

The Heterocera of Mértola (Alentejo, Portugal) (Insecta: Lepidoptera)

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Abstract

The Alentejo region includes more than a third of the entire Portuguese territory. Nevertheless, it is the least studied area in entomology and specifically in lepidopterology. Likewise, little is known about Mértola's insect fauna. In this municipality of the south-east of Alentejo, studies are being conducted to fill this knowledge gap. In this work, we present data regarding Heterocera research as a result of fieldwork using light traps in different habitats and different seasons. A total of 438 species were identified, including four new additions to the Portuguese fauna: *Symmoca sultan* Gozmány, 1962, *Eteobalea sumptuosella* (Lederer, 1855), *Coleophora arefactella* Staudinger, 1859 and *Idaea deitanaria* (Reisser & Weisert, 1977). A compilation of bibliographic records and new data is made. This study includes the first checklist of the area's Heterocera fauna.

Keywords: Insecta, Lepidoptera, Heterocera, faunistics, Alentejo, Mértola, Portugal.

Los Heterocera de Mértola (Alentejo, Portugal) (Insecta: Lepidoptera)

Resumen

La región del Alentejo comprende más de un tercio de todo el territorio portugués. Sin embargo, es el área menos estudiada en entomología y específicamente en lepidopterología. Asimismo, se sabe poco sobre la fauna de insectos de Mértola. En este municipio del sureste del Alentejo se están realizando estudios para colmar esta laguna de conocimiento. En este trabajo, presentamos datos sobre la investigación de Heterocera como resultado del trabajo de campo utilizando trampas de luz en diferentes hábitats y diferentes estaciones. Se identificaron un total de 438 especies, incluyendo cuatro nuevas adiciones a la fauna portuguesa: *Symmoca sultan* Gozmány, 1962, *Eteobalea sumptuosella* (Lederer, 1855), *Coleophora arefactella* Staudinger, 1859 y *Idaea deitanaria* (Reisser & Weisert, 1977). Se hace una recopilación de registros bibliográficos y nuevos datos. Este estudio incluye el primero listado faunístico de los Heterocera del área.

Palabras clave: Insecta, Lepidoptera, Heterocera, faunística, Alentejo, Mértola, Portugal.

Heterocera de Mértola (Alentejo, Portugal) (Insecta: Lepidoptera)

Resumo

A região do Alentejo compreende mais de um terço de todo o território português. Porém, é a área menos estudada em entomologia e especificamente em lepidopterologia. Da mesma forma, pouco se sabe sobre a fauna de insetos de Mértola. Neste concelho do sudeste alentejano estão a ser realizados estudos para colmatar esta lacuna de conhecimento. Neste trabalho, apresentamos dados da pesquisa de Heterocera como resultado de trabalho de campo utilizando armadilhas luminosas em diferentes habitats e diferentes estações do ano. Um total de 438 espécies foram identificadas, incluindo quatro novas adições à fauna de Portugal: *Symmoca sultan* Gozmány, 1962, *Eteobalea*

sumptuosella (Lederer, 1855), *Coleophora arefactella* Staudinger, 1859 e *Idaea deitanaria* (Reisser & Weisert, 1977). É feita uma compilação de registos bibliográficos e novos dados. Este estudo inclui a primeira lista faunística dos Heterocera da área.

Palavras-chave: Insecta, Lepidoptera, Heterocera, faunística, Alentejo, Mértola, Portugal.

Introduction

The Alentejo region, historically composed of two provinces, Alto Alentejo (AAL) and Baixo Alentejo (BAL), occupies about one third of mainland Portugal. Nevertheless, it is the least studied Portuguese area in entomology generally and specifically in lepidopterology. The short history of the study of Alentejo Heterocera shows that only a few places have been sampled and limited information is available regarding local inventories. Nevertheless, recent studies have revealed new species for science such as *Depressaria cinderella* Corley, 2002 described from Serra de São Mamede (Corley, 2002), *Ekboarmia miniaria* Skou, Stüning & Sihvonen, 2017 from Lagoa de Santo André and Grândola (Skou et al. 2017) and *Ypsolopha milfontensis* Corley & Ferreira, 2021 from Costa Vicentina (Corley & Ferreira, 2021), unveiling the relevance of the region and the need for further studies.

In addition to the scarce and dispersed records produced by earlier lepidopterists, as by the Reverend Alfred Edwin Eaton in Almodôvar (Corley & Goodey, 2014) and Teodoro Monteiro in Ribeira do Torgal (Monteiro & Passos de Carvalho, 1984), two recent works stand out, where 440 and 357 species were recorded for Lagoa de Santo André (Corley, 2004) and in the Serpa municipality (Marabuto, 2018), respectively, both located in Baixo Alentejo. The book published by Corley (2015), which consists of a checklist of Lepidoptera of Continental Portugal and includes the known distribution to date for each species, lists a total of 1177 species for the Alentejo region, out of the 2588 present in the country, 944 in AAL and 715 in BAL. New and interesting records for the Portuguese fauna have been published in an annual publication, adding 182 species to the Alentejo region, 58 to AAL and 168 to BAL (Corley et al. 2016, 2018a, 2018b, 2019, 2020, 2021, 2022, 2023). Marabuto (2018) added a further 65 species to BAL. To date, 1321 are listed for Alentejo, of which 1002 and 948 species are listed for AAL and BAL, respectively.

