1990, 1♂.

Trás-os-Montes, Beira Alta, Baixo Alentejo, Algarve.

***Harpactus laevis* (LATREILLE, 1792)**

Eurasian.

Central Portugal, rare (Fig. 15).

DUSMET Y ALONSO 1931: Mata de Leiria.

ANDRADE 1949: Lisboa. S. João do Estoril, Cascais, Vale de Gaio, Mata de Leiria, Porto de Rei.

DINIZ 1973: Caparica, Carcavelos, Lagoa de Albufeira, Pinhal Nova, Seixal; total 6♂, 2♀.

***Harpactus morawitzi* RADOSZKOWSKI, 1884 = *Harpactus moravicus* (SNOFLAK, 1943)**

Southern and central Europe, Siberia, Central Asia, Asia Minor and Kazakhstan.

Southern Portugal, rare, 2 records.

BITSCH *et al.* 1997: Portugal.

Algarve, Carrapateira, 19.ix.2014, 1♂, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Carrapateira, 4.viii.2015, 1♀, *det. & leg.* Cross.

***Harpactus quadrisignatus* (PALMA, 1869)**

Portugal, France, Italy, Sicily and Morocco.

Northern Portugal, rare, 1 record.

DINIZ 1973: Resende, 1♀.

Trás-os-Montes, Bragança, Alfândega da Fé, pans, 26.viii.2015, 1♂, *det.* Baldock/Cross, *leg.* A. Penado.

***Harpactus tumidus* (PANZER, 1801)**

Euro-atlantic.

Northern Portugal, rare.

ANDRADE 1949: Massorra, 2.ix.1946, 1♀.

VIEIRA *et al.* 2013: Douro International NP, 2001, 2♂.

Genus *Hoplisoides* GRIBIDO, 1884

3 species. Prey: Homoptera of various families (BITSCH *et al.* 1997).

***Hoplisoides craverii* (COSTA, 1869)**

Palaeartic.

Central & Southern Portugal, rare, 3 records.

DINIZ 1973: Coimbra, 4♀.
Algarve, Benfarras, 6.v.1985, 1♂, *leg.* Teunissen, coll. Schmid-Egger.
Algarve, Guia, 20.iv.2005, 1♀, *det.* Y. Barbier, *leg.* Baldock.
Algarve, Silves, 12.x.2010, 1♂, *det.* & *leg.* Baldock.

***Hoplisoides latifrons* (SPINOLA, 1808)**

Eurasian.

Northern & Southern Portugal, rare, 3 records.

SAUNDERS 1881: Silves, 1♀ 15.v.1880.

DINIZ 1960B: Portugal.

VIEIRA *et al.* 2013: Portugal 1931; Douro International NP, 2001, 2♀.

Baixo Alentejo, Zambujeira do Mar, 4.vii.2019, 1♂, *det.* & *leg.* A. Livory & R. Coulomb.

Algarve, Amoreira, 21.vii.2015, 1♀, *det.* & *leg.* Cross.

Algarve, Budens, Boca do Rio, 21.vi.2015, 1♂, *det.* & *leg.* Cross.

***Hoplisoides punctuosus* (EVERSMANN, 1849)**

Eurasian.

Central & Southern Portugal, scarce, 9 records.

DINIZ 1960B: (as *Gorytes punctatus*) Portugal.

Central Portugal, 3.vi.1976, 1♀, *leg.* Teunissen, coll. Schmid-Egger.

Algarve, Amoreira, 31.v.2016, 1♂; 1.vi.2016, 1♂; both *det.* & *leg.* Cross.

Algarve, Amoreira, 8.vi.2017, 1♂, *det.* & *leg.* Cross.

Algarve, Boca do Rio, 9.vi.2016, 1♀, *det.* & *leg.* Cross.

Algarve, Boca do Rio, 12.v.2017, 2♂, *det.* & *leg.* Cross.

Algarve, Carrapateira, 8.vi.2015, 1♂ on *Cachrys libanotis*, *det.* & *leg.* Cross.

Algarve, Pêra, Praia Grande, 12.vi.2015, 1♀, *det.* & *leg.* Cross.

Algarve, Pêra, Praia Grande, 28.v.2018, 1♀, *det.* & *leg.* Cross.

Genus *Lestiphorus* LEPELETIER, 1832

1 species. Prey: Homoptera: Cercopidae (BITSCH *et al.* 1997).

***Lestiphorus bicinctus* (ROSSI, 1794)**

Euro-atlantic.

Central Portugal, rare (Fig. 16).

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002, total, 1♂, 5♀.

Genus *Oryttus* SPINOLA, 1836

1 species. Prey: Homoptera: Cicadellidae and Fulgoridae (BITSCH *et al.* 1997).

***Oryttus concinnus* (ROSSI, 1790)**

Widespread in southern and central Europe, north to Germany and east to European Russia and Turkey (SCHMID-EGGER & HAUSER 2021).

Northern & Central Portugal, rare.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♀; Serras de Aire e Candeeiros NP, 2002, 1♀.

Genus *Psammaecius* LEPELETIER, 1832

1 species. The single species known from Europe preys on the Homopteran *Solenoccephalus obsoletus* (BITSCH *et al.* 1997).

***Psammaecius punctulatus* (VANDER LINDEN, 1829)**

Palearctic.

Central & Southern Portugal, rare, 3 records.

DINIZ 1973: (as *Gorytes (Psammaecius) punctulatus*) Coimbra, Oliveira do Bairro, Resende; total 4♂, 3♀.

Baixo Alentejo, Praia da Foz dos Ouriços, 18.vii.2016, 1♂, *det.* Cross, *leg.* M. & E. Howe.

Baixo Alentejo, Santo André, 31.vii.2016, 1♂, *det.* Cross, *leg.* M. & E. Howe.

Algarve, Praia do Vale da Lama, 29.v.2018, 1♂, *det.* & *leg.* Cross.

Subtribe: Spheciina

Genus *Ammatomus* A. COSTA, 1859

1 species. Prey: Homoptera: Fulgoridae (BITSCH *et al.* 1997).

***Ammatomus coarctatus* (SPINOLA, 1808)**

Mediterranean.

Widespread, rare, 1 record.

DINIZ 1973: Celorico de Basto; Tábua; Vouzela; total 3♂, 2♀.

GAYUBO 1984: Minho and Beira Alta; Algarve, 1983: Acoteias; Aldeia da Tôr; Algoz; Bensafrim; Paderne; S. Bartolomeu de Messines.

Algarve, Tavira, 29.v.2015, 1♂, *det.* Cross, *leg.* M. & E. Howe.

Subtribe: Stizina

Genus *Bembecinus* A. COSTA, 1859

4 species. Prey: Homoptera (BITSCH *et al.* 1997). Distribution notes from SCHMID-EGGER 2004.

***Bembecinus carpetanus* (MERCET, 1906)**

Spain & Portugal.

Widespread, frequent, 19 records.

DINIZ 1973: Coimbra, Évora, Resende; total 12♂, 78♀.

VIEIRA *et al.* 2013: Coimbra, Évora, Resende; Douro International NP, 2001; 2♀.

SCHMID-EGGER 2004: Algarve, 15km N Vila do Bispo, 4.v.1996, 1♂; Algarve, Faro, Feteira, 31.v.1996, 1♂. OLL.

Trás-os-Montes, Beira Litoral, Alto Alentejo, Baixo Alentejo, Algarve.

***Bembecinus hungaricus* (FRIVALDSZKY, 1877)**

Widespread in Europe, Turkey, central Asia to Japan and Formosa

Central & Southern Portugal, scarce, 8 records.

ANDRADE 1949: Porto de Rei, 1♂, 1♀.

DINIZ 1973: Coimbra, Porto de Rei, Resende; total 1♂, 2♀.

Baixo Alentejo, Praia da Foz dos Ouriços, 18.vii.2016, 1♀, *det.* Cross, *leg.* M. & E. Howe.

Algarve, Bordeira, 21.vii.2015, 1♂; 29.vii.2016, 1♂; *det.* Cross, *leg.* M. & E. Howe.

Algarve, Carrapateira, 21.vii.2005, 1♀, *det.* Cross, *leg.* M. & E. Howe.

Algarve, Carrapateira, 4.ix.2015, 4♂, on *Crithmum maritimum*; 27.ix.2016, 1♂, *det.* & *leg.* Cross.

Algarve, Carrapateira, 22.ix.2018, 1♂; 23.ix.2018, 1♀; *det.* & *leg.* Cross.

***Bembecinus pulchellus* (MERCET, 1906)**

Spain & Portugal.

Widespread, rare, 5 records (Fig. 17).

DINIZ 1973: Portalegre, Sobreiral; total 8♂.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♀.

Trás-os-Montes, Bragança, Alfândega da Fé, pans, 1.vii.2014, 2♀; 22/24.vi.2015, 2♀, *det.* Schmid-Egger, *leg.* A. Penado.

Algarve, Burgau, 11.vi.2015, 1♀, *det.* & *leg.* Cross.

Algarve, Burgau, 27.vi.2018, 1♂, 2♀, *det.* & *leg.* Cross.

Algarve, Lagoa, Sesmarias, 24.v.1995, 1♂, *det.* Schmid-Egger, *leg.* D. Keen.

***Bembecinus tridens* (FABRICIUS, 1781)**

The most abundant and widespread *Bembecinus* in the Palaearctic.

Central & Southern Portugal, scarce, 10 records.

ANDRADE 1949: Cova da Piedade, Vale de Gaio, Figueira da Foz.

DINIZ 1973: Castelo Branco, Coimbra, Évora, Lagoa de Albufeira, Lousa, Sines, Trafaria; total 29♂, 12♀.

GAYUBO 1984: Algarve, 1983: Martinlongo; Odeleite; Porta de Lagoa; S. Bartolomeu de Messines. Estremadura, São Martinho do Porto, 8.vii.2019, 2♂, 2♀, *det.* & *leg.* A. Livory & R. Coulomb.

Baixo Alentejo, Mértola, 2.vi.2016, 1♂, 5♀, *det.* & *leg.* A. Livory & R. Coulomb.

Algarve, Bordeira, 20.ix.2010, 1♀, *det.* Baldock, *leg.* H. Whiteley.

Algarve, Carrapateira, 8.vi.2015, 1♂ on *Cachrys libanotis*; 4.viii.2015, 2♂; *det. & leg.* Cross.
Algarve, Guia, 17.v.1999, 1♂, *det. & leg.* Baldock.
Algarve, Odeceixe, 25.vii.2010, 1♀, *det. & leg.* A. Livory & R. Coulomb.
Algarve, Praia do Vale da Lama, 29.v.2018, 1♂, *det. & leg.* Cross.
Algarve, Quinta de São Roque, 22.v.2017, 1♀, 27.x.2017.

Genus *Stizoides* GUÉRIN-MÉNEVILLE, 1844

1 species. Cleptoparasites of Sphecidae (BITSCH *et al.* 1997). *Stizoides tridentatus* is recorded as a cleptoparasite of various Sphecidae, among them *Prionyx kirbii* and *Sphex funerarius* (BITSCH *et al.* 1997) but without specific reference to Portugal.

***Stizoides tridentatus* (FABRICIUS, 1775)**

Mediterranean region from Portugal to Greece, Russia and Asia Minor.

Central & Southern Portugal, rare, 3 records.

DINIZ 1973: Lisboa, 1♂, Évora, 1♂, Tavira, 1♂.

Estremadura, Nazaré, 19.viii.2015, 1♀, *det. & leg.* A. Livory & R. Coulomb.

Estremadura, São Martinho do Porto, 21.viii.2015, 1♀; 8.vii.2019, 1♂; *det. & leg.* A. Livory & R. Coulomb.

Genus *Stizus* LATREILLE, 1802

6 species. Prey: adult and immature Orthoptera (BITSCH *et al.* 1997).

***Stizus aestivalis* MERCET, 1906**

Iberia

Northern & Southern Portugal, rare, 1 record.

DINIZ 1973: Vila Real de Santo António, 1♂.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♀.

Alto Alentejo, Montargil, 21.ix.1975, 1♀, *det.* Baldock. MNHNC coll. Mendonça.

***Stizus continuus* (KLUG, 1835)**

Iberian Peninsula, France.

Southern Portugal, rare. Prey recorded in Spain includes Orthoptera nymphs of three families: Acrididae, Phaneropteridae and Pyrgomorphidae (POLIDORI *et al.* 2009). No prey records are available for Portugal.

DINIZ 1973: Monte Gordo, Portimão; total 3♂, 2♀.

GAYUBO 1984: Monte Gordo; Algarve, Castro Marim, 24.vii.1983.

****Stizus fasciatus* FABRICIUS, 1781**

Southern Europe from Portugal to Cyprus. Ukraine to Central Asia, Mongolia and China.

Central Portugal, rare, 1 record.

Estremadura, Caparica, 23.vi.1964, 1♂, *det.* Schmid-Egger. MNHNC coll. Mendonça.

***Stizus hispanicus* MOCSÁRY, 1883**

Mediterranean.

Southern Portugal, rare.

DINIZ 1973: Vila Real de Santo António, 1♀.

***Stizus pubescens* (KLUG, 1835)**

Some authors, e.g. PAGLIANO & NEGRISOLO (2005), regard this and the following species as conspecific. Certainly intermediates occur and it is not always clear to which a specimen belongs. However, most specimens can be safely determined so, until the question is settled, it is felt best to retain separate taxa.

Southern Portugal, scarce, 10 records.

DUSMET Y ALONSO 1931: Mitra.

ANDRADE 1949: Évora, Herdade da Mitra.

DINIZ 1973: Aljustrel, Lagoa de Albofeira, Trafaria; total 3♂, 2♀.

Baixo Alentejo, Melides, 24.vii.2016, 3♂; 7.viii.2018, 1♂; *det.* Cross, *leg.* M. & E. Howe.

Baixo Alentejo, Santo André, 20.vii.2016, 1♂; 1.viii.2018, 1♂; 2.viii.2018, 1♂; all *det.* Cross, *leg.* M. & E. Howe.

Baixo Alentejo, Vila Nova de Milfontes, 10.vii.1971, 1♀; 22.vii.1972, 1♀, *det.* Baldock. MNHNC coll. Mendonça.

Algarve, Cacela Velha, 1.ix.2018, 1♀, *det. & leg.* Cross.

Algarve, Carrapateira, 19.ix.2014, 1♂, *det.* A. Livory/Schmid-Egger, *leg.* A. Livory & R. Coulomb.
Algarve: Tavira, 2.viii.2010, 1♂, *det.* & *leg.* A. Livory & R. Coulomb.

***Stizus ruficornis* (FORSTER, 1771)**

Eurasian.

Central & Southern Portugal, frequent, 28 records (Fig. 18).

Europe, Middle East.

DUSMET Y ALONSO 1931: Lavos

ANDRADE 1949: (as *S. distinguendus* Handlirsch) Lisboa, Troia, Massorra, Lavos (DUSMET Y ALONSO, 1931).

DINIZ 1973: Cabo de Sines, Lisboba (Ajuda), Monchique, Monte Gordo, Mora, Resende, Setúbal; total 14♂, 12♀.

GAYUBO 1984: Acoteias; Burgau; Praia da Luz; Umbrias de Camacho.
Estremadura, Baixo Alentejo, Algarve.

Tribe: Nyssonini

Genus *Brachystegus* A. COSTA, 1859

1 species. *Brachystegus scalaris* is noted as a cleptoparasite of *Tachytes panzeri* Dufour (BITSCH *et al.* 1997) but without specific reference to Portugal.

***Brachystegus scalaris* (ILLIGER, 1807)**

Eurasian.

Northern Portugal, rare, 1 record.

DINIZ 1973: (as *Nysson scalaris*) Lamego, Resende; total 4♀.

Trás-os-Montes, hills east of Moimenta, 2.vii.2016, 4♀, *det.* & *leg.* Wood.

Genus *Nysson* LATREILLE, 1802-1803

11 species. Cleptoparasites of Gorytini (BITSCH *et al.* 1997).

***Nysson castellanus* MERCET, 1909**

Iberia and Morocco.

Central Portugal, rare.

ANDRADE 1949: Lisboa, 7.vi.1948, 2♂, 3♀.

DINIZ 1973: Lisboa, 3♀.

***Nysson dimidiatus* JURINE, 1807**

Euro-atlantic.

Central Portugal, rare.

ANDRADE 1949: Lisboa, 16.vi.1947, 2♂, 3♀.

DINIZ 1973: Aljustrel, Carcavelos, Estoril, Felgueiras, Lisboa, Oeiras, Seixal, Trafaria ; total 6♂, 8♀.

***Nysson dusmeti* MERCET, 1909**

Iberian endemic.

Northern Portugal, rare.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♂.

***Nysson interruptus* (FABRICIUS, 1798)**

Euro-atlantic.

Widespread, rare, 3 records. There are no firm host records from Portugal but at Marmeleite, 18.iv.2017, it was found in the company of several *Argogorytes fargeii*.

ANDRADE 1949: Lisboa, Aldeia Nova de S. Bento.

DINIZ 1973: Caxias, Lisboa, Monchique, Portimão, Seixal; total 4♂, 7♀.

Trás-os-Montes, Pardelhas, 11.vi.2017, 1♀, *det.* & *leg.* Cross.

Algarve, Marmeleite, 18.iv.2017, 1♀, *det.* & *leg.* Cross.

Algarve, Pêra, Praia Grande, 30.iii.2015, 1♀ on *Euphorbia serrata*, *det.* & *leg.* Cross.

***Nysson konowi* MERCET, 1909**

Iberian endemic.

Widespread, rare, 5 records (Fig. 19).

DINIZ 1973: Carcavelos, Estoril; total 2♂, 3♀.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♂.

Algarve, Amoreira, 15.vi.2015, 2♀ on *Cachrys libanotis*, *det. & leg.* Cross.

Algarve, Barragem da Bravura, 15.v.2018, 1♂, *det. & leg.* Cross.

Algarve, Burgau, Barrancão, 8.v.2018, 1♂; 18.v.2018, 1♂; *det. & leg.* Cross.

Algarve, Carrapateira, 19.v.2018, 1♀, *det. & leg.* Cross.

***Nysson maculosus* (GMELIN, 1790)**

Palearctic.

Northern & Southern Portugal, rare, 3 records.

VIEIRA *et al.* 2013: Portugal 2002; Douro International NP, 2001, 5♀.

Algarve, Amoreira, 15.vi.2015, 1♂, 1♀ on *Cachrys libanotis*; 8.vi.2017, 1♂; all *det. & leg.* Cross.

Algarve, Galé, 21.iv.2017, 1♂, *det. & leg.* J. Smit.

***Nysson parietalis* MERCET, 1909**

Iberian endemic.

Portugal, rare.

BITSCH *et al.* 1997: Portugal.

***Nysson pratensis* MERCET, 1909**

Mediterranean.

Northern & Central Portugal, rare.

DINIZ 1973: Cascais, 1♂, Resende, 1♂.

VIEIRA *et al.* 2013: Douro International NP, 2001, 9♂, 2♀.

***Nysson spinosus* FORSTER, 1771**

All Europe to the Middle East and Kazakhstan. Korea and Japan.

Northern & Central Portugal, rare, 1 record.

DINIZ 1973: Coimbra, 1♀.

Douro Litoral, Litoral de Vila do Conde, 11.v.2019, 1♀, *det. & leg.* Wood.

***Nysson trimaculatus* (ROSSI, 1790)**

Most of Europe, east to European Russia and Kazakhstan.

Northern & Central Portugal, rare, 1 record.

VIEIRA *et al.* 2013: Portugal 2002; Douro International NP, 2001; Paul do Boquilobo NR, 2002, total, 12♂, 3♀.

Beira Alta, Gouviães, Tarouca, 2.viii.2008, 1♀, *det.* Baldock, *leg.* P. L'Homme

***Nysson varelai* MERCET, 1909**

Iberian Peninsula, Algeria and Morocco.

Central Portugal, rare.

DINIZ 1973: Lisboa, 1♂, 2♀.

Genus *Synnevrus* A. COSTA, 1859

1 species. Prey: the behaviour is undescribed (BITSCH *et al.* 1997) but, as it is so close to *Nysson*, *Synnevrus* is likely to be cleptoparasitic on Gorytini. Indeed, BITSCH *et al.* (2020) place this species in *Nysson* but it is retained here as a separate genus until this change is widely established.

***Synnevrus monachus* (MERCET, 1909)**

Portugal, Spain, France. Italy and Greece.

Northern & Central Portugal, rare, 1 record.

DINIZ 1973: Lagoa de Albufeira, Lisboa, Resende, Serra da Boa Viagem; total 2♂, 2♀.

Trás-os-Montes, Bragança, Alfândega da Fé, 13.v.2014, 1♂, *det.* Baldock, *leg.* A. Penado.

CRABRONINAE

Tribe: Crabronini

Subtribe: Anacrabronina

Genus *Encopognathus* KOHL, 1897

1 species. Prey: Hemiptera: Mirinae (BITSCH & LECLERCQ 1993).

****Encopognathus braunsi* MERCET, 1915**

Iberian endemic: until its recent discovery in Portugal only known from Spain.

Northern & Southern Portugal, scarce, 7 records. Notes on its biology in Spain are given in GAYUBO 1979. There are no published prey records for either Portugal or Spain. However, a female photographed in Spain appears to be carrying a Capsid bug nymph (Hemiptera: Miridae) (Fig. 20). Flowers visited in Portugal include *Corrigiola telephiifolia* and *Herniaria scabrida*.

Trás-os-Montes, Moimenta, hills to East, 2.vii.2016, 1♀, *det.* & *leg.* Wood.

Trás-os-Montes, Montesinho, Torre Isolada, 30.vi.2016, 1♀, *det.* & *leg.* Wood.

Trás-os-Montes, Pardelhas, 12.vi.2017, 1♂, *det.* & *leg.* Cross.

Trás-os-Montes, Serra do Montesinho, Alto do Falgueirão, 30.vi.2016, 2♂, 2♀, *det.* & *leg.* Wood.

Trás-os-Montes, Serra do Montesinho, Porto do Sabor, 4.vii.2016, 1♂, 2♀, *det.* & *leg.* Wood.

Baixo Alentejo, Mina de São Domingos, 3.vi.2016, 1♀, *det.* Cross, *leg.* A. Livory & R. Coulomb.

Baixo Alentejo, Mina de São Domingos, 24.v.2017, 1♀, *det.* & *leg.* Cross.

Genus *Entomognathus* DAHLBOM, 1844

2 species. Prey: Coleoptera: Chrysomelidae (BITSCH & LECLERCQ 1993).

