

Concerning *Aricia morronensis* (RIBBE, 1910) in the south and south-east of Spain: new localities, a revision of its sub-specific status, and a proposal of synonymy

(Lepidoptera, Lycaenidae)

by

FELIPE GIL-T.

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Resumen: Se informa sobre nuevas localidades (en 11 nuevas cuadrículas UTM 10 x 10 km) del endemismo ibérico-pirenáico *Aricia morronensis* (RIBBE, 1910) en Andalucía: en las provincias de Granada, Almería, Málaga y Jaén. Se añaden nuevos datos sobre su ecología y biología (datos inéditos sobre diapausa de larga duración en larvas L5).

Se compara la morfología de los imagos de las diversas y separadas poblaciones de este taxón en el sur y sureste de la península Ibérica. De acuerdo a los datos obtenidos, todas las poblaciones estudiadas: nuevas localidades y localidades anteriormente conocidas (sin adscripción formal), excepto las localidades correspondientes a la *Aricia morronensis ramburi* (VERITY, 1913), se adscriben a la subespecie nominal (localidad tipo: Sierra Espuña, S. Murcia) y se propone una nueva sinonimia: *Aricia morronensis sierramariensis* MUNGUIRA & MARTÍN, 1988 **syn. nov.** = *Aricia morronensis morronensis* (RIBBE, 1910) (col. pl. 3).

Abstract: 11 new UTM 10 x 10 km grid references for the Iberian-Pyrenean endemism *Aricia morronensis* (RIBBE, 1910) are recorded for the Andalusia Region (S. Spain), in the Granada, Almería, Málaga and Jaen provinces. New unpublished data about the ecology and biology of L5 larvae and their long-term diapause are added.

The morphology of the imagos in several isolated populations in the south and south-east of the Iberian peninsula are compared. On the basis of the data obtained, all of these populations - both new localities and those formerly known, except for localities corresponding to *Aricia morronensis ramburi* (VERITY, 1913) - are attributed to the nominal subspecies (type locality: Sierra Espuña, S. Murcia province). A new synonymy is also now proposed: *Aricia morronensis sierramariensis* MUNGUIRA & MARTÍN, 1988 **syn. nov.** = *Aricia morronensis morronensis* (RIBBE, 1910) (col. pl. 3).

Zusammenfassung: Aus 11 neuen 10 x 10 km UTM-Quadratfeldern werden von dem iberisch-pyrenäen Endemiten *Aricia morronensis* (RIBBE, 1910), neue Funddaten aus Andalusien für die Provinzen Granada, Almería, Málaga und Jaen mitgeteilt, darüberhinaus bisher unveröffentlichte Erkenntnisse über die Ökologie und Biologie der L5-Raupe und deren Langzeit-Diapause (Farbtaf. 3).

Die Morphologie der Imagines verschiedener isolierter Vorkommen im Süden und Südosten der Iberischen Halbinsel werden miteinander verglichen. Anhand der gewonnenen Ergebnisse über die Populationen aus allen bisher bekannten und neuen Fundorten, ausgenommen die Vorkommen die zum Areal der *Aricia morronensis ramburi* (VERITY, 1913) gerechnet werden,

müssen zur namenstypischen Unterart (Typenfundort: Sierra Espuña, S. Murcia Provinz), wodurch sich als neues Synonym ergibt: *Aricia morronensis sierramariensis* MUNGUIRA & MARTÍN, 1988 **syn. nov.** = *Aricia morronensis morronensis* (RIBBE, 1910).

Introduction: *Aricia morronensis* (RIBBE) is a species with a distribution range limited to the Iberian Peninsula and to a few Pyrenean localities. There are a few small isolated colonies in southern and south-eastern Spain, which are located in the Andalusia Region (Almería, Granada, Málaga and Jaén provinces) and in the south-east of the Iberian Peninsula: Murcia (Sierra Espuña, type locality) and Albacete provinces.

The distribution of this species is scattered within the Iberian Peninsula in a fairly large number of localities. Due to their geographic isolation, as well as to their wide morphological variability even within the same locality (different tones in ground colour), up to 12 “subspecies” (!?) have been described, some of which have already been synonymized. Both *A. morronensis* (RBB.), together with *Parnassius apollo* (LINNAEUS, 1758) which is another taxon with an isolated distribution, have by far the highest number of described “subspecies” (several of which have already been synonymized) in the fauna of the Iberian Peninsula. The taxonomic value of some of these is considered to be very doubtful.

