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Anschrift der Verfasser:

PETER ROOS
Am Bahndamm 8
D-4320 Hattingen

WILFRIED ARNSCHIED
Am Sattelgut 50
D-4630 Bochum 5

Studies on the family Lycaenidae
II. New taxa and records from Turkey
Lycaeniden-Studie
II. Neue Taxa und Meldungen aus der Türkei
(Lep. Lycaenidae)
von
AHMET ÖMER KOÇAK

Zusammenfassung

In der vorliegenden Arbeit werden eine neue Art, *Agrodiaetus eberti* und drei neue Unterarten, *Glaucoopsyche astraea eckweileri*, *Aricia eumedon aladaghensis* und *Agrodiaetus pseudoactis sertavulensis* aus der Südtürkei beschrieben. *Agrodiaetus maraschi* FORSTER und *Agrodiaetus pseudoactis* FORSTER werden auf die Artstufe erhoben. Die in der Westtürkei und den Balkanländern vorkommende Unterarten von *Pseudophilotes bavius* EVERSMANN werden neu gruppiert, wobei sich zwei Synonyme ergaben. Zwei Arten und eine Unterart werden für die Türkei neu mitgeteilt.

This paper deals with the descriptions of several new taxa and discussions of new records for Turkish fauna. This research has been supported financially by „Scientific and Technical Research Council of Turkey (T.B.T.A.K.)“ by means of a project (TBAG-240) during the years of 1976-1977. The whole study will be separately published.

Here I wish to express my gratitude to T.B.T.A.K. (Ankara), who supported the main research as a project, and to DAAD (Bonn), who granted my faunistical studies, which I have been carrying out in Karlsruhe for some time. I especially wish to thank my friend Doc. Dr. S. YAZGAN (Ankara) for his valuable help in the course of this study, Mr. G. EBERT and Mr. H. FALKNER (Karlsruhe) for their very kind interest in my problems and providing working facilities in

„Landessammlungen für Naturkunde Karlsruhe“. Finally I sincerely want to thank Mr. G. HESSELBARTH (Diepholz) and Mr. W. ECKWEILER (Frankfurt) as they kindly allowed me to study their materials and Mr. U. EITSCHBERGER for editing this paper.

Subfamily: **Theclinae**

1) *Nordmannia* (s. str.) *marcida* (RILEY, 1921)

Strymon marcidus RILEY, 1921 Ann. Mag. nat. Hist. **8**: 600 „Harir (Type locality) and Karind Gorge“.

Strymon marcidus PEILE, 1921 J. Bombay Nat. Hist. Soc.: 367 Pl. fig. 20.

This little known species was described by RILEY based on two females. Although PEILE and WILTSHIRE (1957: 25) gave some information on this species, it seems that the nominate form inhabits in West Iran. In recent years this species has been first collected from South Turkey, a great distance from the type locality mentioned above. Characters of the wings correspond very well with RILEY's description of *marcida* and with that species PEILE figured, but it is to be hoped that more additional collecting will explain the subspecific relationship between these two populations of *marcida*.

As it was indicated in the original description, this species can be easily distinguished from its relatives, *N. abdominalis* and *N. acaciae guichardi*, which are found in many parts of Turkey, by its completely developed submarginal lunules of underside hindwing and typical postdiscal whitish lines on both wings. On the underside of forewing darker submarginal spot visible at anal angle, but it is different in shape and does not so much contrast with ground colour as in *abdominalis*.

Material: 2 ♂♂ S. Turkey, Konya Prov. Bozkir 1500 m, 2.VII.1976, A. KOÇAK leg.

Subfamily: **Plebejinae**

2) *Glaucopsyche astraea eckweileri* n. subsp.

Holotype (♂), forewing 15 mm.

Upperside of wings (fig. 2): Ground colour dark violet blue as in nominate subspecies but blackish brown marginal band widely developed; on forewing especially between Cubital veins it expands up to 6.7 mm in width.

Underside of wings (fig. 6): Ground colour uniformly dark greyish. On hindwing basal greenish scales weakly developed. Discoidal blackish striae, black postdiscal spots well developed as in nominate subspecies. Ciliae whitish.

Allotype (♀), forewing: 15 mm.

Upperside of wings (fig. 3): Ground colour uniformly blackish brown, without black postdiscal markings. Basal violet suffusion distinct.

Underside of wings (fig. 7): Underside similar to holotype but ground colour slightly darker in tone.

Paratypes:

51 ♂♂: Wing size and the width of dark marginal band of forewing are variable. They were measured and compared with those of the nominate subspecies as follows:

Forewing length: In subsp. *eckweileri*: Variability 12-16 mm, average 14,5 mm \pm 1,08 (SD). In subsp. *astraea* the wing size shows any differences from *eckweileri* statistically.

Variability of blackish marginal band on upperside of forewing (measured between Cu 1-2): In subsp. *eckweileri*: Variability 2-8 mm, average 4,8 \pm 1,17 (SD). Here only 5 ♂♂ *astraea* are measured, which were from the type territory. Results are as follows:

Variability 1,4-2,5 mm, average 1,84 \pm 0,40 (SD).

Using these values, coefficient of difference (CD) for these two populations is calculated (MAYR et al., 1953: 146-147). The C.D. of 1,91 indicates that the population difference is obviously above the level of conventional subspecific difference.

2 ♀♀: Forewing 13,5-14,5 mm. Characters of the wings are similar to allotype.

This new subspecies is easily distinguishable from the nominate subspecies by its highly expanded blackish marginal band of upperside of forewings of males and by the absence of black postdiscal markings on the upperside of forewings of females. The latter does not appear on the same place in wing of males in new subspecies, although it was often visible in males of nominate subspecies.

I dedicate this new subspecies to my friend, Mr. W. ECKWEILER, Frankfurt.