The municipality of Mértola, located in BAL, is a lowland municipality, ranging from 8 m above sea level by the Guadiana River at Pomarão in the south-east to 370 m above sea level at Alcária Ruiva, west of Mértola town. Climatically, it is a severe Mediterranean region, with very hot and dry summers and the land use is mostly extensive agriculture. A significant area of the municipality is recognized as having particular relevance for nature conservation and is classified as Parque Natural do Vale do Guadiana and as Guadiana Natura 2000 site (PTCON0036). Despite being known for its high biodiversity and the presence of emblematic species such as the Iberian Lynx (*Lynx pardinus* (Temminck, 1827)) and the Great Bustard (*Otis tarda* Linnaeus, 1758), Mértola is not an exception to the regional lack of entomological works. To fill this gap, in the last years, studies have been conducted in the municipality to improve the knowledge on invertebrates and to create an inventory of the insect fauna of Mértola. In this paper, we present data regarding moth research as a result of fieldwork using light traps in different habitats and different seasons between 2017 and 2022. Moreover, a compilation of relevant literature is made. This work includes the first comprehensive list of the area's moth fauna.

Material and Methods

All the material examined comes from nine sampling sites in Mértola municipality (Table 1 and Figure 1). Seven field campaigns were carried out from 2017 to 2022, totaling 25 nocturnal trapping sessions. In March 2017, Martin Corley (MC) and Sonia Ferreira (SF) visited Moimho de Alferes and Corte Gafo. In May 2017, David Grundy (DG) visited Bombeira do Guadiana, Corte Sines and Pulo do Lobo. In October 2018, MC and SF returned to Mértola to visit Bombeira do Guadiana. João Nunes (JN) and SF made four field trips in April, July and September 2021 and August 2022.

Table 1. Sampling sites with visit dates, recorders, and precise location.

Code	Locality	Date	Latitude	Longitude	Recorders
B1	Bombeira do Guadiana	06-IV-2021	37.6247	-7.6667	JN, SF
B2	Bombeira do Guadiana	09-V-2017	37.6247	-7.6667	DG
B3	Bombeira do Guadiana	10-V-2017	37.6247	-7.6667	DG
B4	Bombeira do Guadiana	10-VII-2021	37.6247	-7.6667	JN, SF
B5	Bombeira do Guadiana	01-VIII-2022	37.6247	-7.6667	JN, SF
B6	Bombeira do Guadiana	11-IX-2021	37.6247	-7.6667	JN, SF
B7	Bombeira do Guadiana	01-X-2018	37.6247	-7.6667	MC, SF
RO	Ribeira de Oeiras	07-IV-2021	37.6423	-7.6810	JN, SF
M1	Moinho de Alferes	27-III-2017	37.5057	-7.6766	MC, SF
M2	Moinho de Alferes	08-IV-2021	37.5057	-7.6766	JN, SF
M3	Moinho de Alferes	06-VII-2021	37.5057	-7.6766	JN, SF
M4	Moinho de Alferes	03-VIII-2022	37.5057	-7.6766	JN, SF
M5	Moinho de Alferes	12-IX-2021	37.5057	-7.6766	JN, SF
CG1	Corte Gafo	28-III-2017	37.6942	-7.6929	MC, SF
CG2	Corte Gafo	09-IV-2021	37.6955	-7.6926	JN, SF
HA1	Herdade de Alagães	10-IV-2021	37.6742	-7.8474	JN, SF
HA2	Herdade de Alagães	09-VII-2021	37.6742	-7.8474	JN, SF
HA3	Herdade de Alagães	02-VIII-2022	37.6742	-7.8474	JN, SF
HA4	Herdade de Alagães	13-IX-2021	37.6742	-7.8474	JN, SF
PL1	Pulo do Lobo	11-V-2017	37.8036	-7.6347	DG
PL2	Pulo do Lobo	07-VII-2021	37.8036	-7.6347	JN, SF
SC	Santana de Cambas	08-VII-2021	37.6232	-7.5630	JN, SF
J1	João Serra	04-VIII-2022	37.6622	-7.8335	JN, SF
J2	João Serra	14-IX-2021	37.6622	-7.8335	JN, SF
CS	Corte Sines	08-V-2017	37.7225	-7.6175	DG

All specimens were recorded at night using light traps (160 W mixed light, 125 W mercury vapor light, and Skinner and Heath-type traps equipped with UV light). Most specimens were identified in the field and released. The specimens where identification through external morphology was not possible were collected and later identified through the analysis of the genitalia after dissection. Identifications by the last method are marked with an asterisk (*) in Table 2, and the respective specimens are retained in the authors' collections.