In this work I have taken into account the following accepted aspects concerning infra-specific taxonomic ranking:

1. In the case of populations with a discontinuous distribution (separated, without any kind of likely contact between each other), if the majority of individuals show a significant and constant feature enabling a clear discrimination between them, a sub-specific rank can be granted to any of these populations.

Regrettably, in some of the described subspecies of *A. morronensis* (RIBBE), this has not taken into consideration; consequently a correct morphological separation between these races is not possible unless we turn to the origin of the collecting site.

2. The fact that two populations may show discontinuous distribution areas cannot in any way predetermine that these taxons are totally different.

3. Although some characters are often present, evidently, if we are unable to find a constant discriminatory feature, we cannot ascribe sub-species status to any of these populations.

On the basis of the above, together with the comparative morphological results with images and larvae, among the different populations of *A. morronensis* (RIBBE) [excluding the sites in Sierra Nevada, where the characteristic subspecies *A. m. ramburi* (VITY.) exists: fig. 1: ‘B’] is distributed throughout the Andalusia Region and south of Albacete and Murcia provinces, I propose to ascribe all of these populations to the nominal subspecies. The populations previously referred to do not show any relevant or constant differences to allow their separation from the nominal subspecies (fig. 1: ‘A’). Because of their wide range of variability within the Iberian Peninsula, the terms of variety or subspecies are often confused.

Because of all these reasons, I propose the following synonym: *Aricia morronensis sierramariensis* MUNGUIRA & MARTÍN, 1988 **syn. nov.** = *Aricia morronensis morronensis* (RIBBE, 1910), the first being the same as the nominal taxon.

Results

New localities for *A. morronensis* (RIBBE) in the south of the Iberian Peninsula

(Abbreviations: Granada = GR; Almeria = AL; Jaen = JA; province = prov.; provinces = provs.; N.= North; W. = West;...)

The 11 new UTM 10 x 10 km grids (numbered in fig. 2) are:

Two grids (see numbers 1 & 2): north and south of Sierra Mágina Natural Park (JA prov.). Several colonies separated inside these two grids: from south to north: (Mts.) Mágina, Peña Jaén, Cerro Cárcelos, Aznaitín, ect. In the northern grid I also found *Pieris mannii* (MAYER, 1851) which is the first record of this species for Jaen province.

Three grids (surrounding number 3): two grids in Sierra Seca (N. GR. prov.), in Sierra de Castril Natural Park; and another shared between GR and JA provs.

One grid (number 4): W. Sierra Maria (N. AL prov.) and east of Sierra del Orce, up to the limits with GR prov.

One grid (5): in Sierra de los Filabres (W. AL prov.): Bacaes: Tetica de Bacaes Mt.

One grid (6): east Sierra Nevada, W. AL prov., Cerro Almirez and Buitre Mts. (grid mentioned in GIL-T., 2005).

One grid (7): W. Sierra de Gádor, south AL prov.: in Morrón Mts. area.

Two grids (8 & 9): Sierra de Tejeda and Sierra de la Almajara, SE. Malaga and SW. GR provs.

The localities formerly recorded are the following:

Seven grids marked as „*A. m. ramburi*“, all in Sierra Nevada (in GR & AL provs.)

Two grids marked as ‘A’: Sierras de Cazorla y Segura, NE. JA prov.

Two grids to the left of ‘B’: W. Sierra de María, N. AL prov.

One grid to the left of ‘C’: Sierra de Guillimona (N. Sierra de la Sagra), NE. GR prov.

Two grids to the left of ‘D’: Revolicadores Mt. (SW. Murcia prov) and in S. Albacete prov.

One grid (‘E’): Sierra de Baza, E. GR prov.

Two grids to the left of ‘F’: Sierra de Alfácar, Sierra Arana, Sa de Huetor Nat.Park, GR prov.

One grid (‘G’): Sierra de Parapanda, GR prov.

One grid (‘H’): Sierra de Loja, GR prov.

One grid to the left of ‘J’ (in the grid with a ‘?’): in MA prov., the record of RAMBUR (1839) in Sierra Prieta, mentioned later by OBERTHÜR (1910), is as yet unconfirmed (a doubtful record).

The grid marked with “T.L.” corresponds to type locality of the nominal subspecies: Sierra Espuña, Murcia prov.

