

Description of a new subspecies of *Callophrys suaveola* (Staudinger, 1881) (Lepidoptera: Lycaenidae) from Mongolian Altai with notes on a distribution of *C. suaveola*

Описание нового подвида *Callophrys suaveola* (Staudinger, 1881) (Lepidoptera: Lycaenidae) из Монгольского Алтая с заметками по распространению *C. suaveola*

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Key words: Lepidoptera, Lycaenidae, *Callophrys suaveola*, new subspecies, Mongolia, taxonomy.

Ключевые слова: Lepidoptera, Lycaenidae, *Callophrys suaveola*, новый подвид, Монголия, таксономия.

Abstract. Basing on external differences and taking into consideration all modern data on a distribution of *C. suaveola*, the new subspecies, *Callophrys suaveola kozlovi* ssp. n., is described from Mongolian Altai. The new subspecies is characterized by the large androconial spots of males and details of colouration of wings.

Резюме. На основании внешних различий, учитываемых все современные данные по распространению *C. suaveola*, новый подвид, *Callophrys suaveola kozlovi* ssp. n., описывается из Монгольского Алтая. Новый подвид характеризуется крупными андрокониальными пятнами самцов и деталями окраски крыльев.

Callophrys suaveola (Staudinger, 1881) was described from “Lepsa” (Lepsy river valley, Dzhungarsky Alatau, SE Kazakhstan) [Tuzov et al., 2000]. Some authors [Gorbunov, 2001; Tshikolovets, 2011] treat *C. suaveola* as polytypic species with subspecies *butlerovi* Miganrov, 1992 from South Ural and North Kazakhstan (type locality – Kungaktau Mts., Bashkiria) and *danchenkoi* Zhdanko, [1999] from Armenian highland, Transcaucasia and North-Western Iran (type locality – Daralagez Mts., Azerbaijan). *C. titanus* Zhdanko, [1999] which inhabits Tien-Shan Mts., Alai, Ghissar and Western Pamir (type locality – Dzhetyzhol Mts., Kazakhstan) sometimes treated as synonym of *C. suaveola* [ten Hagen, Miller, 2010]. Status of these taxa needs further clarification, partially these problems were discussed in our previous papers [Krupitsky, Devyatkin, 2012; Krupitsky et al., 2012]. Here we consider only the nominate subspecies of *C. suaveola* which inhabits mountains of North-Western and, partially, Middle Asia. Western Altai (Narymsky, Kalbinsky, Ulbinsky Ridges) is the northernmost limit of its distribution and Western Tien-Shan is the southernmost limit [Lukhtanov, Lukhtanov, 1994; Lukhtanov et al., 2007].

A population of butterflies belong to the *C. suaveola* species group was found in Mongolia by R.V. Yakovlev in south-western part of Mongolian Altai (Arshantyn-Nuruu

Range) [Yakovlev, 2012a, b; Yakovlev, Černila, 2012] in several hundreds kilometres eastward of the type locality of *C. suaveola*. Comparison of the specimens from this population with the nominate subspecies of *C. suaveola* from Kazakhstan allow us to regard that Mongolian specimens have the same structure of genitalia as the latter subspecies but have constant differences in the wing pattern lying out of bounds of variability of the nominate subspecies of *C. suaveola*. Taking into account these differences we describe the new subspecies here.

Callophrys suaveola kozlovi Krupitsky et Yakovlev, ssp. n.

Material. Holotype ♂, W Mongolia, Hovd aimak, Bulgan-Gol basin, Arshantyn-Nuruu Mts., Bayan-Gol Valley, middle stream of Ulyastain-Sala riv., 1600–1800 m, 46°21'N / 91°08'E, 17–18.05.2012, R.V. Yakovlev leg. Paratypes: 8♂, 2♀, the same data as in the holotype. Holotype is kept in collection of Zoological Museum of Moscow State University (Moscow, Russia), paratypes are in collections of authors, 1♂ in collection of M. Černila (Kamnik, Slovenia).

Description. Male (Color plate 10: fig. 4–5). Forewing length 16–18 mm.

Antennae black, white-ringed at bases of segments, club dark, its base below white, terminal segments (apiculus) brown. Eyes brown with small yellowish hairs, surrounded by white strip ahead and white and green scales behind. Frons green with black hairs, top of head with green scales and greenish hairs. Palpi: 2nd segment green; 3rd segment black with white hairs on the top. Thorax: upperside black with grey hairs and diffuse green scales, underside green with white hairs. Legs white with black scales and white hairs. Abdomen: upperside black with grey hairs and diffuse green scales, underside white with white hairs.

