

The correct hostplant of *Polyommatus sagratrox* (AISTLEITNER, 1986):

Anthyllis vulneraria microcephala (WILLK.)

(Lepidoptera, Lycaenidae)

by

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Abstract: The intention of this work is to amend the identification given for the hostplant of *Polyommatus (Plebicula) sagratrox* (AISTLEITNER, 1986) in TOLMAN (1994) and TOLMAN & LEWINGTON (1997), where it is incorrectly appointed to be *Anthyllis vulneraria arundana* (BOISS. & REUT.). This error has been subsequently repeated in diverse references concerning this butterfly. Its correct hostplant is *Anthyllis vulneraria microcephala* (WILLK.). A synopsis of the differences between the two subspecies of *A. vulneraria* is included in order to differentiate them.

Resumen: Este trabajo intenta corregir el error cometido en la identificación de la planta nutricia larval de *Polyommatus (Plebicula) sagratrox* (AISTLEITNER, 1986) realizada en TOLMAN (1994) y TOLMAN & LEWINGTON (1997), donde se consideró incorrectamente a *Anthyllis vulneraria arundana* (BOISS. & REUT.). Este error ha sido recogido posteriormente por varios autores en diversas referencias sobre este lepidóptero. Siendo su correcta planta nutricia *Anthyllis vulneraria microcephala* (WILLK.). Se incluye una sinopsis con el objetivo de diferenciar estas dos subspecies de *A. vulneraria*.

Introduction: *Polyommatus sagratrox* (AISTL.) (SE. Spain) is regarded by some authors, those that follow TOLMAN & LEWINGTON (1997), as a subspecies of *Polyommatus (Plebicula) golgus* (HÜBNER, 1813) - an endemic species of the Sierra Nevada, S. Spain. A molecular study indeed would be necessary, sequencing and comparing their DNA, in order to definitively determine the final taxonomic status of *P. sagratrox* (AISTL.) if it is a different species or only a subspecies of *P. golgus* (Hbn.).

As previously mentioned in the abstract, as a result of the works of TOLMAN (1994) and TOLMAN & LEWINGTON (1997), the identification of the hostplant of *P. sagratrox* (AISTL.) appears incorrectly stated in various other works where the biology of this species has been dealt with. Surprisingly, this error remains uncorrected despite the extensive bibliography available on Iberian botany.

The study of diverse references has allowed me to verify and confirm that the hostplant used by *P. sagratrox* (AISTL.) is *Anthyllis vulneraria microcephala*, a plant which, among other differences (described in table 1), is distinguished from the subspecies *Anthyllis vulneraria arundana* by the shape of the terminal leaflet in its basal leaves and the length of its flowers.

It was pointed out in GIL-T. (2007) the correction on the misidentification of the food plant of *P. golgus* (Hbn.), also erroneously ascribed to be *Anthyllis vulneraria arundana* being the correct one *Anthyllis vulneraria pseudoarundana* H. LINDB., a subspecies endemic to the Sierra Nevada, S. Spain. This latter plant is also included in the synopsis of the table 1.

Identification keys for *Anthyllis vulneraria microcephala* (WILLK.) and *Anthyllis vulneraria arundana* (BOISS. & REUT.): CULLEN (1968) misinterpreted the morphology of the subspecies *arundana*, which leads to errors in the subsequent bibliography. This error was corrected in BENEDI (1998: 291), clearly separating the two subspecies *microcephala* and *arundana*.

In various references, for example in CASTROVIEJO et al. (2000; 2001) and in BENEDI (1998: 291-292) identification keys are provided for the differentiation of these two subspecies; their morphology is also described, together with their distribution - all of which is necessary for their correct determination. The main differences are given in Table 1. The plants are illustrated, with drawings, together with measures of leaves and their flowers, in the pdf documents (see links) indicated in CASTROVIEJO et al. (2000).

Of all the characters pointed out in table 1, it is considered that the most significant differences between *A. v. microcephala* (col. pl. 2: 2) and *A. v. arundana* are the next: 1.- Shape of the terminal leaflet in its basal leaves (see fig. 1): elliptic-oblong and orbicular or broadly ovate, respectively. 2.-The length of their flowers: 9-12 mm and 16-18 mm, respectively. 3.- Length of the calyx: 5-8 mm and 10-13 mm, respectively. And 4.- Different altitudinal interval: in the type locality of *P. sagratrox* (AISTL.) (Sierra de la Sagra, NE. Granada province), *A. v. microcephala* can be observed from 2100 m to 2250 m (pers. obs.), higher than the altitude limit indicated in various botanical references (2000 m); however in Sierra Guillimona (N. Sierra de la Sagra) this plant exists as from 1900 m.