***Entomognathus brevis* (VANDER LINDEN, 1829)**

Palearctic.

Widespread, scarce, 13 records.

ANDRADE 1949: Lisboa, Évora, Singeverga.

GAYUBO 1984: Algarve, 1983: Carrapateira; Olhão; Santo Estêvão.

VIEIRA *et al.* 2013: Serras de Aire e Candeeiros NP, 2002, 4♂, 2♀.

Minho, Gilmonde, Barcelos, 7.ix.2015, 1♀, *det.* Wood, *leg.* R. Andrade.

Trás-os-Montes, Vila Real, Aveção do Cabo, 28.vi.2016, 1♀, *det.* & *leg.* Wood.

Douro Litoral, Frende, 17.vi.2016, 1♀, *det.* & *leg.* Cross.

Douro Litoral, Porto, Malta, 6.ix.2013, 1♂, *det.* Schmid-Egger, *leg.* R. Andrade.

Baixo Alentejo, Santo André, 20.vii.2016, 1♀, *det.* Cross, *leg.* M. & E. Howe.

Baixo Alentejo, Zambujeira do Mar, 4.vii.2019, 1♀, *det.* & *leg.* A. Livory & R. Coulomb.

Algarve, Alvor dunes, 6.v.2005, 1♀, *det.* & *leg.* J. Smit.

Algarve, Cabanas, 24.viii.2012, 2♂, *det.* & *leg.* A. Livory & R. Coulomb.

Algarve, Carrapateira, 15.ix.2016, 1♀; 19.x.2016, 1♀, *det.* & *leg.* Cross.

Algarve, Lagoa de Budens, 5.x.2016, field, *det.* & *leg.* Cross.

Algarve; Pêra dunes, 18.ix.2015, 1♀, *det.* Cross, *leg.* Wood.

Algarve, Quinta de São Roque, 27.x.2017, 1♀, *det.* & *leg.* Cross.

***Entomognathus fortuitus* (KOHL, 1915)**

Iberian endemic.

Central & Southern Portugal, rare, 1 record.

VIEIRA *et al.* 2013: Serras de Aire e Candeeiros NP, 2002, 1♀.

Baixo Alentejo, Mina de São Domingos, 3.vi.2016, 1♀, *det.* & *leg.* A. Livory & R. Coulomb.

Subtribe: Crabronina

Genus *Crabro* FABRICIUS, 1775

1 species. Prey: Diptera (BITSCH & LECLERCQ 1993).

[*Crabro cribrarius* (LINNAEUS, 1758)]

BITSCH & LECLERCQ 1993: “Certainement pas ubiquiste dans la Péninsule Ibérique” No definite records for Portugal.

****Crabro korbi* (KOHL, 1883)**

Iberian endemic.

Central and Southern Portugal, rare, 5 records. The only prey record is for a Tachinid/Calliphoridae fly (Diptera: Tachinidae/Calliphoridae) at Amoreira 24.iv.2016 (Fig. 21).

Estremadura, Marinha Grande, Praia da Pedra do Ouro, 5.iv.2017, *det.* Cross, *leg.* M. Jenner.

Algarve, Aljezur, west of Vale da Telha, 1.v.2016, 1♂, *det. & leg.* Wood.

Algarve, Amoreira, 1.iv.2015, 4♂; 24.iv.2016, 1♀; *det. & leg.* Cross.

Algarve, Amoreira, 23.v.2017, 1♀, *det.* Cross.

[*Crabro peltarius* (SCHREBER 1784)]

All Portuguese material of *Crabro* examined critically has proved to be *C. korbi* (Kohl). It is probable that both the following records will prove to be the same species.

ANDRADE 1949: Singeverga, 4.vi.1948, 3♂.

Estremadura, São Pedro de Moel, 15.iv.1997, 1♂, 1♀, *det.* Baldock, *leg.* M. Jenner.

Genus *Crossocerus* LEPELETIER & BRULLÉ, 1835

10 species. Prey: mainly Diptera. A few species use Homoptera or Ephemeroptera (BITSCH & LECLERCQ 1993).

***Crossocerus acanthophorus* (KOHL, 1892)**

Euro-atlantic.

Northern Portugal, rare.

VIEIRA *et al.* 2013: Douro International NP, 2001; Paul do Boquilobo NR, 2002, total 1♂, 8♀.

***Crossocerus annulipes* (LEPELETIER & BRULLÉ, 1835)**

Holarctic.

Northern & Central Portugal, rare.

ANDRADE 1949: (as *Crossocerus ambiguus*) Massorra, 13.ix.1944, 1♂.

DINIZ 1960 B: (as *Crossocerus ambiguus*) Portugal.

VIEIRA *et al.* 2013: Douro International NP, 2001; Paul do Boquilobo NR, 2002, total , 4♂, 3♀.

****Crossocerus dimidiatus* (FABRICIUS, 1781)**

Northern and central Europe to Japan. Scarce in the Iberian Peninsula.

Central Portugal, rare, 1 record.

Beira Alta, Serra da Estrela, Paços da Serra, 6.vii.1977, 1♂, *det.* Schmid-Egger. MNHNC, coll. Mendoça

***Crossocerus elongatulus* (VANDER LINDEN, 1829)**

West Palearctic.

Widespread, frequent, 25 records.

ANDRADE 1949: Lisboa, Cascais, Massorra.

GAYUBO 1984: Algarve, 15.viii.1983, Bensafrim, 2♂.

KUHLMANN 1996: Serra da Estrela, Penhas da Saúde, 1992♀, *det.* K. Schmidt.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002, total 14♂, 26♀.

Minho, Trás-os-Montes, Douro Litoral, Beira Alta, Estremadura, Baixo Alentejo, Algarve.

***Crossocerus megacephalus* (ROSSI, 1790)**

Palearctic.

Widespread, rare, 3 records.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002; Paul do Boquilobo NR, total, 1♂, 7♀.

Beira Alta, Paços da Serra, 18.vii.1974, 1♀ *det.* Schmid-Egger, MNHNC, coll. Mendoça 32351.

Algarve, Carrapateira, 10.x.2017, 1♂ *det. & leg.* Cross.

Algarve, Carrapateira, Beirão, 16.ix.2016, 3♂ *det. & leg.* Cross.

****Crossocerus ovalis* LEPELETIER & BRULLÉ, 1834**

Northern and central Europe, just reaching Iberia.

Northern Portugal, rare, 1 record.

Minho, Esposende, Rio Tinto, 3.vi.2015, 1♂, *det.* Cross, *leg.* R. Andrade.

***Crossocerus podagricus* (VANDER LINDEN, 1829)**

Northern and central Europe to Korea and Sakhalin. Not recorded from Portugal in BITSCH & LECLERCQ 1993, although recorded from north and northeast Spain.

Widespread, rare, 5 records.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1 ♀.

Estremadura, São Martinho do Porto, 8.vii.2019, 1 ♀, det. & leg. A. Livory & R. Coulomb.

Estremadura, Torres Vedras, A dos Cunhados, 19.ix.2013, 1 ♂, det. Baldock, leg. R. Andrade.

Beira Litoral, Estarreja, Canelas, 28.viii.2016, 1 ♀, det. Baldock, leg. R. Andrade.

Algarve, Amoreira, 8.vi.2017, 1 ♀, det. & leg. Cross.

Algarve, Carrapateira, 10.ix.2017, 2 ♂, det. & leg. Cross.

***Crossocerus quadrimaculatus* (FABRICIUS, 1793)**

Europe to eastern Siberia and Mongolia. Algeria and Morocco.

Widespread, scarce, 7 records (Fig. 22).

ANDRADE 1949: Évora, Soure, Massorra, 2.x.1946, 1 ♀, Vale de Gaio.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002; Paul do Boquilobo NR, 2002, total 29 ♂, 44 ♀.

Trás-os-Montes, Pardelhas, 1.ix.2018, 1 ♀, det. & leg. Cross.

Trás-os-Montes, Vila Real, Mascoselo, 1.ix.2018, 1 ♀, det. & leg. Cross.

Douro Litoral, Loivos do Monte, 3.ix.2019, 1 ♀, det. & leg. Cross.

Beira Alta, Manteigas, Vale do Zêzere, 25.viii.2015, 1 ♀, det. & leg. A. Livory & R. Coulomb.

Beira Alta, Serra da Estrela, Paços da Serra, 23.vii.1986, 1 ♂, det. Schmid-Egger. MNHNC, coll. Mendoça.

Algarve, Carrapateira, Beiçudo, 16.ix.2016, 1 ♂, 1 ♀, det. & leg. Cross.

Algarve, Vilarinha, 21.ix.2018, 1 ♀, det. & leg. Cross.

***Crossocerus tarsatus* (SHUCKARD, 1837)**

Euro-atlantic.

Widespread, rare, 1 record.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002; Paul do Boquilobo NR, 2002, total 11 ♂, 36 ♀.

Algarve, Marmeleite, 8.xi.2016, 2 ♂, det. & leg. Cross.

***Crossocerus varus* LEPELETIER & BRULLÉ, 1835**

Northern and central Europe to Japan. Unusual in just reaching Portugal but not yet recorded from Spain (BITSCH & LECLERCQ 1993).

Central Portugal, rare, 1 record.

ANDRADE 1949: Lisboa, 13.v.1945, 1 ♀; Quinta do Mato.

BITSCH & LECLERCQ 1993: Portugal.

Beira Litoral, Aveiro, Estarreja, Canelas, 20.vii.2015, 1 ♂, det. Wood, leg. R. Andrade.

[*Crossocerus wesmaeli* (VANDER LINDEN, 1829)]

BITSCH & LECLERCQ 1993: “çà et là dans la Péninsule Ibérique” but no definite records for Portugal.

Genus *Ectemnius* DAHLBOM, 1845

10 species. Prey: almost entirely Diptera:Brachycera and Cyclorrhapha. A few species use Lepidoptera (BITSCH & LECLERCQ 1993).

***Ectemnius cephalotes* (OLIVIER, 1792)**

Holarctic.

Widespread, rare, 1 record.

ANDRADE 1949: Lisboa, 12.vi.1945, 1 ♀.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002, total 36 ♂, 73 ♀.

Algarve, Carrapateira, Beiçudo, 16.ix.2016, 1 ♀, det. & leg. Cross.

***Ectemnius continuus punctatus* (LEPELETIER & BRULLÉ, 1835)**

Holarctic.

Widespread, frequent, 26 records.

ANDRADE 1949: Lisboa, 30.viii.1947, 1 ♀.

DINIZ 1960B: Portugal.

KUHLMANN 1996: Serra da Estrela, Vale do Zêzere, 1987, 1♀; Penhas da Saúde, 1990, 1♀, *det.* K. Schmidt.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002; Paul do Boquilobo NR, 2002, total 1♂, 6♀.

Minho, Trás-os-Montes, Estremadura, Ribatejo, Baixo Alentejo, Algarve.

***Ectemnius crassicornis* (SPINOLA, 1808)**

Euro-atlantic.

Widespread, rare.

GAYUBO 1984: Algarve, Santo Estêvão, 24.vii.1983, 1♂; Umbrias de Camacho, 22.vii.1983, 1♀.

KUHLMANN 1996: Serra da Estrela, Manteigas, 1987, 1♂, 1♀, *det.* K. Schmidt.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♂, 1♀.

***Ectemnius dives* (LEPELETIER & BRULLÉ, 1835)**

Holarctic.

Portugal, rare.

BITSCH & LECLERCQ 1993: Portugal.

***Ectemnius hypsae* (DE STEFANI, 1884)**

Mediterranean.

Central & Southern Portugal, common, 37 records (Fig. 23).

ANDRADE 1949: Lisboa, São João do Estoril, Vale de Gaio.

GAYUBO 1984: Algarve, 1983: 8 localities.

Estremadura, Alto Alentejo, Baixo Alentejo, Algarve.

***Ectemnius lapidarius* (PANZER, 1804)**

Holarctic.

Northern Portugal, rare, 5 records.

VIEIRA *et al.* 2013: Douro International NP, 2001, 4♀.

Minho, Codeçoso, 14.ix.2019, 2♂, 1♀, *det. & leg.* Cross.

Douro Litoral, Amarante, Chapa, 9.ix.2016, 1♀, *det. & leg.* Cross.

Douro Litoral, Vila do Conde, Malta, 6.ix.2013, 1♂, *det.* Baldock, *leg.* R. Andrade.

Beira Baixa, Freimoninho, Quinta da Melroa, 23.vii.2018, 1♀; 26.vii.2018, 1♀; *det.* Cross, *leg.* M. & E. Howe.

****Ectemnius lituratus* (PANZER, 1804)**

Widespread across Europe to Russia and Turkey.

Northern & Southern Portugal, rare, 3 records.

Douro Litoral, Amarante, Ribeira 14.ix.2019, 1♀, *det. & leg.* Cross.

Algarve, Monchique, 23.vii.2015, 1♂; 26.vii.2015, 3♂, 4♀; *det.* Cross, *leg.* M. & E. Howe.

****Ectemnius massiliensis* (KOHL, 1883)**

Southern Europe from Portugal to Turkey. Its presence in Algeria is unconfirmed.

Southern Portugal, scarce, 8 records (Fig. 24).

Algarve, Aljezur, Praia da Amoreira, 2.v.2005, 1♂, 1♀, *det. & leg.* J. Smit.

Algarve, Aljezur, Vale da Telha, 1.v.2016, 1♂, *det. & leg.* Wood.

Algarve, Amoreira, 23.v.2017, 1♂, 2♀; 1.vi.2017, 1♂, 8.vi.2017, 1♀; all *det. & leg.* Cross.

Algarve, Amoreira, 15.vi.2018, 1♀, *det. & leg.* Cross.

Algarve, Faro, São Brás de Alportel, 12.iv.2015, 1♂, *det.* Baldock, *leg.* A. Gonçalves.

Algarve, Guia, 17.v.1999, 1♂, *det.* K. Guichard, *leg.* Baldock.

***Ectemnius rugifer* (DAHLBOM, 1845)**

Euro-atlantic.

Northern & Central Portugal, rare.

VIEIRA *et al.* 2013: Douro International NP, 2001, Serras de Aire e Candeeiros NP, 2002, total 2♂, 2♀.

***Ectemnius sexcinctus* (FABRICIUS, 1775)**

Widespread in Europe, east to Kashmir and Mongolia.

Portugal, rare.

DINIZ 196B: Portugal.

Genus *Lestica* BILLBERG, 1820

1 species. Prey: Adult Lepidoptera of small size (BITSCH & LECLERCQ 1993).

***Lestica clypeata* (SCHREBER, 1759)**

Europe, Middle East.

Widespread, common, 62 records (Fig. 25).

ANDRADE 1949: Lisboa, Estoril, Torre da Marinha, Vale de Gaio.

GAYUBO 1984: Algarve, 1983: Casais; Monchique; Olhão; S. Marcos da Serra.

KUHLMANN 1996: Serra da Estrela, Unhais, 30.vii.1990, 1♀.

VIEIRA *et al.* 2013: Douro International NP, 2001, 2♀.

Minho, Trás-os-Montes, Douro Litoral, Estremadura, Ribatejo, Baixo Alentejo, Algarve.

Genus *Lindenius* LEPELETIER & BRULLÉ, 1835

9 species. Prey: Heteroptera, Diptera and Hymenoptera (BITSCH & LECLERCQ 1993).

****Lindenius albilabris* (FABRICIUS, 1793)**

Eurasian.

Widespread, scarce, 11 records. One prey record from Portugal: a mirid bug (Hemiptera: Miridae) at Pêra in 2016.

Trás-os-Montes, Bragança, Alfândega da Fé, pans, 2.vi.2014, 1♂, *det.* Wood, *leg.* A. Penado.

Ribatejo, Santarém, 9.vi.1974, 1♀, *det.* Baldock. MNHNC, *coll.* Mendonça.

Algarve, Albufeira, 19.iv.2017, 1♂, 1♀, *det.* & *leg.* J. Smit.

Algarve, Cacela Velha, 23.iv.2017, 1♀, *det.* & *leg.* Cross.

Algarve, Cacela Velha, 3.iv.2019, 1♀, Cross.

Algarve, Carvoeiro, Benagil, 2.iv.2014, 1♂, 1♀, *det.* Baldock, *leg.* Wood.

Algarve, Moncarapacho, Cerro da Cabeça, 25.iv.2016, 1♀, *det.* & *leg.* Wood.

Algarve, Pêra, Praia Grande, 30.iv.2016, 1♂, 1♀; 1.v.2016, 2♀; *det.* & *leg.* Cross.

Algarve, Pêra, Praia Grande, 17.iv.2017, 1♂, *det.* & *leg.* Cross.

Algarve, Tavira, 22.iv.2017, 1♂, *det.* & *leg.* J. Smit.

***Lindenius ibericus* (KOHL, 1905)**

Mediterranean.

Widespread, scarce, 9 records.

GAYUBO 1984: Leça da Palmeira; Lisboa; Porto; Aljustrel; Algarve, Paderne, 30.viii.1983, 1♀.

Minho, Barcelos, Gilmonde, 3.ix.2014, 1♀, *det.* Baldock, *leg.* R. Andrade.

Douro Litoral, Vila Nova de Gaia, Mafamude, 16.ix.2010, 1♀, *det.* Baldock, *leg.* R. Andrade.

Beira Litoral, Leiria, Alcobaça, Cela, 12.ix.2013, 1♀, *det.* Baldock, *leg.* R. Andrade.

Beira Litoral, Aveiro, Salines, 7.vi.2016, 1♂, *det.* & *leg.* A. Livory & R. Coulomb.

Estremadura, São Martinho do Porto, 20.viii.2015, 3♀, *det.* & *leg.* A. Livory & R. Coulomb.

Algarve, Pêra, Praia Grande, 3.vi.2016, 4.vi.2016, 11.vi.2016, 3♀, *det.* & *leg.* Cross.

Algarve, Tavira, 30.vii.2015, 2♀, *det.* Cross, *leg.* M. & E. Howe.

***Lindenius luteiventris* (KOHL, 1915)**

Mediterranean.

Central & Southern Portugal, scarce, 7 records.

BITSCH & LECLERCQ 1993: Portugal.

VIEIRA *et al.* 2013: Serras de Aire e Candeeiros NP, 2002, 1♀.

Algarve, Amoreira, 3.iv.2015, 1♂, 1♀; 13.iv.2015, 2♂; on *Cistus* and *Sesamoides*, *det.* & *leg.* Cross.

Algarve, Budens, 29.iv.2016, 1♀, *det.* & *leg.* Cross.

Algarve, Budens, Vale da Rã, 20.v.2017, 1♀, *det.* & *leg.* Cross.

Algarve, Guia, 20.iv.2006, 1♀, *det.* Barbier, *leg.* Baldock.

Algarve, Pêra, Praia Grande, 17.iv.2017, 1♀, *det.* & *leg.* Cross.

Algarve, Silves, 16.iv.2012, 8♀, *det.* Schmid-Egger, *leg.* Baldock.

****Lindenius melinopus* (KOHL, 1915)**

Mediterranean.

Southern Portugal, scarce, 7 records.

Algarve, Aljezur, west of Vale da Telha, 1-9.v.2016, 1♀, *det.* & *leg.* Wood.

Algarve, Barragem da Bravura, 15.v.2018, 1♀, *det.* & *leg.* Cross.

Algarve, Carvoeiro, 2.iv.2016, 1♂, *det.* & *leg.* Wood.

Algarve, Carvoeiro, Benagil, 2.iv.2016, 1♀, *det. & leg.* Wood.
Algarve, Cerro de Santo Miguel, 28.iv.2016, 1♂, *det. & leg.* Wood.
Algarve, Pêra, Praia Grande, 1.v.2016, 2♀, *det. & leg.* Cross.
Algarve, Pêra, Praia Grande, 10.v.2018, 1♀, *det. & leg.* Cross.

****Lindenius merceti* (KOHL, 1915)**

Previously only known from Spain (BITSCH & LECLERCQ 1993).

Southern Portugal, scarce, 6 records. At Pêra in 2018 a female was photographed stinging and dragging into her nest, an individual of the Crab Spider *Xysticus bufo* (Dufour) Araneae: Thomisidae. Spiders of the genus *Xysticus* are generally found living at ground level or low vegetation but, if this were truly a prey item, it would represent a remarkable outlier of the usual prey range of the genus *Lindenius*.

Algarve, Cacela Velha, 23.vi.2017, 1♀, *det. & leg.* Cross.
Algarve, Pêra, Praia Grande, 4.vi.2016, 1♀, *det. & leg.* Cross.
Algarve, Pêra, Praia Grande, 15.v.2017, 1♂; 31.v.2017, 2♀; *det. & leg.* Cross.
Algarve, Pêra, Praia Grande, 16.vi.2018, 1♀; 26.vi.2018, 1♀; *det. & leg.* Cross.

****Lindenius mesopleuralis* (MORAWITZ, 1890)**

Southern Europe to Asia Minor and Mongolia.

Central & Southern Portugal, rare, 3 records.

Beira Litoral, Aveiro, Salines, 7.vi.2016, 2♂, 1♀, *det. & leg.* A. Livory & R. Coulomb.
Algarve, Carrapateira, 21.vii.2005, 2♀, *det.* Cross, *leg.* M. & E. Howe.
Algarve, Tavira, Forte do Rato, 22.iv.2016, 1♀, *det. & leg.* Wood.

***Lindenius panzeri* (VANDER LINDEN, 1829)**

Europe to eastern Siberia and Manchuria. Reaching only as far south as the northern and central parts of the three main European peninsulas.

Northern & Central Portugal, rare, 1 record (Fig. 26).

ANDRADE 1949: Serra da Via Boagem, 1♀.
VIEIRA *et al.* 2013: Douro International NP, 2001, 1♀.
Beira Alta, Manteigas, Rota da Carvão, 28.viii.2015, 2♂, 3♀, *det. & leg.* A. Livory & R. Coulomb.

***Lindenius peninsularis* (KOHL, 1915)**

Iberian endemic.

Northern & Central Portugal, rare, 1 record.

ANDRADE 1949: Lisboa, Estoril, Mata da Leirosa, Quinta do Mato.
Minho, Gilmonde, Barcelos, 5.ix.2015, 1♀, *det.* Wood, *leg.* R. Andrade cf. *L. Peninsularis*.

***Lindenius pygmaeus pygmaeus* (ROSSI, 1794)**

Mediterranean.

Widespread, scarce, 7 records.