Upperside (Color plate: fig. 4). Forewing: ground colour dark brown; basal area overlaid by large brown scales and diffuse green scales in some cases; costal edge and outer margin marked by diffuse yellowish scales; inner margin and base of space 1a covered by brown hairs. Androconial spot large, oval, its width in 2 times much larger than length, overlaid by small light scales. Fringe yellowish-white, with brown and dark-brown scales at the base. Hindwing: slightly wavy between veins 1b–5; ground colour the same as on forewing; spaces 7–8 and half of space 6 covered by grey scales; cell covered by gray scales at the base; spaces 1a

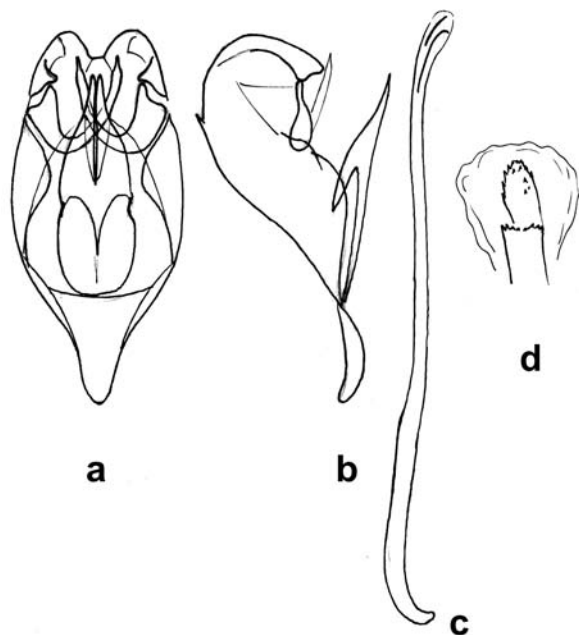


Fig. 1. *C. suaveola kozlovi* ssp. n., male genitalia: a – ventral view, b – lateral view, c – aedeagus, lateral view, d – cornuti, dorsal view.

Рис. 1. *C. suaveola kozlovi* ssp. n., гениталии самца: а – вид снизу, б – вид сбоку, с – аedeagus, вид сбоку, д – корнутусы, вид сверху.

and 1b covered by pale grey scales; basal and discal area covered by greyish-brown hairs; veins marked by dark brown scales, outer margin marked by diffuse yellowish scales; fringe the same as on forewing, chequered with dark scales along veins. Anal lobe not developed; anal angle with small brush of long dark scales. Outer margin (termen) beginning from V2 and inner margin (dorsum) are covered by long white hairs.

Underside (Color plate 10: fig. 5). Forewing: ground colour green with grey scales, except of spaces 1a and 1b which are grey; basal area of wing with emerald-green scales and rare greenish hairs. Distal part of space 1b with green scales. Fringe yellowish-white with greenish-brown scales at the base. Hindwing: ground colour the same as on forewing but emerald-green scales cover basal area and part of discal area of wing; almost the whole wing covered by greyish-green hairs, more intensely in basal area. Postdiscal row of white spots totally reduced on both wings. Fringe the same as on forewing, chequered with dark scales along veins.

Male genitalia (Color plate 7: fig. 1). Uncus deeply divided by tegumen, as broad as 0.7 of width of vinculum in ventral view, with well-developed invad lobes; falces (subunci) slender, oblique, crossing at sharp angles. Clasps long, reach lobes of uncus, medially concave, distally narrowed. Saccus as long as 1/3–1/4 of the general length of genitalia. Aedeagus slender, 1.3–1.4 times longer than the general length of genitalia, cornuti with slightly serration.

Female (Color plate 10: fig. 6–7). Similar to the males in general characters (except androconial spot) but smaller (forewing length 16 mm), margin of forewing rounded (male: margin of forewing straight).

Female genitalia (Color plate 10: fig. 2). Papillae anales long and slender, hairy; apophyses posteriores straight, 1.3 times longer than the length of papillae anales. Antrum with developed lateral lobes, central lobe with hollow. Ductus bursae strong, extending basally, 1.5 times much longer than the length of antrum from top of central lobe to base. Corpus bursae membranous, bears two signa, each with two unequal spines. Slightly differs from the nominate females of *C. suaveola* in the shape of antrum and ductus bursae but these differences are probably exceeded by the variability.

