



## A new *Cochylimorpha* Razowski, 1959 (Lepidoptera: Tortricidae) from Altai and Tuva, Russia

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### Abstract

*Cochylimorpha flavescens* sp. nov. is described from the Altai Republic and Tuva Republic (Russia). The new species is related to *Cochylimorpha obliquana* (Eversmann, 1844) belonging to the *C. jucundana* species group of Cochylini tribe. The new species is figured in detail including male genitalia.

**Key words:** Altai, Lepidoptera, new species, Russia, taxonomy, Tortricidae, Tuva

### Introduction

The genus *Cochylimorpha* Razowski, 1959 comprises 97 species occurring mainly in the Palaearctic region, several species are present also in the Oriental region (Gilligan *et al.* 2018). In Russia, 33 *Cochylimorpha* species were recorded so far, but only four species were known from the Altai Republic and 11 from the Tuva Republic (Sinev 2019). As a result of processing material from the Lepidoptera collections from Russian Altai and Tuva by the first author, an undescribed species of the genus *Cochylimorpha* was discovered. This new species belongs to the *C. jucundana* species group which can be characterized by triangular transtilla, aedeagus with strong sclerotized lateral arm and absence of cornuti in the aedeagus of male genitalia. The fore wing pattern is not clearly distinguishable from other *Cochylimorpha* species, but narrow wings with a markedly elongated apex and distinct oblique dorsal blotch is characteristic for this species group. This contribution aims to provide an updated checklist of the *C. jucundana* species group, and to describe a new species belonging to this group.

### Material and methods

The specimens of *Cochylimorpha flavescens* were collected at a portable light trap with 8 W ultraviolet fluorescent tube. The male genitalia were dissected and prepared using standard methods and studied in glycerol. The photographs of genitalia were taken using a Canon EOS 1100D digital camera attached to an Olympus BX41 compound microscope. The pinned specimens were photographed with a Canon 750D + MP-E 65mm f/2,8 1-5x macro lens. The final pictures were edited in Adobe Photoshop© software. The holotype of *C. flavescens* was barcoded at the Canadian Centre for DNA Barcoding (CCDB, Biodiversity Institute of Ontario, University of Guelph). We used a dry leg for DNA extraction, and a full barcode sequence was obtained (a 658 base-pair long segment of the 5' terminus of cytochrome c oxidase I). Details of the sequenced specimen, comprising faunistic data and image were uploaded to the Barcode of Life Data Systems (Ratnasingham & Hebert 2007). The type material of the new species is preserved in the collection of National Museum, Prague (NMPC). In the description, the terminology of the genitalia follows Razowski (2009).

