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New taxa of the subgenus Agrodiaetus HÜBNER, 1822 from Caucasus

(Lepidoptera, Lycaenidae)

by

ALEXANDER V. DANTCHENKO & VLADIMIR A. LUKHTANOV

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Abstract: Two new species of *Polyommatus* (*Agrodiaetus*): *P. (A.) gorbunovi* and *P. (A.) rovshani* spp. nov. (Talysh mountains) and two new subspecies *P. (A.) carmon surakovi* subspec. nov. (Nakhichevan) and *P. (A.) phyllis nekrutenkoi* subspec. nov. (East Azerbaidzhan) are described.

The type specimens have been deposited in the following collections:
ZISP – Zoological Institute of the Russian Academy of Sciences, St.-Petersburg, Russia. ZMM – Zoological Museum of Moscow State University, Moscow, Russia. EMEM – Entomologisches Museum Dr. U. EITSCHBERGER, Marktleuthen, Germany. IZK – Institute of Zoology, Kiev, Ukraina. CB – collection of Dr. P. BOGDANOV, Moscow, Russia. CG – collection of Dr. O. GORBUNOV, Moscow, Russia. CD, CL – collections of the authors. CP – collection of Dr. I. PLJUSHTCH, Kiev, Ukraine. CW – collection of Dr. Z. WEIDENHOFFER, Prague, Czechia. CE – collection of Dr. W. ECKWEILER, Frankfurt am Main, Germany.

Polyommatus (*Agrodiaetus*) **gorbunovi** spec. nov.

(colour plate VIII, figs. 1–4)

Material
Holotype ♂: Azerbaidzhan, Talysh Mts., Zuvand, Mistan, 1900m, 14.VII.1985, A. DANTCHENKO leg. (CD).
Paratypes: 79 ♂♂, 12 ♀♀, same locality, 14.–17.VII.1985, A. DANTCHENKO leg. (ZISP, CB, CG, ZMM, CL, CD, CP, CN); 1 ♂, same locality, 11.VII.1986, O. GORBUNOV leg. (CG). 3 ♂♂, Talysh, Zuvand, Golobyn, 22., 23.VII.1984, V. LUKHTANOV leg. (CL).

Description
Holotype ♂: Forewing length 15.5 mm. Upperside: ground colour metallic light blue; forewing costally white narrow, marginal obscuration is indistinct, the distal ends of veins are blackened; the inner part of the cilia black, the outer part is white; hindwings' veins are more darkened distally, the black marginal border is somewhat broader, with small black triangular along its inner border; the inner part of the cilia grey, the outer part white. Underside: the ground colour of the forewings grey; the narrow discal marking and a row of postdiscal spots are encircled with white, a row of submarginal spots are darker than the ground colour, slightly brownish but poorly developed and indistinct in front part; the

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hind wing is equably light beige; a submarginal row of spots and an anteriomarginal row is indistinct, is emarginated by light strokes from their outer margins; the discal stroke is nearly invisible, the postdiscal spots strongly reduced; white streak sharp, broadening distally, basal dust is hardly developed.
Females. Forewing length 13.6 – 14.5 mm. Upperside: the ground colour equably brown; the forewing has a narrow black discal stroke which is well developed, the proximal part of the cilia is brown, distal one white; the hindwing has hardly visible reddish crescent markings, the inner part of the cilia is light brown, the outer white. Underside: the pattern as in male, but the ground colour is light brown and the basal dust is absent.

Variation: The specimens of the rather great type series do not vary in colour pattern, but vary only slightly in size: males from 14.0 – 15.8 mm, and females from 14.0 – 14.6 mm.

Definition: This beautiful new species is clearly closest to *P. (A.) khoshyeilagi* (BLOOM, 1979) but differs rather distinctly from it by the poorly developed greenish basal dust. It can be distinguished from *P (A.) caerulea caerulea* (STAUDINGER, 1871) by the brighter metallic glitter and by the darkened distal part of the veins on the upperside of the wings. Besides that, the wing uppersides of the females of *P (A.) c. coerulea* (STAUDINGER, 1871) have a strong blue dust.

Bionomy: The specimens of the type series have been collected around the short bushes of *Astragalus* spp., looking alike *A. aureus* W. (Fabaceae). Imago appearance is in the mid of July in one generation at the border of frigana and highland steppe with xerothermic vegetation.

