

A new species of the subgenus *Agrodiaetus* HÜBNER, 1822 from Iran: *Polyommatus (Agrodiaetus) sephidarensis* spec. nov.

(Lepidoptera, Lycaenidae)

by

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Summary: A new species of the subgenus *Agrodiaetus* HÜBNER, 1822, belonging to the *erschoffi* group, namely *Polyommatus (Agrodiaetus) sephidarensis* spec. nov. (colour pl.33: 1-4), is described from the Sephidar Mts., Fars province, Iran. The holotype ♂ is deposited in the collection of the Pest and Plant Diseases Research Institute (PPDRI) in Tehran, Iran. Paratypes are deposited in the collections of AHMAD KARBALAYE, AMIR HOSSEIN HARANDI and the Pest and Plant Diseases Research Institute, Tehran. The new species is compared with the related taxa of the *Agrodiaetus* subgenus. The larval stages and food plant are not known.

Introduction: During an investigation of the butterfly fauna of the Sephidar mountains a new species from the family Lycaenidae was found at an elevation of 3100 m. The Sephidar mountain complex is about 110 km south of Shiraz, in Fars province. The author and his companion performed their research into this new species in the Sephidar Mts in 2006 and 2007. The first mountain climb was on November 5th, 2006. After that date the author climbed the mountain approximately once every two weeks and finally on June 4th, 2007 at the elevation of 3100 m, they found a small population of a previously unknown species belonging to the *erschoffi* group of the subgenus *Agrodiaetus*. The new species looked similar to *P. (A.) eckweileri* TEN HAGEN, 1998, although the light blue ground colour was darker, and the outer black margin broader than in that species. Another batch of adults of this new species was collected on June 23rd, 2007. Some morphological characters and general habits of the new species were different from related insects. Both ♂♂ and ♀♀ differed by the ground colour of their wings, the size and arrangement of the wing spots, veins and fringes. We therefore decided to describe this butterfly as a new species. The butterfly is endangered due to severely damaged vegetation in the Sephidar region, this being destroyed by grazing sheep.

Polyommatus (Agrodiaetus) sephidarensis spec. nov.

♂: Fore-wing length 13-15 mm (holotype 14 mm) (colour pl.33: 1, 3).

Upperside: Ground colour light blue, but darker than in *P. eckweileri* TEN HAGEN; outer black margin broader than in *P. eckweileri* TEN HAGEN. Veins black. Fringes separated in two parts: inner section, approximately 1/3 black and outer section 2/3 white. The basal, discal, and postdiscal fore- and hind-wing spots on the underside are clearly visible on the upperside.

Underside: Ground colour pale grey, hind-wings slightly lighter. Basal suffusion greenish-blue, broader and more distinct than in *P. eckweileri* TEN HAGEN. The marginal and submarginal fore-wing row of spots is dark grey and distinct. On the hind-wings these spots are more indistinct and similar to *baltazardi*. The discal and postdiscal spots are black on the fore- and hind-wings and are surrounded

by white circles. These spots are significantly smaller on the hind-wings. The outer margin is thin and dark, and the fore- and hind-wing are more rounded than in *P. eckweileri* TEN HAGEN.

♀: Fore-wing 14-15 mm (colour pl.33: 2, 4).

Upperside: Ground colour dark brown with metallic dark brown veins. Discoidal spots small and black with the greenish-blue base. An outer black margin is present on the fore-wings and on the hind-wings. A light marginal and submarginal pattern is reduced on the fore-wings, but is present on the hind-wings in the holotype ♂. The basal suffusion is indistinct, being of a pale greenish-blue on both fore- and hind-wings. The fringes are separated into two parts; the inner section of the fore-wing fringes are approximately 1/3 light brown while 2/3 of the outer section is white. Basal, discal, and postdiscal spots on both the fore- and hind-wings is clearly visible on the upperside.

Underside: Ground colour pale grey-brown. Fringes to the inner half light grey and the outer half whitish. Basal suffusion metallic blue. Outer margin dark and narrow. Marginal and submarginal spots light brown and less distinct on the fore-wings. Discal spots slightly smaller and darker than in *P. eckweileri* TEN HAGEN. Fore-wing outer margin broader than in *P. eckweileri* TEN HAGEN.