## Results

### Checklist of *jucundana* species group

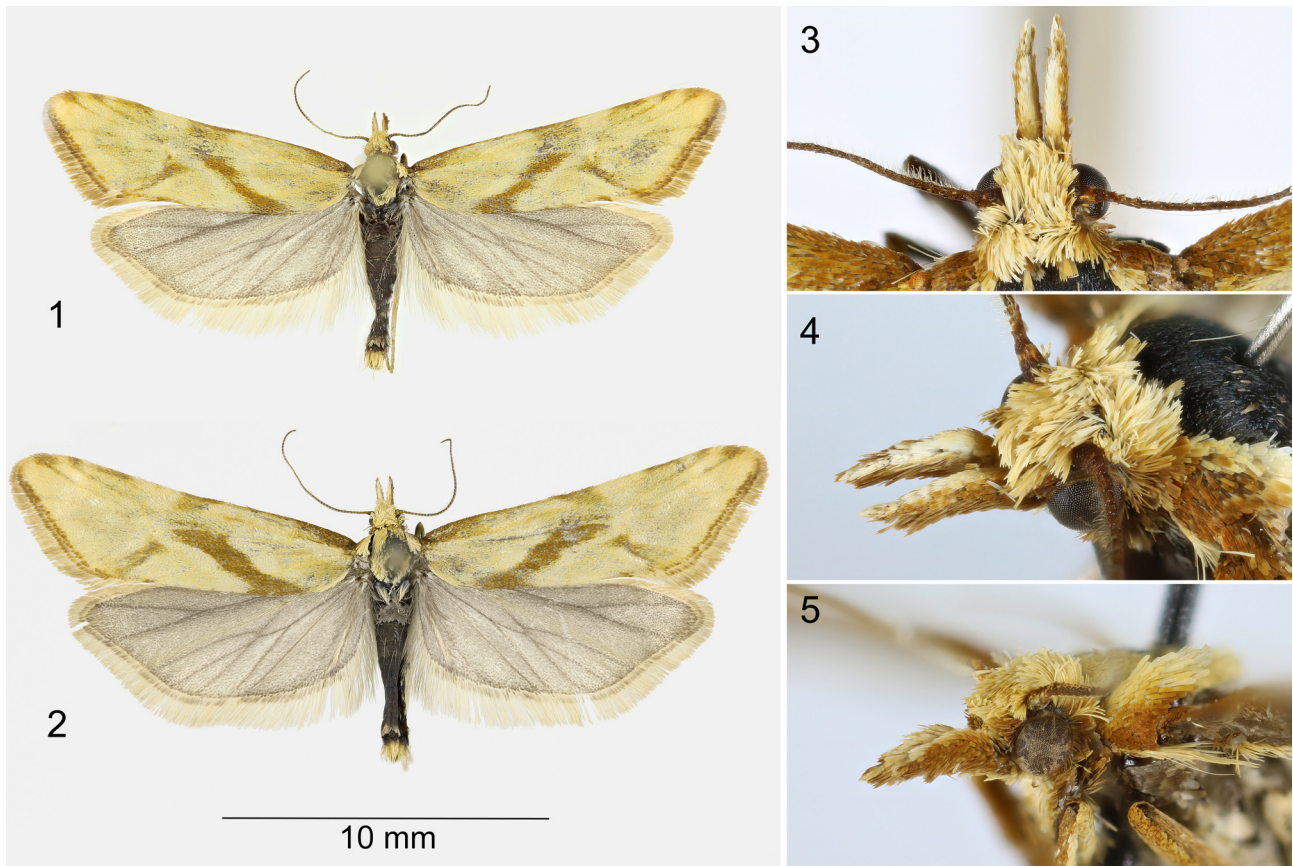
*jucundana* Treitschke, 1835 (TL: Hungary)  
*obliquana* Eversmann, 1844 (TL: Russia, Southern Ural)  
*flavescens* **sp. n.** (TL: Russia, Altai, Tuva)  
*pyramidana* Staudinger, 1871 (TL: Russia, Volgograd [Sarepta])  
*emiliana* Kennel, 1919 (TL: Russia, Tuva, Tannu-Ola)  
*thomasi* Karisch, 2003 (TL: Turkey, Van)  
*ignicolorana* Junnilainen & K. Nupponen, 2001 (TL: Russia, Southern Ural)