The next relative to this taxon is *Agrodiaetus altivangans ectabanensis* DE LESSE, 1963 from Northern Iran (Prov. Hamadan).

Polyommatus (*Agrodiaetus*) **r o v s h a n i** spec. nov.
(colour plate VIII, figs. 5 – 8)

Material
Holotype ♂: Azerbaidzhan, Talysh Mts., Zuvand, Mistan, 1900m, 12.VII.1984, A. DANTCHENKO leg. (CD).
Paratypes: 10 ♂♂, 1 ♀ same data as holotype (CG, CD, CL, IZK).

Description
Holotype ♂ Forewing length 15.2 mm. Upperside: the ground colour is light blue, the discal strokes are absent; the forewings' costa are bordered by a white narrow line, the marginal obscuration is wide, the distal ends of the veins are darkened, the inner part of cilia are dark grey, the outer part white; the hindwings' marginal obscuration is narrow, with small black markings along its inner border, the cilia are white with grey markings at vein-ends. Underside: the ground colour of the forewings is grey, the narrow discal marking and a row of small postdiscal spots are encircled with white, a row of submarginal

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markings are darker than the ground colour, slightly brownish but poorly developed and indistinct in front part, the antemarginal markings are replaced with a light colour; the hindwings are grey with a brownish tint, the marginal row is as in the forewings, the discal stroke is nearly invisible, the postdiscal spots are very small and encircled with white, the white streak is distally enlarged, the basal dust is well developed.
Female. Forewing length: 14.1 mm. Upperside: the ground colour is brown, the veins darker distally; the forewings have a narrow black discal stroke which is well developed, the inner part of cilia is brown, and the outer part is white; the hindwing fringe is light brown, the outer part is white. Underside: the pattern is as in males but the ground colour is light brown, the basal dust is well developed.

Variation: Forewing length of males ranges from 15.0 mm to 15.6 mm, the marginal obscuration is wide from 2 mm to 4 mm.

Definition: Males of *P. (A.) rovshani* spec. nov. differ from *P (A.) baytopi baytopi* (DE LESSE, 1959) and *P. (A.) tanceri tanceri* (DE LESSE, 1960) by well developed marginal pattern of wing underside, from *P.(A.) altivagans altivagans* (FORSTER, 1956) by more marginal obscuration and not such a strong glitter of the wing upperside.

Bionomy: Butterflies flown on a small steppe locality above Mistan village.

A very similar population occurs also in Nort Iran, Azerbaidjan province, 20 km W Ahar (leg. ECKWEILER) and vic. Dugijan (leg. HÄUSER, SCHURIAN & NAUMANN). This material is according to Dr. ECKWEILER very closely related with *Agrodiaetus baytopi* DE LESSE, 1959 from Eastern Turkey.

Polyommatus (Agrodiaetus) carmon **s u r a k o v i** subspec. nov.
(colour plate VIII, figs. 9–12)

Material
Holotype ♂: Azerbaidzhan, Nakhichevan, Buzgov, 1000m, 6.VII.1986, A. DANTCHENKO and A. SURAKOV leg. (CD).
Paratypes: 121 ♂♂, 14 ♀♀, same locality, 28.VI.–12.VII.1986, (CD, CL, CP, EMEM, IZK, CE), 2 ♂♂, same locality, 6.VII.1982, O. GORBUNOV leg. (CG); 2 ♂♂, same locality, 6.VII. 1982, O. GORBUNOV & KHOLINA leg. (CE); 1 ♂, same locality, 16.VI.1985, O. GORBUNOV leg. (CG); 3 ♂♂, 1 ♀, same locality, 17.VII.1986, O. GORBUNOV leg. (CG); 1 ♂, same locality, 18.VII.1986, O. GORBUNOV leg. (CE); 1 ♂, same locality, 24.VII.1986, O. GORBUNOV leg. (CE); 5 ♂♂, 1 ♀, Armenia, Arpachai, 2.–12.VII.1935, 1937 M. A. RJABOV leg. (ZISP); 12 ♂♂, 4.VII.1988, Khosrov reserve, Z. WEIDENHOFFER leg. (CW); 1 ♂, same locality, 3.VII. 1988, O. GORBUNOV leg. (CG); 1 ♂, same locality, 1.–3.VII.1988, O. GORBUNOV leg. (CE); 7 ♂♂, 2 ♀♀, same locality, 8.–31.VII.1970–1974, A. V. TZVETAEV leg. (ZMM); 4 ♂♂, Armenia, Daralagez, Martiros, 1900m, 12.VII.1984, V. LUKHTANOV leg. (CL).