Distribution. The new subspecies is known only from the type locality Arshantyn-Nuruu Mts.

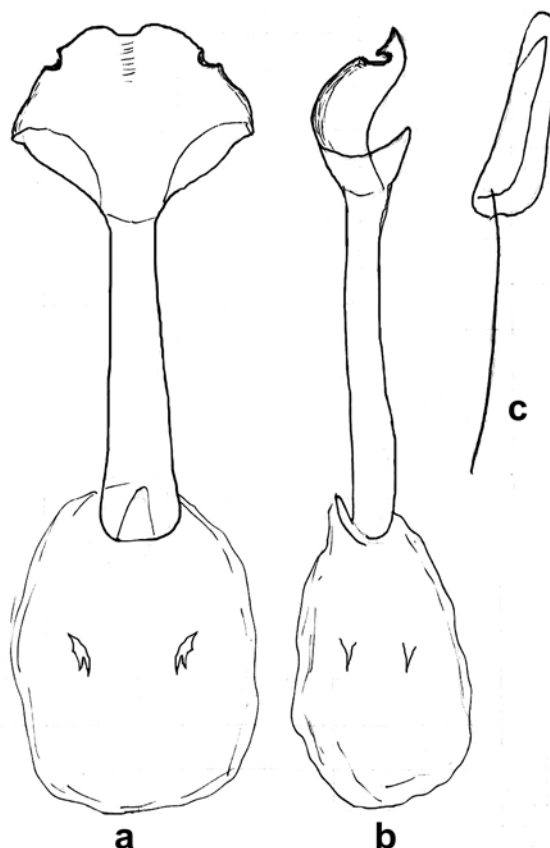


Fig. 2. *C. suaveola kozlovi* ssp. n., female genitalia: a – antrum, ductus bursae and bursa copulatrix with signa, dorsal view; b – antrum, ductus bursae and bursa copulatrix with signa, lateral view; c – apophyses posteriores and papillae anales, dorsal view).

Рис. 2. *C. suaveola kozlovi* ssp. n., гениталии самки: а – антрум, дуктус и бурса с сигнумами, вид сверху, б – антрум, дуктус и бурса с сигнумами, вид сбоку, с – задняя апофиза и анальный сосочек, вид сбоку

Biology. Unknown; probably the subspecies is associated with *Ferula* spp. (Apiaceae), host plants of *C. suaveola* in the main area of distribution. All specimens were found flying over shrubs of *Lonicera microphylla* (Caprifoliaceae). On the wings at May, together with *C. rubi* (Linnaeus, 1758).

Etymology. The subspecies is named in an honour of P.K. Kozlov (1863–1935), well-known explorer of Central Asia.

Differential diagnosis and discussion. Differs from the nominate subspecies in the following main characters:

- dark-brown upperside of the wings (upperside pale-brown in nominate *C. suaveola*);
- large oval broad androconial spot (androconial spot thin in nominate *C. suaveola*);
- upperside and underside of the wings with reduced yellowish pattern in costa (yellowish pattern in costa developed in nominate *C. suaveola*);
- white postdiscal row of spots on the underside of wings totally reduced (one white dot of postdiscal row is developed in most specimens of nominate *C. suaveola*).