GAYUBO 1984: Lisboa; Algarve, Benafim, 28.vii.1983, 3♀.
VIEIRA *et al.* 2013: Douro International NP, 2001, 2♂.
Minho, Celorico de Basto, 8.ix.2019, 1♀; *det. & leg.* Cross.
Minho, Gilmonde, Barcelos, 5.ix.2015, 1♀, *det.* Wood, *leg.* R. Andrade.
Minho, Rua Nova, 11.ix.2019, 1♀; *det. & leg.* Cross.
Beira Alta, Guarda 29.viii.2015, 1♂, *det.* Cross, *leg.* R. Andrade.
Beira Alta, Manteigas, Nave de Santo António, São Pedro, 19.vii.2015, 1♂, *det.* Cross, *leg.* A. Gonçalves.
Baixo Alentejo, Évora, 26.ix.2014, 1♀, *det. & leg.* A. Livory & R. Coulomb.
Algarve, Cabanas, 24.vii.2012, 1♂, *det.* Livory/Baldock, *leg.* A. Livory & R. Coulomb.

Genus *Rhopalum* STEPHENS, 1829

2 species. Prey: Psocoptera, small Diptera and small Homoptera (BITSCH & LECLERCQ 1993).

***Rhopalum clavipes* (LINNAEUS, 1758)**

Widespread from Ireland and Portugal to Japan but uncommon in the Mediterranean region.

Northern & Central Portugal, rare, 1 record.

VIEIRA *et al.* 2013: Serras de Aire e Candeeiros NP, 2002, 2♂, 8♀.
Minho, Barcelos, Gilmonde, 30.v.2015, 1♂, *det.* Baldock, *leg.* R. Andrade.

***Rhopalum coarctatum* (SCOPOLI, 1763)**

Widespread from Ireland and Portugal to Japan but uncommon in the Mediterranean region.
Central Portugal, rare.

VIEIRA *et al.* 2013: Paul do Boquilobo NR, 2002, 8♂, 26♀.

Genus *Tracheliodes* MORAWITZ, 1866

1 species Prey: exclusively Hymenoptera: Formicidae (BITSCH & LECLERCQ 1993).

***Tracheliodes quinquenotatus* (JURINE, 1807)**

Mediterranean.

Widespread, frequent, 26 records (Fig. 27).

ANDRADE 1949: Lisboa, 1.v.1945, 2♀; Évora, Mata de Leiria, Porto de Rei.

GAYUBO 1984: Algarve, 1983, Odeleite; Quarteira; Salir; S. Marcos da Serra.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002, total 9♀.

Minho, Trás-os-Montes, Estremadura, Baixo Alentejo, Algarve.

Tribe: Larrini

Subtribe Gastrosericina

Genus *Ancistromma* FOX, 1893

2 species. Prey: Gryllidae (BITSCH *et al.* 2001).

***Ancistromma europaeum* MERCET 1910**

Iberia, Algeria

Central & Southern Portugal, rare, 4 records (Fig. 28).

ANDRADE 1949:14: Estoril: Areias, Caparica.

DINIZ 1960B:4 (as *Larropsis europaea*; new combination), Estoril, Lisboa.

VIEIRA *et al.* 2013: Serras de Aire e Candeeiros NP, 2002, 1♀.

Algarve, Burgau, Barrancão, 22.x.2018, 1♀, *det. & leg.* Cross.

Algarve, Salema, Boca do Rio, 19.ix.2015, 1♀, *det.* Cross, *leg.* Wood.

Algarve, Pêra, Praia Grande, 5.x.2017, 1♂, *det. & leg.* Cross.

Algarve, Pêra, Praia Grande, 6.x.2017, 1♂, *det. & leg.* Cross.

***Ancistromma punctulatum* (KOHL, 1884)**

Mediterranean.

Northern & Central Portugal, rare, 4 records.

ANDRADE 1949:14 (as *Larropsis maligna*) Massorra; Resende; Tabuaço.

DINIZ 1959:29: Porto do Rei, Quinta do Mato.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♂, 2♀.

Minho, Viana do Castelo, 14.vii.2019, 1♂, 1♀, *det. & leg.* A. Livory & R. Coulomb.

Douro Litoral, Loivos do Monte, 2.ix.2018, 2♀, *det. & leg.* Cross.

Douro Litoral, Loivos do Monte, 3.ix.2019, 1♀, *det. & leg.* Cross.

Beira Alta, Manteigas, 28.viii.2015, 1♂, *det. & leg.* A. Livory & R. Coulomb.

Genus *Prosopigastra* A. COSTA, 1867

4 species. Prey: Nymphs of Hemiptera: Heteroptera, Lygaeidae, Nabidae and Scutelleridae (BITSCH *et al.* 2001).

***Prosopigastra handlirschi* MORICE, 1897**

Mediterranean.

Southern Portugal, rare.

GAYUBO 1984: Algarve, 1983: Algoz, 2.viii.1983 2♂, 1♀; Benafim, 28.vii.1983, 1♂.

***Prosopigastra kohli* MERCET, 1907**

Iberian endemic.

Central & Southern Portugal, rare, 2 records.

ANDRADE 1949: Lisboa, 3.viii.1948, 1♀. Estoril, Cascais, Boca do Inferno.

Baixo Alentejo, Mina de São Domingos, 3.v.2017, 1♀, *det. & leg.* Cross.

Algarve, Pêra, Praia Grande, 3.vi.2016, 1♂, *det. & leg.* Cross.

***Prosopigastra punctatissima* A. COSTA, 1867**

Iberia, South Italy, North Africa.

Central & Southern Portugal, scarce, 10 records.

ANDRADE 1949: Estoril, Caparica, 12.ix.1945, 1♂.

DINIZ 1959: Aljustrel; Setúbal.

GAYUBO 1984: Algarve, 1983: Aldeia da Tôr; Bensafrim.

VIEIRA *et al.* 2013: Serras de Aire e Candeeiros NP, 2002, 1♂, 5♀.

Beira Baixa, Serra da Estrela, Covilha, 13.viii.2016, 1♂, *det.* Cross, *leg.* A. Albernaz Valente.

Ribatejo, Coruche, Couco, 6.viii.2016, 1♂, *det.* Cross, *leg.* A. Albernaz Valente.

Algarve, Boca do Rio, 2.vi.2016, 1♂, *det.* & *leg.* Cross.

Algarve, Burgau, Barrancão, 4.vi.2017, 1♀, *det.* & *leg.* Cross.

Algarve, Cacela Velha, 31.v.2018, 1♀; 14.vi.2018, 1♂; *det.* & *leg.* Cross.

Algarve, Guia, 15.vii.2009, 1♂, 1♀, *det.* Schmid-Egger, *leg.* Baldock.

Algarve, Pêra, Praia Grande, 19.vi.2015, 1♀, *det.* & *leg.* Cross.

Algarve, Pêra, Praia Grande, 27.v.2016, 1♂, *det.* & *leg.* Cross.

Algarve, Pêra, Praia Grande, 31.v.2017, 1♀, *det.* & *leg.* Cross.

***Prosopigastra zalinda* BEAUMONT, 1955**

Iberia, Balkan Peninsula, North Africa, Israel, Asia Minor, Central Asia and Mongolia.

Southern Portugal, rare. 2 records.

BITSCH *et al.* 2001: Manda Jota, Algarve, 6.vii.1996, 1♀, *leg.* E. Gros.

Algarve, Pêra, Praia Grande, 29.vi.2015, 1♀, *det.* & *leg.* Cross.

Algarve, Pêra, Praia Grande, 27.v.2016, 1♂, *det.* & *leg.* Cross.

Genus *Tachysphex* KOHL, 1897

25 species. Prey: Orthoptera and Dictyoptera, (BITSCH *et al.* 2001). A number of new species of *Tachysphex* have been recently described, or are in the process of description. Not all of these have been widely accepted and firmly “bedded-in”. Since understanding of this genus is in a state of flux, it has been decided to follow a conservative approach for the moment and use only the names recognised in the most recent treatment of the all the European members of the genus, BITSCH *et al.* 2001.

***Tachysphex adjunctus* KOHL, 1885**

West Mediterranean.

Widespread, scarce, 9 records (Fig 29).

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♂.

Trás-os-Montes, Pardelhas, 12.vi.2017, 1♀, *det.* & *leg.* Cross.

Beira Alta, Manteigas, Vale do Zêzere, 14.vi.2016, 1♂, *det.* & *leg.* A. Livory & R. Coulomb.

Beira Alta, Manteigas, 17.vi.2016, 2♂, *det.* & *leg.* A. Livory & R. Coulomb.

Estremadura, Sesimbra, 16.v.1971, 1♂, *det.* Straka, *leg.* Mendoça. MNHNC, coll. Mendoça.

Algarve, Amoreira, 8.iv.2017, 1♀, *det.* & *leg.* Cross.

Algarve, Budens, 29.iv.2016, 1♂, *det.* & *leg.* Cross.

Algarve, Cacela Velha, 11.iv.2017, 1♂, *det.* & *leg.* Cross.

Algarve, Pêra, Praia Grande, 17.iv.2017, 1♂, *det.* & *leg.* Cross.

Algarve, Vila Real de Santo António, 2.iv.2019, 1♂, *det.* & *leg.* Cross.

***Tachysphex albocinctus* (LUCAS, 1849)**

Palaeartic, Africa

Southern Portugal, frequent, 16 records. In Spain nests are provisioned with male and female nymphs of the Praying Mantis *Mantis religiosa* L (ASÍS *et al.* 1989). No prey records are available for Portugal.

ANDRADE 1949: (as *T. dusmeti* Giner) Évora; Vale de Gaió.

GAYUBO 1984: Albufeira; Portimão; Algarve, 1983: Porta da Lagoa; Quarteira.

Beira Litoral, Baixo Alentejo, Algarve.

***Tachysphex brevipennis* MERCET, 1909**

Eurasian.

Central & Southern Portugal, rare, 3 records.

ANDRADE 1949: Lisboa, 21.vi.1947, 1♀; Trafaria; Cascais.

GAYUBO 1984: Algarve, 1983: Aljezur; Pêra.

Beira Litoral, São Jacinto, 8.vi.2016, 1♂, *det.* & *leg.* A. Livory & R. Coulomb.

Estremadura, Nazaré, dunes south, 19.viii.2015, 1♀, *det. & leg.* A. Livory & R. Coulomb.
Algarve, Lagoa, Sesmarias, 18.v.1995 1♀, *det.* Jozan/Straka, *leg.* D. Keen.

[*Tachysphex brullii* F. SMITH, 1856]

DUSMET Y ALONSO 1931: 1♀, Coimbra, Mata da Trafaria, Mitra (*as rufipes?*). Marked as a questionable ID by Dusmet. Because of this, and in the absence of recent records, it is regarded as doubtful.

[*Tachysphex cabrerai* MERCET, 1909 = *T. consocius* KOHL, 1892]

***Tachysphex consocius* KOHL, 1892**

Eurasian.

Widespread, rare. In Spain nests are provisioned with early instar nymphs of Acridinae (Orthoptera: Acrididae) (ASÍS *et al.* 1989). No prey records are available for Portugal.

ANDRADE 1949: Lisboa, 1.vi.1947, 1♀; Porto de Rei; Trafaria; Cascais (*as T. cabrerai* Mercet 1909).

PULAWSKI 1971: Douro, Resende; (*as T. grandii*)

GAYUBO 1984: Algarve, S. Bartolomeu de Messines (*as T. grandii*) Algarve, 1983 Aldeia da Tôr; Aljezur; Bensafrim; Olhão; Porta de Lagoa (*as consocius*).

VIEIRA *et al.* 2013: Douro International NP, 2001, 2♀.

***Tachysphex coriaceus* (COSTA, 1867)**

Spain, Italy and southeast Europe.

Central & Southern Portugal, rare, 1 record.

KUHLMANN 1996: Serra da Estrela: Nave de Santo António, 21.vii.1990, 1♀, *det.* K. Schmidt.

Algarve, Amoreira, 10.viii.2015, 1♂, *det. & leg.* Cross.

***Tachysphex costae* (DE STEFANI, 1882)**

Mediterranean.

Central & Southern Portugal, rare, 2 records.

ANDRADE 1949: Cruz Qu.ebrada; Vale de Gaio, 17.viii.1947, 1♀.

GAYUBO 1984: Monchique; Algarve, 1983: Bensafrim; Santo Estêvão; Vaqueiro.

KUHLMANN 1996: Serra da Estrela: Manteigas 800m, viii.1987, 2♀, *det.* K. Schmidt.

Algarve, Carrapateira, 19.ix.2014, 1♂, *det.* Straka, *leg.* A. Livory & R. Coulomb.

Algarve, Luz de Tavira, 4.v.2005, 1♀, *leg.* Smit.

***Tachysphex denisi* BEAUMONT, 1936**

Mediterranean.

Widespread, scarce, 6 records.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♂, 3♀.

Trás-os-Montes, Bragança, Alfândega da Fé, 24.iv.2015, 1♀, *det.* Straka, *leg.* A. Penado.

Estremadura, Sesimbra, 2.v.1971, 1♀; 16.v.1971, 2♀; *det.* Straka, *leg.* Mendoça. MNHNC, coll. Mendoça.

Algarve, Amoreira, 11.iv.2015, 1♀, *det. & leg.* Cross.

Algarve, Quarteira, 20.iv.2017, 1♂, *det. & leg.* J. Smit.

Algarve, Vila Nova de Milfontes, 18-19.v.2012, 1♂, *det.* Livory/Baldock, *leg.* A. Livory & R. Coulomb.

***Tachysphex erythropus* (SPINOLA, 1839)**

South Palaearctic.

Central & Southern Portugal, scarce, 7 records (Fig. 30).

ANDRADE 1949: Vale de Gaio, 18.viii.1947, 1♀; Trafaria (*as mantivora* Beaumont).

DINIZ 1960B: Portugal.

GAYUBO 1984: Trafaria; Vale de Gaio; Pegões; Algarve, 1983: Bensafrim; Faro; S. Bartolomeu de Messines.

Algarve, Boca do Rio, 19-22.ix.2015, 3♀, 1♂, *det. & leg.* Wood.

Algarve, Boca do Rio, 22.vi. 2015, 1♂; 29.vii.2015, 1♂; *det. & leg.* Cross.

Algarve, Boca do Rio, 4.x.2018, 1♂, *det. & leg.* Cross.

Algarve, Pêra dunes, 18.ix.2015, 1♂, *det. & leg.* Wood.

Algarve, Lagos, Ponta da Piedade, 23.ix.2014, 1♂, *det. & leg.* Cross.

Algarve, Salema, Praia da Figueira, 22.ix.2015, 1♀, *det. & leg.* Wood.

***Tachysphex excelsus* TURNER, 1917**

Spain, France, Italy, Russia and widespread in northern Asia.

Central Portugal, rare.

KUHLMANN 1996: (Beira Baixa) Serra da Estrela: Penhas da Saúde, 29.vii.1990, 1♀, det. K. Schmidt.

[***Tachysphex filicornis* KOHL, 1885 = *T. fugax* RADOSZKOWSKI, 1877**]

***Tachysphex fugax* (RADOSZKOWSKI, 1877) = *T. filicornis* KOHL 1885**

Eurasian.

Widespread, scarce, 10 records.

ANDRADE 1949: (as *T. filicornis* Kohl) Lisboa; Seixal; Vale de Gaio; Porto de Rei.

DINIZ 1960B: Portugal.

Minho, Esposende, 15.vii.2019, 2♂, det. & leg. A. Livory & R. Coulomb.

Minho, Viana do Castelo, 14.vii.2019, 1♂, det. & leg. A. Livory & R. Coulomb.

Baixo Alentejo, Almogrove, 21.v.2012, 1♂, 1♀, det. Livory/Baldock, leg. A. Livory.

Baixo Alentejo, Mértola, 2.vi.2016, 1♂, det. & leg. A. Livory & R. Coulomb.

Baixo Alentejo, Porto Covo, 24.ix.2014, 1♂, det. Straka, leg. A. Livory & R. Coulomb, as *filicornis*.

Baixo Alentejo, Zambujeira do Mar, 4.vii.2019, 1♀, det. & leg. A. Livory & R. Coulomb.

Algarve, Carrapateira, 8.vii.2009, 1♂, det. Jozan.

Algarve, Guia, 17.v.1999, 1♂, 1♀, det. Y. Barbier, leg. Baldock, as *filicornis*.

Algarve, Pêra dunes, 17.v.1999, 1♂, det. Straka, leg. Baldock.

Algarve, Praia do Amado, 13.viii.2015, 1♀, det. & leg. Cross.

***Tachysphex fulvitaris* (COSTA, 1867)**

Palaeartic.

Central & Southern Portugal, scarce, 11 records.

GAYUBO 1984: Algarve, 1983: Benafim; Bensafrim; Carrapateira; Olhão; Porta de Lagoa; S. Bartolomeu de Messines; Santo Estêvão.

KUHLMANN 1996: Serra da Estrela: Penhas da Saúde, vii.1990, 2♂♂, 1♀; Unhais, 30.vii.1990, 1♀, det. K. Schmidt.

VIEIRA *et al.* 2013: Portugal 1964; Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002, total 7♂, 12f.

Beira Litoral, São Jacinto, 8.vi.2016, 1♂, det. & leg. A. Livory & R. Coulomb.

Beira Alta, Manteigas, Rota da Carvão, 28.viii.2015, 1♂, det. & leg. A. Livory & R. Coulomb.

Alto Alentejo, Montargil, Portalegre, 28.vii.1973, 1♀, det. Straka, coll. Museu Bocage.

Algarve, Amoreira, 7.viii.2015, 1♂, det. & leg. Cross.

Algarve, Amoreira, 1.vi.2017, 2♀, det. & leg. Cross.

Algarve, Carrapateira, 19.ix.2014, 1♀, det. & leg. A. Livory & R. Coulomb.

Algarve, Guia, 15.vii.2009, 1♀, det. Jozan/Straka, leg. Baldock.

Algarve, Odeceixe, 1.vii.2009, 1♀, det. Jozan, leg. A. Livory & R. Coulomb.

Algarve, Pêra, Praia Grande, 13.v.2016, 1♂, det. & leg. Cross.

Algarve, Pêra, Praia Grande, 26.v.2018, 1♀, det. & leg. Cross.

Algarve, Vilarinha, 18.ix.2018, 1♀, det. & leg. Cross.

[***Tachysphex gibbus* KOHL, 1885 = *T. obscuripennis gibbus* KOHL, 1885**]

[***Tachysphex grandii* BEAUMONT, 1965 = *T. consocius* KOHL, 1892**]

****Tachysphex helveticus* KOHL, 1885**

Eurasian.

Southern Portugal, rare, 1 record.

Algarve, Tavira, 14.vii.2009, 1♀, det. Jozan, leg. A. Livory.

***Tachysphex incertus* (RADOSZKOWSKI, 1877)**

Mediterranean.

Widespread, rare, 2 records.

ANDRADE 1949: (as *pygidialis*) Lisboa: Benfica 1945, 1947; Estoril 1946.

GAYUBO 1984: Algarve, 1983: 16 localities.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♀.

Baixo Alentejo, Mértola, 4.vi.2016, 1♂, *det. & leg.* A. Livory & R. Coulomb.
Algarve, Boca do Rio, 6.vi.2017, 1♀, *det. & leg.* Cross.

***Tachysphex julliani* KOHL, 1883**

Mediterranean.

Central & Southern Portugal, scarce, 10 records.

ANDRADE 1949: Évora; Vale de Gaio; Porto de Rei.

DINIZ 1960B: Monchique.

GAYUBO 1984: Algarve, 1983: 11 localities.

KUHLMANN 1996: Serra da Estrela: Manteigas, 1987, 1♀; Unhais, 1990, 1♀, *det.* K. Schmidt.

Beira Alta, Manteigas, Vale do Zêzere, 25.viii.2015, 2♂, *det. & leg.* A. Livory & R. Coulomb.

Baixo Alentejo, Zambujeira do Mar, 6.vii.2019, 1♂, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Amoreira, 7.viii.2015, 1♂, *det. & leg.* Cross.

Algarve, Budens, Monte da Sincera, 25.ix.2016, 1♂, *det. & leg.* Cross.

Algarve, Carrapateira, 14.ix.2014, 1♀, *det.* Straka, *leg.* A. Livory & R. Coulomb.

Algarve, Carrapateira, 3.x.2017, 1♂, *det. & leg.* Cross.

Algarve, Silves, Barragem do Arade, 5.viii.2015, 1♀; 14.viii.2015, 1♀; *det. & leg.* Cross.

Algarve, Tavira, 9.vii.2009, 1♂, *det.* Jozan, *leg.* A. Livory.

Algarve, Vilarinha, 18.ix.2018, 2♀; *det. & leg.* Cross.

[*Tachysphex mantivora* BEAUMONT, 1940 = *T. erythropus* (SPINOLA, 1839)]

***Tachysphex mediterraneus* KOHL, 1883**

Mediterranean.

Central & Southern Portugal, scarce, 15 records.

ANDRADE 1949: Vale de Gaio, 1♂, 1♀.

Estremadura, Pegões, 11.ix.2016, 1♀, *det. & leg.* Cross.

Ribatejo, Santarem, 11.ix.1985, 1♀, *det.* Straka, *leg.* J. Mendoça. MNHNC, coll. Mendoça.

Alto Alentejo, Montargil, 28.vii.1983, 1♀, *det.* Straka, *leg.* Mendoça. MNHNC, coll. Mendoça.

Baixo Alentejo, Odeceixe, 25.vii.2010, 1♂, *det.* Jozan, *leg.* A. Livory & R. Coulomb.

Baixo Alentejo, Zambujeira do Mar, 4.vii.2019, 2♀, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Budens, Boca do Rio, 29.vii.2015, 1♀, *det. & leg.* Cross.

Algarve, Cacela Velha, 10.ix.2018, 1♀, *det. & leg.* Cross.

Algarve, Carrapateira, 29.vi.2009, 2♂, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Carrapateira, 4.viii.2015, 1♀, *det. & leg.* Cross.

Algarve, Carrapateira, 3.x.2017, 1♀, *det. & leg.* Cross.

Algarve, Pêra, Praia Grande, 26.ix.2014, 1♂, *det.* Straka, *leg.* Cross.

Algarve, Praia da Figueira, 14.ix.2018, 1♀, *det. & leg.* Cross.

Algarve, Praia do Vale da Lama, 24.ix.2018, 1♀, *det. & leg.* Cross.

Algarve, Quinta de São Roque, 27.x.2017, 1♀, *det. & leg.* Cross.

Algarve, Salema, Boca do Rio, 19.ix.2015, 1♀, *det. & leg.* Wood.

***Tachysphex nitidior* BEAUMONT, 1940**

Mediterranean.

Widespread, scarce, 7 records.