A compilation of the published records for Mértola was made through bibliographic revision. The order and nomenclature of Lepidoptera families and species follow Corley (2015) and subsequent updates in Corley et al. (2016, 2018a, 2018b, 2019, 2020, 2021, 2022 and 2023). The region designated as Baixo Alentejo (BAL) in Corley (2015) and following works on Lepidoptera of Portugal correspond to what currently is considered Alentejo Litoral and Baixo Alentejo territorial units (Instituto Nacional de Estatística, I. P. 2015).

The sampling sites are briefly described and three are illustrated:

Bombeira do Guadiana (Figures 2-3) - Section of the west bank of the Guadiana River. It is a diverse landscape with planted areas of *Pinus* sp., small patches of *Quercus rotundifolia* Lam., parcels of diverse shrubland of *Rhamnus* spp., *Pistacia* spp., *Phillyrea* ssp., *Retama sphaerocarpa* (L.) Boiss, *Osyris lanceolata* Hochst. & Steud., *Olea europaea* var. *sylvestris* (Mill.) Hegi, *Asparagus* spp., *Lavandula* spp. and *Cistus* spp., and meadows rich in herbaceous plants in the floodplain. Near the river there are patches of *Juniperus turbinata* Guss. and *Tamarix* sp.

Ribeira de Oeiras - Section of the riverside Ribeira de Oeiras. The surroundings are full of *Pinus* sp. plantations, but the river valley is populated with native flora. The river partially dries in spring and summer, losing its lotic characteristics and creating a lentic environment with small ponds or pools. The valley slopes present some diversity of Mediterranean shrubs (e.g. *Rhamnus* spp., *Olea europaea*

var. *sylvestris* (Mill.) Hegi, *Retama sphaerocarpa* (L.) Boiss, *Genista polyanthos* R.Roem. ex Willk). In spring it is particularly rich in herbaceous plants.

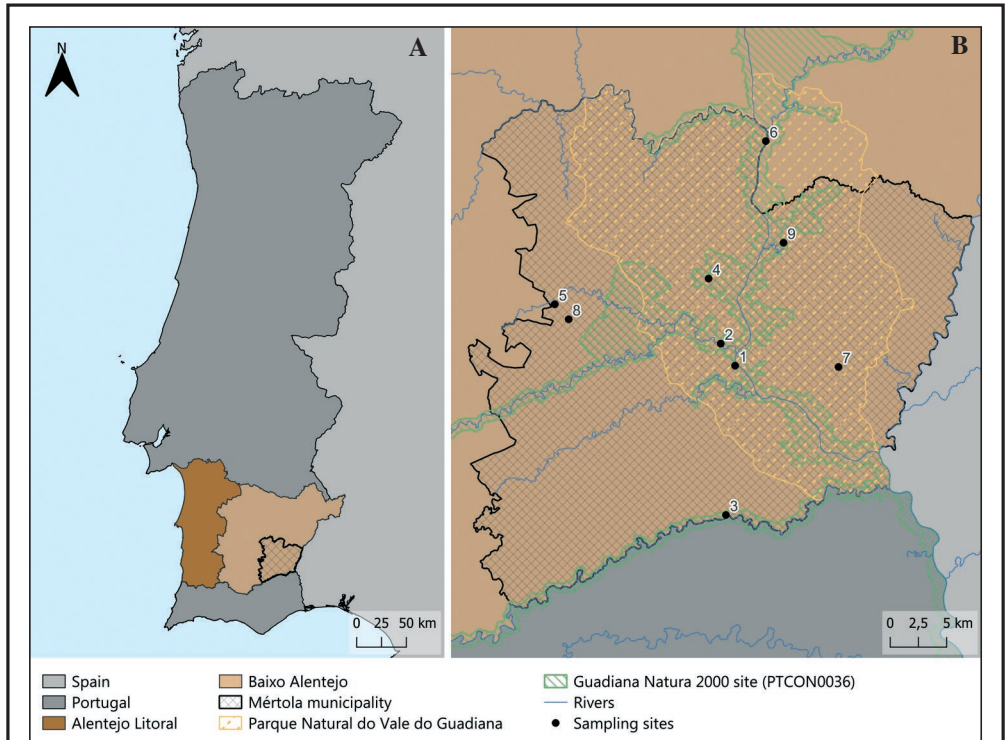


Figure 1. Framework of the study area in the national and regional context (A). Location of the nine trapping sites, with the location of the designated areas for nature conservation and main rivers that cross the territory represented (B). 1 - Bombeira do Guadiana. 2 - Ribeira de Oeiras. 3 - Moinho de Alferes. 4 - Corte Gafo. 5 - Herdade de Alagães. 6 - Pulo do Lobo. 7 - Santana de Cambas. 8 - João Serra. 9 - Corte Sines.