### Description of new species

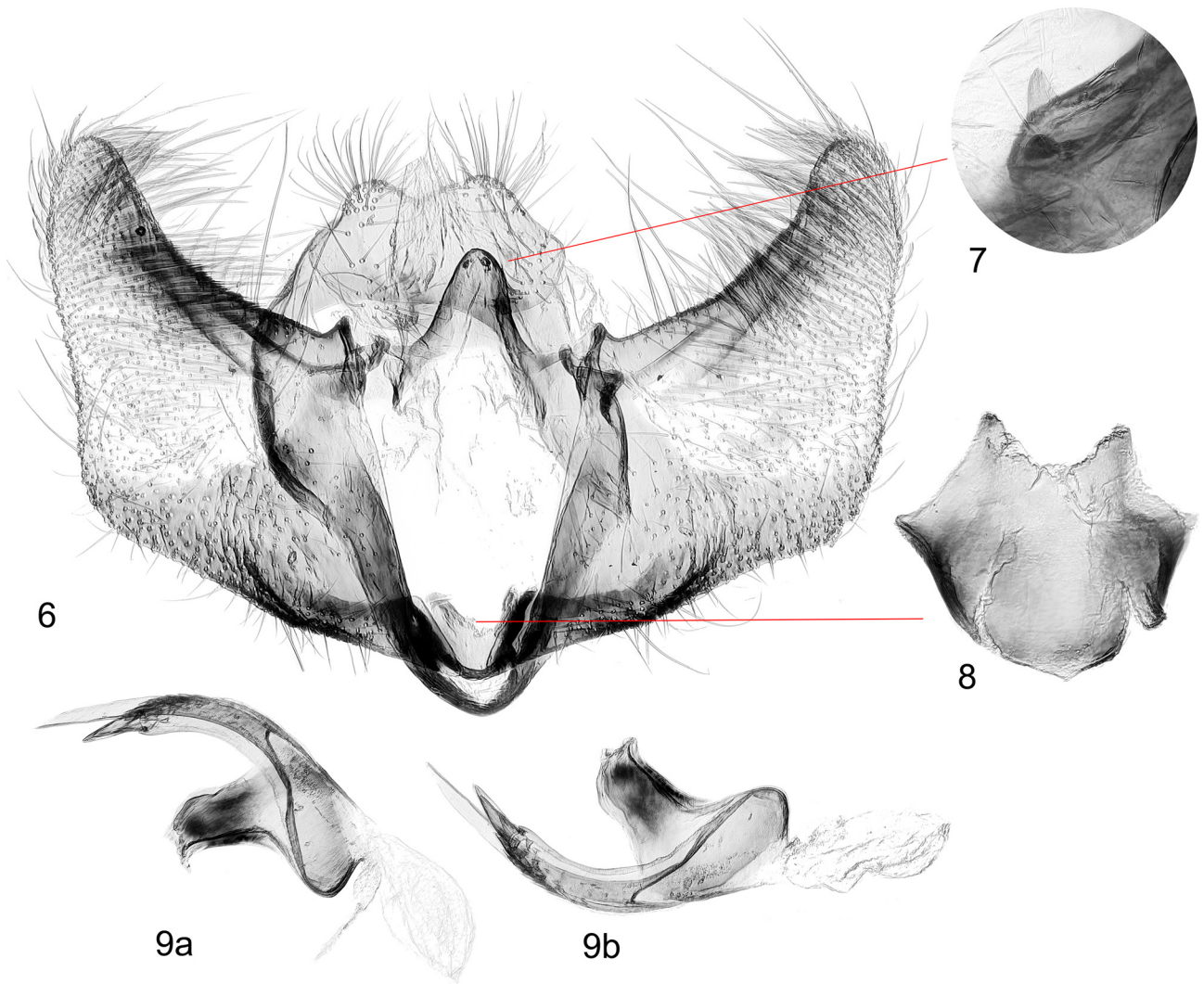
#### *Cochylimorpha flavescens* **sp. n.**

(Figs 1–9)