GAYUBO 1984: Cascais; Évora; Lisboa; Rezende; Algarve, 1983: Benafim; Marmeleite; Quarteira; Salir; Marcos da Serra.

VIEIRA *et al.* 2013: Portugal 1964; Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002, total 9♂, 6♀.

Trás-os-Montes, Bragança, Alfândega da Fé, 20.vi.2015, 1♂, *det.* Straka, *leg.* A. Penado.

Estremadura, Guincho, 9.vii.1982, 2♂, *det.* Straka, *leg.* K. Guichard.

Estremadura, Nazaré, 18.viii.2015, 23.viii.2015, 2♀, *det. & leg.* A. Livory & R. Coulomb.

Baixo Alentejo, Zambujeira do Mar, 5.vii.2019, 1♂, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Odeceixe, 24.vii.2010, 2♂, *det.* Jozan, *leg.* A. Livory.

Algarve, Vilarinha, 18.ix.2018, 1♀, *det. & leg.* Cross.

***Tachysphex nitidus ibericus* (SAUSSURE, 1867)**

The southern subspecies of *Tachysphex nitidus*. Found from Iberia and the Canaries, through North Africa and the Levant to Asia Minor and Central Asia.

Central & Southern Portugal, rare, 5 records. At Carrapateira in 2018 a female was recorded preying on an unidentified grasshopper nymph (Orthoptera: Acrididae).

DUSMET Y ALONSO 1931: Évora, 1921, 1♀; Mitra .

ANDRADE 1949: Lisboa; Estoril; Cascais; Caparica; Évora; Massorra.

Algarve, Carrapateira, 14.iii.2015, 1♂; 28.iii.2017, 1♂; 19.v.2018, 1♀; *det. & leg.* Cross.

Algarve, Odeceixe, 24.vii.2010, 1♂, *det.* Jozan, *leg.* A. Livory & R. Coulomb.

Algarve, Tavira, 4.v.2005, 1♂, *det. & leg.* J. Smit.

***Tachysphex obscuripennis gibbus* KOHL, 1865**

Mediterranean.

Central & Southern Portugal, scarce, 11 records. A female photographed at Carrapateira in 2018 was carrying a cockroach, probably an *Ectobius* sp (Dictyoptera: Blattellidae).

DUSMET Y ALONSO 1931: (as *T. lativalvis* Thom.) Mitra, 1921, 1♀.

ANDRADE 1949: (as *T. lativalvis gibbus* Kohl) Mata de Leiria; Cascais, Boca do Inferno, 7.viii.1949, 1♂.

GAYUBO 1984: Algarve, 1983: Carrapateira; Marmeleite; Monte Clérigo; Pêra.

Beira Alta, Manteigas, Rota da Carvão, 28.viii.2015, 1♀, *det. & leg.* A. Livory & R. Coulomb .

Estremadura, Nazaré, 19.viii.2015, 2♀; 10.vii.2019, 2♀; *det. & leg.* A. Livory & R. Coulomb.

Estremadura, São Martinho do Porto, 8.vii.2019, 1♀, *det. & leg.* A. Livory & R. Coulomb .

Algarve, Aljezur, Azenha near, 29.ix.2015, 1♀, *det. & leg.* Cross.

Algarve, Carrapateira, 17.ix.2015, 1♀, *det. & leg.* Wood.

Algarve, Carrapateira, 14.ix.2016, 1♀, *det. & leg.* Cross.

Algarve, Carrapateira, 19.ix.2018, 1♀, *det. & leg.* Cross.

Algarve, Pêra dunes, 17.vii.2009, 1♀; 11.vi.2011, 1♀, *det.* Jozan/Straka, *leg.* Baldock.

Algarve, Odeceixe, 4.vii.2009, 1♀, *det.* Jozan, *leg.* A. Livory.

***Tachysphex panzeri* (VANDER LINDEN, 1829)**

Mediterranean.

Widespread, scarce, 9 records.

ANDRADE 1949: very abundant. Lisboa; Caparica; Estoril; Trafaria; Cascais; Vale de Gaio; Massorra; Porto de Rei.

GAYUBO 1984: Algarve, 1983: abundant, 17 localities.

KUHLMANN 1996: Serra da Estrela: 4 localities, 1990, *det.* K. Schmidt.

Minho, Viana do Castelo, 14.vii.2019, 3♀; *det. & leg.* A. Livory & R. Coulomb.

Beira Alta, Guarda, Almeida, Castelo Bom, 26.vii.2015, 1♂, *det.* Baldock, *leg.* A. Gonçalves.

Beira Alta, Manteigas, Rota do Sol, 27.viii.2015, 1♀, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Carrapateira, 14.x.2016, 1♀, *det. & leg.* Cross.

Algarve, Carrapateira, 3.x.2017, 1♀, *det. & leg.* Cross.

Algarve, Carvoeiro, 4.vii.1994, 1♀, *det.* Jozan, *leg.* D. Keen.

Algarve, Pêra dunes, 11.vi.2011, 1♀, *det.* Jozan, *leg.* Baldock.

Algarve, Tavira, Cabanas, 24.vii.2012, 1♂, *det. & leg.* A. Livory & R. Coulomb.

Algarve; Salema, Praia da Figueira, 22.ix.2015, 1♂, *det.* Straka, *leg.* Wood.

****Tachysphex plicosus* (COSTA, 1867)**

Palaeartic.

Northern & Southern Portugal, rare, 4 records.

Trás-os-Montes, Bragança, Alfândega da Fé, 23.vii.2013, 27.vi.2015, 28.vii.2015, 3♀, *det.* Straka, *leg.* A. Penado.

Algarve, Faro, Bordeira, 20.ix.2010, 1♀, *det.* Jozan/Straka, *leg.* H. Whiteley.

***Tachysphex pompiliformis* (PANZER, 1805) = *T. jokischiana* PANZER**

This taxon includes the form *nigripennis* Spinola, which is regarded as a full species by some authors. Where the form has been recorded it is noted here. However, it is uncertain to which form most material belongs. It is probable that the bulk, if not all, Portuguese *Tachysphex pompiliformis* are actually *nigripennis*.

Palaeartic.

Widespread, scarce, 7 records.

DUSMET Y ALONSO 1931: Mitra, 1921; Monte das Flores .

ANDRADE 1949: Serra da Cabreira.

GAYUBO 1984: Algarve, 1983: Aljezur; Junqueira; Quarteira; Porta de Lagoa.

KUHLMANN 1996: Serra da Estrela: 3 localities, 1990, *det.* K. Schmidt.

Trás-os-Montes, Pardelhas, 11.vi.2017, 1♂, *det. & leg.* Cross.
Minho, Gerês, Braga distr., P-ger, 31.vii.2001, 1♀, *det.* Straka, *leg.* Schmid-Egger.
Minho, Barcelos, Gilmonde, 4.ix.2014, 1♀, *det.* Baldock, *leg.* R. Andrade.
Douro Litoral, Porto, Póvoa de Varzim, 14.viii.2013, 1♂, *det.* Straka, *leg.* R. Andrade.
Beira Litoral, Leiria, Alcobaça, Cela, 12.ix.2013, 1♂, *all det.* Straka, *leg.* R. Andrade.
Beira Alta, Armamar, Viseu distr., P-arn, 1.viii.2001, 1♀, *det.* Straka, *leg.* Schmid-Egger.
Estremadura, Torres Vedras, 19.ix.2013, 1♀, *det.* Straka, *leg.* R. Andrade.

- form: *nigripennis* (SPINOLA, 1808)

Western Palaearctic.

Northern Portugal, rare, 2 records.

Trás-os-Montes, Reconco, 3.vii.2016, 1♂, *det.* Straka, *leg.* Wood.

Douro Litoral, Vila Caiz, 13.ix.2019, 1♀, *det. & leg.* Cross.

***Tachysphex psammobius* (KOHL, 1880)**

Eurasian.

Northern Portugal, rare.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♂, 3♀.

***Tachysphex pseudopanzeri* BEAUMONT, 1955**

Mediterranean.

Widespread, frequent, 30 records.

PULAWSKI 1971: Algarve, Monte Gordo.

GAYUBO 1984: 15 localities.

KUHLMANN 1996: Serra da Estrela: Unhais, 30.vii.1990, 1♀, *det.* K. Schmidt.

Minho, Beira Litoral, Estremadura, Baixo Alentejo, Algarve.

***Tachysphex tarsinus* (LEPELETIER, 1845)**

South Palaearctic.

Widespread, frequent, 18 records.

GAYUBO 1984: Algarve, 1983: Aljezur; Benafim; Burgau; Carrapateira; Pêra; Praia da Luz; Sagres; Santo Estêvão.

KUHLMANN 1996: Serra da Estrela: Penhhas da Saúde, 31.vii.1990, 1♀; Unhais, 30.vii.1990, 1♀, *det.* K. Schmidt.

Trás-os-Montes, Beira Litoral, Beira Alta, Estremadura, Ribatejo, Baixo Alentejo, Algarve.

***Tachysphex unicolor* (PANZER, 1809)**

Palaearctic

Widespread, scarce, 14 records.

GAYUBO 1984: Algarve, 1983: 9 localities.

KUHLMANN 1996: Serra da Estrela: 3 localities, 1990, common.

Douro Litoral, Amarante, 18.vi.2016, 1♀, *det. & leg.* Cross.

Beira Alta, Manteigas, Vale do Zêzere, 14.vi.2016, 2♂, *det. & leg.* A. Livory & R. Coulomb.

Baixo Alentejo, Mértola, 5.vi.2016, 3♂, *det. & leg.* A. Livory & R. Coulomb.

Baixo Alentejo, Mina de São Domingos, 3.vi.2016, 1♂, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Aljezur, Ponte de Atalaia, 2.v.2005, 2♀, *det. & leg.* J. Smit.

Algarve, Amoreira, 15.vi.2015, 1♂; 3.v.2016, 1♂1♀, *det. & leg.* Cross.

Algarve, Barragem da Bravura, 27.vii.2016, 1♂, *det. & leg.* Cross.

Algarve, Foz do Laje, 18.iv.2017, 1♀, *det.* W. Kuijken, *leg.* J. Smit.

Algarve, Salema, 28.iv.2017, 1♀, *det. & leg.* Cross.

Algarve, Tavira, 26.v.2012, 1♀, *det.* Straka, *leg.* A. Livory & R. Coulomb.

Algarve, Tavira, Cabanas, 31.v.2016, 2♂, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Torre Velhas, 17.iv.2017, 1♀, *det. & leg.* J. Smit.

Algarve; Vila Real de Santo António, 24.v.2012, 2♀, *det. & leg.* A. Livory & R. Coulomb.

Genus *Tachytes* PANZER, 1806

3 species. Prey: Orthoptera: Acrididae, adults & nymphs, (BITSCH *et al.* 2001).

***Tachytes freygessneri* KOHL, 1881**

Mediterranean.

Widespread, frequent, 18 records.

ANDRADE 1949: Lisboa; Vale de Gaio.

GAYUBO 1984: Monchique; Portimão; Algarve, 1983: Aldeia da Tôr; Odeleite; Pêra; Praia da Luz; Quarteira; S. Bartolomeu de Messines; Vaqueiro.

Minho, Douro Litoral, Beira Alta, Ribatejo, Alto Alentejo, Baixo Alentejo, Algarve.

[*Tachytes matronalis* DAHLBOM, 1845]

This record is doubtful and the status of this species as Portuguese is provisional pending confirmation.

Baixo Alentejo, Sines, 11.vi.1970, 1♀, *det.* Baldock. MNHNC, coll. Mendonça.

***Tachytes obsoletus* (ROSSI, 1792)**

Southern and central Europe east to Turkey, Israel and Central Asia. North Africa.

Northern & Central Portugal, rare, 1 record.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♂.

Beira Alta, Manteigas, Rota da Carvão, 28.viii.2015, 1♂, *det. & leg.* A. Livory & R. Coulomb.

***Tachytes panzeri* (DUFOR, 1841)**

Mediterranean.

Widespread, frequent, 17 records (Fig 31).

DUSMET 1931: (as *T. europaeus* Kohl) Mitra, 1921, 1♀.

ANDRADE 1949: (as *T. europaeus*) Évora; Cascais.

Trás-os-Montes, Beira Alta, Estremadura, Baixo Alentejo, Algarve.

Subtribe Larrina

Genus *Larra* FABRICIUS, 1793

1 species. Prey: Orthoptera: Gryllotalpidae (BITSCH *et al.* 2001).

***Larra anathema* (ROSSI, 1790)**

Mediterranean.

Widespread, scarce, 13 records (Fig. 32).

DUSMET Y ALONSO 1931: Oliv. Do Hosp. 1921, 1♀.

ANDRADE 1949: S. Pedro do Estoril, Caparrica, Caldas de Aregos, Mira, Oliveira do Hospital, Serra de Gerês.

GAYUBO 1984: Algarve, 1983: Bensafirim; Praia da Luz; Sagres.

Douro Litoral, Amarante, 9.ix.2016, 1♀, *det. & leg.* Cross.

Estremadura, Nazaré, 18/23.viii.2015, 2♂, 5♀, *det. & leg.* A. Livory & R. Coulomb.

Ribatejo, Santarém, 13.vi.1977, 1♀, *det.* Baldock. MNHNC coll. Mendonça.

Baixo Alentejo, Vila Nova de Milfontes, 15.vii.1972, 1♀, *det.* Baldock. MNHNC, coll. Mendonça.

Algarve, Amoreira, 3.vi.2015, 1♂ on *Cachrys libanotis*, *det. & leg.* Cross.

Algarve, Amoreira, 1.vi.2017, 8.vi.2017, 1♂, 1♀, *det. & leg.* Cross.

Algarve, Carrapateira, 14.x.2016, 19.x.2016, 2♂, *det. & leg.* Cross.

Algarve, Carrapateira, 30.x.2017, 1♂, *det. & leg.* Cross.

Algarve, Guia, 4.v.2002, 1♀, *det. & leg.* Baldock.

Algarve, Vila Nova de Gaia, 5.ix.2009, 1♀, *det.* Baldock, *leg.* R. Andrade.

Genus *Liris* FABRICIUS, 1804

3 species. Prey: Orthoptera: Gryllidae, (BITSCH *et al.* 2001).

***Liris atratus* (SPINOLA, 1805)**

Mediterranean, east to Central Asia and Pakistan.

Central & Southern Portugal, scarce, 8 records.

DUSMET Y ALONSO 1931: Soure (Beira Litoral) 1♀ (as *Notogonia nigrita* Lepeletier).

ANDRADE 1949: (as *Leptolarra nigrita* Lepeletier) Lisboa, Cascais.

DINIZ 1960 B: (as *Leptolarra nigrita* Lepeletier) Portugal.

Algarve, Boca do Rio, 3.xi.2016, 1♀, *det. & leg.* Cross.

Algarve, Budens, Boca do Rio, 12.iii.2015, 4.iv.2015, 2♀, *det. & leg.* Cross.

Algarve, Lagos, Ponta da Piedade, 19.ii.2016, 1♂, *det. & leg.* Cross.

Algarve, Salema, Boca do Rio, 4.iv.2015, 1♀, *det.* Baldock, *leg.* Wood.
Algarve, Salema, Boca do Rio, 22.ix.2015, 1♀, *det. & leg.* Wood.
Algarve, Salema, Praia da Figueira, 22.ix.2015, 1♂, *det. & leg.* Wood.
Algarve, Vila do Bispo, Praia do Barranco, 3.xii.2015, 1♀, *det. & leg.* Cross.

***Liris festinans praetermissus* (RICHARDS, 1928)**

Mediterranean, east to Iran and Pakistan.

Widespread, scarce, 7 records.

ANDRADE 1949: (as *Leptolarra schulthessi* Giner) Évora, Vale de Gaio, 7.ix.1947, 2♂.
DINIZ 1960B: (as *Leptolarra schulthessi* Giner) Portugal.
GAYUBO 1984: Cascais; Évora, Lagoa de Albufeira; Pegões; Algarve, 1983: Aljezur; Odeleite; Porta da Lagoa; S. Bartolomeu de Messines.
Douro Litoral, Amarante, Chapa, 19.vi.2016, 1♀, *det. & leg.* Cross.
Baixo Alentejo, Porto Covo, 24.ix.2014, 1♀, *det. & leg.* A. Livory & R. Coulomb.
Algarve, Armação de Pêra, 5.v.2005, 2♀, *det. & leg.* J. Smit.
Algarve, Barragem da Bravura, 5.xii.2015, 2♂, *det. & leg.* Cross.
Algarve, Boca do Rio, 20.ix.2016, 1♀, *det. & leg.* Cross.
Algarve, Praia da Figueira, 9.x.2016, 1♂, *det. & leg.* Cross.
Algarve, Vilarinha, 21.ix.2018, 1♂, *det. & leg.* Cross.

***Liris niger* (FABRICIUS, 1775)**

Palearctic.

Widespread, frequent, 23 records (Fig. 33).

ANDRADE 1949: (as *Leptolarra pompiliformis* Panzer) Lisboa, Cascais, Estoril, Évora, Vale de Gaio, Soure, Porto de Rei, Quinta do Mato, Massorra.
GAYUBO 1984: Algarve, 1983: Benafim; Bensafrim; Paderne.
VIEIRA *et al.* 2013: Portugal 1931; Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002, total 2♂, 2♀.
Minho, Trás-os-Montes, Douro Litoral, Ribatejo, Baixo Alentejo, Algarve.

Tribe: Miscophini

Genus *Miscophus* JURINE, 1807

13 species. Prey: small, immature spiders of various families (BITSCH *et al.* 2001).

***Miscophus albufeirae* ANDRADE, 1952**

Mediterranean. This species epitomises the “Chorotype 1” group of wasps that inhabit the warmest zones of the southwestern quadrant of the Iberian Peninsula, and which reach their northern limit in the Arribes del Duero in northern Spain (GONZÁLEZ *et al.* 2009).

Central and Southern Portugal, rare.

ANDRADE 1952: Lagoa de Albufeira, Sesimbra, 1♀, Holotype.
ANDRADE 1960: Évora.
GAYUBO 1984: Algarve, Pêra, 4.viii.1983, 1♀.
BITSCH *et al.* 2001: Setúbal.

***Miscophus andradei* VERHOEFF, 1955**

Endemic to Portugal.

Central Portugal, rare.

ANDRADE 1952: Caparica; Lagoa de Albufeira near Sesimbra; Lisboa; Trafaria; Troia.
BITSCH *et al.* 2001: Setúbal, Lisboa.

***Miscophus ater* LEPELETIER, 1845**

Eurasian.

Central Portugal, rare, 2 records.

ANDRADE 1952: Caparica.
Minho, Esposende, 15.vii.2019, 1♀, *det. & leg.* A. Livory & R. Coulomb.
Baixo Alentejo, Zambujeira do Mar, 5.vii.2019, 1♂, *det. & leg.* A. Livory & R. Coulomb.

***Miscophus bicolor* JURINE, 1807**

Euro-atlantic.

Widespread, scarce, 7 records.

ANDRADE 1952: Cascais; Quinta do Mato.

GAYUBO 1984: Burgau; Carrapateira; Paderne; Sagres.

Trás-os-Montes, Bragança, Alfândega da Fé, pans, 28.vii.2015, 2.viii.2015, 2♀, *det.* Schmid-Egger, *leg.* A. Penado.

Algarve, Loulé, 10.vii.1996, 1♂, *leg.* Gross. Coll. C. Schmid-Egger.

Algarve: Silves, 22.vi.2014, 1♀, *det.* Schmid-Egger, *leg.* Baldock.

Algarve, Boca do Rio, 6.x.2018, 1♀, *det.* & *leg.* Cross.

Algarve, Carrapateira, 19.ix.2014, *det.* & *leg.* A. Livory & R. Coulomb.

Algarve, Carrapateira, 19.ix.2016, 1♀, *det.* & *leg.* Cross.

***Miscophus eatoni* SAUNDERS, 1903**

Mediterranean.

Widespread, scarce, 14 records. There is one Portuguese prey record: ♀ *Steatoda albomaculata* (De Geer) Araneae: Theridiidae, on 27.x.2017.

ANDRADE 1952: Cascais; Estoril; Évora; Lisboa; Resende.

GAYUBO 1984: Algarve, 1983; 10 localities Bensafrim etc.

Trás-os-Montes, Bragança, Alfândega da Fé, pans, 20.vi.2015, 1♀; 2.viii.2015, 1♂, 1♀, *det.* Schmid-Egger, *leg.* A. Penado.

Estremadura, Nazaré, 18.viii.2015, 1♀, *det.* & *leg.* A. Livory & R. Coulomb.

Estremadura, São Martinho do Porto, 21.viii.2015, 1♀, *det.* Schmid-Egger, *leg.* A. Livory & R. Coulomb.

Estremadura, São Martinho do Porto, 8.vii.2019, 1♀, *det.* & *leg.* A. Livory & R. Coulomb.

Estremadura, São Jacinto, 8.vi.2016, 1♂, *det.* Schmid-Egger, *leg.* A. Livory & R. Coulomb.

Baixo Alentejo, Vila Nova de Milfontes, 18-19.v.2012, 1♀, *det.* Livory/Baldock, *leg.* A. Livory & R. Coulomb.

Algarve, Boca do Rio, 19-22.ix.2015, 2♀, *det.* Schmid-Egger, *leg.* Wood.

Algarve, Carrapateira, 19.iv.2014, 1♂, *det.* Schmid-Egger, *leg.* A. Livory & R. Coulomb.

Algarve, Garrão, 18-21.vii.1996, 4♂, 2♀, *leg.* E. Gros, coll. Schmid-Egger.

Algarve, Monte Clérigo, 18.vi.1993, 2♀; *leg.* E. Gros, coll. Schmid-Egger.

Algarve, Sagres, 8.viii.2001, 1♂, 3♀, *det.* & *leg.* Schmid-Egger.

Algarve, Salema, 29.x.2016, 1♀, *det.* & *leg.* Cross.

Algarve, Quinta de São Roque, 27.x.2017, *det.* & *leg.* Cross.

[*Miscophus gallicus* KOHL, 1883 = *M. helveticus* KOHL, 1884]

***Miscophus helveticus* KOHL, 1883**

Mediterranean.

Central & Southern Portugal, scarce, 14 records.

ANDRADE 1954: Lisboa, Cascais, Praia das Maçãs, Aljustrel, Monchique, Resende, as *M. gallicus*

DINIZ 1960B: (as *M. gallicus*) Portugal.

GAYUBO 1984: Algarve, 1983: common, 13 localities.