Diagnosis

♂: *Polymmatius (Agrodiaetus) sephidarensis spec. nov.* belongs to the *erschoffi* group, although it differs from all other species in this group by the absence of a ventral white streak on the hind-wings. The only exceptions are: *P. eckweileri* TEN HAGEN (col. pl.33: 5-8), *P. shirkuhensis* TEN HAGEN & ECKWEILER, 2001 (col. pl.33: 9-12), and *P. baltazardi* DE LESSE (col. pl.33: 13-16). All these species lack the white streak and possess a metallic violet-blue ground colour on the wings upperside. Of these, *P. shirkuhensis* TEN HAGEN & ECKWEILER presents the lightest colour. *P. sephidarensis spec. nov.* and *P. baltazardi* DE LESSE possess well developed black veins whereas these veins are only partly developed in *P. eckweileri* TEN HAGEN and almost absent in *P. shirkuhensis* TEN HAGEN & ECKWEILER.

P. sephidarensis spec. nov. and *P. shirkuhensis* possess a pale grey ground colour to the underside wings whereas in *P. baltazardi* and *P. eckweileri* TEN HAGEN it is slightly pale brown. The marginal and submarginal fore-wing row of spots is distinct and sharply defined in *P. sephidarensis spec. nov.* and *P. eckweileri* TEN HAGEN whereas it is indistinct in *P. shirkuhensis* TEN HAGEN & ECKWEILER and *P. baltazardi* DE LESSE.

♀: The upperside ground color is dark brown with metallic dark brown veins and metallic blue basal suffusion in all related species. However, three closely related species differ significantly on the underside. The ground colour of *P. sephidarensis spec. nov.* is pale grey-brown and much lighter than the pale brown colour of *P. eckweileri* TEN HAGEN, *P. shirkuhensis* TEN HAGEN & ECKWEILER, and *P. baltazardi* DE LESSE.

Variability: In ♂♂ the basal, discal, and postdiscal spots on the underside of the fore- and hind-wings are visible on the upperside, although the intensity does vary.

Etymology: The new species is named *sephidarensis* from the mountain complex where the butterfly was discovered.

Ecology and Distribution: The Sephidar mountain is about 3180 m high, 50 km long, 20 km wide and is surrounded by lowland. The mountain is partly forested by *Pistacia atlantica* and *Amygdalus* sp. In the foothills there are numerous fruit orchards and gardens consisting mainly of almond trees and vineyards.

The mountain is composed of calcareous rocks with fossil shell fishes on the peak. The dominant plants in the type locality were *Astragalus* sp., *Lavandula* sp., *Didlotaxis* sp., *Pistacia atlantica*, *Amygdalus scoparia*, *Maresia* sp., and *Euphorbia* sp.

Co-habiting butterflies are: *Papilio alexanor* ESP., *P. machaon* L., *Aporia crataegi* (L.), *Pieris krueperi* STGR., *P. rapae* (L.), *P. ergane* GEYER, *Pontia callidice* (HBN.), *P. daplidice* (L.), *P. glauconome* KLUG, *P. chloridice* (HBN.), *Anaphaeis aurota* (F.), *Colias erate* (ESP.), *C. crocea* (GEOFF.), *Gonepteryx farinosa* (ZELLER), *Cigaritis maxima* STGR., *Lycaena phlaeas* (L.), *L. thersamon* (ESP.), *L. lamponides* STGR., *L. asabinus* (H.-S.), *Satyrrium sassanides* (KOLL.), *Lampides boeticus* (L.), *Turanana endymion* (FREYER), *Plebeius pylaon* FISCHER VON WALDHEIM, *Vanessa cardui* (L.), *Polygonia egea* (CR.), *Pandoriana pandora* ([D. & S.]), *Coenonympha saadi* (KOLL.), *Lasiommata megera* (L.), *Hyponephle dysdora* (LED.), *Melanargia hylata* (MÉN.), and *Chazara persephone* (HBN.).