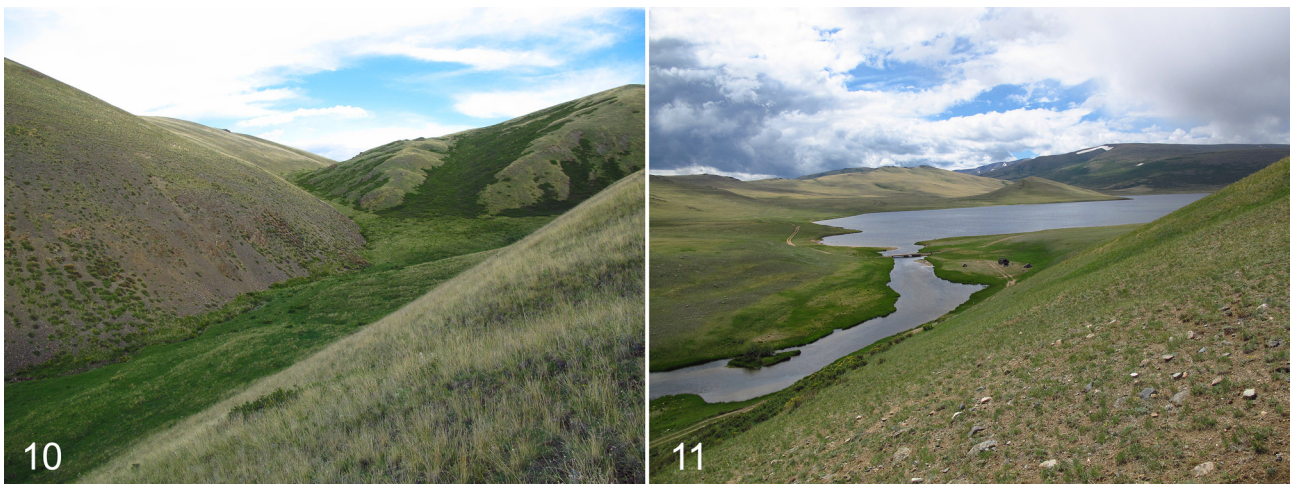
**Type material:** Holotype, ♂, **Russia**, Altai Republic, Kosh-Agach Distr., Tashanta env. (8 km N), 49°44'11"N, 89°20'02"E, bellow, "11 station", rocky steppe / montains meadows, 2280 m, 1.vii.2015 (gen. prep. J. Šumpich 19907, Barcode NMPC-Lep-0270) (J. Šumpich) (NMPC). Paratypes: 1 ♂, with the same label as holotype; 3 ♂, **Russia**, Altai Republic, Kosh-Agach Distr., Kurai env. (15 km SW), Dzhangyskol lake, 50°10'49"N, 87°44'19"E, steppe, 1830 m, 29–30.vi.2016 (J. Šumpich); 2 ♂, **Russia**, Tuva, 75 km NE of Kosh-Agach, Ak-Chol lake, 50°16'43"N, 89°36'44"E, rocky steppe, meadows, 2230 m, 2–3.vii.2015 (J. Šumpich) (all NMPC).



**FIGURES 1–5.** *Cochylimorpha flavescens* **sp. n.** 1–2. Adults, males. 1. Holotype, Altai, Tashanta env. 2. Paratype, Tuva, Ak-Chol lake env. 3–5. Head. 3–4. Altai, Dzhangyskol lake area. 5. Tuva, Ak-Chol lake area.



**FIGURES 6–9.** *Cochylimorpha flavescens* sp. n., male genitalia, holotype, gen. prep. 19907 J. Šumpich. 6. General view. 7. Detail of apex of transtilla. 8. Detail of juxta. 9. Aedeagus: a—right view, b—left view.



**FIGURES 10–11.** Habitats of *Cochylimorpha flavescens* sp. n. 10. Altai, Tashanta area, bellow 11. station. 11. Tuva, Ak-Chol lake.

**Diagnosis.** Externally, *Cochylimorpha flavescens* sp. nov. differs well from all known Palaearctic species of this genus due to the peculiar forewing pattern, apart from *C. obliquana*. However, *C. flavescens* differs from *C. obliquana* by larger wingspan and nearly uniformly yellowish coloration of the forewings. The male genitalia are unmistakable within this species group, mainly due to the unique shape of the valvae, which is very similar to that of *C. razowskiana* Kuznetsov, 2006. However, *C. razowskiana* has a square transtilla and the aedeagus is with two cornuti and without lateral arm. For more details see Razowski (2009).