Finding of a taxon from the *C. suaveola* species group

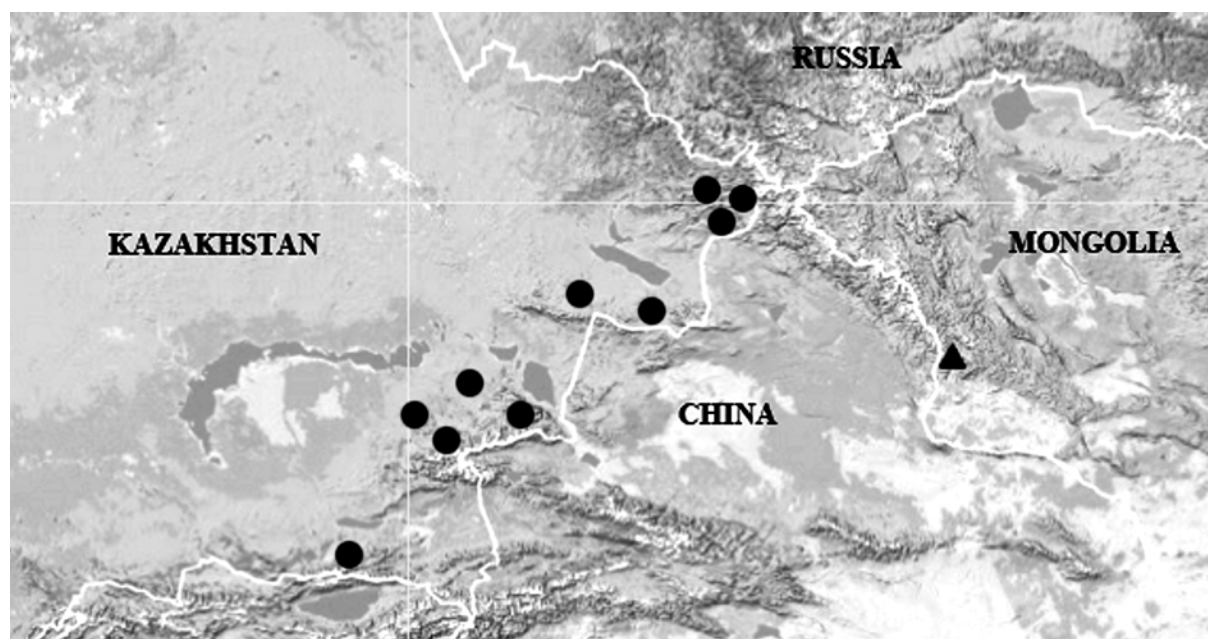


Fig. 3. Distribution of *C. suaveola*: circles – nominate subspecies, triangle – *C. s. kozlovi* ssp. n.
Рис. 3. Распространение *C. suaveola*: круги – номинативный подвид, треугольник – *C. s. kozlovi* ssp. n.

in Arshantyn-Nuruu Range was predictable due to the presence of Dzhungarian species (*Muschampia antonia* (Rambur, 1858), *Athamanthia dimorphus* (Staudinger, 1881), *Chazara heydenreichi* (Lederer, 1853), *Polygonia interposita* (Staudinger, 1881), *Otnjukovia tatjana* (Zhdanko, 1984)) – on the one hand, and endemic species closely relate to Dzhungarian species (*Melitaea yakovlevi* Kolesnichenko, 2007, *Neolycaena sapozhnikovii* Yakovlev, 2012, *Tongeia arata* Yakovlev, 2009, *Paleophilotes svetlana* (Yakovlev, 2003)) – on the other, in the fauna of this range [Yakovlev, 2012b; Yakovlev, Černila, 2012]. Discovery of *C. suaveola kozlovi* ssp. n. expands the distribution area of taxa from the *C. suaveola* species group. At the present time Arshantyn-Nuruu Range, which is separated from the area of distribution of the nominate subspecies by several hundreds kilometres (Color plate 10: fig. 3), is the easternmost limit of distribution area of the group. *C. suaveola* wasn't mentioned in lists of Chinese Lycaenidae [Chou, 1994; Ming, Xiaoling, 1999], but it seems to be very possible that it inhabits Chinese parts of Altai and Tien-Shan Mts. and, probably, other parts of Mongolian Altai.

