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A recently discovered new locality for *Coenonympha leander* in Greece, and notes about the taxonomic position of the species-group taxon *Coenonympha orientalis* (Lepidoptera: Nymphalidae, Satyrinae)

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Abstract. A new locality in Greece is given for *Coenonympha leander* (Esper, 1784) and the taxonomic position of the species-group taxon *Coenonympha orientalis* (Rebel, 1913) is being discussed.

Samenvatting. Een onlangs ontdekte nieuwe vindplaats in Griekenland van *Coenonympha leander* en bemerkingen over de taxonomische plaats van het taxon in de soort-groep *Coenonympha orientalis* (Lepidoptera: Nymphalidae, Satyrinae)

Résumé. La découverte récente d'une nouvelle localité de *Coenonympha leander* en Grèce, avec des notes sur la position taxonomique du taxon dans le groupe-espèces *Coenonympha orientalis* (Lepidoptera: Nymphalidae, Satyrinae)

Key words: Satyrinae – *Coenonympha* – *leander* – *orientalis* – taxonomy - distribution – faunistics - Greece.

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Introduction

The hitherto known distribution of nominotypical *Coenonympha leander* (Esper, 1784) in Greece comprises areas that are situated immediately to the N and NW of Mt. Falakró (Dráma district, Makedonía), on and immediately to the SW of Mt. Varnóús, on Mt. Vítsi (both localities being in Flórina district, Makedonía), at Valtónera, situated near Ptolemaís (Kozáni district, Makedonía) and at Kristalopigí, situated immediately to the S of lake Mikrí Préspa (Kastoriá district, Makedonía). The species-group taxon *orientalis* (Rebel, 1913) is known to occur in Greece in the general vicinity of Katára pass, on Mt. Tzoumérka

(both, S Píndos Mts., Ioánnina district, Ípiros), near Miliá and Flambourári (both, N Píndos Mts., Ioánnina district, Ípiros), near Pendálofos, situated on Mt. Vóio (Kozáni district, Makedonía), on Mt. Grámmos (Kastoriá district, Makedonía) and on Mt. Smólikas (Ioánnina district, Ípiros). No single area has so far been found in which the two species-group taxa fly together.

The purpose of the present paper is to give new locality data on *leander* within Greek territory and to discuss the taxonomic position of *orientalis* vis-à-vis *leander* and *Coenonympha gardetta* (de Prunner, 1798).

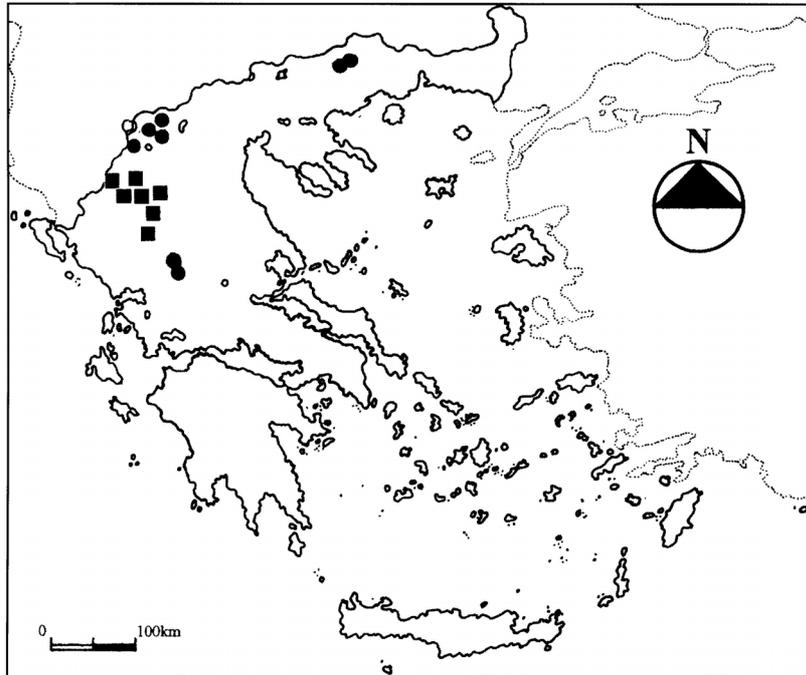


Fig. 1. Map of Greece, indicating sampling localities.