In VERHULST (2004) various southern Iberian localities are mentioned for this species, stating the UTM grid references. I have discovered that several of the grid references given for these sites in the Granada and Almeria provinces are erroneous, therefore I consider them unreliable. As an example, the grids given (30SW.....) for the localities 43, 44, 45, 46... etc. of the previous paper, are located outside (!) the mountain ranges (Sierras) or are distant from the colonies referred to.

Subspecific revision and ascription of populations to the nominal subspecies

The underside ground colour of the imagos (fig. 1) is significantly variable, this variability being a result of their adaptation to the different colouring of the soil in their environment; this is a dark grey slate colour in siliceous terrain for *A. m. ramburi* (Vty.) and a pale limestone colour for the nominal subspecies. The phenotypic adaptation to the substrate ground colour (lime or siliceous) of this species is remarkable. Even in the same type locality (Sierra Nevada, see fig. 2) of *A. m. ramburi* (Vty.) (fig. 1: 'B'), where in lower altitudes limestone is predominant, the wing colouring varies considerably, specimens being much paler and more similar to the nominal subspecies, rather than to *A. m. ramburi* (Vty.) it self.

After considering the essential importance in revising the taxonomic status of all the *A. morronensis* (Rbb.) populations found on limestone soils in Andalusia (both formerly known and new) which have not been ascribed to any of these taxons or particular subspecies (this is to say, all of them, except for those referred to in the fig. 2 for *A. m. ramburi* (Vty.) and the new locality 6 -also *ramburi*), I decided to compare the imagos (between 12 and 25 specimens from each confirmed locality) from all of these populations. All the specimens clearly show a similar range of variability when compared to the nominal subspecies to which they are ascribed. I have found that in all of these colonies, this variability, even within the individuals of same population, can be summarized (in order to avoid illustrating a large number of imagos) by means of the specimen shown in fig. 3 (note: scanned specimens).

The population 7 (see fig. 2), in Sierra de Gádor (SW. Almeria province) is ascribed to the subspecies *ramburi* because of its similar morphology.

TOLMAN & LEWINGTON (1997) only consider three subspecies for *A. morronensis* (RIBBE): *A. m. ramburi* (Vty.) [note: mentioned from "Sierra Nevada, Granada" (sic): as we have previously seen, this subspecies also exists in the Sierra Nevada sector included in Almeria province]; *A. m. hesselbarthi* (MANLEY & ALLCARD, 1970), from Abejar (Soria province); and the nominal subspecies. Surprisingly, the remaining Iberian and Pyrenean localities (known to these authors) are included under the nominal subspecies.

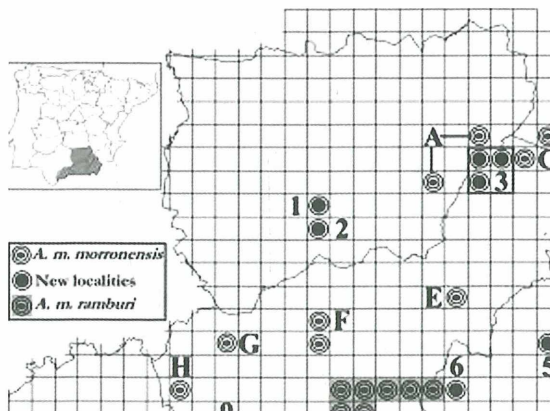


Fig. 2: Distribution of *Aricia morronensis* (RIBBE, 1910) in the S. Iberian peninsula with new localities.

I have not been able to examine samples from all the Spanish populations, but am totally convinced that some of the described “subspecies” do not show sufficient distinctive features (to affirm variation on account of the tone of the background colour in such a variable species is inappropriate, or even irrelevant) to consider them within the said taxonomic rank; at the most, this is simple variability.

Phenology and new biological data

The adult's flight-time in Spain can range from June to September, depending upon locality. This extended flight period is explained by some authors to be on account of differences in larval development (Note: larvae are polymorphic, even within the same locality - see fig. 4). But according to my personal observations there are other reasons which explain this fact: Breeding in captivity appears to have contributed new data: larvae were collected from a single locality, at various stages, in L3 and L5, some of the L5 of which hid (I assume for pupation). The L3 larvae continued development; meanwhile the L5 remained inactive for eight days without any signs of pre-pupation. The first of the larvae collected in L3, now in L5, pupated (20 days from L3 to pupa). Shortly afterwards the remaining L3 larvae also pupated normally. Finally, at last, the first hidden larvae (collected in L5) pupated (19 days hidden, inactive and without pupating!), and thereafter the remainder pupated (between 20 and 24 days hidden). It can be seen that the difference in adult emergence is not only as a consequence of the gap in larval development. The L3 larvae were able to reach the adult stage before the L5 on account of the diapause or quiescent periods that some completely developed larvae showed (with a minimum of 19 days, in the previous case), for reasons are yet unknown to us. This same circumstance may likewise occur to other larvae (collected in L3) when L5 is reached, in which case the adult emergence phase is prolonged much further. All of this would partially explain the unusually lengthy flight period of this species, although I don't disregard a hypothetical partial second generation.