Baixo Alentejo, Zambujeira do Mar, 4.vii.2019, 2♂; 5.vii.2019, 1♀; *det.* & *leg.* A. Livory & R. Coulomb.

Algarve, Boca do Rio, 2.ix.2014, 1♂, *det.* & *leg.* Cross.

Algarve, Boca do Rio, 21.ix.2016, 1♀, *det.* & *leg.* Cross.

Algarve, Budens, Monte da Sinceira, 25.ix.2016, 1♀, *det.* & *leg.* Cross.

Algarve, Garrão, 17.vi.1993, 2♀, *leg.* E. Gros *det.* & coll. Schmid-Egger.

Algarve, Garrão, 7-10.vii.1996, 9♂, 13♀; all *leg.* E. Gros *det.* & coll. Schmid-Egger.

Algarve, Lagos, Barragem da Bravura, 11.viii.2015, 1♂, *det.* & *leg.* Cross.

Algarve, Lagos, Praia do Canavial, 28.ix.2014, 1♂, *det.* & *leg.* Cross.

Algarve, Odeceixe, 1.ix.2008, 1♀, *det.* & *leg.* A. Livory & R. Coulomb.

Algarve, Odeceixe, 24.vii.2010, 2♂, *det.* Schmid-Egger, *leg.* A. Livory & R. Coulomb.

Algarve, Sagres, 8.viii.2001, 2♀, *det.* & *leg.* Schmid-Egger.

Algarve, Sagres, 20.vii.2012, 2♂, *det.* Livory/Baldock, *leg.* A. Livory & R. Coulomb.

Algarve, Tavira, 9.vii.2009, 1♂, *det.* Schmid-Egger, *leg.* A. Livory & R. Coulomb.

***Miscophus lusitanicus* ANDRADE, 1952**

Mediterranean.

Central and Southern Portugal, rare, 1 record.

ANDRADE 1952: Praia da Rocha; Trafaria; Évora.

GAYUBO 1984: Algarve, 1983: Acoteias; Algoz; Benafim; Bensafirim; Carrapateira; Paderne; Salir. Algarve, Garrão, 10.vii.1996, 1♀, *leg.* E. Gros, *det.* & coll. Schmid-Egger.

***Miscophus merceti* ANDRADE, 1952**

Mediterranean.

Central and Southern Portugal, rare.

ANDRADE 1952: Lisboa (Areeiro).

GAYUBO 1984: Algarve, 1983: Acoteias; Algoz; Bensafirim; Paderne; Quarteira.

***Miscophus nevesi* ANDRADE, 1952**

Iberian endemic

Central and Southern Portugal, rare.

ANDRADE 1952: Caparica; Cascais; Boca do Inferno; Azenhas do Mar.

GAYUBO 1984: Algarve; Portimão; Pêra, 4.viii.1983, 1♂.

***Miscophus nicolai* FERTON, 1896**

West Mediterranean.

Widespread, scarce, 10 records.

ANDRADE 1952: Lisboa district: Cascais, Boca do Inferno; Azenhas do Mar; Praia das Maças; Carcavelos; Estoril; Setúbal district: Lagoa de Albufeira, Seixal; Pinhal Novo; Caparica; Viseu district: Resende; Algarve, Trafaria.

GAYUBO 1984: Algarve, 1983; common, 11 localities.

Minho, Rua Nova, 7.ix.2019, 1♀, *det.* & *leg.* Cross.

Trás-os-Montes, Bragança, Alfândega da Fé, pans, 26-28.vii.2015, 2♀, *det.* Schmid-Egger, *leg.* A. Penado.

Trás-os-Montes, Serra do Montesinho, Alto do Falgueirão, 30.vi.2016, 1♀, *det.* & *leg.* Wood.

Beira Litoral, Aveiro, Barra, 12.vi.2016, 1♀, *det.* Schmid-Egger, *leg.* A. Livory & R. Coulomb.

Algarve, Sagres; Marmeleite; Garrão; Loulé, all *leg.* E. Gross, coll. Schmid-Egger.

Algarve, Sagres, 8.viii.2001, 4♂, 2♀, *det.* & *leg.* Schmid-Egger.

Algarve, Carrapateira, 9.viii.2001, 8♂, 9♀, *det.* & *leg.* Schmid-Egger.

****Miscophus niger* DAHLBOM, 1844**

Euro-atlantic.

Southern Portugal, rare, 1 record.

Algarve, Silves, 12.x.2010, 1♀, *det.* Jozan/Schmid-Egger, *leg.* Baldock.

***Miscophus portoi* ANDRADE, 1956**

Endemic to Portugal.

Central and Southern Portugal, rare 3 records (Fig. 34).

ANDRADE 1952: Lisboa District, Azenhas do Mar, 29.viii.1954, *leg.* Andrade.

DINIZ 1959: Lisboa, Azenhas do Mar; Fontanelas.

Baixo Alentejo, Cascalheira, 31.vii.2018, 1♀, *det.* Cross, *leg.* M. & E. Howe.

Baixo Alentejo, Zambujeira do Mar, 5.vii.2019, 1♀, *det.* Cross, *leg.* A. Livory & R. Coulomb.

Algarve, Monte Clérigo, 14.v.2016, 2♂, *det.* & *leg.* Cross.

***Miscophus verhoeffi* ANDRADE, 1952**

Mediterranean.

Central and Southern Portugal, rare 4 records.

ANDRADE 1952: Caparica; Cascais; Lisboa; Porto de Rei; Praia da Rocha; Trafaria.

GAYUBO 1984: Algarve, 1983: Aldeia da Tôr; Benafim; Paderne.

Estremadura, Nazaré, 17.vi.1980, 1♀, *det.* Schmid-Egger, *leg.* H. Tussac.

Estremadura, Nazare, south dunes, 19.viii.2015, 1♂, *det.* Schmid-Egger, *leg.* A. Livory & R. Coulomb.

Baixo Alentejo, Zambujeira do Mar, 5.vii.2019, 1♂, *det.* & *leg.* A. Livory & R. Coulomb.

Algarve, Carrapateira, 9.viii.2001, 5♂, 5♀, *det.* & *leg.* Schmid-Egger.

Genus *Nitela* LATREILLE, 1809

5 species. Prey: Psocoptera and Homoptera: Aphididae (BITSCH *et al.* 2001).

***Nitela borealis* VALKEILA, 1974**

Europe, south to Spain, Italy and Greece.

Central and Southern Portugal, rare 1 record.

GAYUBO 1984: Algoz, 1983; Benafim, 1983.

VIEIRA *et al.* 2013: Portugal 1984; Douro International NP, 2001, 1♂.

***Nitela blascoi* GAYUBO & FELTON, 2000**

Iberia, Corsica

Central and Southern Portugal, rare.

GAYUBO & FELTON, 2000:

Estremadura, Setúbal, Troia, 31.vii.1992, 1♀; 7.viii.1992, 1♂, *leg.* S. Gayubo. Paratypes

Beira Litoral, Leiria, 15.viii.1994, 1♀, *leg.* J. García. Paratype.

Baixo Alentejo, Beja, Cavaleiro, 26.vii.1994, 1♀, *leg.* J. García. Paratype.

[*Nitela fallax* KOHL 1884]

BITSCH *et al.* 2001: “rare dans la Péninsule ibérique” No definite records for Portugal.

***Nitela lucens* GAYUBO & FELTON, 2000**

Euro-atlantic.

Widespread, scarce, 8 records.

GAYUBO & FELTON 2000:

Beira Alta, Viseu, Covelo, 21.viii.1992, 1♀, *leg.* J. García.

Estremadura, Setúbal, Troia, 5.viii.1992; 9-11.viii.1992, 1♀, *leg.* S. Gayubo.

Ribatejo, Santarém, Alcanhões, 9.vii.1995, 2♀, *leg.* J. García.

Baixo Alentejo, Beja, Cerca, 24.vii.1994, 1♀, *leg.* J. García

Algarve, Algoz, 20.viii.1983, 1♂, *leg.* S. Gayubo.

Algarve, Benafim, 28.vii.1983, 1♀, *leg.* S. Gayubo.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002; Paul do Boquilobo NR, 2002, total 30♂, 202♀.

***Nitela spinolae* LATREILLE, 1809**

Euro-atlantic.

Widespread, rare 2 records.

GAYUBO & FELTON 2000:

Paço de Queirã, 1♀.

Douro Litoral, Resende, 1♀.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002; Paul do Boquilobo NR, 2002, total 23♂, 22♀.

Algarve, Salema, 29.x.2016, 5♀, *det. & leg.* Cross.

Algarve, Salema, 29.v.2017, 1♂, *det. & leg.* Cross.

***Nitela truncata* GAYUBO & FELTON, 2000**

Euro-atlantic.

Northern and Southern Portugal, rare 3 records.

GAYUBO & FELTON 2000:

Trás-os-Montes, Bragança, Algozo, 31.vii.1993, 1♂, *leg.* J. García. Paratype.

Trás-os-Montes, Vila Real, Carrazedo de Montenegro, 2.viii.1995, 1♀, *leg.* J. García. Paratype.

VIEIRA *et al.* 2013: Douro International NP, 2001; Paul do Boquilobo NR, 2002, total 13♂, 18♀.

Trás-os-Montes, Bragança, Alfândega da Fé, pans, 24.vi.2015, 1♀, *det.* Schmid-Egger, *leg.* A. Penado.

Algarve, Carrapateira, 14ix.2016, 1♂; 30.ix.2016, 1♀; *det. & leg.* Cross.

Genus *Plenoculus* W. FOX, 1893

1 species. Prey: Heteroptera: Miridae & Coreidae. Lepidoptera larvae (BITSCH *et al.* 2001).

***Plenoculus beaumonti* ANDRADE, 1957**

Iberia.

Southern Portugal, rare. There are no published prey records for Portugal but in the adjoining Spanish province of Huelva, adults and final instar nymphs of Capsid bugs (Hemiptera: Miridae) have been recorded as prey. This species does not seem to have been recorded in Portugal since the original

description in 1957. Differences in morphology between the Portuguese specimens and those from Spain have been discussed in GAYUBO *et al.* (1993) but are not thought to be significant (Fig. 35).

ANDRADE 1957: Sines, 26.v.1956, 8♂; Setúbal, Albufeira Lagoon, 10.vi.1956, 1♂, 2♀.

DINIZ 1959: Lagoa de Albufeira, Sines.

Genus *Solierella* SPINOLA, 1851

4 species. Prey: Heteropteran nymphs (BITSCH *et al.* 2001).

Solierella compedita (PICCOLI, 1869)

Mediterranean.

Widespread, scarce, 8 records.

ANDRADE 1950: Lisboa: Benfica, Terreiro do Paço; Estoril; Areias; Cascais: Boca do Inferno, Vale de Gaio; Massorra.

GAYUBO 1984: Algarve, 1983: Aldeia da Tôr; Aljezur; Marmeleite; Paderne; Pêra; Sagres; Santo Estêvão.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002, total 62♂, 136♀.

Trás-os-Montes, Bragança, Alfândega da Fé, 29.v-26.vii.2015, 12♀, *det.* Baldock/ C. Schmid-Egger, *leg.* A. Penado.

Estremadura, Torres Vedras, 19.ix.2013, 1♀, *det.* Baldock, *leg.* R. Andrade.

Alto Alentejo, Montemor-o-Novo, Foros de Vale de Figueira, 20.vi.2011, 1♀, *det.* Schmid-Egger, *leg.* A. Albernaz Valente.

Alto Alentejo, Évora, Montemor-o-Novo, 18.viii.2016, 1♀; 22.viii.2016, 1♂; 30.viii.2016, 1♂, *det.* Cross, *leg.* A. Albernaz Valente.

Algarve, Carrapateira, 9.viii.2001, 1♀; Sagres, 8.viii.2001, 4♂, *det.* & *leg.* Schmid-Egger.

Solierella insidiosa BEAUMONT, 1964

Iberia, Cyprus.

Southern Portugal, rare.

BITSCH *et al.* 2001: Algarve, Loulé, 14.vii.1996, Malaise trap, 1♀, *leg.* E. Gros.

Solierella pisonoides (SAUNDERS, 1873)

Mediterranean.

Widespread, rare, 1 record.

GAYUBO 1984: Algarve, 1983: Aldeia da Tôr, 27.vii.1983; Santo Estêvão, 24.vii.1983, 2♂, 1♀.

VIEIRA *et al.* 2013: Douro International NP, 2001, 6♂, 7♀.

Trás-os-Montes, Bragança, Alfândega da Fé, 29.v-26.viii.2015, 15♂, 3♀, *det.* Schmid-Egger, *leg.* A. Penado.

Solierella seabrai ANDRADE, 1950

Mediterranean.

Widespread, rare, 2 records.

ANDRADE 1950: Estoril: Campo de Golf, 16.viii.1946, 1♀ (Holotype); 22.viii.1946, 1♂ (Allotype); Chaves, Cascais, Estoril, Lisboa, Quinta do Mato.

GAYUBO 1984: Algarve, 1983: Aljezur, 12.viii.1983, 1♂, 1♀: Carrapateira.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♂.

Trás-os-Montes, Bragança, Alfândega da Fé, 27- 29.vii.2015, 2♀, *det.* Baldock/Schmid-Egger, *leg.* A. Penado.

Algarve, Sagres, 8.viii.2001, 2♂, 1♀, *det.* & *leg.* Schmid-Egger.

Tribe: Oxybelini

Genus *Belomicrus* A. COSTA, 1871

1 species. Prey: Coleoptera: Melyridae, Heteroptera: Miridae (BITSCH & LECLERCQ 1993).

[*Belomicrus italicus* A. COSTA, 1871]

Central Portugal, rare. The absence of recent records of this species is puzzling, as is the fact that all records were made by one recorder, from a single site and over a brief period of 10 years. Furthermore, the type locality of *Belomicrus italicus* is Susa, at an altitude of 500m in Piémont, Italy, whereas Estoril

is at sea level, a habitat more consistent with *B. odontophorus*. It would be useful to trace these specimens to confirm their identity. Until then, the presence of this species is regarded as unconfirmed.

ANDRADE 1949: São João do Estoril, 25.v.1947, 2♂.

MINGO 1966: Estoril 16.v.1954, 2♂; 17.iv.1955, 2♀, 1♂; 28.iv.1955, 1♀, 1♂; 6.v.1956, 1♀ São João do Estoril, 25.v.1947, 2♂ 27.iv.1948, 1♂; 28.iv.1948, 2♂, all *det. & leg.* N.F. de Andrade.

***Belomicrus odontophorus* (KOHL, 1892)**

Mediterranean.

Southern Portugal, rare, 3 records.

MINGO 1966: Sines 26.v.1956, 1♂, *det. & leg.* N.F. de Andrade.

GAYUBO 1984: (as *B. caesariensis* Pate) Algarve, Odeleite, 22-24.vii.1983, 2♂.

Algarve, Monte Clérigo, 14.v.2016, 3♂, *det. & leg.* Cross.

Algarve, Tavira, Cabanas, 31.v.2016, 3♂, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Vila Real de Santo António, 24.v.2012, 2♂, *det.* Baldock, *leg.* A. Livory & R. Coulomb.

Genus *Oxybelomorpha* BRAUNS, 1897

1 species. Prey: not distinguished from *Belomicrus* in BITSCH & LECLERCQ 1993 but likely to have a similar prey range.

***Oxybelomorpha steckii* (KOHL, 1923)**

Mediterranean.

Southern Portugal, scarce, 10 records (Fig. 36).

BITSCH & LECLERCQ 1993: Portugal.

Baixo Alentejo, Vila Nova de Milfontes, 18-19.v.2012, 1♂, *det.* Baldock, *leg.* A. Livory & R. Coulomb.

Algarve, Albufeira, Torre Velhas, 19.iv.2017, 2♀, *det. & leg.* J. Smit.

Algarve, Carrapateira, 1.vi.2018, 1♀, *det. & leg.* Cross.

Algarve, Guia, 2.v.2008, 1♂, *det.* Jozan, *leg.* Baldock.

Algarve, Odeceixe, 26.v.2011, 1♀, *det.* Cross, *leg.* A. Livory & R. Coulomb.

Algarve, Pêra, Praia Grande, 1.v.2016, 1♂; 13.v.2016, 1♀, *det. & leg.* Cross.

Algarve, Ponta do Castelo, 17.iv.2017, 1♂; 19.iv.2017, 1♂ 3♀; 24.iv.2017, 1♂; all *det. & leg.* J. Smit.

Genus *Oxybelus* LATREILLE, 1796

17 species. Prey exclusively Diptera (BITSCH & LECLERCQ 1993). Seven species have no, or only a single, recent record. Some of these are difficult to determine and may have simply been overlooked. However, *Oxybelus hastatus*, *lamellatus*, *latro* and *spectabilis* are distinctive and were recorded in the past from localities that have been extensively worked in recent years. Their scarcity is unlikely to reflect under-recording and may well represent a genuine loss of range due to extensive habitat destruction.

[*Oxybelus andalusiacus* SPINOLA, 1843 = *O. lamellatus andalusiacus*]

***Oxybelus aurantiacus* MOCSARY, 1883**

Mediterranean.

Central & Southern Portugal, rare, 2 records.

MINGO 1966: (Estremadura) Caparica 25.v.1952, 1♀, *det. & leg.* N.F. de Andrade.

BITSCH & LECLERCQ 1993: Portugal.

Algarve, Monchique, 29.vii.2010, 1♂, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Tavira, 2.viii.2010, 1♂, *det. & leg.* A. Livory & R. Coulomb.

***Oxybelus bipunctatus* OLIVIER, 1812**

Holarctic.

Widespread, rare, 3 records. Apparently widespread in the past, including a record from the Algarve, all recent records have come from the north of Portugal.

MINGO 1966: Caparica, Lisboa, Porto de Rei, Trafaria, *det. & leg.* N.F. de Andrade.

GAYUBO 1984: Lisboa; Setúbal; Viseu; Algarve, Benafim, 28.vii.1983, 1♂.

Minho, Rua Nova, 7.ix.2019, 1♀, *det. & leg.* Cross.

Minho, Celorico de Basto, 8.ix.2019 1♀, *det.* Cross.

Douro Litoral, Porto, Estela, 1.vii.2013, 1♂, *det.* Baldock, *leg.* R. Andrade.

***Oxybelus dissectus* DAHLBOM, 1845**

Europe, North Africa.

Central & Southern Portugal, scarce, 12 records.

ANDRADE 1949: Lisboa, 19.iv.1945, 1♀.

MINGO 1966: Albufeira, Ariero, Caparica, Lisboa, Trafaria, *det. & leg.* N.F. de Andrade.

GAYUBO 1984: Albufeira; Algarve, 1983: Pêra; Quarteira.

Beira Litoral, Barra, 12.vi.2016, 1♀, *det. & leg.* A. Livory & R. Coulomb.

Baixo Alentejo, Zambujeira do Mar, 17.vii.2012, 1♀; 4.vii.2019, 1♀; *det. & leg.* A. Livory & R. Coulomb.

Algarve, Alvor, 30.iv.2005, 1♂, *det. & leg.* J. Smit.

Algarve, Carrapateira, 15-16.ix.2014, 2♂, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Carrapaeira, 13.x.2017, 1♀, *det. & leg.* Cross.

Algarve, Lagos, Ponta da Piedade, 16.ix.2015, 1♀, *det.* Schmid-Egger, *leg.* Wood.

Algarve, Praia da Figueira, 28.iv.2016, 1♀, *det. & leg.* Cross.

Algarve, Praia do Vale da Lama, 21.v.2018, 1♀; 24.ix.2018, 1♀; *det. & leg.* Cross.

Algarve, Tavira, 1.viii.2010, 1♀, *det.* Jozan, *leg.* A. Livory & R. Coulomb.

Algarve, Vila Real de Santo António, 2.iv.2019, 1♀, *det. & leg.* Cross.

***Oxybelus haemorrhoidalis* OLIVIER, 1812**

Continental Europe east to Iran, Afghanistan and Mongolia.

Central & Southern Portugal, frequent, 18 records.

- subsp. *haemorrhoidalis* OLIVIER, 1812

Two subspecies are recognised in BITSCH & LECLERCQ 1993. All records reported simply as "*haemorrhoidalis*" are listed here, although many may actually refer to *victor*. Intermediates occur and both subspecies are sometimes found at the same site so the matter requires further study.

Central & Southern Portugal, frequent, 16 records.

ANDRADE 1949: as *O. victor* Lepeletier, Lisboa, 4.vii.1947, 1♀; S. João do Estoril, Quinta do Mato.

MINGO 1966: Albufeira, Carcavelos, Estoril, Lisboa, Sines, *det. & leg.* N.F. de Andrade.

Minho, Beira Litoral, Algarve.

- subsp. *victor* LEPELETIER, 1845

Central and Southern Portugal, rare, 2 records (but probably under-recorded).

ANDRADE 1949: as *O. victor* Lepeletier, Lisboa, 4.vii.1947, 1♀; S. João do Estoril, Quinta do Mato

MINGO 1966: Carcavelos, Estoril, Lisboa, *det. & leg.* N.F. de Andrade.

Algarve, Boca do Rio, 22.vi.2015, 1♀; 29.vii.2015, 1♀; *det. & leg.* Cross.

***Oxybelus hastatus* FABRICIUS, 1804**

Portugal, Spain, Morocco and Tunisia.

Central & Southern Portugal, rare, 1 record.

MINGO 1966: Seixal, 30.v.1954, 1♂; Albufeira, 10.vi.1956, 1♀.

Baixo Alentejo, Janeirinha de Cima, 23.vii.2016, 1♂, *det.* Baldock, *leg.* M. & E. Howe.

***Oxybelus lamellatus andalusiacus* SPINOLA, 1843**

Mediterranean.

Central & Southern Portugal, rare. 1 record. The scarcity of recent records of this species is puzzling, especially since many of the published records are from well-visited localities. *Oxybelus lamellatus* takes a wide range of prey from at least nine Diptera families in Spain (TORMOS *et al.* 2000). Unfortunately, due to its rarity in Portugal, there are no prey records for that country (Fig 37).

ANDRADE 1949: Lisboa, Algés, Estoril, Évora, Vale de Gaio, Porto de Rei.

DINIZ 1960B: Aljustrel; Évora; Portimão; Trafaria.

MINGO 1966: Albufeira, Caparica, Sines, Trafaria, *det. & leg.* N.F. de Andrade.

GAYUBO 1984: Albufeira; Algarve, 1983: Acoteias; Cachopo; Monte Gordo; Odeleite; Pêra; Silves

Baixo Alentejo, Santo André, Praia do Monte Velho, 5.viii.2018, 1♂, *det.* Cross, *leg.* M. & E. Howe.