Type material: The holotype ♂ is deposited in the collection of Pest and Plant Diseases Research Institute (PPDRI) Tehran, Iran. Paratypes are deposited in the collections of AHMAD KARBALAYE (18 ♂♂, 4 ♀♀), AMIR HOSSEIN HARANDI (7 ♂♂), and Pest and Plant Diseases Research Institute, Tehran (1 ♂, 1 ♀).

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Colour plate 8/ Farbtafel 8

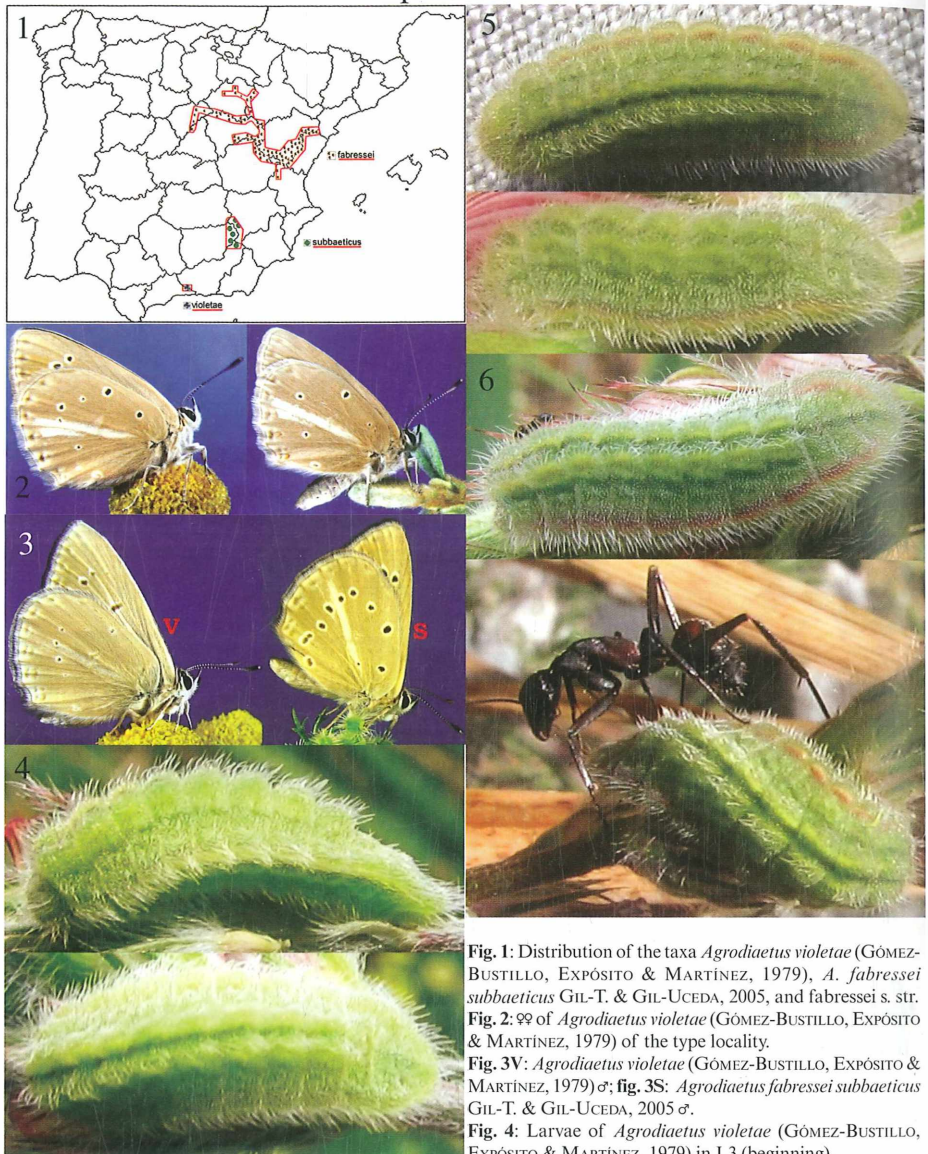


Fig. 1: Distribution of the taxa *Agrodiaetus violetae* (GÓMEZ-BUSTILLO, EXPÓSITO & MARTÍNEZ, 1979), *A. fabressei subbaeticus* GIL-T. & GIL-UCEDA, 2005, and *fabressei* s. str. **Fig. 2:** ♀♀ of *Agrodiaetus violetae* (GÓMEZ-BUSTILLO, EXPÓSITO & MARTÍNEZ, 1979) of the type locality.