Note: recent new data about the ecology (larval parasitoid) of this species in SHAW & GIL-T. (2008).

Proposal of new synonymy

EITSCHBERGER & STEINIGER (1973), the first authors to examine the population of *A. morronensis* (RBB.) from Sierra Maria (NE. Almeria province), considered this to be *Aricia morronensis morronensis* (RBB.), whose type locality is the nearby Sierra de Espuña (S Murcia province: Fig. 2, see “T.L.”), separated by about 55 km. In EITSCHBERGER & STEINIGER (1975: 117) the taxon from Sierra Maria is also regarded as *Aricia morronensis morronensis* (RIBBE).

In EITSCHBERGER & STEINIGER (1973), the subspecies *carmenensis* was described from Pontedo (León province, N. Spain). In MUNGUIRA & MARTÍN (1988), the previous taxon is synonymized with the subspecies *elsae* (WYATT, 1952), whose locality type is Riaño, which is situated at about 50 km from the preceding locality. Also, in spite of the acceptance of the high variability of this species, the above authors decided to describe the “subspecies” *sierramariensis* from Sierra Maria. The description of this taxon was very brief and restricted to the following: “they are similar in punctuation to the typical *morronensis*, but the back-ground tone [underside] is much lighter, of non-orange creamy colour” Subsequently, in FERNÁNDEZ-RUBIO (1991), for this taxon, it is stated that they are “very similar to typical *morronensis*, but of pale back-ground colour not orange” The description is literally the same as the original wording,

except for the addition of “very similar” and “pale ground colour” in contrast with “similar” and “much lighter”

According to some of the previous references my following statements concerning the morphology of the populations of Sierra Maria and the proposal for the new synonym should be discarded as hypothetical subjectivity.

The type locality for the nominal subspecies, Sierra de Espuña (S. Murcia province; fig. 2: see „T.L.“), is situated only about 55km. from Sierra Maria (NE Almeria province; fig. 2: 2 grids ,B’ and the new grid 4) and over 100 km (!) from the other known localities of *A. morronensis* (RIBBE) in NE of Jaén prov. (Sierras de Cazorla and Segura, fig. 2: ,A’). It is accepted by various authors, eg. MANLEY & ALLCARD (1970), that the aforementioned populations in the Sierras de Cazorla and Segura, and of the other neighbouring localities, should be ascribed to the nominal subspecies as these show no differences.

The series of 11 specimens used for the description of “sierramariensis” were collected on July 19th. The colonies of *A. morronensis* (RIBBE) in Sierra María, as well as their phenology, are therefore both well known to me, consequently I am able to affirm that I find that this date is rather late for the normal flight period in this area. Probably these specimens were not in a fresh condition. I’ve examined quite a large number of specimens collected in Sierra Maria, as well as some other specimens obtained ex-larva, and can therefore verify that the ground colour of the underside shows a certain variability, this being a normal feature in this species - even individuals from the same locality (fig. 3) can show a different colour tone, which is directly influenced by the adult’s lifespan (applicable to all the populations of this species): the longer they live, the underside turn paler.

In fig. 5 there are two specimens, upper row (‘A’) ex-larva, very fresh; one fresh specimen (‘C’) taken July 3rd; and a specimen (‘B’) with a paler underside, taken on the July 15th, this being a similar date to the specimens used to describe “sierramariensis” Without any doubt, the background colour of the last specimen is the tone referred to in MUNGUIRA & MARTÍN (1988) as “much lighter, of non-orange creamy colour” (sic). As already verified, this is not a distinctive characteristic for this population; it solely depends on the adult’s age, appearing in other localities which I have ascribed to the nominal subspecies (see also fig. 3).