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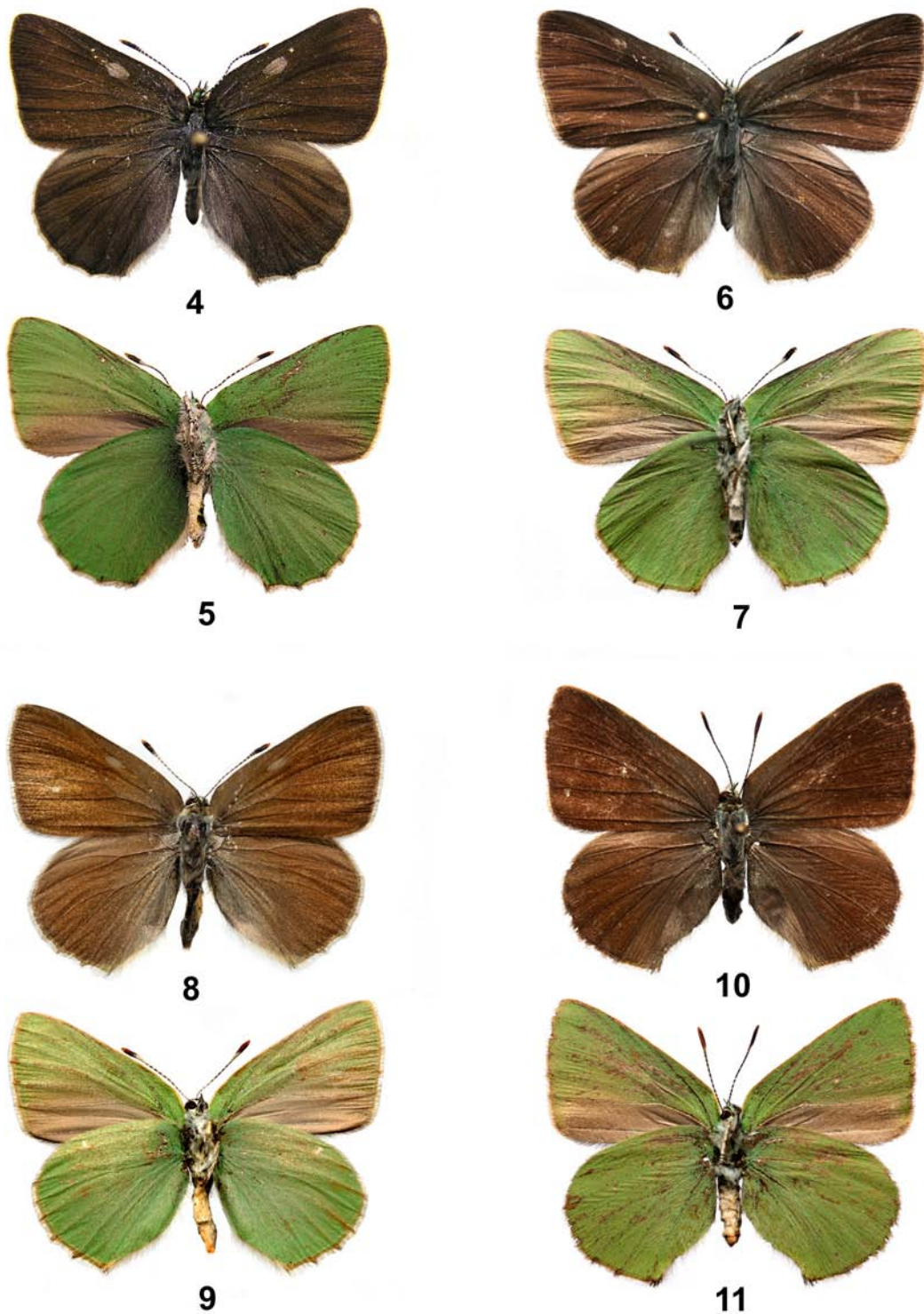


Fig. 4–11. *Callophrys suaveola*, внешний вид. 4 – *C. s. kozlovi* ssp. n., holotype, male, upperside; 5 – Same, wings underside; 6 – *C. s. kozlovi* ssp. n., paratype, female, upperside; 7 – Same, wings underside; 8 – *C. s. suaveola*, male, wings upperside, Kazakhstan, Alma-Ata, 14.05.1967, Tsvetaev A. leg., ex coll Zoological Museum of the Moscow State University; 9 – Same, wings underside; 10 – *C. s. suaveola*, female, wings upperside, E Kazakhstan, SW Tarbagatai Mts., Blagodatnoe environs, 1000 m a.s.l., 02.06.2011, N. Rubin leg., ex coll. Krupitsky A. V.; 11 – Same, wings underside.

Рис. 4–11. *Callophrys suaveola*. 4 – *C. s. kozlovi* ssp. n., голотип, самец, верхняя сторона крыльев; 5 – То же, испод крыльев; 6 – *C. s. kozlovi* ssp. n., паратип, самка, верхняя сторона крыльев; 7 – То же, испод крыльев; 8 – *C. s. suaveola*, самец, верхняя сторона крыльев, Казахстан, Алма-Ата, 14.05.1967, Цветаев А. лг., колл. Зоологического Музея Московского Государственного Университета; 9 – То же, испод крыльев; 10 – *C. s. suaveola*, самка, верхняя сторона крыльев, В Казахстан, ЮВ Тарбагатай, окр. пос. Благодатное, 1000 м н. у. м., 02.06.2011, Н. Рубин лг., колл. Крупицкого А. В.; 11 – То же, испод крыльев.

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