Fig. 3V: *Agrodiaetus violetae* (GÓMEZ-BUSTILLO, EXPÓSITO & MARTÍNEZ, 1979) ♂; **fig. 3S:** *Agrodiaetus fabressei subbaeticus* GIL-T. & GIL-UCEDA, 2005 ♂.

Fig. 4: Larvae of *Agrodiaetus violetae* (GÓMEZ-BUSTILLO, EXPÓSITO & MARTÍNEZ, 1979) in L3 (beginning).

Fig. 5: Larvae of *Agrodiaetus violetae* (GÓMEZ-BUSTILLO, EXPÓSITO & MARTÍNEZ, 1979) in L3 (end).

Fig. 6: Larvae of *Agrodiaetus violetae* (GÓMEZ-BUSTILLO, EXPÓSITO & MARTÍNEZ, 1979) in L4; ant (bottom): Camponotus cruentatus. **Fig. 7:** Larvae of *Agrodiaetus violetae* (GÓMEZ-BUSTILLO, EXPÓSITO & MARTÍNEZ, 1979) in L5.

Fig. 8: Larvae of *Agrodiaetus fabressei subbaeticus* GIL-T. & GIL-UCEDA, 2005 in L5.

Fig. 9: Larvae of *Agrodiaetus fabressei subbaeticus* GIL-T. & GIL-UCEDA, 2005 (L5), forms; ants: Plagiolepis pygmaea.

Fig. 10: Sequence of pupae of *Agrodiaetus violetae* (GÓMEZ-BUSTILLO, EXPÓSITO & MARTÍNEZ, 1979) according to age.