The altitude limit indicated for *A. v. arundana* (table 1; around 1700 m) in several botanical references is below the minimum altitude of the biotopes known *P. sagratrox* (AISTL.) (1900 m): fair to say that neither plant nor butterfly coincide in the same high altitude.

Anthyllis v. microcephala exists (endemism) in various Subbética mountain ranges (north Andalusia Region, S. Iberian peninsula): Sierras (= mountain ranges) of Magina, Cazorla, Segura, Arana, Castril and La Sagra. *Polyommatus sagratrox* (AISTL.) and *A. v. microcephala* have the same type of locality: Sierra de la Sagra (NE. Granada province). In the fig. 3 (col. pl. 2) we can see a pair of *P. sagratrox* (AISTL.) in copula on their hostplant *A. v. microcephala*.

Anthyllis v. arundana exists (endemism) in various Penibérica mountain ranges (south Andalusia Region, S. Iberian peninsula): from Sierras of Ronda and Grazalema to Sierra de Baza).

As commented in GIL-T. (2007): „[...] TOLMAN (1994: 27), erroneously believed that *P. sagratrox* and *P. golgus* feed on the same hostplant (*A. v. arundana*), this coincidental assumption appearing to be the basis of his statement that argued “strongly against specificity for *sagratrox*”, and which therefore considered *P. sagratrox* to be solely a subspecies of *P. golgus* (which is a controversial opinion). TOLMAN appears to ignore, among other features (ecological and morphological differentiations), the relevant differences in sexual and flight behaviour [...]”, see GIL-T. (2003) and GIL-T. & IBÁÑEZ (2009). Conclusion: both taxa feed on different host plants, *P. sagratrox* (AISTL.) feeds on *A. v. microcephala* (calcareous soils) and *P. golgus* (Hbn.) feeds on *A. v. pseudoarundana* (endemic plant of the Sierra Nevada, S. Spain; siliceous soils).

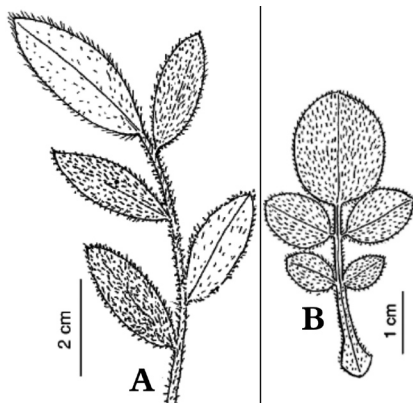


Fig. 1: Differences in basal leaves of *Anthyllis vulneraria microcephala* (WILLK.) (A) and *Anthyllis vulneraria arundana* (BOISS. & REUT.) (B).

	<i>A. v. microcephala</i> (hostplant of <i>P. sagratrox</i>)	<i>A. v. arundana</i> (erroneously cited)	<i>A. v. pseudoarundana</i> (hostplant of <i>P. golgus</i>)
N° of leaflets on basilar leaves	5-7	3-5	5-7
Basal leaves: shape of the terminal leaflet	Eliptic-oblong	orbicular or broadly ovate	Eliptic-oblong
Basal leaves: size of the terminal leaflet respect to the laterals	Not more than double	Not more than double	Double or superior to the double
Indument on the top side of the leaves	None	silky: fine & upright hairs	None or almost
Indument on underside of the leaves	Bristly: thick & curved hairs	silky: fine & upright hairs	Bristly: thick & curved hairs
Colour of indument of leaves	Brownish-chestnutbrown	Silvery or brownish-chestnutbrown	Brownish-chestnutbrown rarely silvery
Diameter of the glomerules	15-20 mm	20-25 mm	5-30 mm
Glomerule bracts	around the same length of the calyx	around the same length of the calyx or something shorter	More short than half of the calyx
Length of the flowers	9-12 mm	16-18 mm	14-16 mm
Length of the calyx	5-8 mm	10-13 mm	9-10 mm
Soil substrate biotope	Saxicole, on calcareous soils	Saxicole among thymes, on calcareous soils or dolomitic sands	psicroxerophyle communities, siliceous soils (micaschists)
Altitudinal interval	1600-2250 (pers. obs.) m	around 1200-1700 m	2200-3400 m

Table 1: Synopsis differences between *Anthyllis vulneraria arundana* (BOISS. & REUT.) and *Anthyllis vulneraria pseudoarundana* H. LINDB.

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