Moinho de Alferes (Figures 4-5) - Section of the north bank of the Vascão River. The shrubby vegetation along the margins and riverbed mostly consists of *Nerium oleander* L. and *Flueggea tinctoria* (L.) G. L. Webster, occasionally with *Tamarix* sp. As the river dries in summer, the riverbed develops a diversity of herbaceous plants, dominated by Cyperaceae species. The valley slopes present some *Quercus rotundifolia* Lam. woodland but are mostly dominated by *Cistus ladanifer* L. There is also a small grove of *Populus alba* L. on the south bank of the river (in Algarve).

Corte Gafo and Corte Sines - Flat land with scattered trees of *Quercus suber* L. and *Quercus rotundifolia* Lam. In winter, some water accumulates at the bottom of small slopes. There is some diversity of shrubs such as *Pyrus bourgaeana* Decne., *Crataegus monogyna* Jacq. and *Phlomis purpurea* L. The surroundings have *Pinus* sp. plantations and shrubland dominated by *Cistus ladanifer* L.

Herdade de Alagães (Figures 6-7) - Property dominated by *Pinus pinea* L. plantations. Under the trees there is a well-developed community of *Cistus* spp. (dominated by *Cistus monspeliensis* L.). There are clearings rich in herbaceous plants that dry out in spring/summer and a small reservoir which allows the presence of some hydrophilic plant species (e.g. *Typha* sp., *Tamarix* sp. and Cyperaceae species).

Pulo do Lobo - Section of the west bank of the Guadiana River. In this section the river is particularly narrow and most of the valley floor is rocky and poor in vegetation. The vegetation of the adjacent slopes is shrubland dominated by a great diversity of Mediterranean shrubs.

Santana de Cambas - Cereal steppe with a small artificial pond which allows the presence of some hydrophilic plant species (e.g. *Typha* sp.). In the proximity there were *Pinus* sp. plantations.

João Serra - Semi-natural steppe with shrub patches dominated by *Cistus ladanifer* L. There are a couple of recently created ponds.

Results and Discussion

In this work, 1796 new records of 436 species, which belong to 42 families, are presented for Mértola municipality (Table 2). For each species the localities and dates in which adults were recorded are given in abbreviated form following the code established in the section Material and Methods - Table 1. The number of individuals recorded is given for fieldwork carried out in 2017 and 2018. In the 2021 and 2022 campaigns the number of specimens was not counted, and the records are given as if based on a single specimen of each species, although in many cases more specimens were observed.

As a result of the bibliographic revision, six scientific papers and a published dataset in Global Biodiversity Information Facility (GBIF) were found to include moth records from Mértola municipality (Corley et al. 2006, 2013, 2018a, 2018b, 2019, 2020; Nunes et al. 2024). The papers include 58 records of 55 species, most of which (45 out of 58) were produced in the 2017 and 2018 campaigns and published in Corley et al. (2018a) and Corley et al. (2019). These are also included in Table 2 and indicated with a plus sign (+) The record of *Anacamptis timidella* (Wocke, 1887) in Corley et al. (2019) is considered doubtful due to the absence of known host plants locally, the repeated recording of *Anacamptis scintillella* (Fischer von Röslerstamm, 1840) at the same locality, and the lack of preservation of the dissection supporting the original identification, leading to its exclusion from the Mértola list in this study. In turn, the dataset contains 40 moth records of 33 species, all from the same sampling spot, in Mértola town (Nunes et al. 2024). This dataset includes all the 2021 and 2022 records from the Portuguese moth recording scheme named Rede de Estações de Borboletas Noturnas. In total, 83 species from 20 families were previously known to occur in the municipality from the referred bibliographic sources.

With the present work, the number of species recorded for Mértola has risen to 447, which belong to 43 families (Table 2). This result reflects that at least 17.1% of moth species (Lepidoptera species that do not belong to the superfamily Papilionoidea) recorded for mainland Portugal are present in Mértola municipality. However, although these numbers indicate a considerable diversity, they still underrepresent the total number of moth species present in the municipality. The lack of fieldwork carried out in June, which is an important period in terms of moth flight activity (Yela, 1992), as well as the absence of fieldwork in most of autumn and winter, suggests that a considerable number of species remains to be recorded. Moreover, some groups are apparently overlooked, as can be concluded from the Figure 8, where the species distribution within the recorded families for Mértola is presented and compared to the national known diversity. This is particularly evident in Nepticulidae, but also in Elachistidae and Coleophoridae. These families are mainly composed by small species difficult to identify in the field, usually with leaf-mining larvae. The early evening flight period of some of these species makes its detection with light traps inefficient. Gracillariidae, a family with 90 species cited for Portugal, is another group of leaf-miners that is certainly overlooked in the region since none of the species is recorded for Mértola so far. An effective inventory of these families requires specific fieldwork for these groups, including direct search for larvae and empty mines on host-plants.