Colour plate 9/ Farbtafel 9

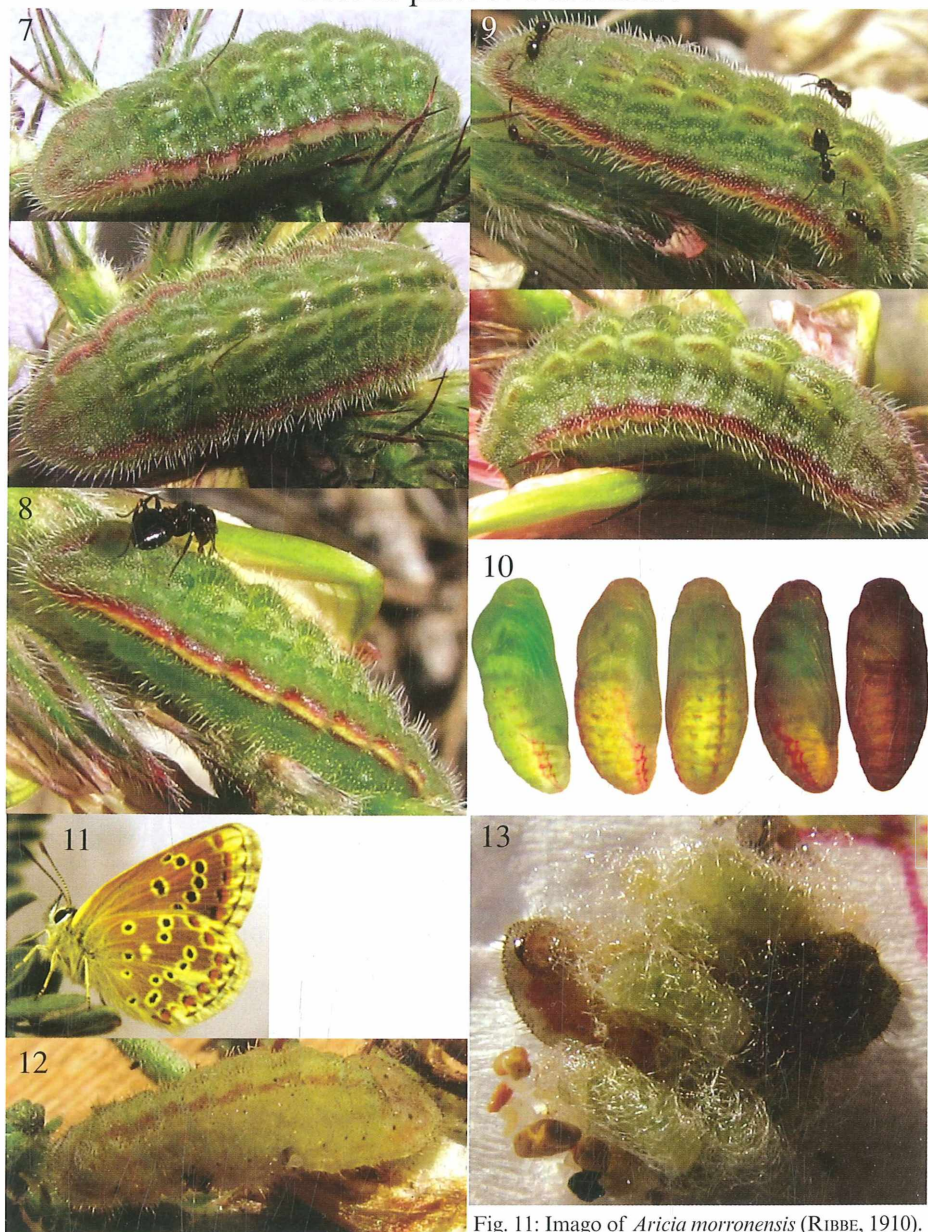
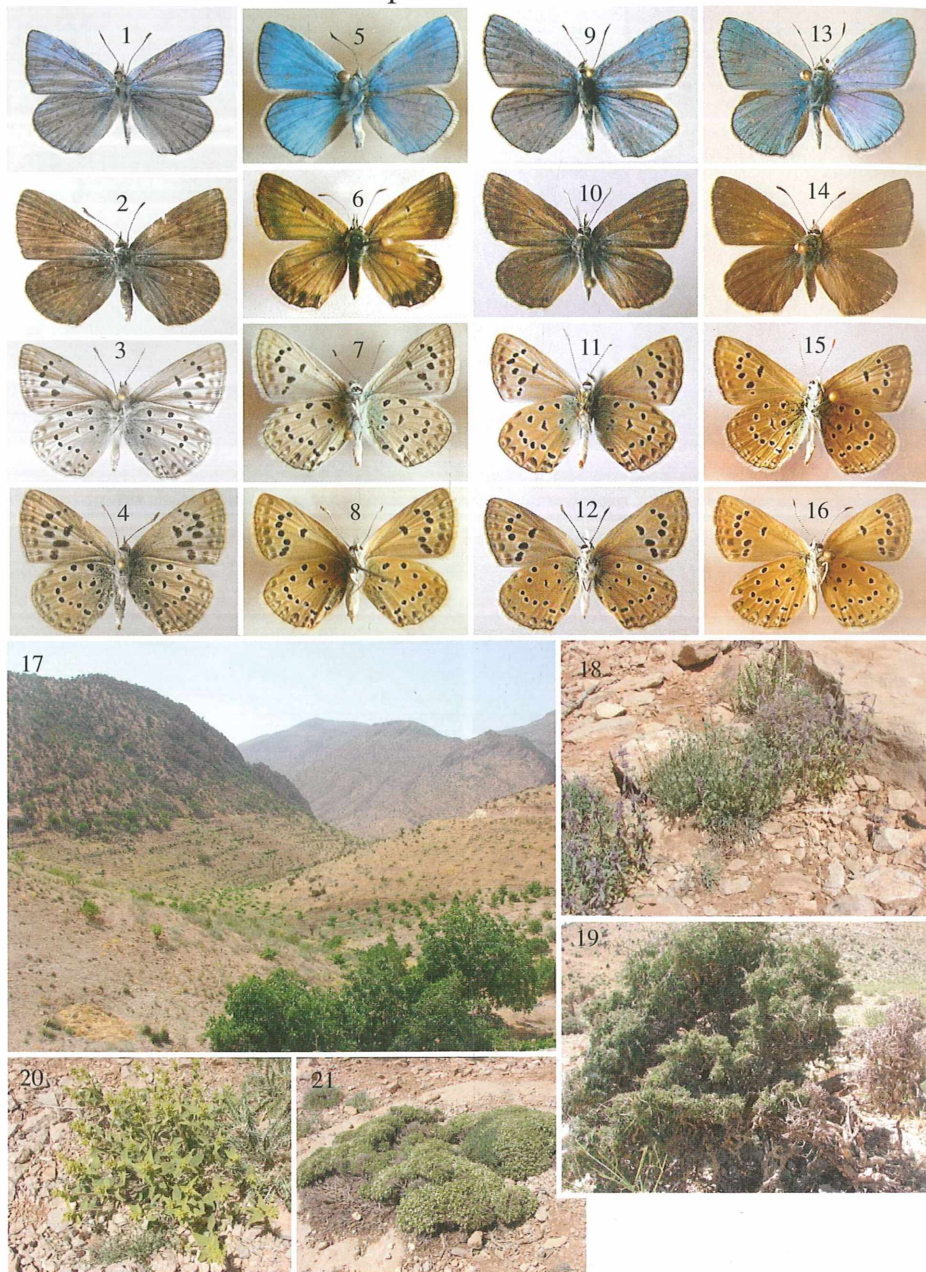