Material:

Holotype (♂). SW-Turkey, Antalya Prov. Kohu mountains, Dokuzgöl 1600-1800 m., 5.VI.1976 A. KOÇAK leg. (in coll. Zool. Dept. Univ. Ankara).

Allotype (♀) from the same mountain, loc. Bölükkatran 2000 m, 6.VI.1976 A. KOÇAK leg. (in coll. Zool. Dept. Ankara).

Paratypes (51 ♂♂, 2 ♀♀) from the same mountain and date (in coll. Zool. Dept. Ankara, Landessammlungen für Naturkunde Karlsruhe, in coll. Prof. Dr. K. ROSE and Mr. W. ECKWEILER).

Other specimens compared: 1 ♂ „Anatolien Konia 1914 KORB“ ex coll. REICHL (LNK), 1 ♂ „Pontus (Amasya)“ ex coll. NOACK (LNK), 1 ♂ „L. *astraea*, Mesopotamia“ ex coll. DECKERT (LNK), 1 ♂ „*astraea*“ ex coll. WYATT (LNK), 1 ♂, 1 ♀ „Pont. Tokat, Malatia“ ex coll. DAUB (LNK), 2 ♂♂, 1 ♀ „Amasia“ ex coll. DAUB (LNK), 3 ♂♂ E. Turkey Malatya Prov. vic. Darende 1100 m, 11.V. 1972 A. KOÇAK leg., 6 ♂♂, 1 ♀ S. Turkey, Niğde Prov. Demirkazik 1600-1900 m. 6.VII.1976 A. KOÇAK leg. (in coll. m.).

3) *Pseudophilotes bavius* (EVERSMANN)

It was hardly known that *bavius* occurs in Asia Minor very locally and up to recent years we were unacquainted with its Anatolian subspecies. Although some southern populations of this species were treated by some authors as subsp. *fatma* OBTH., a very distinct subspecies among other Anatolian *bavius* forms, which seems to be closely related to *fatma*, was recently described under the name of *eitschbergeri* KOÇAK from Mardin and Urfa Provinces in SE-Turkey.

Central Anatolian populations of *bavius* show some subspecific differences not only from Balkan Peninsula including Greek mainland, but also southwest Anatolian populations. By a number of diagnostic features these populations were described as subsp. *onalpae* KOÇAK.

In East Turkey this species was unknown up to recent years. During the author's expeditions in 1972 and 1973 *P. bavius* was first discovered in the southern mountainous district of Van Lake and Hakkari Province. Populations approach morphologically the West Anatolian *bavius* rather than *eitschbergeri*. This East Anatolian form was also described as subsp. *vanicola* KOÇAK. The sooty-blackish brown colouration which replaces in the male the bluish-violet diffusion on the upperside and well developed dark markings on the underside of the wings of *vanicola* seem to be the eastern clinal characteristics of *bavius*, ranging from South Macedonia, Greece, SW-Turkey by way of Taurus mountains, southwards to Amanos mountains (loc. Akbes), eastwards as far as Hakkari Prov. in SE-Turkey.

As to the Balkan subspecies of *P. bavius*, there are two described forms:

1. *casimiri* HEMMING, 1932 from Kalavryta (S. Greece)
2. *macedonica* SCHULTE, 1958 from „Treschka-Schlucht“ (Youg. Macedonia).

Morphologically *macedonica* and *casimiri* resemble each other to some degree. In „Landessammlungen f. Naturkunde, Karlsruhe, I had the chance to examine NOACKs specimens from Kalavryta (1 ♂, 1 ♀) and from Zachlorou, which is situated very near to before mentioned. The former can be without doubt treated as the topotypes of *casimiri* HEMM., while the latter specimens, as Dr. FORSTER determined (see TURNER, 1967), are almost identical with the paratypes of *macedonica*. After examining the types of *macedonica* in „Zoologische Staatssamml. München“ und late Mr. WYATTs collection (in Landessamml. Karlsruhe) I am satisfied that Maceonian *bavius* form agrees also with the populations of *bavius* from SW-Turkey. On the other hand 1 ♂, 1 ♀ from Kalavryta are distinguishable from *macedonica* by their remarkably small size and better developed orange submarginal band on underside of hindwing. Between Kalavryta and Zachlorou there is any important geographical or ecological barrier actually. Recently Mr. ECKWEILER kindly informed me that he had taken one *casimiri*-like female with her forewing ca. 11 mm found at Zachlorou. In fact wing size and submarginal orange lunules in *bavius* seem to be very variable. Among my specimens from the West Taurus mountains

there are some *casimiri*-like individuals. As we have not enough material from other parts of this region, it is safe to say that *casimiri* should be accepted as an ecological variation or individual form, which seems to be confined to this type of territory.

On the other hand I was lucky enough to discover *egea* H.SCH., as well described and figured but now unnoticed form of *bavius*! I think that this new situation will bring about a more acceptable explanation to the *macedonica-casimiri* complex.

Lycaena egea H.SCH. had been collected by FRIVALDSKY in Turkey. In order to better define the type locality of *egea*, it may be reasonable to propose the Province Bursa (NW-Turkey), especially the vicinity of Uludağ (= Olymp Mount), as in the cases of some forms such as *iphigenia* H.SCH., *hyacinthus* H.SCH. etc., which had been also collected by FRIVALDSKY in Turkey. Their type localities were treated by some authors afterwards as Bursa Province (FORSTER 1960: 113; STAUDINGER 1878: 257 and 1899: 152).

After taking HERRICH-SCHAEFFER's description and the figure into consideration, it can be said that *egea* shows almost the same characteristics as the populations of *bavius*, occurring in SW-Turkey, S. Greece and Macedonia. Using these criteria SE. European and W. Anatolian *bavius*-forms may be presented in the following way:

Pseudophilotes bavius egea (HERRICH-SCHAEFFER, 1852) comb. n.