Based on the foregoing, I propose the following synonymy:

Aricia morronensis morronensis RIBBE, 1910 = *Aricia morronensis sierramariensis* MUNGUIRA & MARTÍN, 1988 **syn. nov.**

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Address of the author

FELIPE GIL-T.
Aptdo. postal 3042
E-18080 Granada, Spain

Colour plate 3/ Farbtafel 3

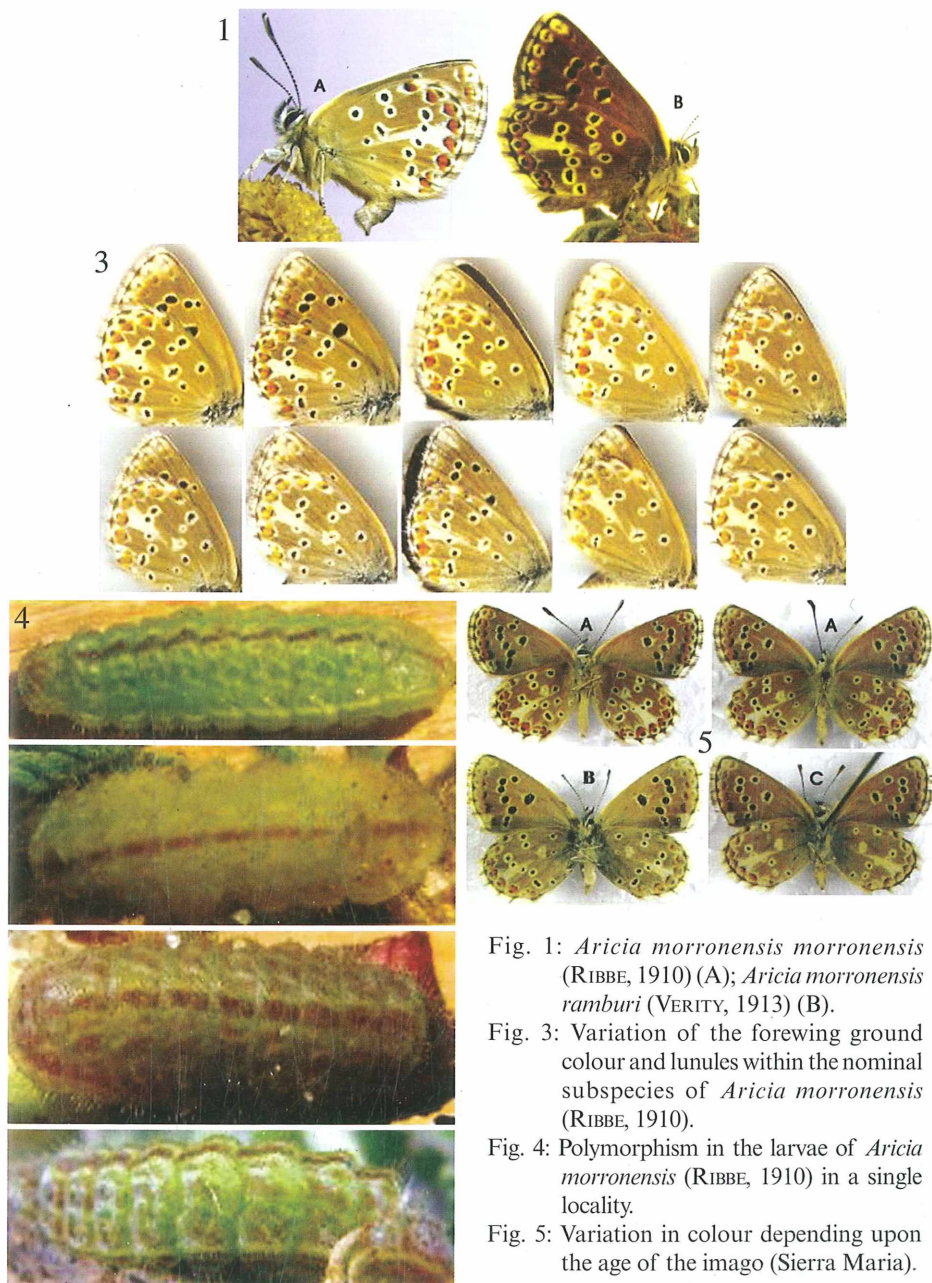


Fig. 1: *Aricia morronensis morronensis* (RIBBE, 1910) (A); *Aricia morronensis ramburi* (VERITY, 1913) (B).

Fig. 3: Variation of the forewing ground colour and lunules within the nominal subspecies of *Aricia morronensis* (RIBBE, 1910).

Fig. 4: Polymorphism in the larvae of *Aricia morronensis* (RIBBE, 1910) in a single locality.

Fig. 5: Variation in colour depending upon the age of the imago (Sierra Maria).

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