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Description

Male. Forewing length 18.0 mm. Upperside: the ground colour is light bright blue; the forewings' subcosta aerie is covered with white dence pubescence, the marginal obscuration is indistinct, the distal ends of the veins are darkened, the inner part of the cilia are black, the outer part white; the hindwings' veins and marginal obscurations and veins are less developed, the inner part of the fringe is light grey, the outer part is white. Underside: the ground colour of the forewings is light-grey, the discal spot and spots of the postdiscal rows are encircled with white, a row of submarginal markings is hardly visible; the hindwings' colour grey, discal stroke invisible, row of small postdiscal spots encircled with white, antemarginal row nearly absent, submarginal markings indistinct, white streak sharp, equal in width on both ends, basal dust well developed.

Females. The forewing length varies from 16.0 mm to 18.0 mm. Upperside of wings: the ground colour is brown, the veins are darker; the forewings have a discal stroke and hardly visible reddish crescent markings, the inner part of the cilia is brown, the outer part is light brown, on apical part is white, the hindwings' fringe is light brown. Underside: pattern as in males but ground colour brown, marginal row better developed on forewings, basal dust less developed than in male.

Variation: Forewing length of males ranges from 15.2 mm to 18.8 mm. One male has metal glitter as in ssp. *munzuricus* (ROSE, 1978), half of the specimens have the two lateral spots of the postdiscal row on the upperside of the forewings strongly reduced.

Definition: Males of *P. (A.) carmon surakovi* subspec. nov. differ from *P. (A.) carmon carmon* (HERRICH-SCHÄFFER, 1851), *carmon munzuricus* (ROSE, 1978), *carmon schuriani* (ROSE, 1978) by absent discal strokes, lighter blue colour, not such a strong glitter of wing upperside and poorly developed marginal pattern of wing underside.

Bionomy: Butterflies fly on dry slopes in one generation.

Polyommatus (Agrodiaetus) phyllis **n e k r u t e n k o i** subspec. nov.
(colour plate VIII, figs. 13 – 16)

Material.

Holotype ♂: Azerbaidzhan, East Caucasus, mt. Diubrar, 29.VII.1984, I. DEGTIAREV leg. (CD).

Paratypes: ♂♀, same date, same locality; (CD, CB). 2 ♂♂, 2 ♀♀, same locality, 15.VII. 1985, V. I. TZIMBEROV leg. (CP). 17 ♂♂, same locality, 15.VIII.1985, P. KAZARIAN leg. (CL, ZISP).

Description

Holotype ♂: Forewing length is 16.4 mm. Upperside: the ground colour is silver blue with a metallic glitter (similar to *P. (A) phyllis dagestanica* (FORSTER, 1960) but brighter), in basal area blue colour is more developed, the forewings' subcosta aerie is covered with a white dense pubescence, the discal streak is indistinct, the marginal obscurations are

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poorly developed, the distal ends of veins are darkened, the proximal part of the cilia black, the distal one white; the hindwing's black marginal border is somewhat broader, the cilia white with grey markings at vein-ends. Underside: the ground colour of the forewing is light grey; the narrow discal marking and a row of postdiscal spots are dark brown, a row of submarginal markings of light brown colour become indistinct up to the costa, the antemarginal markings are replaced by a lighter colour, the ground colour of the hindwing is light grey with a slightly brownish tint, a row of small postdiscal spots encircled with white, a row of submarginal markings of light brown colour becomes indistinct up to the costa, the antemarginal markings are replaced by a light colour, the white streak is not sharp, but enlarged distally, the basal dust is well developed.
Females: Forewing length ranges from 14.0 mm to 15.0 mm. Upperside: the ground colour is greybrown; the veins, discal streak and submarginal markings are darker, the forewing cilia are white, the inner part is light brown only up to the costa, the hindwing cilia are white. Underside: the pattern is as in males but with more contrast and ground colour brown, very small basal spots on the forewings.

Variation: Forewing length of males varies from 16.0 mm to 16.5 mm.