Among all the species detected in this study, four represent new additions to the Portuguese moth fauna: *Symmoca sultan* Gozmány, 1962 (Figure 9), *Eteobalea sumptuosella* (Lederer, 1855) (Figure 10), *Coleophora arefactella* Staudinger, 1859 (Figure 11) and *Idaea deitanaria* (Reisser & Weisert, 1977) (Figure 12). The four are already known for mainland Spain and two of them, *Idaea deitanaria* and *Symmoca sultan*, until this work, were only known from that country (de Jong et al., 2014). Their

biology is mostly unknown and further investigations are required. This work also includes the second Portuguese record of *Coleophora zernyi* Toll, 1944 (Figure 13), previously only known from Loulé, Algarve (Corley et al. 2022). In addition, two of the recorded species, *Ecleora solieraria* (Rambur, 1834) and *Afriberina tenietaria* (Staudinger, 1900) (Figure 14), are only known in Portugal from localities in Mértola municipality (Corley et al. 2018a, 2019). Several others are only known from one other locality in Portugal: *Anatrachyntis simplex* (Walsingham, 1891), known from Aljezur (Algarve), *Mesophleps ochracella* (Turati, 1926) and *Merulempista azrouella* (Lucas, 1933), both known from Portimão, also in Algarve (Corley, 2015), *Sciota elegiella* (Zerny, 1928), already known from Serpa in BAL (Marabuto, 2018), *Sciota rhenella* (Zincken, 1818), known from Mirandela (Trás-os-Montes) and *Eupithecia ultimaria* Boisdual, 1840, known from Ria Formosa area in Algarve (Corley, 2015; Nunes et al. 2024). In total, this work adds 71 species for BAL, which are highlighted in Table 2, and 31 new species for Alentejo (sensu Corley, 2015).

Future inventory efforts in Mértola should focus both on new sampling sites and on different seasons that were not explored in this work. These additional sampling works should also include daylight inspections, particularly during spring, to detect species of day-flying micro-Heterocera, and in other seasons to detect leaf-mining species in their early stages. These should considerably increase the moth checklist of Mértola. The finding of four new species for Portugal, new species for the region and scarce species, along with the diversity of Lepidoptera found throughout this work, demonstrates the high biodiversity of the region and pinpoints the potential for new discoveries in this territory with continued research, as well as its importance for nature conservation. This work is the first step to realize the fascinating moth diversity of Mértola.

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Figures 2-7. 2-3. Bombeira do Guadiana sampling site (April, 2021). **2.** Mosaic of planted pine trees with native shrubs. **3.** Floodplain meadows (April, 2021) (Photos: Rui Andrade). **4-5.** Moinho de Alferes sampling site. **4.** Vascão River bed (July, 2021) **5.** Vascão River (April, 2021) (Photos: Rui Andrade). **6-7.** Herdade de Alagães sampling site. **6.** Pine tree plantation with a shrub community dominated by *Cistus monspeliensis* L. (July 2021) **7.** Reservoir margin at full capacity (April 2021) (Photos: Rui Andrade).