***Oxybelus latro* OLIVIER, 1812**

Southern, central and eastern Europe east to Mongolia.

Northern and Central Portugal, rare. Another species with an alarming absence of recent records.

DUSMET Y ALONSO 1931: Mitra, Cova da Piedade.

ANDRADE 1949: Lisboa, Cascais, Trafaria, Évora, Vale de Gaio, Massorra.

MINGO 1966: Resende, Massora (Douro Litoral); Cova da Piedade, Lisboa (Estremadura), *det. & leg.* N.F. de Andrade.

***Oxybelus lusitanicus* CROSS, 2020**

Only recently described, this is a large, distinctive, black and yellow species. To date only found in late summer, on the dune systems of Carrapateira in the south and the deep valley of a tributary of the Douro in the north. Currently this is a Portuguese endemic, though its presence at an inland site in the far north of the country suggests it is more widespread than originally thought and may eventually be found in Spain (Fig. 38).

Northern & Southern Portugal, scarce.

CROSS 2020; 10 records; Minho, Rua Nova, 7.ix.2019, 1♀; *det. & leg.* Cross.

Algarve, Carrapateira, 1.x.2014, 1♀; 4.x.2014, 1♀; 27.ix.2016, 1♂; 30.ix.2016, 1♂; 9.x.2017, 1♂; 20.ix.2018, 1♀; 2.x.2018, 2♀; 3.x.2018, 2♂; 7.x.2018, 1♀; all *det. & leg.* Cross.

***Oxybelus mandibularis* DAHLBOM, 1845**

Europe, east to Kazakhstan and Siberia. Generally scarce in southern Europe.

Central Portugal, rare.

KUHLMANN 1996: Serra da Estrela, Penhas da Saúde, 18.vii.1990, 1♂; Nave de Santo António, 21.vii.1990, 1♂.

***Oxybelus mucronatus* (FABRICIUS, 1793)**

Mediterranean.

Widespread, common, 43 records.

DUSMET Y ALONSO 1931: Coimbra, Val de Coselhas.

ANDRADE 1949: Lisboa, Estoril, Sintra, Évora, Coimbra, Massorra.

MINGO 1966: several localities, *det. & leg.* N.F. de Andrade.

GAYUBO 1984: Algarve, 1983: 11 localities.

KUHLMANN 1996: Serra da Estrela, 2 localities, 1990.

Minho, Trás-os-Montes, Beira Litoral, Beira Alta, Estremadura, Ribatejo, Alto Alentejo, Baixo Alentejo, Algarve.

***Oxybelus occitanicus* MARQUET, 1896**

Iberia, France

Central & Southern Portugal, scarce, 9 records. A species of coastal sands and dunes in Portugal (Fig. 39).

GAYUBO 1984: Algarve, Pêra, 4.viii.1983, 1♂, 1♀ on *Polygonum equisetiforme*.

Beira Litoral, Barra, 12.vi.2016, 2♂, *det. & leg.* A. Livory & R. Coulomb.

Beira Litoral, Mira, 26.vii.2018, 1♂, *det.* Cross, *leg.* M. & E. Howe.

Algarve, Carrapateira, 4.x.2014, 1♀ on *Helichrysum italicum*, *det. & leg.* Cross.

Algarve, Carrapateira 26.viii.2015, 3♀ on *Helichrysum italicum*, *det. & leg.* Cross.

Algarve, Carrapateira 23.ix.2018, 2♀, *det. & leg.* Cross.

Algarve, Lagos, Meia Praia, Barro do Alvor, 27.ix.2014, 2♀ on *Dittrichia viscosa*, *det. & leg.* Cross.

Algarve, Odeceixe, 4.vii.2009, 1♂, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Tavira, 2.viii.2010, 2♂; 1.vi.2011, 1♂; *det. & leg.* A. Livory & R. Coulomb.

***Oxybelus quattuordecimnotatus* JURINE, 1807**

Mediterranean.

Widespread, frequent, 23 records.

DUSMET Y ALONSO 1931: Évora, Herdade da Mitra.

MINGO 1966: Aljustrel, Évora, Lisboa, Estoril, *det. & leg.* N.F. de Andrade.

GAYUBO 1984: Algarve, 1983: Acoteias; Paderne; Praia da Luz; Quarteira; Santo Estêvão; Silves.

KUHLMANN 1996: Serra da Estrela: Penhas da Saúde, very common, 1990.

Minho, Beira Litoral, Beira Alta, Alto Alentejo, Algarve.

***Oxybelus spectabilis* GERSTAECKER, 1867**

West Mediterranean.

Central & Southern Portugal, rare. One prey record for Portugal: the Calliphorid fly *Lucilia sericata* (Diptera: Calliphoridae) MINGO 1966.

ANDRADE 1949: Cascais, Boca do Inferno, 17.vi.1948, 1♀.

MINGO 1966: Cascais, Coutada, Lagoa de Albufeira, Lisboa, Boca do Inferno, *det. & leg.* N.F. de Andrade.

GAYUBO 1984: Algarve, 1983: Benafim; Carrapateira; Quarteira.

***Oxybelus subspinosus* KLUG, 1835**

Mediterranean.

Central & Southern Portugal, rare, 4 records.

MINGO 1966: several localities, *det.* & *leg.* N.F. de Andrade.

GAYUBO 1984: Albufeira; Algarve, 1983: Aljezur, 12.viii.1♂ on *Polygonum equisetiforme*; Burgau, 7.viii, 1♂ on *Crithmum maritimum*; Silves, 2.viii, 1♂ on *Mentha silvestris*.

Algarve, Carrapateira, 19.x.2016, 1♀, *det.* & *leg.* Cross.

Algarve, Lagos, Ponta da Piedade, 2.vi.2015, 1♀, *det.* & *leg.* Cross.

Algarve, Tavira, Rio Sequa, 30.vii.2015, 1♂; 2.viii.2015, 3♂; *det.* Cross, *leg.* M. & E. Howe.

***Oxybelus trispinosus* (FABRICIUS, 1787)**

This species is widely distributed in the temperate Palaearctic but rare in the extreme south of Europe (CASSAR *et al.* 2020B). This may explain its scarcity in Portugal and the absence of records from the Algarve. In northern Italy it hunts various flies of the families Calliphoridae and Sarcophagidae (ANDRIETTI *et al.* 2013). No prey records are available for Portugal.

Central Portugal, rare.

MINGO 1966: [Beira Baixa] Mata do Fundão 2♂, Castelo Branco 1♂, N.F. de Andrade.

***Oxybelus uniglumis* (LINNAEUS, 1758)**

Holarctic.

Northern & Central Portugal, rare, 1 record.

MINGO 1966: several localities, *det.* & *leg.* N.F. de Andrade.

VIEIRA *et al.* 2013: Douro International NP, 2001, 2♂, 2♀.

Trás-os-Montes, Serra do Montezinho, Barragem da Serra Serrada, 4.vii.2016, 1♀, *det.* & *leg.* Wood.

***Oxybelus variegatus* WESMAEL, 1852**

Euro-atlantic.

Widespread, rare, 3 records.

ANDRADE 1949: Lisboa.

MINGO 1966: Resende, Arieiro, Lisboa, Évora, *det.* & *leg.* N.F. de Andrade.

GAYUBO 1984: Évora; Algarve, 1983: Algez, 2.viii.1983, 1♂; Salir, 27.vii.1983, 1♂.

KUHLMANN 1996: Serra da Estrela: Penhas da Saúde, 31.vii.1990, 1♀.

Estremadura, Fernão Ferro, Fonte de Libateira, 3.viii.2019, 1♀, *det.* Cross, *leg.* Wood.

Algarve, Cabanas, 24.vii.2012, 1♀, *det.* & *leg.* A. Livory & R. Coulomb.

Algarve, Silves, 12.vi.2011, 1♀, *det.* Jozan/Baldock, *leg.* Baldock.

Tribe: Trypoxylini

Genus *Pison* JURINE, 1808

1 species. Prey: small spiders (BITSCH *et al.* 2001).

***Pison atrum* (SPINOLA, 1808)**

Euro-atlantic.

Widespread, scarce, 15 records.

ANDRADE 1949: Lisboa, 31.v.1945, 1♀, Vale de Gaio.

GAYUBO 1984: Algarve, 1983: Algez; Odeleite; Salir; S. Marcos da Serra.

Trás-os-Montes, Bragança, Alfândega da Fé, pans, 24.vi-5.viii.2015, 9♀, *det.* Baldock, *leg.* A. Penado.

Alto Alentejo, Évora, Montemor-o-Novo, 30.viii.2016, 1♀, *det.* Cross, *leg.* A. Albernaz Valente.

Baixo Alentejo, Beja, 20km north of Mértola, 5.viii.2001, 4♂, *det.* & *leg.* Schmid-Egger.

Baixo Alentejo, Mértola, 4.vi.2016, 1♀, 5.vi.2016, 1♀; *det.* & *leg.* A. Livory & R. Coulomb.

Baixo Alentejo, Montemor-o-Novo, 4.vi.2011, 1♀, 1♂, *det.* Baldock, *leg.* A. Albernaz Valente.

Algarve, Amoreira, 1.vi.2017, *det.* Cross.

Algarve, Boca do Rio, 23.ix.2016, field, *det.* & *leg.* Cross.

Algarve, Lagoa da Budens, 20.v.2017, *det.* Cross.

Algarve, Lagos, Barragem da Bravura, 26.vii.2015, 2♂; 12.ix.2016, 23.ix.2016 field, *det.* & *leg.* Cross.

Algarve, Monchique, Maçarotal, 27.vi.2015, 1♂, *det.* & *leg.* Cross.

Algarve, Silves, Barragem do Arade, 5.viii.2015, 1, *det.* & *leg.* Cross.

Algarve, Vilarinha, 2.vi.2017, *det.* Cross.

Genus *Trypoxylon* LATREILLE, 1796

8 species. Prey: small spiders (BITSCH *et al.* 2001).

***Trypoxylon attenuatum* SMITH, 1851**

Eurasian.

Widespread, frequent, 24 records.

DUSMET Y ALONSO 1931: Mitra, 1♀.

ANDRADE 1949: Lisboa, Évora, Vale de Gaio. Massorra, Singeverga.

DINIZ 1960B: Portugal.

GAYUBO 1984: Algarve, 1983: common, 8 localities.

Trás-os-Montes, Estremadura, Baixo Alentejo, Algarve.

***Trypoxylon beaumonti* ANTROPOV, 1991**

Western Mediterranean from Portugal to Italy.

Portugal, rare.

BITSCH *et al.* 2001: Portugal.

***Trypoxylon clavicerum* LEPELETIER, 1825**

Palaeartic.

Central & Southern Portugal, scarce, 6 records.

SAUNDERS 1881: Silves to Monchique road, 1♀ 18.v.1880.

ANDRADE 1949: Lisboa; S. João do Estoril.

DINIZ 1960B: Silves.

GAYUBO 1984: Algarve, Benafim, 28.vii.1983, 6♂, 1♀.

Estremadura, Sesimbra near Lisboa, 14.v.2012, 1♀, *det.* Baldock, *leg.* A. Livory.

Algarve, Loulé, Querença, 12.vii.2014, 1♀, *det.* Baldock, *leg.* R. Andrade.

Algarve, Monchique, 29.vii.2010, *det.* Jozan, *leg.* A. Livory.

Algarve, Odeceixe, 26.vii.2010, 1♀; *det.* & *leg.* A. Livory & R. Coulomb.

Algarve, Salema, 29.ix.2016, 1♀, *det.* & *leg.* Cross.

Algarve, Vilarinha, 18.ix.2018, 1♂, *det.* & *leg.* Cross.

****Trypoxylon deceptorium* ANTROPOV, 1991**

Western and central Palaeartic east to Mongolia.

Southern Portugal, rare, 1 record.

Algarve, Odeceixe, 26.vii.2010, 1♀, *det.* & *leg.* A. Livory.

***Trypoxylon figulus* (LINNAEUS, 1758)**

Holarctic.

Central & Southern Portugal, rare, 5 records.

DUSMET Y ALONSO 1931: Mitra, 1♂.

ANDRADE 1949: (as *T. figulus major* Beamont) Lisboa.

DINIZ 1959: Mitra.

GAYUBO 1984: Algarve, Salir, 27.vii.1983, 1♀.

Douro Litoral, Amarante, Ribeira, 4.ix.2019, 1♀, *det.* & *leg.* Cross.

Baixo Alentejo, São Sebastião dos Carros, 4.iv.2017, 1♂, *det.* & *leg.* Cross.

Algarve, Carrapateira, 10.vi.2016, 1♀, *det.* & *leg.* Cross.

Algarve, Lagoa, Sesmarias, 19.v. 1995, 1♀, *det.* Jozan, *leg.* D.Keen.

Algarve, Rasmalho, 31.iii.2015, 1♀, *det.* & *leg.* Cross.

***Trypoxylon kolazyi* KOHL, 1893**

Palaeartic.

Central Portugal, rare.

VIEIRA *et al.* 2013: Paul do Boquilobo NR, 2002, 1♀.

****Trypoxylon minus* BEAUMONT, 1945**

Palaeartic.

Central Portugal, rare, 1 record.

Beira Alta, Serra da Estrela, Folgoso, 31.vii.2001, 2♂, 1♀, *det.* & *leg.* Schmid-Egger.

***Trypoxylon scutatatum* CHEVRIER, 1867**

Euro-atlantic.

Widespread, scarce, 9 records (Fig. 40).

ANDRADE 1949: S. João do Estoril, Cascais, Vale de Gaio.

GAYUBO 1984: Algarve, 1983: common, 8 localities.

Trás-os-Montes, Bragança, Alfândega da Fé, pans, 20.iv-19.viii.2015, 5♀, *det.* Baldock, *leg.* A. Penado.

Beira Alta, Paços da Serra, 26.vii.1984, 1♀ *det.* Schmid-Egger (coll. Mendoça 32393) MNHNC.

Baixo Alentejo, Mértola, Berges do Guadiana, 2.vi.2016, 2♂, 1♀, *det.* & *leg.* A. Livory & R. Coulomb.

Baixo Alentejo, Praia da Foz dos Ouriços, 18.vii.2016, 1♂, *det.* Cross, *leg.* M. & E. Howe.

Algarve, Cabanas, 24.vii.2012, 1♀, *det.* & *leg.* A. Livory & R. Coulomb.

Algarve, Guia, 28.iv.2004, 1♀, *det.* & *leg.* Baldock.

Algarve, Silves, 10.vi.2011, 1♀, 20.iv.2012, 1♀, *det.* & *leg.* Baldock.

Algarve, Silves, Barragem do Arade, 15.vi.2015, 1♀, *det.* & *leg.* Cross.

DINETINAE

Genus *Dinetus* PANZER 1806

1 species. Prey: Heteropteran nymphs, principally Nabidae, rarely Lygaeidae (BITSCH *et al.* 2001).

***Dinetus pictus* (FABRICIUS, 1793)**

Euro-atlantic.

Widespread, scarce, 15 records (Fig. 41).

ANDRADE 1949: Lisboa.

DINIZ 1964: Serra da Estrela.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♀.

Trás-os-Montes, Bragança, Reconço, 3.vii.2016, 1♂, *det.* & *leg.* Wood.

Algarve, Aljezur, Ponte da Atalaia, 2.v.2005, 1♂, *det.* & *leg.* J. Smit.

Algarve, Amoreira, 3.vi.2015, 1♀ on *Cachrys libanotis*, *det.* & *leg.* Cross.

Algarve, Amoreira, 3.v.2016, 1♂; 31.v.2016, 1♀; *det.* & *leg.* Cross.

Algarve, Amoreira, 23.v.2017, 1♀; 8.vi.2017, 1♀; *det.* Cross.

Algarve, Carrapateira, 1.vi.2018, 1♂, *det.* Cross.

Algarve, Lagos, Quinta de São Roque, 22.v.2017, 1♀, *det.* Cross.

Algarve, Luz de Tavira, 4.v.2005, 1♂, *det.* & *leg.* J. Smit.

Algarve, Meia Praia, 2.v.2017, 1♂, 1♀, *det.* Cross.

Algarve, Ponta da Atalaia, 17.v.2017, 1♀, *det.* Cross.

Algarve, Praia do Vale da Lama, 21.v.2018, 1♀, *det.* & *leg.* Cross.

Algarve, Tavira, Cabanas, 31.v.2016, 1♂, *det.* & *leg.* A. Livory & R. Coulomb.

Algarve, Vila Nova de Milfontes, 18-19.v.2012, 1♂, 1♀, *det.* Livory/Baldock, *leg.* A. Livory & R. Coulomb.

MELLININAE

Genus *Mellinus* FABRICIUS, 1790

1 species. Prey: adult Diptera: Brachycera and Cyclorrhapha (BITSCH *et al.* 1997).

***Mellinus arvensis* (LINNAEUS, 1758)**

Euro-atlantic.

Widespread, rare, 5 records. The only prey record for Portugal is a tachinid fly (Diptera: Tachinidae) caught low among *Calluna vulgaris* at Amoreira in 2016 (Fig. 42).

DUSMET Y ALONSO 1921: Bussaco, 1921, 1♂, 1♀.

DUSMET Y ALONSO 1931: Description of var. *ibericus*.

ANDRADE 1949: Évora, Sintra, Parque da Pena.

DINIZ 1973: Abrunhosa, Figueira da Foz, Sintra; total 2♂, 3♀.

VIEIRA *et al.* 2013: Douro International NP, 2001SACNP, 2002; Paul do Boquilobo NR, 2002, total 1♂, 22♀.

Beira Alta, Manteigas, Rota da Carvão, 28.viii.2015, 1♀, *det.* & *leg.* A. Livory & R. Coulomb.

Beira Alta, Manteigas, São Pedro, Nave de Santo António, 19.viii.2015, 1♂, *det.* Cross, *leg.* A. Gonçalves.

Estremadura, Caparica, 25.x.1970, 1♀, *det.* Baldock. MNHNC, coll. Mendonça .

Estremadura, Leiria, Salir do Porto, 1.xi.2013, 1♀, *det.* Baldock, *leg.* R. Andrade.

Algarve, Amoreira, 30.x.2016, 1♀, *det.* & *leg.* Cross.

PEMPHREDONINAE

Tribe: Pemphredonini

Subtribe: Ammoplanina

Genus *Ammoplanus* GIRAUD, 1869

7 species. Prey: larval Thysanoptera (BITSCH *et al.* 2001).

Ammoplanus ceballosi GINER MARI, 1943

Euro-atlantic.

Northern & Central Portugal, rare.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002 6♂, total 54♂, 2♀.

**Ammoplanus dusmeti* GINER MARI, 1943

Iberia & North Africa.

Northern Portugal, rare, 1 record.

Minho, Vila Nova de Famalicão, Novais, 28.vi.2013, 1♂, *det.* Cross, *leg.* R. Andrade.

Ammoplanus kohlii KOHL, 1898

Mediterranean.

Northern & Central Portugal, rare.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002, total 3♂, 10♀.

Ammoplanus nanus BOUCEK & GAYUBO, 2001

Mediterranean.

Portugal, rare.

BITSCH *et al.* 2001: Portugal.

Ammoplanus perrisi GIRAUD, 1869

Euro-atlantic.

Northern Portugal, rare.

VIEIRA *et al.* 2013: Douro International NP, 2001, 2♀.

Ammoplanus rhodesianus ARNOLD, 1924

Iberia, Namibia, South Africa, UAE, Zimbabwe.

Central Portugal, rare.

BITSCH *et al.* 2001: Portugal.

VIEIRA *et al.* 2013: Serras de Aire e Candeeiros NP, 2002, 1♀.

Ammoplanus torresi GAYUBO, 1991

Iberian Endemic.

Northern & Central Portugal, rare.

BITSCH *et al.* 2001: Portugal: Beira Alta.

VIEIRA *et al.* 2013: Douro International NP, 2001, 5♀.

Subtribe: Pemphredonina

Genus *Diodontus* CURTIS, 1854

6 species. Prey: Heteroptera: Aphididae (BITSCH *et al.* 2001).

***Diodontus friesei* KOHL, 1901**

Iberia, France, North Africa.

GAYUBO 1984: Algarve, 1983: Acoteias; Odeleite; Paderne; Sagres; S. Bartolomeu de Messines; Silves.

***Diodontus insidiosus* SPOONER, 1938**

Euro-atlantic.

Widespread, frequent, 22 records.

GAYUBO 1984: Algarve, 1983: Acoteias; Aldeia da Tôr; Aljezur; Carrapateira; Paderne; Quarteira; Sagres; S. Marcos da Serra.

KUHLMANN 1996: Serra da Estrela, Penhas da Saúde, 29.vii.1990, 1♀, *det.* K. Schmidt.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002, total 36♂, 23♀.

Trás-os-Montes, Beira Litoral, Estremadura, Baixo Alentejo, Algarve.

***Diodontus luperus* SHUCKARD, 1837**

Europe, east to Siberia and Mongolia.

Northern & Central Portugal, rare.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002, total 2♂, 6♀.

***Diodontus minutus* (FABRICIUS, 1793)**

Palearctic.

Southern Portugal, rare, 1 record.

GAYUBO 1984: Algarve, 1983: Odeleite; Salir.

Algarve, Tavira, 23-25.v.2012, 1♂, 1♀, *det.* Livory/Baldock. *leg.* A. Livory & R. Coulomb.

***Diodontus polytylus* (BUDRYS, 2019)**

North Africa, Portugal & Spain.

Central & Southern Portugal, frequent.

BUDRYS *et al.* 2019: Several localities.

***Diodontus tristis* (VANDER LINDEN, 1829)**

Palearctic.

Northern & Southern Portugal, rare, 2 records.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♂.

Algarve, Santa Bárbara de Nexe, 30.v.2009, 1♂, *det.* Baldock, *leg.* Pennicamp & Pereira. MNHNC.

Algarve, Pêra, Praia Grande, 30.iv.2016, 1♀, *det.* & *leg.* Cross.

Genus *Passaloecus* SHUCKARD, 1837

7 species. Prey: Homoptera: Aphididae, rarely Psyllidae (BITSCH *et al.* 2001).

***Passaloecus corniger* SHUCKARD, 1837**

Euro-atlantic.

Northern and Central Portugal, rare.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002, total 4♂, 20♀.

***Passaloecus eremita* KOHL, 1893**

Europe.

Northern Portugal, rare (Fig. 43).

VIEIRA *et al.* 2013: Douro International NP, 2001, 2♀.

***Passaloecus gracilis* (CURTIS, 1834)**

Holarctic.

Widespread, scarce, 13 records.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002, total 44♂, 129♀.