Definition: Males of *P. (A.) phyllis nekrutenkoi* subspec. nov. differ from *P. (A.) phyllis phyllis* (CHRISTOPH, 1877), *phyllis vanensis* (DE LESSE, 1957), *phyllis zeituna* (FORSTER, 1960), *phyllis sheljuzhkoi* (FORSTER, 1960), *phyllis dagestanica* (FORSTER, 1960), *phyllis zeituna* (FORSTER, 1960) by less marginal obscurations of the wings' upperside, the ground colour of wings' underside is lighter and not so sharp.

Bionomy: Unknown, but this subspecies is undoubtedly related to *Onobrychis cornuta* (L.).

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Explanation of colour plate VIII (p. 433)

Fig. 1: *Polyommatus (Agrodiaetus) gorbunovi* spec. nov., holotype ♂, Azerbaidzhan, Talysh Mts., Zuvand, Mistan, 1900m, 14.VII.1985, A. DANTCHENKO leg. (CD). Upperside.
Fig. 2: The same as in fig. 1. Underside.
Fig. 3: *Polyommatus (Agrodiaetus) gorbunovi* spec. nov., ♀, paratype, same data as holotype. Upperside.
Fig. 4: The same as in fig. 3. Underside.
Fig. 5: *Polyommatus (Agrodiaetus) rovshani* spec. nov., holotype ♂, Azerbaidshan, Talysh Mts., Zuvand, Mistan, 1900m, 12.VII.1984, A. DANTCHENKO leg. (CD). Upperside.
Fig. 6: The same as in fig. 5. Underside.
Fig. 7: *Polyommatus (Agrodiaetus) rovshani* spec. nov., ♀, paratype, same data as holotype. Upperside.
Fig. 8: The same as in fig. 7. Underside.
Fig. 9: *Polyommatus (Agrodiaetus) carmon surakovi* subspec. nov., holotype ♂, Azerbaidshan, Nakhichevan, Buzgov, 1000m, 6.VII.1986, A. DANTCHENKO & A. SURAKOV leg. (CD). Upperside.
Fig. 10: The same as in fig. 9. Underside.
Fig. 11: *Polyommatus (Agrodiaetus) carmon surakovi* subspec. nov., ♀, paratype, same data as holotype. Upperside.
Fig. 12: The same as in fig. 11. Underside.
Fig. 13: *Polyommatus (Agrodiaetus) phyllis nekrutenkoi* subspec. nov., holotype ♂, Azerbaidshan, East Caucasus, mt. Diubrar, 29.VII.1984, I. DEGTIAREV leg. (CD). Upperside.
Fig. 14: The same as in fig. 13. Underside.
Fig. 15: *Polyommatus (Agrodiaetus) phyllis nekrutenkoi* subspec. nov., ♀, paratype, same data as holotype. Upperside.
Fig. 16: The same as in fig. 15. Underside.

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4	8	12	16
3	7	11	15
2	6	10	14
1	5	9	13

Adresses of the authors

A. V. DANTCHENKO
Institute of Evolutionary Morphology and Ecology of Animals
Russian Academy of Sciences
Leninsky pr. 33
Moscow 117071
Russia

V. A. LUKHTANOV
St.-Petersburg State University
Universitykaya 7/9
St.-Petersburg
Russia

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Fig. 2: The same as in fig. 1. Underside.
Fig. 3: *Polyommatus (Agrodiaetus) gorbunovi* spec. nov., ♀, paratype, same data as holotype. Upperside.
Fig. 4: The same as in fig. 3. Underside.
Fig. 5: *Polyommatus (Agrodiaetus) rovshani* spec. nov., holotype ♂, Azerbaidshan, Talysh Mts., Zuvand, Mistan, 1900m, 12.VII.1984, A. DANTCHENKO leg. (CD). Upperside.
Fig. 6: The same as in fig. 5. Underside.
Fig. 7: *Polyommatus (Agrodiaetus) rovshani* spec. nov., ♀, paratype, same data as holotype. Upperside.
Fig. 8: The same as in fig. 7 Underside.
Fig. 9: *Polyommatus (Agrodiaetus) carmon surakovi* subspec. nov., holotype ♂, Azerbaidshan, Nakhichevan, Buzgov, 1000m, 6.VII.1986, A. DANTCHENKO & A. SURAKOV leg. (CD). Upperside.
Fig. 10: The same as in fig. 9. Underside.
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Fig. 16: The same as in fig. 15. Underside.

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Colour plate VIII

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