Lycaena bavius: HERRICH-SCHAEFFER, 1847 fig. 357-358 (♂),
359-360 (♀)

Lycaena egea HERRICH-SCHAEFFER, 1852 Syst. Bearb. Schmett. 6:
25-26 „aus der Türkei“ Bursa Prov.

Scolitantides bavius casimiri HEMMING, 1932 Entomologist 65: 180
„Kalavryta“, syn. n.

Philotes bavius macedonica SCHULTE, 1958 Bioloski Glasnik 11: 73-74
figs. „Treshka-Schlucht (Macedonia)“, syn. n.

Characteristics of this subspecies are its darker colourations on both wings and more restricted submarginal orange lunules especially on underside of hindwing (except *casimiri*).

Material:

1 ♂, 1 ♀ Peloponnes Kalavryta 750 m. 26.V.-16.VI.1959 H. NOACK leg. (LNK);
1 ♀ Peloponnes Zachlorou 700-900 m. 3.-5.VI.1975 ECKWEILER leg. (similar
to *casimiri* fw. 10 mm); 4 ♂♂ Peloponnes Zachlorou 600 m. 3.-31.VIII.1961
H. NOACK leg. (LNK) (similar to *macedonica*, fw. 13-15 mm); 7 ♂♂ Macedo-
nien (Yougl.), Innere Treska-Schlucht 28.III.-10.V.1956 coll. Dr. A. SCHULTE,
ex coll. WYATT (LNK) and the type series of *macedonica* from the same
locality in „Zoologische Staatssammlung München“; 171 ♂♂, 6 ♀♀: SW-Turkey,
Antalya Prov. Kohu mountains 1500-2000 m. 5.-6.VI.1976 A. KOÇAK leg.
(in coll. AUFF. and LNK), 1 ♀ SW-Turkey, Antalya Prov. Elmali 1250 m.

6.VI.1976 A. KOÇAK leg., 4 ♂♂ SW-Turkey, Isparta Prov. Eğridir 1000 m., 4 ♂♂, 1 ♀ S-Turkey, Adana Prov., Tekor 1350 m., 2 ♂♂ S-Turkey, Kayseri Prov. Bakirdağı, Saracik 1600 m., 6 ♂♂ from the same prov. loc. Saimbeyli (= Hadjin, old name) 900 m., S-Turkey Antakya Prov. Akbes 1000 m. 6.VI.1972 A. KOÇAK leg. (AUFF.).

4) *Aricia (Eumedonia) eumedon aladaghensis* n. subsp.

Holotype (♂), forewing: 15,5 mm.

Upperside of wings: Ground colour dark brown, almost as in subsp. *osiris*, but slightly reddish instead of blackish in tone. Darker brown discoidal spot often visible on forewing. Basal part of ciliae brownish, outer part not so pure white as in *osiris* but creamy.

Underside of wings (fig. 10): With the exception of more reddish tone of cell and submarginal area of forewing ground colour of wings greyish brown. Base of hindwing covered by metallic green scales. On forewing discoidal black spot large, its white ring well defined. Postdiscal spots large, roundish and complete in number, each distinctively white-ringed. Reddish-orange submarginal lunules of forewing, except apical and anal area, well developed, each bordered by dark brown internally. Antemarginal dark brown dots more or less surrounded by whitish scales. Dark brown marginal lines finely developed on both wings. On hindwing basal and postdiscal black spots well developed, complete in number. Discoidal spot dark brown, its white ring and usual white longitudinal band well developed, as broad as in *osiris*. Reddish-orange submarginal lunules sharply developed, triangular in shape and their inner points very near to outer boundary of white postdiscal rings (cf. the values mentioned below for the postdiscal spot and submarginal lunule in space 4). Antemarginal whitish area between orange lunules and marginal line broadly developed.

Allotype (♀), forewing: 15,5 mm.

Upperside of wings: General appearance similar to holotype, only orange submarginal lunules, antemarginal dark brown dots and whitish area appear at anal part of hindwing.

Underside of wings (fig. 11): Similar to holotype. Ground colour more reddish in tone and reddish-orange submarginal lunules on both wings better developed.

Paratypes:

All characters, presented in the descriptions of holo- and allotype vary to some degree in both sexes. Forewing lengths of ♂♂ and ♀♀ from type locality (Demirkazik) are as follows:

17 ♂♂: 12,5-15,5 mm, average $13,79 \pm 0,96$ (SD)

18 ♀♀: 14-16 mm, average $14,80 \pm 0,64$ (SD).

On the other hand 6 ♂♂ (not Paratypes), which were collected by Mr. HESSELBARTH from Pozanti are smaller than those of Demirkazik.

6 ♂♂: 12,5-14 mm, average 13,08 ± 0,41 (SD).

But yet this character differs statistically not significant from subspecific distinctness.

Distance between the outer margin of white postdiscal ring and black border of submarginal orange lunule in space of 4 is one of the important characteristics in distinguishing this new subspecies from *osiris*. The values of this distance, which were calculated and compared in males of both taxa, are given below:

aladaghensis 17 ♂♂ (Paratypes): 0,1-0,5 mm, av. 0,33 ± 0,11 (SD)
osiris 20 ♂♂ (Topotypes): 0,5-1,1 mm, av. 0,73 ± 0,18 (SD)

The value of the Coefficient of difference (CD) is calculated as 1.37, that is to say that it will be advisable to separate these two populations subspecifically. In females, however, this character seems to be unreliable.

Among 6 ♂♂ from Pozanti this value varies as follows:

Range: 0,1-0,5 mm, av. 0,31 ± 0,14 (SD).

It is seen that the populations of Pozanti and Demirkazik are identical in this respect.

On the other hand, greenish basal suffusion and basal spots on underside of hindwing of Pozanti specimens diverge from those of type locality in the following way:

Number of basal spots (in 6 ♂♂): 4,4,2,2,1,0.