● = *Coenonympha (leander) leander*, ■ = *Coenonympha (leander) orientalis*

A new locality record for *Coenonympha leander*

In early June 2003 the second author discovered a colony of *leander* on Mt. Voutsikáki (Ágrafa Mts., S Píndos range, Kardítsa district, Thessalía) at an altitude of about 1700 m. In early June 2004 the same area was revisited, this time by both authors, and a further colony was discovered on Mt. Galatás at an altitude of about 1300 m. The former locality is situated just above the tree line and supports a mixed Flora of grasses and shrubs. The latter locality comprises clearings with grasses and ferns within a forest composed of a mixture of *Abies*

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borisii-regis Mattf. and various deciduous trees. These localities lay SSE of Katára pass and Mt. Tzoumérka. They are separated from them by at a distance of about 70 km and 50 km respectively and belong to the same mountain system (Píndos range). They constitute the southernmost, known range limit of *leander* in Europe. The importance of this find is that it shows that the range of *leander* in Greece comprises localities that encircle from roughly North, North-East and South the known localities of *orientalis*, apparently without the present existence of any zones of contact.

The taxonomic status of *orientalis*

There have been in time four positions in respect of the taxonomic status of *orientalis*. There are those who have placed it as a ssp. of *gardetta*, and those who have considered it as simply belonging to the *Coenonympha arcania* (Linnaeus, 1761)/*Coenonympha darwiniana* Staudinger, 1871/*C. gardetta*-complex, others who have considered it to be a ssp. of *leander*, and still others who have considered it to be a separate species in its own right. In those cases in which taxonomic justifications are given, the criteria that are being selected and stressed (either through publication, or through personal communication) are the ones that best support the often, predetermined taxonomic view. The first position is held by Rebel & Zerny (1931), by Gross (1957), by Thurner (1964), by Sijarić (1978), by Boillat (1990)—who also provides a detailed historic overview on the subject, re-establishes synonymies and gives the first detailed presentation of arguments in support of his views—, and by Jakšić (1988 & 1998). The second position is held by Schawerda (1913) and by Davenport (1941). The third position is held by Coutsis (1972), by Dacie *et al.* (1979), by Higgins & Riley (1980), by Willemse (1981), by Higgins & Hargreaves (1983), by Tolman & Lewington (1997), by Tolman (2001), and by Chinery (1998). The fourth and last position is held by Schawerda (1917), who had apparently changed his mind vis-à-vis his previous position, by Pamperis (1997), and by Lafranchis (2004).

According to the first position, *orientalis* is being considered as being a ssp. of *gardetta* on the basis primarily of two external aspects: a.- That *orientalis* shares with *gardetta* a similar in shape, white post-discal band on HW underside, which is considered more important than other characters, and which it is said that *leander* completely lacks, and b.- That form *macrophthalmica*, Stauder of *gardetta*, which inhabits areas that are geographically placed between the distribution areas of typical *gardetta* and *orientalis*, presents certain external characters that are considered as being intermediate between those of typical *gardetta* and those of *orientalis*, suggesting the presence of variation on a cline. Mention is also made of the existence of a gray area on apex of FW underside in some individuals of *orientalis* of a more northern provenance, which is a constant character in *gardetta*, but considered as totally lacking in *leander*, implying that this is yet another aspect that makes *orientalis* appear closer to *gardetta* than it does to *leander*.