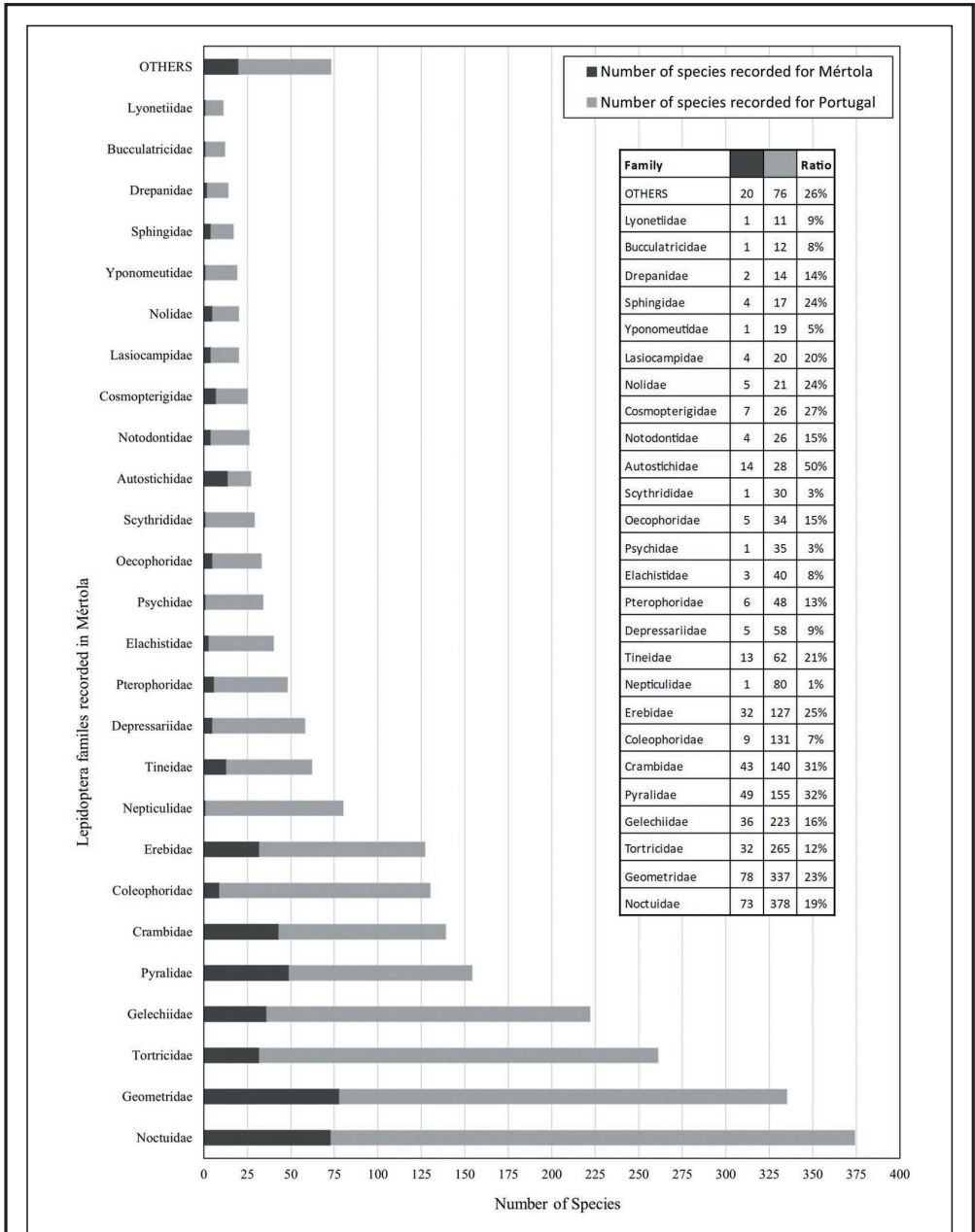


Figure 8. Number of species per family recorded for Mértola municipality and comparison with the national known diversity. The families with less than 10 species recorded for Portugal were grouped in OTHERS category. The given numbers of species recorded for Portugal per family follows Corley (2015) and subsequent updates in Corley et al. (2016, 2018a, 2018b, 2019, 2020, 2021, 2022 and 2023).



Figures 9-14. Examples of moth species recorded and of special interest in Mértola municipality. New species for Portugal: **9.** *Symmoca sultan* Gozmány, 1962, Pulo do Lobo 07-VII-2021. **10.** *Eteobalea sumptuosella* (Lederer, 1855), Moinho de Alferes 03-VIII-2022. **11.** *Coleophora arefactella* Staudinger, 1859, Corte Gafo 09-IV-2021. **12.** *Idaea deitanaria* (Reisser & Weisert, 1977), Ribeira de Oeiras 07-IV-2021. Second record for Portugal: **13.** *Coleophora zernyi* Toll, 1944, Bombeira do Guadiana 06-IV-2021. Species only known from Mértola in Portugal: **14.** *Afriberina tenietaria* (Staudinger, 1900), Pulo do Lobo 07-VII-2021 (Photos: João Nunes).

Table 2. Mértola moth checklist with the records from the seven field campaigns performed during this work. The columns are organized per nigh trapping sessions and respective months to better infer the phenology of the recorded species. The order and nomenclature of Lepidoptera families and species follows Corley (2015). The records from 2017 and 2018 already published are indicated with “+”. The absence of records is indicated with “-”. Mar: March; Apr: April; May: May; Jul: July; Aug: August; Sep: September; Oct: October; *: identification based on the analysis of the genitalia of at least one individual; •: new species for BAL (sensu Corley, 2015); M1: Moinho de Alferes 27-III-2017; CG1: Corte Gafo 28- III-2017; B1: Bombeira do Guadiana 06-IV-2021; RO: Ribeira de Oeiras 07-IV-2021; M2: Moinho de Alferes 08-IV-2021; CG2: Corte Gafo 09-IV-2021; HA1: Herdade de Alagães 10-IV-2021; CS: Corte Sines 08-V-2017; B2: Bombeira do Guadiana 09-V-2017; B3: Bombeira do Guadiana 10-V-2017; PL1: Pulo do Lobo 11-V-2017; M3: Moinho de Alferes 06-VII-2021; PL2: Pulo do Lobo 07-VII-2021; SC: Santana de Cambas 08-VII-2021; HA2: Herdade de Alagães 09-VII-2021; B4 Bombeira do Guadiana 10- VII-2021; B5: Bombeira do Guadiana 01-VIII-2022; HA3: Herdade de Alagães 02-VIII-2022; M4: Moinho de Alferes 03-VIII-2022; J1: João Serra 04-VIII-2022; B6: Bombeira do Guadiana 11-IX-2021; M5: Moinho de Alferes 12-IX-2021; HA4: Herdade de Alagães 13-IX-2021; J2: João Serra 14-IX-2021 and B7: Bombeira do Guadiana 01-X-2018.