These have been also counted among the specimens from Tarsus (ex coll. DAUB, LNK) as follows:

in 3 ♂♂: 4,4,2.

in 4 ♀♀: 4,4,2,2.

These basal spots in the population of Demirkazik are always 4 in number, besides basal suffusion in generally (76,47 %) green, (17,64 %) bluish-green, or rarely (5,88 %) blue in colour.

In Cilician Taurus, among the specimens from Pozanti 3 ♂♂ have bluish-green, 3 ♂♂ green basal suffusion, whereas from Tarsus 1 ♂, 2 ♀♀ have green and 2 ♂♂, 2 ♀♀ nearly blue basal suffusion on their underside of hindwing. In addition, Tarsus specimens differ from Demirkazik specimens by more reddish-brown ground colour of underside and larger wing-size varying from 14 to 15,5 mm. (average 14,75 mm) in 3 ♂♂ and 15-17 mm average 16 mm in 4 ♀♀.

After taking the criteria mentioned above into consideration, it is safe to say that the populations of Cilician Taurus are questionable, since they show some transitional characteristics between *aladaghensis* and an unknown subspecies of *eumedon* living on perhaps West Taurus mountains. Tarsus specimens are not identical with *aladaghensis*, but the same cannot be easily said of the specimens of Pozanti.

This new subspecies is distinguishable from other near relatives by the following characters:

1) *aladaghensis* n. subsp. is larger in wing-size than *mylitta* HEMMING, colouration and markings, especially reddish-orange submarginal lunules on underside much better developed than those of Lebanese subspecies (fig. 16).

2) This new subspecies is easily distinguishable from *rumeliensis* EITSCHBERGER & STEINIGER by broadly developed white band, sharply developed orange submarginal markings and lighter ground colouration on underside of wings (fig. 14).

3) This new subspecies is distinguishable from *osiris* BANGHAAS, which seems to be the nearest relative among other subspecies of *eumedon*, by its reddish-orange instead of yellowish-orange submarginal lunules and also their sharply defined triangular rather than roundish shapes. On the other hand, *aladaghensis* contrary to *osiris* has generally green basal scales and always well marked and complete basal black spots on underside of hindwing: whereas in *osiris* basal spots show the following values (20 ♂♂ examined):

- 6 ♂♂ with 4 basal spots
- 7 ♂♂ with 3 basal spots
- 5 ♂♂ with 2 basal spots
- 2 ♂♂ with 1 basal spot.

Hence, average of basal spots for a single specimen and its Standard Deviation (SD) may be calculated:

$$\text{average: } 2,85 \pm 0,70 \text{ (SD).}$$

The value of CD = 1.64 for the populations of Demirkazik (*aladaghensis*) and Kazikoparan (*osiris*) is above the level of subspecific distinctness.

18 ♀♀ of *aladaghensis* show always well marked four basal spots on underside of hindwing; whereas in *osiris* number of basal spots varies as follows (15 ♀♀ examined):

Variability: 1-4, average: $2,93 \pm 0,25$ (SD)

Value of CD is above the level of subspecific distinctness.

On the other hand, antemarginal whitish band on underside of wings generally wider in *aladaghensis* than *osiris*, but this feature seems to be unsatisfactory after statistical analysis.

Finally, ground colouration on underside of wings of *aladaghensis* is more reddish-brown contrary to dark greyish-brown of *osiris*, and upperside of wings is also slightly reddish brown in *aladaghensis*, more blackish-brown in *osiris*.

4) As to the subspecies *jeanensis* EITSCHBERGER & STEINIGER, this subspecies is not only well isolated from *aladaghensis* geographically, but also easily separable by its poorly developed and partly obscured markings on the underside of wings (cf. Taf. I, fig. 17 (Holotype) in Atalanta 6: 89 and also de-

scription in page 94 to 96).

This new subspecies is probably more widely spread eastwards to the Taurus mountain range in South Turkey. On male from Bakirdaği 2000 m agrees almost entirely with the type-series from Demirkazik, so I labelled him as paratype. On the other hand, Cilician Taurus populations seem to be transitional to an undescribed subspecies of *eumedon* in the Central Taurus mountains, or a local variation due the environmental conditions.

This subspecies flies at stony slopes of the northern part of Demirkazik (Aladağ range) between 1600-2500 m, where its probable foodplant, *Erodium cedrorum* grows (cf. LARSEN, 1974: 170).

Material:

Holotype (♂), Allotype (♀) and Paratypes: 16 ♂♂, 17 ♀♀ were collected from South Turkey, Niğde Prov. Demirkazik (northern slopes of Aladağ) 1600-2500 m, 5.-6.VII.1976; 1 ♂ from South Turkey, Kayseri Prov., Bakirdaği, Gez Beli 2000 m, 22.VI.1976 A. KOÇAK leg.

Holotype, Allotype are in coll. of Department of Systematic Zoology in Ankara. Paratypes are deposited in coll. of Department of Systematic Zoology (Ankara), in coll. Prof. Dr. K. ROSE (Mainz) and in coll. W. ECKWEILER (Frankfurt).

Other material compared:

20 ♂♂, 15 ♀♀: „Türkei, Kars, 8 km westl. Kazikoparan 2300-25-- m. 5.-9.VII.77 ECKWEILER leg.; 7 ♂♂, 3 ♀♀: NE-Turkey, Karls Prov., Kagizman mountains, on the roadside of Cumaçay-Akçay, ca. 2400-2500 m, 24.VII.1973 A. KOÇAK leg.; 2 ♂♂, 2 ♀♀ „Achalzich“ ex coll. DAUB (LNK); 2 ♂♂, 2 ♀♀ ex Taurus, Tarsus, 1 ♂, 2 ♀♀ „Cilic. Taurus“ ex coll. DAUB (LNK); 6 ♂♂ „Türkei, Taurus vic. Pozanti Akdağ, Ostseite 1530 m. 26.VI.1977 leg. HESSELBARTH“; 3 ♂♂ „Bulgarien Juni 1923 Ryla Geb. 1200 bis 1800 m. O. BUBACEK, WIEN“ ex coll. WYATT (LNK).