Fig. 2. Upper-sides of *Coenonympha* from Greece. 1–4. (*leander*) *leander*, 5–8. (*leander*) *orientalis*, 1. ♂ near Krateró, Mt. Varnóús, Flórina district, Makedonía, ca. 800 m, 5.vi.1997 (normal), 2. ♂ Mt. Varnóús, Flórina district, Makedonía, 1400 m, 21.vi.1996 (dark), 3. ♀ near Andártiko, Flórina district, Makedonía, 1300 m, 5.vi.1997 (normal), 4. ♀ near Ahladiá, Dráma district, Makedonía, 550 m, 15.v.1994 (with weekly defined HW sub-marginal fulvous-orange band), 5. ♂ Near Katára pass, Píndos range, Ioánnina district, Ípiros, ca. 1500 m, 15.vi.1977 (normal), 6. ♂ Near Katára pass, Píndos range, Ioánnina district, Ípiros, ca. 1500 m, 15.vi.1977 (dark), 7. ♀ Near Katára pass, Píndos range, Ioánnina district, Ípiros, ca. 1500 m, 15.vi.1977 (normal), 8. ♀ Near Katára pass, Píndos range, Ioánnina district, Ípiros, ca. 1500 m, 15.vi.1977 (HW with sub-marginal fulvous-orange band).



Fig. 3. Undersides of *Coenonympha* from Greece. 1-6. (*leander*) *orientalis*, 7-12. (*leander*) *leander*, 1. ♀ near Pendálofos, Mt. Vóio, Kozáni district, Makedonía, 1200 m, 22.vi.1976 (wide white band), 2. ♂ Near Katára pass, Píndos range, Ioánnina district, Ípiros, ca. 1500 m, 15.vi.1977 (normal white band), 3. ♂ Near Katára pass, Píndos range, Ioánnina district, Ípiros, ca. 1500 m, 15.vi.1977 (reduced white band with fulvous-orange wash), 4. ♂ Near Katára pass, Píndos range, Ioánnina district, Ípiros, ca. 1500 m, 15.vi.1977 (reduced white band with fulvous-orange wash and reduced black rings), 5. ♂ Near Katára pass, Píndos range, Ioánnina district, Ípiros, ca. 1500 m, 15.vi.1977 (much reduced white band with pronounced fulvous-orange wash), 6. ♂ near Pendálofos, Mt. Vóio, Kozáni district, Makedonía, 1200 m, 22.vi.1976 (reduced white band and much enlarged black rings), 7. ♂ Kristalopigí, Kastoriá district, Makedonía, ca. 600 m, 5.vi.1997 (normal), 8. ♂ near Ahladiá, Dráma district, Makedonía, 550 m, 15.v.1994 (black rings proximally with white scales), 9. near Andártiko, Flórina district, Makedonía, 1300 m, 5.vi.1997 (narrow white band just appearing), 10. ♀ Kristalopigí, Kastoriá district, Makedonía, ca. 600 m, 21.vi.1996 (narrow white band evident), 11. ♂ near Ahladiá, Dráma district, Makedonía, 550 m, 15.v.1994 (large black rings), 12. ♂ Mt. Galatás, Ágrafa Mts., Píndos range, Kardítsa district, Thessalía, 1200-1300 m, 16.vi.2004 (normal - new locality record)

According to the second position, *orientalis* is being placed within the *arcania/darwiniana/gardetta* complex, presumably on the basis of external characters and in particular because of the fact that they all share the white post-discal band on HW underside.

According to the third position, *orientalis* is being placed as a ssp. of *leander*, on the basis of their sharing upper-side wing characters (most important of which is considered the fulvous-orange wedge-like mark on HW anal angle, which in *gardetta* is either totally missing, or at the most appears as traces of a narrow marginal line), of what is (erroneously) believed to be their constant sharing a fulvous-orange apex on FW underside (in *gardetta*, *macrophthalmica* inclusive, the apex is grey), of there being individuals of *orientalis* with a marked reduction of the HW underside white band and individuals of *leander* with a faint appearance of this band, of their having about equal FW lengths (*gardetta* is a smaller butterfly), of their inhabiting areas included within the same altitudinal limits (from about 600 to about 1700 m, the upper limit of which in Greece is sub-alpine and not alpine, thus differing in this case from *gardetta*, which is predominantly an alpine species) and of their sharing the same flight period (late May to first half of July, according to altitude, and under normal seasonal and weather conditions – *gardetta* as a rule flies in July and August). The problem with lepidopterists adhering to this position is that they did not consider these arguments worthy of publication, as they judged them as being self-evident.

According to the fourth position, *orientalis* is being raised to specific level apparently on the basis of what is believed to be unique external characters, that do not relate to any of the other taxa under consideration, of sympatry with *leander* (though no actual syntopism is involved here), and of the supposed absence of intermediates between the two.