Species list	Mar			Apr				May			Jul				Aug				Sep			Oct			
	M1	CG1	B1	RO	M2	CG2	HA1	CS	B2	B3	PL1	M3	PL2	SC	HA2	B4	B5	HA3	M4	J1	B6	M5	HA4	J2	B7
MICROPTERIGIDAE																									
<i>Micropterix ibericella</i> Caradja, 1920	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
• <i>Micropterix granatensis</i> Heath, 1981	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPTICULIDAE																									
• <i>Zimmermannia hispanica</i> (Van Nieukerken, 1985)	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
OPOSTEGIDAE																									
<i>Opostega salaciella</i> (Treitschke, 1833)	-	-	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ERIOCOTTIDAE																									
• <i>Eriocottis hispanica</i> Zagulajev, 1988	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PSYCHIDAE																									
• <i>Dissoctena granigerella</i> Staudinger, 1859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
TINEIDAE																									
<i>Myrmecozela ataxella</i> (Chrétien, 1905)	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Infurcitinea atrifasciella</i> (Staudinger, 1871)	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	2
• <i>Nemapogon nevadella</i> (Caradja, 1920)	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Neurothaumasia ragusaella</i> (Wocke, 1889)	-	-	-	-	-	-	-	-	-	-	1	-	1	1	1	1	1	-	-	1	-	1	-	1	+
• <i>Anomalotinea liguriella</i> (Millière, 1879)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1*	-	-	-	-	-	-	-	-	-
• <i>Cephalallota crassiflavella</i> Bruand, 1851	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-
<i>Reisserita zernyi</i> Petersen, 1957	-	-	-	-	-	-	-	-	-	-	1*	-	-	-	-	1	-	1	-	-	-	-	-	-	-
<i>Reisserita chrysotierella</i> (Herrich-Schäffer, 1854)	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
• <i>Reisserita flavofimbriella</i> (Chrétien, 1925)	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-
<i>Trichophaga bipartitella</i> (Ragonot, 1892)	-	-	1	-	1	-	1	-	-	-	-	1	-	1	1	1	-	-	-	1	1	1	1	1	1
• <i>Tinea basifasciella</i> Ragonot, 1895	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
• <i>Monopis nigricantella</i> (Millière, 1872)	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Crassicornella agenjoi</i> Petersen, 1957	-	-	-	1	-	-	-	1	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
BUCCULATRICIDAE																									
<i>Bucculatrix alaternella</i> Constant, 1890	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YPONOMEUTIDAE																									
<i>Zelleria oleastrella</i> (Millière, 1864)	-	-	-	1	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-
PLUTELLIDAE																									
<i>Plutella xylostella</i> (Linnaeus, 1758)	-	-	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	1	-
<i>Eidophasia syenitella</i> Herrich-Schäffer, 1854	-	-	1	1	1	1	-	1	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-
LYONETHIDAE																									
• <i>Phyllobrostis daphneella</i> Staudinger, 1859	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PRAYDIDAE																									
<i>Prays oleae</i> (Bernard, 1788)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1*	1	-	-
DOUGLASHIDAE																									
• <i>Klimeschia thymetella</i> (Staudinger, 1859)	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AUTOSTICHIDAE																									
<i>Arragonia punctivittella</i> (Zerny, 1927)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-
<i>Holcopogon adsecllella</i> (Eversmann, 1844)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1*	-	-	-	-	-	-	-	-	-
• <i>Oegoconia caradjai</i> Popescu-Gorj & Căpușe, 1965	-	-	-	-	-	-	-	-	-	-	1*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Symmoca signatella</i> Herrich-Schäffer, 1854	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	1	-	-

THE HETEROCERA OF MERTOLA (ALENTEJO, PORTUGAL)