It should be noted that subsp. *rumeliensis* expands its range eastwards to the central part of North Turkey. Several specimens of this subspecies were collected by the author from vic. Abant lake 1400 m (Bolu Prov.) and vic. Karagöl (Ankara Prov.) in June and July. These records are new for Turkey.

5) *Aricia (Ultraaricia) crassipuncta bassoni* LARSEN, 1974

Aricia crassipuncta bassoni LARSEN, 1974 Butts. Lebanon: 172-174
Pl. 161 „Jabal Qammoua 1800 m (type locality);
Laklouk 1700 m.“

This subspecies inhabits the upper parts of Amanos mountains in S-Turkey, and this record is new for the Turkish fauna.

Material:

10 ♂♂, 4 ♀♀: S-Turkey, Antakya Prov. Amanos mountains, Daz Dağ 1600-1700 m. 19.VI.1976 A. KOÇAK leg.

6) *Agrodiaetus (Sublysandra) eberti* n. sp.

Holotype (♀), forewing 12,5 mm.

Upperside of wings (fig. 18): Ground colour bright blue, without violet suffusion. No blue scales especially on forewing along veins, so veins apparently black. Black discoidal spot well marked on forewing. Blackish marginal band broad (1-1,1 mm in width). Costal edge also bordered by black scales varying from 0,2 to 0,5 mm in width. Furthermore, between blue and blackish colouration on submarginal area whitish colouration more pronounced at subapical area. On hindwing blue scales between veins of R and A₁ well developed, dorsal and costal area blackish. Antemarginal black dots between R-A₁ well marked, roundish in shape, one in space of Cu 1-2 with reddish scales internally.

Underside of wings (fig. 22): General appearance approaches female *candalus*. Ground colour light brown. Basal, discoidal and postdiscal spots on forewing black in colour, developed as in *candalus*. Orange submarginal lunules in spaces of 2 and 3 (M3-Cu2) well-, in space of 1b, 4 and 5 weakly developed. They are bordered by dark brown scales internally.

Colouration of hindwing as that of forewing, greenish-blue suffusion confined between base and basal spots. Discoidal spot light brown, postdiscal spots smaller in size than those of forewing, each white ringed and complete in number. Whitish triangular marking between M2-Cu1 well developed. Submarginal lunules in general appearance better developed than *candalus*. Orange submarginal lunules complete, well pronounced between Sc-A₂, totally 7 in number (double at anal angle), each internally finely bordered by black and also creamy scales. Antemarginal black dots well marked between R-A₁ totally 6 in number (double at anal angle). Margin of both wings with fine brown border. Ciliae white, without chequered.

Paratype (1 ♀), forewing 14 mm.

Upperside of wing (fig. 19): Ground colour as in holotype. Discoidal spot smaller but well marked, black in colour. Blackish marginal band varies at termen from 0,7 to 1,0 mm, at costal edge from 0,2 to 1 mm in width. Whitish antemarginal colouration more pronounced than that of holotype. Hindwing resembles holotype but whitish antemarginal colouration appears around black dots. Reddish scales in space of Cu1-2 reduced but distinct.

Underside of wings (fig. 23): Ground colour light brown, but on hindwing darker in tone than forewing. Basal and partly postdiscal spots of hindwing absent, rest remarkably small in size. Other markings similar to holotype.

Material:

Holotype (♀) and Paratype (1 ♀): South Turkey, Niğde Prov. Demirkazik 2600 m (northern slopes of Aladağ) 19.VIII.1976 A. KOÇAK leg. (Types are deposited in the Department of Systematic Zoology University of Ankara).

This new species seems to be local at alpine zone of the Taurus mountains,

inhabits on dry, rocky slopes and flies with *A. (Sublysandra) candalus zuleikae*, which appears to be rare in this region.

This new species is easily distinguishable from *candalus*, *isauricoides* and *anatolica*, three nearest relatives among *Sublysandra*-species, by its very well developed blue colouration, well marked discoidal and antemarginal black spots, broad black marginal area on upperside of fore-, and blackish costal area of hindwing. By this blue colouration of upperside this species approaches to some degree *delerei* HEYDEMANN (Afghanistan). For better explanation to the taxonomic positions of these two forms much more material is needed.

It is also uncertain today whether this new species breeds twice a year or not. Nearest relative *candalus* has two broods on the Taurus mountains and the capture of *candalus* from Demirkazik belongs doubtless to the second one. If this new species has also similar phenology as *candalus*, description above mentioned belongs to the second generation.

I dedicate this new species to my friend Mr. G. EBERT (Karlsruhe), who has valuable studies on West Asiatic Macrolepidoptera.

7) *Agrodiaetus (Lysandra) syriaca* (TUTT, 1914)

This species is new for the Turkish fauna.

REBEL (1917: 271) indicated a *coridon*-form, collected in 23.IV. from „Kushdjula (Taurus)“ (= Kuşçular). This record without doubt belongs to this species.