Minho, Barcelos, Gilmonde, 26.vii.2014, 1♀, *det.* Schmid-Egger, *leg.* R. Andrade.

Trás-os-Montes, Bragança, Alfândega da Fé, pans, 25.vi.2015, 1♀, *det.* Baldock, *leg.* A. Penado.

Beira Alta, Manteigas, Poço do Inferno, 26.viii.2015, 1♀, *det. & leg.* A. Livory & R. Coulomb.
Beira Alta, Manteigas, Vale do Zêzere, 25.viii.2015, 1♀, *det. & leg.* A. Livory & R. Coulomb.
Estremadura, Cabo Espichel, 15.v.2012, 1♂, *det.* Livory/Baldock, *leg.* A. Livory & R. Coulomb.
Estremadura, São Martinho do Porto, 20.viii.2015, 1♂; 21.viii.2015, 1♂, *det. & leg.* A. Livory & R. Coulomb.
Baixo Alentejo, Odeceixe, 24.vii.2010, 1♂, 1♀, *det. & leg.* A. Livory & R. Coulomb.
Baixo Alentejo, Zambujeira do Mar, 6.vii.2019, 1♀, *det. & leg.* A. Livory & R. Coulomb.
Algarve, Boca do Rio, 20.ix.2016, 1♀, *det. & leg.* Cross.
Algarve, Carrapateira, 14.ix.2014, 2♀, *det. & leg.* A. Livory & R. Coulomb.
Algarve, Carrapateira, 7.x.2016, 1♀, *det. & leg.* Cross.
Algarve, Monte Gorfo, Praia do Cabeço, 26.iv.2016, 1♀, *det. & leg.* Wood.

***Passaloecus monilicornis* DAHLBOM, 1842**

Palearctic.

Northern Portugal, rare.

DUSMET Y ALONSO 1931: Mitra, 1921, 1♂.

GAYUBO *et al.* 2002: Trás-os-Montes: Portela de Santa Eulália, 2.viii.1995, 1♀ *leg.* J. García.

***Passaloecus pictus* RIBAUT, 1952**

Mediterranean.

Widespread, scarce, 6 records.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002, total 3♂, 11♀.

Estremadura, São Martinho do Porto, 9.vii.2019, 1♂, *det. & leg.* A. Livory & R. Coulomb.

Baixo Alentejo, Odeceixe, Baiona, 29.iii.2015, 1♂, *det. & leg.* Cross.

Algarve, Carvoeiro, 24.vi.1988, 1♀, *det.* Wood, *leg.* J.W. Ismay.

Algarve, Guia, 20.iv.2006, 1♀, *det. & leg.* Baldock.

Algarve, Amoreira, 6.vi.2015, 1♀; 26.vi.2015, 1♂, 1♀; *det. & leg.* Cross.

***Passaloecus singularis* DAHLBOM, 1844**

Euro-atlantic.

Northern & Central Portugal, rare.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002, total 5♂, 2♀.

***Passaloecus vandeli* RIBAUT, 1952**

Euro-atlantic.

Northern & Central Portugal, rare.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002; Paul do Boquilobo NR, 2002, total 99♀.

Genus *Pemphredon* LATREILLE, 1796

9 species. Distributions from DOLLFUSS 1995. Prey: Homoptera: Aphididae, rarely Cicadellidae (BITSCH *et al.* 2001).

***Pemphredon austriaca* (KOHL, 1888)**

Algeria, Cyprus, Europe, Turkey.

Northern & Central Portugal, rare.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002, total 11♀.

****Pemphredon inornata* SAY, 1824**

Palearctic

Central & Southern Portugal, rare, 2 records.

Estremadura, Lisboa, Sintra, Almargem do Bispo, 21.viii.2013, 1♂, *det.* Baldock, *leg.* R. Andrade.

Algarve, Rasmalho, 31.iii.2015, 2♀, *det. & leg.* Cross.

***Pemphredon lethifer* (SHUCKARD, 1837)**

Holarctic.

Widespread, frequent, 20 records.

ANDRADE 1949: (as *P. unicolor*) Lisboa, Évora, Estoril, Seixal, Massorra.

DINIZ 1959: (as *P. fabricii* Mueller) Estoril. Évora, Lisboa, Massorra, etc.
GAYUBO 1984: Algarve, 1983: Algoz; Bensafirim; Burgau; Carrapateira; Monchique; Pêra; Sagres.
Minho, Estremadura, Baixo Alentejo, Algarve.

***Pemphredon lugens* (DAHLBOM, 1842)**

Eurasian.

Northern & Southern Portugal, rare, 1 record.

VIEIRA *et al.* 2013: Douro International NP, 2001, 5♀.

Algarve, Monchique, 27.vi.2015, 1♀, *det. & leg.* Cross.

***Pemphredon lugubris* (FABRICIUS, 1793)**

Holarctic.

Widespread, rare, 2 records.

VIEIRA *et al.* 2013: Douro International NP, 2001; Paul do Boquilobo NR, 2002, total 12♀.

Trás-os-Montes, Bragança, França, 20.vi.2015, 1♀, *det.* Cross, *leg.* R. Andrade.

Algarve, Carrapateira, 16.ix.2016, 1♂, 2♀, *det. & leg.* Cross.

***Pemphredon morio* VANDER LINDEN, 1829**

Paaearctic.

Central Portugal, rare.

GAYUBO *et al.* 2002: Beira Litoral: São João do Campo, 23.viii.1992, 1 ♀ *leg.* J. García.

VIEIRA *et al.* 2013: Serras de Aire e Candeeiros NP, 2002, 1♀.

***Pemphredon mortifer* VALKEILA, 1972**

Central and southern Europe, including Iberian Peninsula.

Northern and Central Portugal, rare, 1 record.

KUHLMANN 1996: (as *P. mortifer*) Serra da Estrela: Vale do Zêzere, viii.1987, 2♀.

Douro Litoral, Loivos do Monte, 8.ix.2016, 1♀, *det. & leg.* Cross.

***Pemphredon rugifer* (DAHLBOM, 1844)**

Holarctic.

Widespread, rare, 1 record.

DOLLFUSS 1995 Arrabida, Lissabon 2♀ NHMUK.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♀.

Algarve, Budens, Monte da Sinceira, 14.v.2017, 1♀, *det. & leg.* Cross.

***Pemphredon wesmaeli* (MORAWITZ, 1864)**

Central and southern Europe.

Central Portugal, rare.

ANDRADE 1949: (as *P. wesmaeli*) Lisboa, 26.v.1947, 1♀; Massorra, 2.ix.1946, 1♀.

Subtribe: Spilomenina

Genus *Spilomena* SHUCKARD, 1838

3 species. Prey: Thysanoptera (immature and adults), Homoptera: Psyllidae, Coccidae (BITSCH *et al.* 2001).

***Spilomena beata* BLÜTHGEN, 1953**

Euro-atlantic.

Northern Portugal, rare.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♀.

***Spilomena mocsaryi* KOHL, 1898**

Euro-atlantic.

Northern Portugal, rare.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♂.

***Spilomena troglodytes* (VANDER LINDEN, 1829)**

Eurasian.

Northern and Central Portugal, rare.

ANDRADE 1949: Lisboa, Jardim Botânico, 15.iv.1945, 1♂.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002; Paul do Boquilobo NR, 2002, total 8♂, 46♀.

Subtribe: Stigmina

Genus *Stigmus* PANZER, 1804

1 species. Prey: Homoptera: Aphididae (BITSCH *et al.* 2001).

Stigmus solskyi MORAWITZ, 1864

Eurasian.

Widespread, rare, 4 records.

ANDRADE 1949: Lisboa, Jardim Botânico; Massorra 24.vii.1946.

GAYUBO 1984: Algarve, Aljezur, 12.viii.1983, 5♂, 2♀.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002; Paul do Boquilobo NR, 2002, total 18♂, 28♀.

Minho, Aveiro, Estarreja, Canelas, 20.vii.2015, 1♀, *det.* Baldock, *leg.* R. Andrade.

Minho, Barcelos, Gilmonde, 6.ix.2015, 1♀, *det.* Baldock, *leg.* R. Andrade.

Trás-os-Montes, Bragança, Espinhosela; 9.ix.2014, 1♂, *det.* Baldock, *leg.* R. Andrade.

Beira Litoral, Espesende, Rio Tinto, 3.vii.2014, 1♀, *det.* Baldock, *leg.* R. Andrade.

Tribe: Psenini

Genus *Mimesa* SHUCKARD, 1837

2 species. Prey: Homoptera: Cicadellidae and Psyllidae, nymphs and adults (BITSCH *et al.* 2001).

Mimesa crassipes COSTA, 1871

Central and southern Europe, Ukraine, Russia and Turkey.

Central Portugal, rare.

ANDRADE 1949: Lisboa, Parque Florestal do Monsanto, 3.vi.1948, 6♂; 7.vi.1948, 2♂, 1♀.

Mimesa grandii MAIDL, 1933

Eurasian.

Widespread, scarce, 6 records.

ANDRADE 1949: Porto de Rei, 7.ix.1948, 1♀; Massorra, 19.vi.1946, 1♀.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♂.

Algarve, Bordeira, Praia da Bordeira, 21.vii.2015, 1♂, *det.* Cross, *leg.* M. & E. Howe.

Algarve, Carrapateira, 21.vii.2005, 1♀, *det.* Cross, *leg.* M. & E. Howe.

Algarve, Lagos, Meia Praia, 27.ix.2014, 1♀, *det.* & *leg.* Cross.

Algarve, Praia do Vale da Lama, 8.x.2018, 1♀, *det.* & *leg.* Cross.

Algarve, Salema, 2.viii.2015, 1♀, *det.* & *leg.* Cross.

Algarve, Silves, 10.vi.2011, 1♀, *det.* Baldock/Schmid-Egger, *leg.* Baldock.

[*Mimesa lutaria* (FABRICIUS, 1787)]

BITSCH & LECLERCQ 1993: “connu également de la Péninsule ibérique” but no specific reference to Portugal.

Genus *Mimumesa* MALLOCH, 1933

2 species. Prey: Homoptera (BITSCH *et al.* 2001).

**Mimumesa dahlbomi* (WESMAEL, 1852)

Northern and central Europe, east to Korea and Japan. Its presence in Spain remains to be confirmed (BITSCH *et al.* 2001).

Southern Portugal rare, 1 record.

Algarve, Odelouca, river margin, 22.vi.1988, 1♂, *det.* Wood, *leg.* J. Ismay.

Mimumesa unicolor (VANDER LINDEN, 1929)

Eurasian.

Northern & Southern Portugal, scarce, 7 records.

VIEIRA *et al.* 2013: Douro International NP, 2001, 1♀.

Minho, Gilmonde, Barcelos, 7.ix.2015, 1♀, *det.* Wood, *leg.* R. Andrade.

Baixo Alentejo, Praia da Foz dos Ouriços, 18.vii.2016, 1♂, *det.* Cross, *leg.* M. & E. Howe.

Algarve, Bordeira, Praia da Bordeira, 21.vii.2015, 1♂, *det.* Cross, *leg.* M. & E. Howe.

Algarve, Budens, Boca do Rio, 20.viii.2015, 1♀, *det.* & *leg.* Cross.

Algarve, Carrapateira, 21.vii.2005, 3♂, *det.* Cross, *leg.* M. & E. Howe.

Algarve, Tavira, 24.vii.2012, 1♂, *det.* Cross, *leg.* A. Livory & R. Coulomb.

Algarve, Tavira, Rio Sequa, 2.viii.2015, 1♂, *det.* Cross, *leg.* M. & E. Howe.

Genus *Psenulus* KOHL, 1897

3 species. Prey: Homoptera: Aphididae, Psyllidae (BITSCH *et al.* 2001).

Psenulus fuscipennis (DAHLBOM, 1843)

Eurasian.

Northern and Central Portugal, rare.

ANDRADE 1949: Lisboa, Defensores de Chaves, 15.v.1947, 2♀.

VIEIRA *et al.* 2013: Douro International NP, 2001; Serras de Aire e Candeeiros NP, 2002, total 68♀.

Psenulus pallipes (PANZER, 1798)

Palearctic.

Widespread, rare, 2 records.

VIEIRA *et al.* 2013: Douro International NP, 2001; Paul do Boquilobo NR, 2002, total 15♀.

Beira Alta, Serra da Estrela, Paços da Serra, 27.vii.1975, 1♂, *det.* Baldock. MNHNC. coll. Mendoza.

Baixo Alentejo, Moura, 27.ix.2014, 1♀, *det.* & *leg.* A. Livory & R. Coulomb.

**Psenulus schencki* (TOURNIER, 1889)

Euro-atlantic.

Northern & Southern Portugal, rare, 2 records.

Trás-os-Montes, Bragança, 3km north of Fontes, 1.vii.2016, 1♀, *det.* & *leg.* Wood.

Algarve, Bordeira, 9.v.2017, 1♂, *det.* & *leg.* Cross.

PHILANTHINAE

Tribe: *Cercerini*

Genus *Cerceris* LATREILLE, 1802

19 species. Prey: Coleoptera; especially Curculionidae, Buprestidae and Chrysomelidae; Apoidea; especially Halictidae (BITSCH *et al.* 1997).

Cerceris arenaria (LINNAEUS, 1758)

Palearctic.

Widespread, common, 56 records. Prey are adult weevils (Coleoptera: Curculionidae). In Northern Portugal a colony was observed focussing on *Gonipterus platensis* Marelli, a well-known pest species in introduced *Eucalyptus* plantations. It would be interesting to explore the possibility of using *Cerceris arenaria* as a biological control agent for this weevil. Other recorded prey in Portugal include *Brachyderus cf. incanus*.

SAUNDERS 1881: Silves, 1♂ 15.v.1880.

DUSMET Y ALONSO 1931: Mitra, 1921, 1♀.

ANDRADE 1949: many localities including Estoril, Évora.

GAYUBO 1984; Algarve, 1983: 9 localities.

KUHLMANN 1996: Serra da Estrela, 3 localities, 1990, *det.* K. Schmidt.

Minho, Trás-os-Montes, Douro Litoral, Beira Litoral, Beira Baixa, Baixo Alentejo, Algarve.

Cerceris bellona MERCET, 1914

Iberian Peninsula and one record from France.

Central Portugal, rare.

ANDRADE 1949: Lisboa, Benfica.

***Cerceris bicincta* KLUG, 1835**

Palearctic.

Northern & Central Portugal, rare, 1 record.

DINIZ 1966: Serra da Estrela, 1♀.

Trás-os-Montes, hills east of Moimenta, 2.vii.2016, 1♀, *det. & leg.* Wood.

***Cerceris bupresticida* DUFOUR, 1841**

Palearctic.

Widespread, scarce, 6 records. Recorded prey in Portugal include the Buprestid beetle *Cyphosoma lausoniae* (Chevrolat, 1838) Coleoptera: Buprestidae at Pêra (Fig 44).

ANDRADE 1949: Lisboa, Algés, Cascais, Estoril, Massorra.

Douro Litoral, Amarante, Chapa, 19.vi.2016, 1♂, *det. & leg.* Cross.

Algarve, Pêra, Praia Grande, 12.vi.2015, 1♂ on *Teucrium polium*, *det. & leg.* Cross.

Algarve, Pêra, Praia Grande, 27.v.2016, 3.vi.2016, 2♀, *det. & leg.* Cross.

Algarve, Pêra, Praia Grande, 30.v.2017, *det.* Cross.

Algarve, Pêra, Praia Grande, 16.vi.2018, *det.* Cross.

[*Cerceris circularis dacica* SCHLETTERER, 1887]

SCHMIDT 2000: Table 2 “Literaturangabe” but with no details. The authors have recorded this species as near as the Spanish province of Sevilla so it is potentially found in the south of Portugal. However, without a detailed record, its presence is unconfirmed.

***Cerceris dusmeti* GINER MARI, 1941**

Iberia, Algeria, Morocco, Israel..

Northern Portugal, rare.

SCHMIDT 2000: Fafe Umg. Lagoa 1.x.1994, 1♀; Braga, 10km east of Fafe 5.vii.1992, 1♀, both coll. Schwarz.

[*Cerceris eryngii* MARQUET, 1875]

SCHMIDT 2000: Table 2 “Literaturangabe” but with no details. In the absence of a specific reference or specimens its presence in Portugal is unconfirmed.

****Cerceris fimbriata* (ROSSI, 1790)**

Palearctic.

Southern Portugal, scarce, 7 records.

Algarve, Pêra, Praia Grande, 12.vi.2015, 1♂, on *Teucrium polium*, *det. & leg.* Cross.

Algarve, Pêra, Praia Grande, 27.v.2016, 1♀; 4.vi.2016, 1♀; *det. & leg.* Cross.

Algarve, Pêra, Praia Grande, 5.vi.2017, 2♂; *det. & leg.* Cross.

Algarve, Pêra, Praia Grande, 28.v.2018, 2♂; 16.vi.2018, 1♀; 21.vi.2018, 1♂; *det. & leg.* Cross.

[*Cerceris flavicornis* BRULLÉ, 1833]

Portugal, rare.

BITSCH *et al.* 1997: Gives “Portugal” but with no further details or reference. We have been unable to trace any specimens or literature references for this species. It is likely to occur but, in the meantime, its presence is unconfirmed.

***Cerceris flavilabris* (FABRICIUS, 1793)**

Widespread in the Mediterranean area and southern-central Europe to Central Asia (CASSAR *et al.* 2020B)

Widespread, scarce, 11 records.

DUSMET Y ALONSO 1931: (as *Cerceris ferreri* Vander Linden) Mitra, 1921, 2♂.

ANDRADE 1949: (as *C. aurita* Latreille) Massorra, Valença do Minho.

GAYUBO 1984: Monte Gordo; Algarve, Quarteira, 25/26.vii.1983, 3♂.

Minho, Lamoso, 9.ix.2019, 1♀, *det. & leg.* Cross.

Douro Litoral, Amarante, Chapa, 2.ix.2019 1♂, 1♀, *det. & leg.* Cross.

Douro Litoral, Amarante, Ribeira, 4.ix.2019 1♂, *det. & leg.* Cross.

Douro Litoral, Vilarinho, 12.ix.2019, 1♀, *det.* Cross.

Beira Baixa, Serra da Estrela, Covilha, 4.viii.2016, 1♂ *det.* Cross leg. A. Albernaz Valente.

Baixo Alentejo, Cercal, Janeirinha de Cima, 18.vii.2016, 19.vii.2016, 21.vii.2016, 2♂, 2♀, *det.* Cross, *leg.* M. & E. Howe.

Baixo Alentejo, Moura, 27.ix.2014, 1♂, *det. & leg.* A. Livory & R. Coulomb.

Algarve, Pêra, Praia Grande, 10.vi.2015, 1♂ on *Eryngium campestre*, det. & leg. Cross.
Algarve, Salema, 13.v.2018, 1♂, det. & leg. Cross.

***Cerceris flaviventris lusitana* (BEAUMONT, 1953)**

Cerceris flaviventris is confined to the Iberian Peninsula and Morocco and is divided into two subspecies. The nominate subspecies is found in Spain and Morocco, subspecies *lusitana* is endemic to Portugal Central & Southern Portugal, scarce, 15 records. The subspecies *lusitana* is very variable in the relative proportions of black, orange-red and yellow (Fig 45).

SCHMIDT 2000: Caparica, 12.vi.1962, 1♂; Caparica, Aldeia do Meco, 4.vi.1989, 2♂; Lisboa 20-30.v.1949, 1♂, 1♀.

Baixo Alenejo, Sines, 31.v.1970, 1♀, det. Schmid-Egger. MNHNC, coll. Mendocça.

Algarve, Amoreira, 3.v.2015, 1♂ on *Cachrys libanotis*, det. & leg. Cross.

Algarve, Amoreira, 31.v.2016, 1♂; 1.vi.2016, 1♂, 1♀; det. & leg. Cross.

Algarve, Amoreira, 23.v.2017, 1♂, det. & leg. Cross.

Algarve, Amoreira, 17.v.2018, 1♂, det. Cross.

Algarve, Carrapateira, 9.vi.2015, 1♂, det. & leg. Cross.

Algarve, Carrapateira, 24.iv.2017, 1♂, det. & leg. Cross.

Algarve, Carrapateira, 23.v.2018, 1♀, det. & leg. Cross.

Algarve, Odeceixe, 26.v.2011, 1♀, det. Baldock/Schmid-Egger, leg. A. Livory & R. Coulomb.

Algarve, Pêra, 3 km south, 23.iv.2017, 2♂, det. & leg. J. Smit.

Algarve, Pêra, Praia Grande, 18.v.2016, 2♀, det. & leg. Cross.

Algarve, Pêra, Praia Grande, 15.v.2017, 1♀, det. & leg. Cross.

Algarve, Pêra, Praia Grande, 10.v.2018, 1♂, 26.v.2018; det. & leg. Cross.

***Cerceris ibericella* LECLERCQ, 1979**

West Mediterranean.

Central & Southern Portugal, rare 2 records. At Pêra a female has been photographed stinging a *Glyptomorpha* sp (Hymenoptera: Braconidae), which are themselves parasitoids of various Coleoptera. In the neighbouring Spanish province of Huelva the authors witnessed a female stinging a Chalcid wasp (Hymenoptera: Chalcidae). So the sketchy evidence available suggests that *Cerceris ibericella* preys on a wide range of Hymenoptera Parasitica.

ANDRADE 1949: (as *C. iberica* Leclercq) Lisboa, Vale de Gaio.

GAYUBO 1984: Algarve, Paderne, 30.vii.1983, 1♂.

Algarve, Cacela Velha, 14.vi.2018, 1♀, det. & leg. Cross.

Algarve, Pêra, Praia Grande, 16.vi.2018, 3♀, det. & leg. Cross.

***Cerceris interrupta peninsularis* MERCET, 1903**

Southern and central Europe, east to Turkey, Kazakhstan and western Siberia.

Northern & Central Portugal, rare, 5 records.

ANDRADE 1949: Massorra, Quinta do Mato, Valença do Minho, Porto (Giner, 1939).

DINIZ 1966: Serra da Estrela, Torre 1900m.

Minho, Gilmonde, Barcelos, 1♂, 5.ix.2015, det. Cross, leg. R. Andrade.

Minho, Lamoso, 9.ix.2019, 1♂, det. & leg. Cross.

Minho, Rua Nova, 11.ix.2019, 1♀, det. & leg. Cross.

Douro Litoral, Amarante, Chapa, Linha do Tâmega, 19.vi.2016, 1♂, det. & leg. Cross.