DREPANIDAE																						
<i>Watsonalla uncinula</i> (Borkhausen, 1790)	2	1	1	-	1	1	1	1	2	3	1	1	1	1	-	-	-	-	-	1	-	-
<i>Tethea ocularis</i> (Linnaeus, 1767)	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LASIOCAMPIDAE																						
<i>Lasiocampa trifolii</i> (Denis & Schiffermüller, 1775)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	3
<i>Psilogaster lotii</i> (Ochsenheimer, 1810)	-	-	1	-	1	-	-	-	-	-	-	-	1	1	1	-	-	-	-	1	1	1
<i>Phyllodesma kermesifolia</i> (Lajonquière, 1960)	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Phyllodesma suberifolia</i> (Duponchel, 1842)	3	-	-	-	-	1	-	2	1	-	1	-	-	-	-	-	-	-	-	-	-	-
SPHINGIDAE																						
<i>Smerinthus ocellata</i> (Linnaeus, 1758)	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
<i>Macroglossum stellatarum</i> (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Hyles livornica</i> (Esper, 1780)	-	-	1	1	1	1	1	-	1	-	1	-	1	1	1	-	-	-	-	-	-	-
<i>Hippotion celerio</i> (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
GEOMETRIDAE																						
<i>Idaea lusohispanica</i> Herbulot, 1991	-	-	-	-	-	-	-	-	+	1	-	-	-	-	-	-	-	-	-	-	-	-
<i>Idaea macilentaria</i> (Herrich-Schäffer, 1847)	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Idaea mustelata</i> (Gumpenberg, 1892)	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-
<i>Idaea circuitaria</i> (Hübner, 1819)	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Idaea incisaria</i> (Staudinger, 1892)	-	-	-	-	1	-	-	-	-	-	1	1	-	1	1	-	-	-	-	-	-	-
<i>Idaea calumetaria</i> (Staudinger, 1859)	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
• <i>Idaea belemata</i> (Millière, 1868)	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	1	-	1	-	-	-	-
<i>Idaea elongaria</i> (Rambur, 1833)	-	-	-	-	-	-	-	2	2	2	-	1	-	1	1	-	-	1	-	1	1	1
• <i>Idaea obsoletaria</i> (Rambur, 1833)	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	-	-	-	-	-	-
<i>Idaea bigladiata</i> Herbulot, 1975	-	-	-	-	-	-	7	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-
<i>Idaea longaria</i> (Herrich-Schäffer, 1852)	-	-	1	1	1	1	1	6	1	-	-	1	-	1	-	-	-	-	-	-	-	-
<i>Idaea nexata</i> (Hübner, 1813)	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Brachyglossina manicaria</i> (Herrich-Schäffer, 1851)	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
<i>Idaea minuscularia</i> (Ribbe, 1912)	-	2	1	-	-	1	-	-	-	-	1	1	-	1	1	-	-	-	-	1	1	1
<i>Idaea subsericeata</i> (Haworth, 1809)	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-
<i>Idaea cervantaria</i> (Millière, 1869)	-	-	1	-	-	1	-	2	1	2	-	-	-	-	-	-	-	-	-	-	-	+
<i>Idaea deitanaria</i> (Reisser & Weisert, 1977)	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Idaea rhodogrammaria</i> (Püngeler, 1913)	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
<i>Idaea infirmaria</i> (Rambur, 1833)	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	2
<i>Idaea eugenata</i> (Dardoin & Millière, 1870)	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
• <i>Brachyglossina exilaria</i> (Guenée, 1858)	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	1	1	-	1	1	-
<i>Idaea ostrinaria</i> (Hübner, 1813)	-	-	1	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-
<i>Idaea degeneraria</i> (Hübner, 1799)	-	-	1	-	1	-	2	1	1	1	-	-	-	-	-	-	-	-	1	1	-	3
<i>Scopula ornata</i> (Scopoli, 1763)	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	1	-
<i>Scopula submutata</i> (Treitschke, 1828)	-	-	1	1	-	-	-	-	-	-	1	-	-	1	1	-	-	-	-	-	-	-
<i>Scopula decorata</i> (Denis & Schiffermüller, 1775)	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-
• <i>Scopula turbidaria</i> (Hübner, 1819)	-	-	-	-	-	-	-	-	-	-	1	-	1	-	1	-	-	-	-	-	-	-
<i>Scopula imitaria</i> (Hübner, 1799)	-	1	1	1	1	-	-	2	1	2	-	1	-	1	1	-	-	-	-	-	-	-
<i>Scopula minorata</i> (Boisduval, 1833)	1	-	-	1	1	-	-	-	-	-	-	-	1	1	-	-	-	-	1	-	-	-
<i>Cyclophora puppillaria</i> (Hübner, 1799)	-	-	-	1	1	-	-	-	4	-	1	-	1	1	-	-	-	-	1	-	-	3
<i>Rhodometra saccharia</i> (Linnaeus, 1767)	1	-	-	1	-	-	-	-	2	1	1	-	1	1	1	-	-	-	1	1	1	28
<i>Scotopteryx peribolata</i> (Hübner, 1817)	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Orthonama obstipata</i> (Fabricius, 1794)	-	1	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
<i>Xanthorhoe fluctuata</i> (Linnaeus, 1758))	-	1	1	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Catarhoe basochesiata</i> (Duponchel, 1831)	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Costaconvexa polygrammata</i> (Borkhausen, 1794)	-	-	-	-	-	-	-	-	-	-	1	-	1	1	-	-	-	-	-	-	-	-
• <i>Campogramma bilineata</i> (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
<i>Nebula ibericata</i> (Staudinger, 1871)	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Gymnoscelis rufifasciata</i> (Haworth, 1809)	1	-	1	1	1	1	1	-	1	1	1	1	1	1	1	-	-	-	1	1	1	3
<i>Eupithecia laquaearia</i> Herrich-Schäffer, 1848	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
• <i>Eupithecia ultimaria</i> Boisduval, 1840	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
<i>Eupithecia pantellata</i> Millière, 1875	-	-	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Eupithecia massiliata</i> Millière, 1865	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Eupithecia breviculata</i> (Donzel, 1837)	-	-	1	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Eupithecia irriguata</i> (Hübner, 1813)	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Eupithecia centaureata</i> (Denis & Schiffermüller, 1775)	-	-	1	1	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	1	1	-