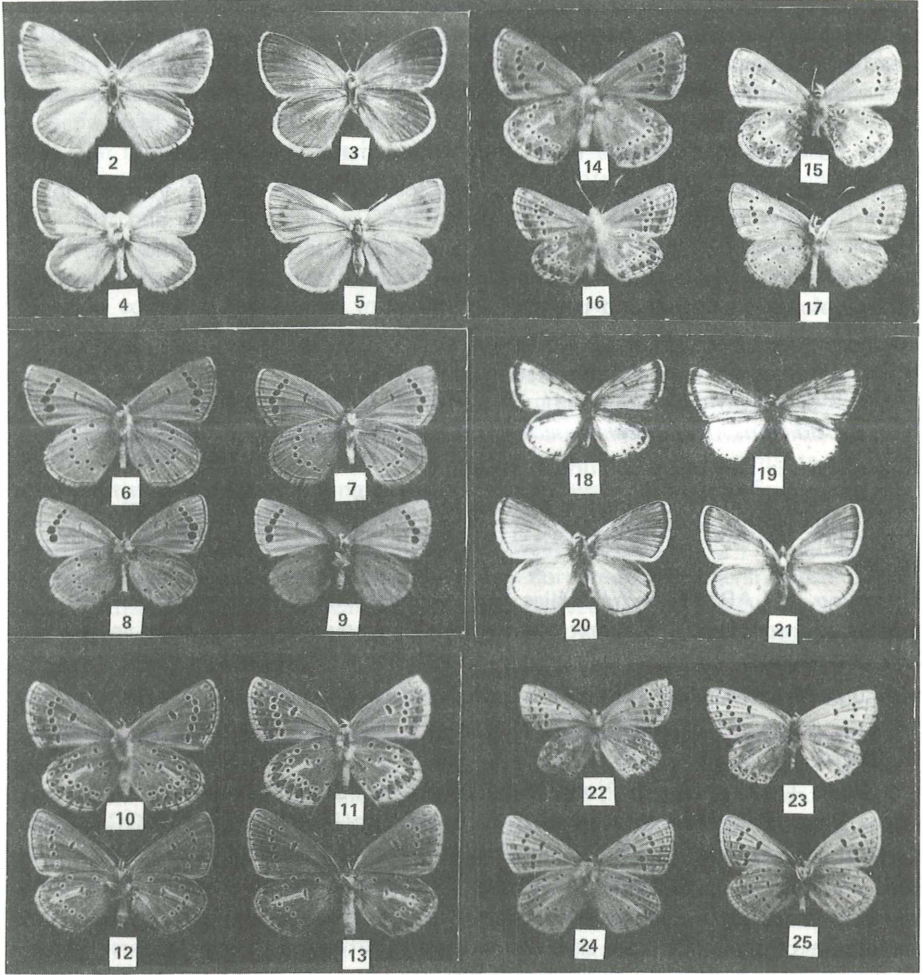
According to LARSEN, *syriaca* flies high in the mountains of Lebanon and appears in two broods, the first from early June onwards, the second in late July and August.

Although Mr. BROOME (London) kindly informed me that this species flies in the Taurus mountains above 2000 m from sea level, my two males are labelled as follows:

1 ♂ South Turkey: Mersin Prov., Çamalan 850 m (Cilic. Taurus) 8.V.1976; 1 ♂ Adana Prov., Saimbeyli (old name Hadjin) 1000 m 10.VII.1973 A. KOÇAK leg.

As to the subspecific distinction from nominate subspecies, the spring form of mine are slightly darker blue on upperside, and the blackish marginal band of forewing is broader, blackish antemarginal dots on hindwing slightly larger than those of second brood, and also without whitish bordering. Underside characters seem not to be significantly different from those of the second brood of Turkish and Lebanese *syriaca*. Unfortunately I could not see the first brood of Lebanese *syriaca*, while the second ones seem to be identical.

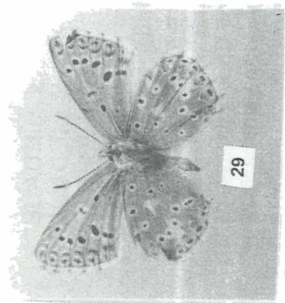
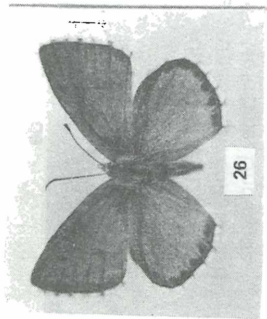
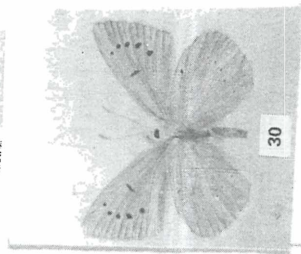
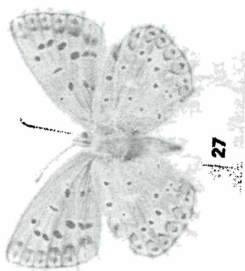
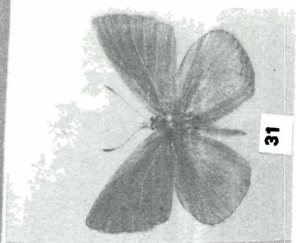
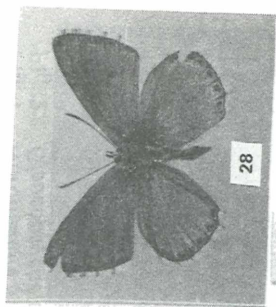
In conclusion, it is safe to say that Turkish and Lebanese *syriaca* are not different subspecifically. Of course, more material is needed for confirmation.