**Description. Adult** (Figs 1–5). Male. Wingspan 21.5–23 mm. Head with moderately protruding pale yellow scales, labial palpi porrect with dense long scales of same color, straight, scapus covered with brownish scales, rest antennomeres with alternating light yellow and grayish brown rings, densely ciliated beneath. Thorax dorsally, including tegulae, covered with light yellow scales, without pattern. Forewing very narrow, with straight costal and strongly oblique tornal margin, dorsal margin slightly convex. Upperside forewing ground color light yellow, with dark pattern consisting of: narrow oblique long brown dorsal spot with slightly sinuous inner and outer margins starting in front of middle of dorsal margin and reaching costal border of median cell; much shorter oblique spot of same color extending from dorsal border of apex of median cell to tornal angle, strongly narrowing; five blurred brown spots along costal edge, largest of which more or less rectangular and located above dorsal spot and almost connected with it; smaller, narrower spot with rounded dorsal border and narrowing apex at base of wing; rod-like third spot of even width approximately 1 mm long extending along costal margin, starting distally from apex of median cell; remaining two smallest more or less rounded triangular spots on costal edge of the wing at the confluence of  $R_3$  and  $R_4$ , brown lines emerging from these spots follow these veins for more than 1 mm each, further blurring and terminating. Cilia light brown, some scales with yellowish fragments at base, ciliar line darker, dark brown. Hindwings gray, with darker veins and wide dark gray suffusion along the RR and  $M_1$  trunks and, fragmentarily, above. Cilia yellowish-gray in upper part of wing, at apex and along outer edge of wing almost to the confluence of  $M_3$  vein, and further downward becomes lighter, dirty yellowish-white. Fringe line darker, about same color as veins. Female unknown.

**Male genitalia** (Figs 6–9). Uncus absent, tegumen comparatively wide, with shallow wide notch at apex. Socii rather wide, relatively weakly sclerotized, curved almost at right angle in, slightly narrowed terminally and with dense relatively short setae. Median process of transtilla strongly sclerotized, long, apically rounded formation with two small conical spines in apical part. Valva wide in basal half, distally strongly narrowed and bending dorsally at obtuse angle. Top of valva rounded. Aedeagus smooth, curved ventrally, slender and, with semi-oval coecum. Lateral arm with several spines in apical half, curved ventrally. Cornuti absent.

**Female.** Unknown.

**Molecular data.** BIN BOLD: AEA2526 (n = 1). The nearest neighbor is *C. jucundana* with 5.29% p-distance. However, at the time of a preparation of this paper, some related species have not yet been barcoded, including *C. obliquana*.

**Biology.** Host plant unknown. Adults were observed only at the very end of June and in the beginning of July at altitudes of 1800–2300 m above sea level in rocky steppes and open xerothermic habitats (Figs 10–11).

**Distribution.** Russia: Altai, Tuva.

**Etymology.** The species name refers to the yellowish color of the forewings.

## Conclusion

The tortricid fauna of southern Siberia is relatively well surveyed (Sinev 2019), with notable contributions to the knowledge of Altai fauna in particular having been made by Ukrainian entomologist Yu. A. Kostjuk in the 1970s (e.g. Kostjuk 1979) as well as by Russian and Finnish entomologists during the course of several joint expeditions to the region, and especially neighbouring Tuva, in the 1980s and 1990s (e.g. Kuznetsov & Jalava 1988). Many species have been described from the Altai Mountains in the past, these include *Clepsis altaica* (Caradja, 1917), *Eriopsela falkovitshi* Kostjuk, 1979 and *Dichrorampha altaica* Danilevsky, 1968 as well as two species from the tribe Cochylini: *Aethes decens* Razowski, 1970 and *Cochylimorpha cultana* (Lederer, 1855), the latter from the Kazakh Altai. Compared to other parts of southern Siberia, Cochylini fauna of the Altai appears poorer (Sinev 2019), this is due however to a significantly lower level of exploration. During the last 20 years, the results of only two trips to the Russian Altai have been published (Bidzilya *et al.* 2002; Huemer *et al.* 2017), both of which also contain records

of leaf rollers. In the coming years, the aim is to prepare a comprehensive study of Cochylini (and later also other groups) recorded in the Russian Altai between 2014–2019 by the first author of this work.

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