Beira Alta, Manteigas, Rota do Sol, 27.viii.2015, 1♂, det. & leg. A. Livory & R. Coulomb.

***Cerceris lunata* COSTA, 1869**

Southern Europe.

Central & Southern Portugal, scarce, 7 records (Fig 46).

ANDRADE 1949: Lisboa; Benfca, 10.vii.1945, 1♀; Tapada da Ajuda, 28.vii.1947, 1♂.

GAYUBO 1984: Algarve, Santo Estêvão, 24.vii.1983, 1♂.

Algarve, Amoreira, 25.vi.2015, 1♀ on *Mentha pulegium*, det. & leg. Cross.

Algarve, Pêra, Praia Grande, 10.vi.2015, 1♂, 2♀; 12.vi.2015, 2♂; on *Eryngium campestre* & *Teucrium polium*; all det. & leg. Cross.

Algarve, Pêra, Praia Grande, 11.vi.2016, 1♂, det. Cross.

Algarve, Pêra, Praia Grande, 30.v.2017, 1♂, det. & leg. Cross.

Algarve, Pêra, Praia Grande, 21.vi.2018, 1♀, det. Cross.

Algarve, Silves, 12.vii.2011, 1♀, det. & leg. Baldock.

[*Cerceris media* KLUG, 1835]

BITSCH *et al.* 1997: “Péninsule ibérique” but no specific reference to Portugal.

***Cerceris quadricincta* (PANZER, 1799)**

Palaeartic.

Widespread, common, 44 records.

DUSMET Y ALONSO 1921: Porto, 1921.

ANDRADE 1949: Lisboa, São João de Estoril, Sintra, Évora, Massorra.

GAYUBO 1984: Algarve, 1983: Casais; Carrapateira.

Minho, Trás-os-Montes, Douro Litoral, Beira Litoral, Beira Alta, Beira Baixa, Estremadura, Baixo Alentejo, Algarve.

***Cerceris quadrifasciata* (PANZER, 1799)**

Europe, east to Manchuria and Korea.

Central Portugal, rare.

ANDRADE 1949: Paço de Queirã.

***Cerceris quinquefasciata consobrina* KOHL, 1898**

Europe, east to Manchuria and Korea.

Widespread, scarce, 6 records.

ANDRADE 1949: Porto (Giner, 1939) Lisboa.

Trás-os-Montes, Bragança, Monte de Montesinho, 20.vi.2016, 1♂, *det. & leg.* Cross.

Douro Litoral, Amarante, Chapa, 13.vi.2017, 1♀, *det. & leg.* Cross.

Algarve, Pêra, Praia Grande, 3.vi.2016, 1♀, *det. & leg.* Cross.

Algarve, Pêra, 2 km south, 21.iv.2017, 1♂, *det. & leg.* J. Smit.

Algarve, Pêra, 3 km south, 23.iv.2017, 1♀, *det. & leg.* J. Smit.

Algarve; Tavira, 26.v.2012, 1♂, *det. & leg.* A. Livory & R. Coulomb.

***Cerceris ruficornis* (FABRICIUS, 1793)**

Europe, east to Manchuria and Korea. One record from Morocco.

Central Portugal, rare, 1 record.

DINIZ 1960B: (as *C. labiata* F.) Portugal.

KUHLMANN 1996: Serra da Estrela, Vale de Candieira 1400m, 2.vii.1990, 2♂, *det.* K. Schmidt.

Minho, Ponte de Lima, 17.vii.2019, 1♂, *det. & leg.* A. Livory & R. Coulomb.

***Cerceris rybyensis* (LINNAEUS, 1771)**

Palaeartic.

Widespread, common, 34 records. The prey are bees (Hymenoptera: Apidae), above all of the genera *Halictus* and *Lasioglossum* (BITSCH *et al.* 1997). Recorded prey in Portugal include *Lasioglossum albocinctum* (Lucas) at Carrapateira in 2018.

ANDRADE 1949: Lisboa, Caparica, Vale de Gaio, Porto de Rei, Massorra, Valenda do Minho.

KUHLMANN 1996: Serra da Estrela, 4 localities, 1990, *det.* K. Schmidt.

Minho, Trás-os-Montes, Douro Litoral, Beira Baixa, Estremadura, Baixo Alentejo, Algarve.

***Cerceris sabulosa* (PANZER, 1799)**

Palaeartic.

Widespread, common, 60 records.

DUSMET Y ALONSO 1931: (as *C. emarginata*) Évora, 1921, 1♂.

ANDRADE 1949: (as *C. emarginata* Panzer) Lisboa, Estoril, Évora, Vale de Gaio, Massorra, Valença do Minho.

GAYUBO 1984: Monte Gordo; Monchique; Portimão; Algarve, 1983: 16 localities.

KUHLMANN 1996: Serra da Estrela, common at 2 localities, 1990, *det.* K. Schmidt.

Minho, Trás-os-Montes, Douro Litoral, Beira Alta, Beira Baixa, Estremadura, Ribatejo, Alto Alentejo, Baixo Alentejo, Algarve.

***Cerceris specularis* COSTA, 1869**

Mediterranean.

Northern & Southern Portugal, scarce, 6 records.

BITSCH *et al.* 1997: Iberian Peninsula.

Trás-os-Montes, Bragança, Reconço, 3.vii.2016, 1♂, *det. & leg.* Wood.

Algarve, Pêra, Praia Grande, 3.vi.2016, 4.vi.2016, 2♀, *det. & leg.* Cross.
Algarve, Pêra, Praia Grande, 15.v.2017, 1♂, 30.v.2017, 1♀, *det. & leg.* Cross.
Algarve, Pêra, Praia Grande, 21.vi.2018, 1♂, *det. & leg.* Cross.

***Cerceris tuberculata* (VILLERS, 1789)**

Central Portugal, rare.

ANDRADE 1949: Lisboa; Tapada da Ajuda, 27.vii.1945, 1♀; 4.viii.1947, 1♂.

Tribe: Philanthini

Genus *Philanthus* FABRICIUS, 1790

4 species. Prey: Hymenoptera:Apidae, Sphecidae (BITSCH *et al.* 1997).

***Philanthus coronatus ibericus* BEAUMONT, 1970**

Euro-atlantic.

Northern & Central Portugal, rare, 3 records.

ANDRADE 1949: Jogueiros, Valença do Minho, 18.vii.1948, 1♀.

Minho, Ponte de Lima, 17.vii.2019, 1♀, *det. & leg.* A. Livory & R. Coulomb.

Trás-os-Montes, Vila Real Norte 28.vi.2016, 1♀, *det. & leg.* Wood.

Beira Alta, Serra da Estrela, Paços da Serra, 22.vii.1986, 1♀, *det.* Baldock. MNHNC, coll. Mendonça.

[*Philanthus dufourii* LUCAS, 1849]

Portugal, rare.

BITSCH *et al.* 1997: “Péninsule ibérique” but no specific reference to Portugal.

***Philanthus pulchellus* SPINOLA, 1843**

Mediterranean.

Central & Southern Portugal, common, 53 records. It has a wide range of prey (ASÍS *et al.* 1996). Recorded prey in Portugal include the Crabronid wasp *Oxybelus mucronatus* (Fabricius) (Hymenoptera: Crabronidae) and the Halictid bee *Lasioglossum interruptum* (Panzer) (Hymenoptera: Apidae) (Fig 47).

DUSMET Y ALONSO 1931: (as *P. andalusiacus* Kohl) Mitra, 1921, 2♀.

ANDRADE 1949: (as *P. andalusiacus* Kohl) Lisboa, Évora, Cascais, Trafaria, Vale de Gaio, Porto de Rei.

GAYUBO 1984: Algarve, 1983: common, 9 localities.

Estremadura, Ribatejo, Baixo Alentejo, Algarve.

***Philanthus sculpturatus* GAYUBO, 1991**

Iberian endemic.

Southern Portugal, rare.

GAYUBO *et al.* 2006: Algarve, Quarteira, 16-19.vi.1978, 1♀, *det.* Gayubo, *leg.* K. Guichard.

***Philanthus triangulum* (FABRICIUS, 1775)**

Europe

Widespread, common, 88 records. All observations of prey in Portugal have involved the honeybee *Apis mellifera* Linnaeus (Fig 48).

SAUNDERS 1881: São Marcos da Serra, 1♂ 23.v.1880.

DUSMET Y ALONSO 1921: (as *P. apivorus*) Porto.

ANDRADE 1949: many localities, very abundant.

GAYUBO 1984: abundant, 18 localities.

KUHLMANN 1996: Serra da Estrela: 3 localities, 1990.

Minho, Trás-os-Montes, Douro Litoral, Beira Litoral, Beira Alta, Estremadura, Ribatejo, Baixo Alentejo, Algarve.

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* Reference available at www.sea-entomologia.org

Plate I. Ampulicidae and Sphecidae

- Fig. 1:** Male *Ampulex ruficollis*. Newly recorded from Portugal, so far it has only been found in two sites in the Algarve. Unfortunately no host records are available for either Portugal or Spain.
- Fig. 2:** Female *Ammophila heydeni* and prey – a moth larva of the family Geometridae.
- Fig. 3:** Female *Ammophila laevicollis* dragging a Geometrid larva into her nest. This is a characteristic species of coastal sands.
- Fig. 4:** Female *Podalonia tydei* warming herself on a sunny rock. Like other *Podalonia*, this species overwinters as an adult and has been recorded in nearly every month of the year.
- Fig. 5:** Female *Sceliphron madraspatanum* gathering nest material.
- Fig. 6:** Female *Prionyx kirbii* at her nest. A predator of grasshoppers, this is the most widespread and abundant Portuguese *Prionyx* by a wide margin.
- Fig. 7:** Female *Prionyx subfuscatus* dragging an adult *Calliptamus italicus* grasshopper to her nest. In Portugal this is mainly a species of coastal dunes.
- Fig. 8:** Female *Sphex funerarius*. The commonest Portuguese *Sphex*, all prey recorded in Portugal have been adult females of the Bush-cricket *Phaneroptera nana*. As can be seen, the female wasps commonly drag their prey by its antennae.

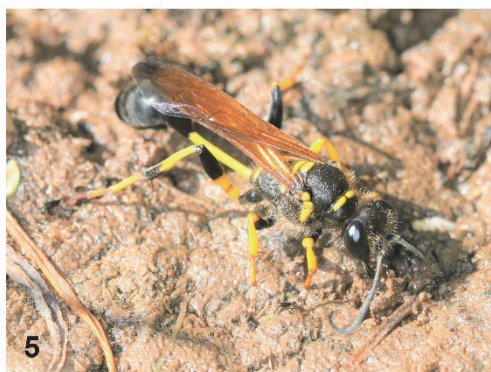


Plate II. Crabronidae: Astatinae to Bembicinae

- Fig. 9:** Male *Astata cobosi*. One of the most frequent of the larger black and red species. This is a typical pose for a male *Astata*: perched on a lookout and watching for passing females.
- Fig. 10:** Female *Astata miegii*. An easily identified all-black species. This is possibly the first photographic record of prey carriage in this species. *Dicranocephalus* is an unusual prey choice and may have some bearing on the scarcity of this species in Portugal.
- Fig. 11:** Male *Dryudella tricolor*. Like male *Astata*, males of *Dryudella* spend a lot of time on lookout. Even when disturbed they will return to a favoured spot time after time.
- Fig. 12:** Mating pair of *Bembix olivacea*. This species nests in looser sand than most *Bembix*. Excavating females will move considerable amounts of material, often creating miniature landscapes of ridges and canyons.
- Fig. 13:** *Argogorytes hispanicus* mating ball. In a frenzy to be the first to mate, two males are stacked above a single female. The unusually long antennae of a male *Argogorytes* can be seen, a feature that reaches its greatest development in the related Portuguese species, *Argogorytes mystaceus*.
- Fig. 14:** Female *Gorytes nigrifascies*. A rare species, found in southern and central Portugal. It is difficult to understand this rarity as it is locally numerous in adjoining provinces of southern Spain.
- Fig. 15:** Male *Harpactus laevis*. *Harpactus formosus* is the most widespread and numerous Portuguese *Harpactus* by a wide margin. This species is very scarce in central Portugal with no recent records. This male was photographed in Spain.
- Fig. 16:** Female *Lestiphorus bicinctus*. A rare species with one record for northern Portugal. This female was photographed in the UK.

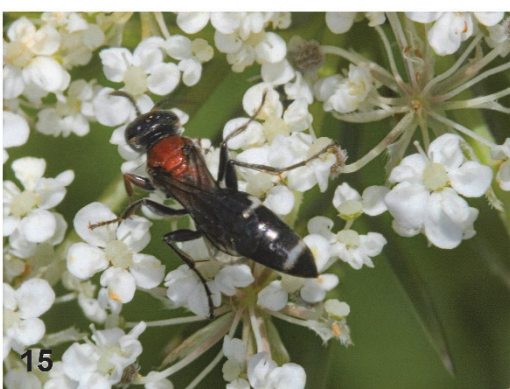


Plate III. Crabronidae: Bembicinae (cont.) to Crabroninae

- Fig. 17:** Female *Bembecinus pulchellus*. With its four-coloured scheme, this is one of the most attractive *Bembecinus*: the basic black and yellow contrasting with lovely green eyes and flashes of orange-red on the legs. It is the least recorded of the four Portuguese species, although quite widespread. We suspect it is probably often under recorded for the commoner *Bembecinus tridens* and *B. hungaricus*.
- Fig. 18:** Female *Stizus ruficornis* excavating nest. The only widespread and frequent Portuguese *Stizus*.
- Fig. 19:** Female *Nysson* cf. *konowi*. *Nysson* is a difficult genus within the Portuguese fauna and impossible to identify with certainty from photos. They are cleptoparasites of wasps in the tribe Gorytini but little is known about specific hosts for most species.
- Fig. 20:** Female *Encopognathus braunsi* carrying prey. Nothing is published about its prey preferences. This photo may be the first evidence we have. It looks like the prey are Capsid bug nymphs.
- Fig. 21:** Male *Crabro korbi*. Males of *Crabro* have an extremely modified and expanded fore tibia. These have patterns of light and dark areas that are useful in species recognition. It is believed these are held over the eyes of the female whilst mating.
- Fig. 22:** Female *Crossocerus quadrimaculatus*. An easy species to distinguish. This is a member of the subgenus *Hoplocrabro*, characterised by a tooth beneath the gena in both sexes.
- Fig. 23:** Female *Ectemnius hyspae*. Closely related to the abundant *Ectemnius continuus* but becoming more numerous towards the south of Portugal. This female is collecting mud to form the cell partitions in her nest.
- Fig. 24:** Female *Ectemnius massaliensis*. A scarce southern species noted for the massive, box-like heads of the females.



Plate IV. Crabronidae: Crabroninae (cont.)

- Fig. 25:** Male *Lestica clypeata*. The males of this species are unmistakable. Females do not have the peculiarly-shaped head and highly modified fore basitarsi and can easily be mistaken for an *Ectemnius* female.
- Fig. 26:** Male *Lindenius panzeri*. This is not one of the many interesting Mediterranean *Lindenius* to be found in the Algarve. Instead *Lindenius panzeri* is essentially a northern species that only reaches the northern two thirds of Portugal, where it is quite scarce.
- Fig. 27:** Female *Tracheliodes quinquenotatus*. At a glance this is a rather unexceptional small, dark wasp with pale ivory markings. The hunting behaviour is remarkable. The females prey on worker ants and can be watched hovering low over the ant columns, darting down every now and then to snatch up an ant and carry it away.
- Fig. 28:** Female *Ancistromma europaeum*. This small genus of hunting wasps is poorly known and rarely photographed. Nothing seems to have been published about the biology of this species, which is one of a select group of Ibero-Maghrebian members of the Portuguese fauna. It is assumed to prey on Crickets.
- Fig. 29:** Male *Tachysphex adjunctus*. This is an attractive early spring species and one of the first *Tachysphex* to appear each year. The male has beautiful blue-grey eyes in life, a feature that does not persist in pinned specimens.
- Fig. 30:** Male *Tachysphex erythropus*. This dazzling species has many contrasts with *Tachysphex adjunctus*. It is one of a number of all-black *Tachysphex* - but instantly distinguishable by its lemon-yellow eyes and red legs. Unlike *T. adjunctus* it seems to have at least two broods in Portugal. So it puts in a welcome reappearance, late in the season when other *Tachysphex* are scarce.
- Fig. 31:** Male *Tachytes panzeri*. *Tachytes* are very close to *Tachysphex* and take some care in identification. In common with many *Tachysphex* this species hunts grasshopper nymphs.
- Fig. 32:** Male *Larra anathema*. A widespread, though not often numerous, species. *Larra anathema* is a specialist hunter of Mole Crickets but is rarely seen hunting, as the chase takes place underground in its host's burrows!

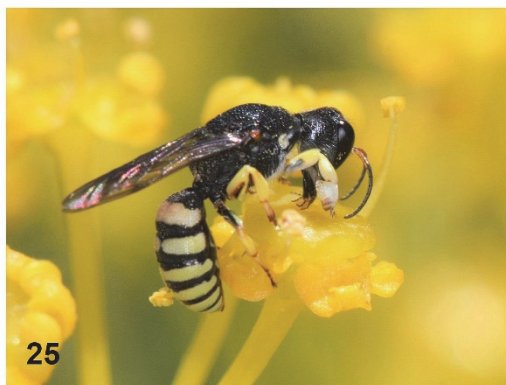


Plate V. Crabronidae: Crabroninae (cont.)

- Fig. 33:** Male *Liris niger*. This is the most abundant and widespread *Liris*, common throughout the country in a wide range of habitats.
- Fig. 34:** Male *Miscophus portoi*. A Portuguese endemic species, found only in sandy areas of the Atlantic coast of Portugal. This *Miscophus* is one of the “*handlirschi*” species group, marked by narrow forewings with a reduced venation and often violet, metallic tones on the body. Four of the five European species in this group are Iberian endemics: two confined to Portugal, two only found in Spain.
- Fig. 35:** Male *Plenoculus beaumonti*. This lovely little wasp has an unusual colour scheme, with a black and red body and sharply contrasting ivory-white markings and blue eyes. It does not seem to have been recorded from Portugal for over sixty years, yet was obviously fairly numerous when originally described. The reason for this lack of recent records is a complete mystery (this photo is of a Spanish example).
- Fig. 36:** Female *Oxybelomorpha steckii*. This is a local species of coastal sands in southern Portugal. Though it is known to excavate nests in sand (this photo is of a nest-digging female) little else is known of its detailed biology in Portugal – including the all-important question of what it preys on.
- Fig. 37:** Male *Oxybelus lamellatus*. Male *Oxybelus* choose prominent lookouts where they watch for passing females. These are usually at ground level but an unusual feature of this species is the way it readily uses humans as observation posts, as this male is doing. Why this wasp has this peculiar relationship with another species is unknown. Could the female be a specialised hunter of biting flies of large mammals?
- Fig. 38:** Female *Oxybelus lusitanicus*. A recently described species, this is currently a Portuguese endemic. It does not appear to be a habitat specialist so will probably eventually be found in Spain. This female is gathering nectar from *Helichrysum italicum* at a dune site in the western Algarve.
- Fig. 39:** Female *Oxybelus occitanicus* and prey. A West-Mediterranean species, found elsewhere only in Spain and southern France. This is a classic species of coastal sands and dune systems.
- Fig. 40:** Female *Trypoxylon scutatatum* collecting mud. Patches of mud are good places to seek out species of *Trypoxylon*, as the females visit to collect material to make the partitions in their nests. This species belongs to the “*scutatatum*” species group in which the fore ocellus is surrounded by a little, shield-shaped ridge.

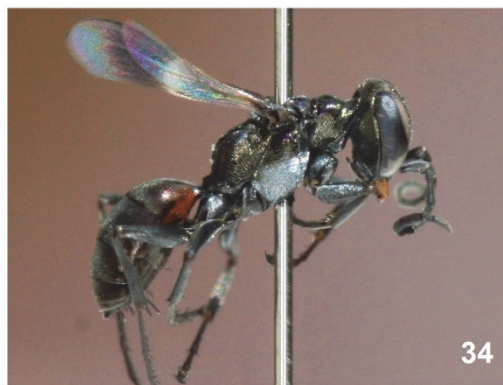


Plate VI. Crabronidae: Dinetinae, Mellininae, Pemphredoninae, Philanthinae

- Fig. 41:** *Dinetus pictus* mating pair. This species shows an extreme sexual dimorphism. The male is black, yellow and orange-red with green eyes. The female has a crisp, smart pattern of black, white and red. This male's antennae are a blur as he is vigorously palpitating the female as part of his courtship. Presumably this explains the peculiar form of his hockey-stick-shaped antennae.
- Fig. 42:** Female *Mellinus arvensis*. This species generally has a more northern distribution in Europe and, as expected, is mainly found in northern and central Portugal. However, it demonstrates a peculiar feature of some Portuguese distribution patterns – penetrating as far south as the Algarve in the cooler, damper west coast valleys.
- Fig. 43:** Female *Passaloecus eremita*. A typical *Passaloecus*: being small, very slender (to fit its chosen nesting sites in narrow beetle burrows) and virtually all black. A rare species in Portugal, confined to the far north of the country.
- Fig. 44:** Female *Cerceris bupresticida* and prey. The specific name of this wasp means “buprestid killer” and succinctly reflects its prey choice, which are beetles of the family Buprestidae. This female is carrying an adult *Cyphosoma lausoniae* (Chevrolat), a buprestid of coastal marshes, where the beetle larvae feed on the roots of *Bolboschoenus maritimus* (L.).
- Fig. 45:** Female *Cerceris flaviventris lusitana*. This is a Portuguese endemic subspecies. The females in particular are quite variable. This is a particularly dark form. In Portugal this is essentially a coastal species. Recently all records have come from the Algarve, where it is found along both the south and west coasts. In the past it was found as far north as Estremadura and there is no reason to doubt that it is still present there.
- Fig. 46:** Female *Cerceris lunata*. A particularly attractive *Cerceris* with its subtle shades of white and lemon-yellow and black, circular “target” mark on its abdomen. This is a scarce species in the country, with recent records from a limited number of sites in the south of the country.
- Fig. 47:** Male *Philanthus pulchellus*. A common species, especially on light, sandy soils in central and southern Portugal. The females hunt a broad range of hymenopteran prey and are not above provisioning their nests with members of their own species!
- Fig. 48:** Female *Philanthus triangulum* in the mouth of her burrow. Widespread and abundant throughout Portugal, this is the commonest *Philanthus*. In contrast to *Philanthus pulchellus*, it uses a single prey species, the Honeybee *Apis mellifera*.



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S.E.A.