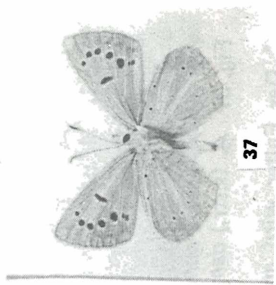
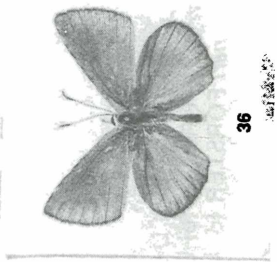
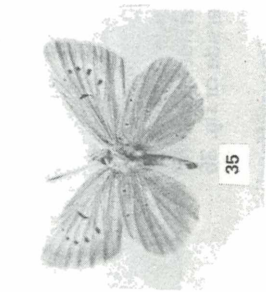
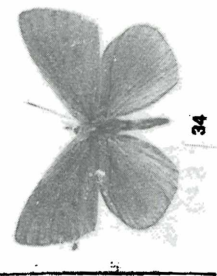
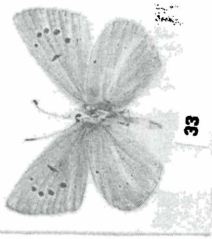
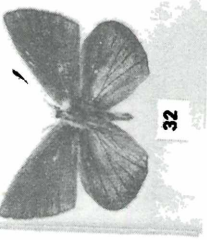


Explanation of the figures

- Fig. 1 *Nordmannia marcida* RILEY (♂) Underside *
- Fig. 2 *Glaucopsyche astraea eckweileri* (♂) Holotype, Upperside
- Fig. 3 *G. astraea eckweileri* (♀) Allotype, Upperside
- Fig. 4 *G. astraea astraea* (FREYER) (♂) Upperside „Amasia, ex coll. DAUB“
- Fig. 5 *G. astraea astraea* (FREYER) (♀) Upperside „Amasia, ex coll. DAUB“
- Fig. 6 *G. astraea eckweileri* (♂) Holotype, Underside
- Fig. 7 *G. astraea eckweileri* (♀) Allotype, Underside
- Fig. 8 *G. astraea astraea* (FREYER) (♂) Underside „Amasia ex coll. DAUB“
- Fig. 9 *G. astraea astraea* (FREYER) (♀) Underside „Amasina ex coll. DAUB“
- Fig. 10 *Aricia (Eumedonia) eumedon aladaghensis* (♂) Holotype, Underside
- Fig. 11 *A. (E.) eumedon aladaghensis* (♀) Allotype, Underside
- Fig. 12 *A. (E.) eumedon* ssp. (♂) Underside „Cilic. Taurus, ex coll. DAUB“
- Fig. 13 *A. (E.) eumedon* ssp. (♀) Underside „Cilic. Taurus, ex coll. DAUB“
- Fig. 14 *A. (E.) eumedon rumeliensis* EITSCHBERGER & STEINIGER, (♂), Underside, „Bolu: Abant“
- Fig. 15 *A. (E.) eumedon osiris* (BANG-HAAS) (♂), Underside „Kağızman“
- Fig. 16 *A. (E.) eumedon* ssp.? (♂) Underside „Amanos mts.“
- Fig. 17 *A. (E.) eumedon mylitta* (HEMMING) (♂) Underside „Lebanon“
- Fig. 18 *Agrodiaetus (Sublysandra) eberti* (♀) Holotype Upperside
- Fig. 19 *Agrodiaetus (Sublysandra) eberti* (♀) Paratype, Upperside
- Fig. 20 *A. (S.) candalus zuleikae* (PFEIFFER) (♂) Upperside „Toros Mts.“
- Fig. 21 *A. (S.) isauricoides* (GRAVES) (♂) Upperside „Lebanon“
- Fig. 22 *A. (S.) eberti* (♀) Holotype, Underside
- Fig. 23 *A. (S.) eberti* (♀) Paratype, Underside
- Fig. 24 *A. (S.) candalus zuleikae* (PFEIFFER) (♂) Underside
- Fig. 25 *A. (S.) isauricoides* (GRAVES) (♂) Underside
- Fig. 26 *Agrodiaetus (Lysandra) syriaca* (TUTT) (♂) Upperside I. Generation „S. Turkey, Toros Mountains“
- Fig. 27 *A. (L.) syriaca* (TUTT) (♂) Underside of fig. 26
- Fig. 28 *A. (L.) syriaca* (TUTT) (♂) Upperside II. Generation „Lebanon, ex coll. LARSEN (LNK)“
- Fig. 29 *A. (L.) syriaca* (TUTT) (♂) Underside of fig. 28
- Fig. 30 *Agrodiaetus* (s.str.) *pseudactis sertavulensis* (♂) Holotype, Underside
- Fig. 31 *A. (s.str.) pseudactis sertavulensis* (♂) Paratype, Upperside
- Fig. 32 *A. (s.str.) actis actis* (H.-SCH.) (♂) Upperside „Demirkazik“
- Fig. 33 *A. (s.str.) actis actis* (H.-SCH.) (♂) Underside „Demirkazik“
- Fig. 34 *A. (s.str.) pseudactis pseudactis* (FORSTER) (♂) „Maras: Göksun“
- Fig. 35 *A. (s.str.) p. pseudactis* (FORSTER) (♂) Underside of fig. 34
- Fig. 36 *A. (s.str.) damone wagneri* FORSTER (♂) Upperside „Ankara“
- Fig. 37 *A. (s.str.) damone wagneri* FORSTER (♂) Underside of fig. 36

* Der Falter wird an anderer Stelle in dieser Zeitschrift veröffentlicht, da das Original bei Drucklegung nicht vorlag.





8) *Agrodiaetus (s. str.) pseudactis sertavulensis* n. subsp.

Holotype (♂), forewing 16 mm.

Upperside of wings: Ground colour shining vivid sky-blue, it approaches that of spring form of *bellargus* ROTT. Blackish costal area of hindwing highly reduced. On forewing discoidal spot absent. Veins, except Radius of hindwing, not black and invisible on both wings. Androconial hairs absent on forewing. Blackish marginal line very fine on both wings. Ciliae of forewing black at base, outer part pure white, that of hindwing completely white with the exception of apical area.

Underside of wings (fig. 30): Ground colour of hindwing, costal and apical parts of forewing light greyish sandy brown, lighter and more grey in tone than that of *maraschi* FORSTER. Central and dorsal parts of forewing light grey. Discoidal and postdiscal spots of forewing black, small-sized and sharply developed as in *pseudactis* FORSTER. On hindwing discoidal spot almost invisible, and postdiscal spots remarkably smaller than those of forewing but complete in number. Whitish longitudinal band weakly developed. Submarginal markings visible and complete on both wings. Greenish-blue basal scales on hindwing well developed. Ciliae completely white on both wings.