Fig. 11: Imago of *Aricia morronensis* (RIBBE, 1910).

Fig. 12: Larva of *Aricia morronensis* (RIBBE, 1910) parasitised by *Cotesia tenebrosa* WESMAEL.

Fig. 13: Cocoons of *Cotesia tenebrosa* and larva of *Aricia morronensis* (RIBBE, 1910).

Colour plate 33/ Farbtafel 33



Farbtafel 34



Abb. 1: *Pieris mannii* (MAYER, 1851), ♀, Merzhausen bei Freiburg (Baden-Württemberg), 14.IX.2008.
 Abb. 2: *Pieris mannii* (MAYER, 1851), ♀♀, Merzhausen bei Freiburg (Baden-Württemberg), 11.IX.2008.
 Abb. 3: Anthropogener Lebensraum von *Pieris mannii* (MAYER, 1851) in Merzhausen (Baden-Württemberg). Südwest exponierter, gebüschreicher Steingarten mit eingestreuten *Iberis sempervirens* Pflanzen, an denen die Raupen dieser Tagfalterart leben.

Legend to colour plate 33/ Legende zu Farbtafel 33

Figs. 1-4: *Polyommatus (Agrodiaetus) sephidarensis spec. nov.*

Fig.1, 3: Holotype ♂, upper- and underside, Iran, Fars province, Sephidar mountain, 3100 m, 5.VI.2007, leg. A.KARBALAYE, coll. PPDRI.

Fig. 2, 4: Paratype ♀, upper- and underside same data as holotype ♂, leg .et.coll. A.KARBALAYE..

Figs. 5-8: *Polyommatus (Agrodiaetus) eckweileri* TEN HAGEN, 1998, Iran, Fars province, Bvanat, 3100 m, 12.VII.2006, leg. et.coll. A.KARBALAYE. Fig.5, 7: ♂, Fig. 6, 8: ♀.

Figs. 9-12: *Polyommatus (Agrodiaetus) shirkuhensis* TEN HAGEN & ECKWEILER, 2001, Iran, Yazd province, Shirkuh Mts, Manshad, 2700 m, 25.VI.2005, leg .et.coll. A.KARBALAYE. Fig. 9, 11: ♂, Fig.10, 12: ♀.

Figs:13-16: *Polyommatus (Agrodiaetus) baltazardi* DE LESSE, 1963, Iran, Kerman province, 280 km N.E. Kerman, Dahaj, Kuh-e Madvar, 25.VI.2005, 2700 m, leg .et coll. A.KARBALAYE. Fig. 13, 15: ♂, Fig.14, 16: ♀.

Figs. 17-21: Habitat of *Polyommatus (Agrodiaetus) sephidarensis spec. nov.*, Iran, Fars province, Sephidar mountain, 3100 m, 5.VI.2007. Fig. 18: Presumably in blossom *Salvia* or *Phlomis* sp., Fig. 19: *Maresia* sp., Fig. 20: *Amygdalus scoparia*, Fig. 21: *Stachys* spec.

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