Data based on personal experience

Our own field experiences in Greece with both *leander* and *orientalis*, dating back to 1971, has shown them to inhabit predominantly grassy clearings within the forest zone, as well as clearings supporting large concentrations of ferns. The lowest altitude at which we have found *leander* is at 500 m, and *orientalis*, at 600 m. The highest altitude for the former has been recorded at 1700 m and for the latter, at 1500 m., both being clearly situated below alpine level, as applying to Greece. The earliest capture for the former has been recorded in mid-May (very fresh), and for the latter, in early June (fairly fresh), while the latest captures for both have been recorded in mid-July (worn, or in tatters), thus both taxa appearing and ending their flight, respectively before the appearance and phasing out of the syntopic *arcania*. Out of a total of 61 male *leander* in our possession, the minimum FW length has been measured at 17.00 mm, the maximum at 20.10 mm and the average at 18.29 mm. In the case of Greek *orientalis*, and out of a total of 46 male individuals, minimum FW length was

measured at 16.00 mm, maximum at 19.00 mm and average at 17.22 mm. Female *leander* in our possession, totalling 21 individuals, have a FW length of minimum 17.40 mm, maximum 20.60 mm and average 19.15 mm, while the corresponding values for 14 *orientalis* females in our possession are minimum 18.40 mm, maximum 20.10 mm and average 19.07 mm. All these measurements for both taxa are higher than are the corresponding ones for *gardetta*. Variation in both *leander* and *orientalis* males is expressed on upper-side by the extent, definition and tone of the FW fulvous-orange area, by the definition of the FW end-cell black stria and by the degree of extension of the wedge-like mark on HW anal angle along the wing's sub-margin, occasionally forming a weakly-defined band that partly encloses some of the sub-marginal black rings. In male *leander* the underside of the HW varies primarily by the size of the black sub-marginal rings, as well as by the rare presence of a narrow whitish post-discal band just basad to these rings. In male *orientalis* variation on underside is expressed on HW primarily by the width and shape of the whitish post-discal band, which on rare occasions may be much reduced and darkened, and by the size of the sub-marginal black rings. In both taxa there is also variation in the tone of, and amount of grey present in the basal, discal and part of the post-discal area of the HW underside. Variation in the females of both taxa follows that which is expressed in the males, but the colours on upper-side are as a rule of a lighter hue and the fulvous-orange sub-marginal band of HW upper-side, when present, tends to be wider, more extensive and better defined than it is in the males.

***Coenonympha leander* from localities other than Greece**

In Hesselbarth *et al.* (1995), Tuzov *et al.* (1997), and Nazari (2003), there are colour photographs of *leander*, respectively from Turkey (Pl. 39 Underside, figs. 1–5), Russia (Pl. 46, fig. 21) and Iran (Pl. 51, fig. 7), that clearly show them to possess a grey area on the apex of FW underside, much as is the case in *gardetta* and certain northern *orientalis* and quite unlike the totality of Greek specimens of *leander* that have been studied and which always have the apex fulvous-orange instead. This shows that this trait cannot be considered as indicating exclusive taxonomic proximity between *orientalis* and *gardetta*, since it is also occasionally present in *leander*.

Discussion

Our own estimation of the problem is that at present and with the evidence at hand, there is no safe way of drawing 100% definitive conclusions as to the true taxonomic status of *orientalis*. The criteria presented by the position that *leander* and *orientalis* are conspecific (third position), however, and especially the one which relates to the existence in both *leander* and *orientalis* of intermediate individuals as far as the whitish post-discal band on HW underside is concerned (perhaps suggesting gene exchange between the two taxa at a time when they may have been syntopic), appear to us as being the most convincing of the lot, and we are of the opinion that on a tentative basis, it is best at present to either

consider *orientalis* as being a ssp. of *leander* rather than of *gardetta*, or to consider it as being a semispecies of superspecies (*leander*). The problem will most probably eventually be solved by a study of the DNA sequences of all the species-group taxa under consideration and it is sincerely hoped that this will be done in the very near future.

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