Female: unknown.

Paratypes (33 ♂♂).

Forewing: 13,5-16 mm, average 15,01 ± 0,48 (SD).

They show an important difference from holotype.

2 ♂♂, in my collection, came from Barcin Yaylasi 1820 m (Central Taurus mountains) differ from the type series by their smaller wing size, less pointed apex of forewing and better developed submarginal lunules of underside. Here I determine them temporarily as *sertavulensis*, without labelling as paratypes.

Material:

Holotype (♂) and 33 ♂♂ (Paratypes): South Turkey, Konya Prov. Sertavul Paß 1600 m, 4.VII.1976 A. KOÇAK leg.; 2 ♂♂ S. Turkey, Konya Prov., Ermenek, Barcin Yaylasi 1820 m, 3.VII.1976 A. KOÇAK leg.

Holotype is deposited in the collection of Systematical Zoology University of Ankara. Paratypes are deposited in the Department of Systematic Zoology (Ankara), „Landessammlungen f. Naturkunde (Karlsruhe), in collection of Prof. Dr. K. ROSE and Mr. W. ECKWEILER.“

This species was collected on a cold morning, while the butterflies were sleeping on *Phlomis* sp. and *Marrubium* sp.

Although this new taxon resembles *maraschi* FORSTER in some respects, it can be easily distinguished from it by the absence of long androconial hairs on upperside of forewings, its brighter colouration, but less violet suffusion on upperside of wings, by complete white ciliae on hindwing, sharply developed, but small sized postdiscal spots on underside of forewing, lighter and more

greyish ground colour of underside of hind, and apical parts of forewings and almost invisible longitudinal whitish band on hindwing.

By external morphology, *sertavulensis* approaches *actis-pseudactis* group in some respects. Although markings of underside of wings are almost similar to both forms, that is to say, *actis* H.-S. and *pseudactis* FORSTER, after taking the upperside characteristics into consideration, I could place *sertavulensis* near *pseudactis* FORSTER. Wing shape, colour of the veins and reduced blackish costal area on upperside of hindwing appear to be evidence of this relationship.

As to the geographical distributions of *actis* H.S. and *pseudactis* FORSTER, the former is distributed in West, North Turkey as far as Amasya and Tokat, in South Turkey, Sultan Dağları, Konya (FORSTER 1960: 106), and by the way of the Taurus mountains eastwards to Demirkazik (Aladağlar); the latter extends its range from North Iran, Transcaucasus, East Turkey as far west as the Central Taurus mountains. In this case, distributions of these two taxa partly overlap by extending beyond the boundary of Taurus. As any intergradation form has been observed within this overlapping area, I propose here *Agrodiaetus pseudactis* as a distinct species from *Agrodiaetus actis* H.S.

This new subspecies differs from the nominate subspecies by the following characteristics:

Ground colour of upperside lighter in tone, ciliae of hindwing almost completely white. On underside ground colour slightly lighter in tone, black spots smaller and less variable than those of *pseudactis*. Whitish band on hindwing is not so distinct as in *pseudactis*.

It should be noted that in *pseudactis* ground colour of upperside of males show lighter tone gradually from east to west, and basal part of hindwing ciliae on upperside has less black hairs by degrees.

Finally, I am of the opinion that *Agrodiaetus maraschi* FORSTER is a species distinct from *Agrodiaetus damone* EVERSMANN, and it is easily separable from other species by the presence of long androconial hairs on upperside of forewing of males.

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Anschrift des Verfassers:
 Dr. AHMET Ö. KOÇAK
 Ankara Üniversitesi Fen Fakültesi,
 Sistematik Zooloji Bölümü
 Ankara, Türkiye

Literaturübersicht

GATTER, W. (1977): Eine Wanderung der Erdschnake *Tipula oleracea* L. Passive Verdriftung oder gerichtete Migration? (Diptera, Tipulidae). *Nachrichtenbl. Bayer. Ent.* **26**: 81-89.

Nach planmäßiger Beobachtung wurden vom 12.VIII. bis 8.IX.1976 auf der Schwäbischen Alb 836 wandernde Erdschnaken (*T. oleracea*) registriert. Das Maximum der hauptsächlich auf den späten Nachmittag beschränkten Wanderungen wurde am 20./21.VIII. mit insgesamt 459 Ex. erreicht. Trotz etwa gleichhäufigem Angebots aller Windrichtungen flogen die Tipuliden nur bei in südliche bis westliche Richtungen weisenden Winden. Es kann daher von einer gerichteten Migration gesprochen werden.

THOMAS MEINEKE

LOKKI, J., KALEVI, K. MALMSTRÖM & E. SUOMALAINEN: Migration of *Vanessa cardui* und *Plutella xylostella* (Lepidoptera) to Spitzbergen in the summer 1978. *Notulae Ent.* **58**: 121-123. 1978.

Plutella xylostella wurden in größerer Anzahl auf Spitzbergen am Nachmittag des 25. VI. 1978 unmittelbar nach einem starken S-SE-Sturm beobachtet. Der Sturm hatte in der vorhergehenden Nacht begonnen. Die Massenwanderung dieser Art hatte tags zuvor sowohl S-Finnland als auch Finnisch-Lappland erreicht. Offenbar wurde diese Microlepidoptere in etwa einem Tag über eine Strecke von 1000 km über die Barentssee nach Spitzbergen verfrachtet. Zwei Distelfalter wurden in Spitzbergen am 2.VI.1978 gesehen, der erste Nachweis für die Insel. Dieses Auftreten steht mit der Massenwanderung dieser Art Ende Juni über Finnland in Zusammenhang.

KURT HARZ

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

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