

UDC595.78(477+574)

NEW AND LITTLE-KNOWN SPECIES OF CASEBEARERS (LEPIDOPTERA, COLEOPHORIDAE) FROM UKRAINE AND KAZAKHSTAN

Yu. I. Budashkin¹, O. V. Bidzilya²

¹T. I. Vyasemskiy Karadag Scientific Station — Nature Reserve,
Kurortnoye, Feodosia
E-mail: budashkin@ukr.net

²Institute for Evolutionary Ecology, NAS of Ukraine,
Academician Lebedev st., 37, Kyiv, 03143 Ukraine
E-mail: olexbid@gmail.com

urn:lsid:zoobank.org:pub:2B54EBA7-ADDC-4B4A-AF7A-E56D12299573

New and Little-Known Species of Casebearers (Lepidoptera, Coleophoridae) from Ukraine and Kazakhstan. Budashkin, Yu. I., Bidzilya, O. V. — *Multicoloria jukkai* Budashkin & Bidzilya, sp. n. is described from South-Eastern Kazakhstan and South-Eastern Ukraine. *Casignetella pokrovkella* (Baldizzone & Tabell, 2007), comb. n. is found in South-Eastern Crimea. The larvae host plant of the second species is *Climacoptera brachiata* (Pall.) Botsch. Adults and the genitalia of both species are illustrated. The following new combinations are proposed: *Casignetella psamata* (Falkovitsh, 1973), comb. n. and *Casignetella cyrta* (Falkovitsh, 1973), comb. n.

Key words: Lepidoptera, Coleophoridae, new species, little known species, new combinations, new host plant, Kazakhstan, Ukraine, Crimea.

Introduction

As a result of ongoing inventory of Coleophoridae in Ukraine (Bidzilya et al., 2001, 2003, 2006, 2011, 2013, 2014; Budashkin et al., 2011, 2012 a, b, 2014, 2017; Budashkin, Zhakov, 2013) and study of bionomy and faunistic of casebearers in Crimea (Budashkin, 2004, 2006, 2011, 2013, 2014 a, b; 2016; Bidzilya, Budashkin, 2005, 2009; Anikin, Budashkin, 2005; Budashkin et al., 2007, 2009; Budashkin, Falkovitsh, 2007; Budashkin, Savchuk, 2008, 2010, 2012, 2013; Budashkin, Giderashko, 2009; Budashkin, Puzanov, 2011, 2014), a previously unknown species *Multicoloria jukkai* Budashkin & Bidzilya, sp. n. is described from South-Eastern Kazakhstan (Charyn valley) and South-Eastern Ukraine (“Kamyani Mohyly” Nature Reserve). *Casignetella pokrovkella* (Baldizzone & Tabell, 2007) “comb. n.” known from the type series collected in Orenburg Region of Russia, is found in South-Eastern Crimea (western vicinity of Karadag Nature Reserve). The larva bionomy (host plant and life history) and life cycle are described for the last species. The holotype of *M. jukkai* sp. n. is deposited in the collection of Kari Nupponen (Espoo, Finland) (KN), nine paratypes of *M. jukkai* sp. n. are deposited in the collections of Jukka Tabell (Hartola, Finland) (JT) and Kari Nupponen, one paratype — in the collection of Zoological Museum of Kyiv Taras Shevchenko National University

(Kyiv) (ZMKU). The material on *C. pokrovkella* is deposited in the collection of ZMKU and in the collection of Zoological Institute Russian Academy of Sciences (St.-Petersburg) (ZISP).

Material and methods

The adults were collected by light trap or bread from larvae in laboratory. Male and female genitalia were dissected and prepared using standard methods. Pinned specimens were photographed with an Olympus E-410 digital camera attached to microscope Olympus SZX12. Slide-mounted genitalia were photographed with a Canon EOS 600D digital camera mounted on Olympus U-CTR30-2 combined with Carl Zeiss microscope. Sets of 10–20 images were taken for each specimen and assembled into deep-focused images using Helicon Focus 6 and edited in Adobe Photoshop CS5.

Results

Multicoloria jukkai Budashkin & Bidzilya, sp. n.

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Type material. Holotype: ♂, Kazakhstan, Charyn River, 1220 m, 43°14'36" N, 78°52'48" E, 1.06.2014 (Nupponen, Haverinen) (KN). Paratypes: 8 ♂, 2 ♀, Kazakhstan, Charyn valley, 1080 m, 43°17'56.4" N, 78°58'42.6" E, 18.05.2003 (Pototski, Jürivete) (GP 5302, J. Tabell) (JT); 6 ♂, 2 ♀, Kazakhstan, Charyn River, 1220 m, 43°14'36" N, 78°52'48" E, 1.06.2014 (Nupponen, Haverinen) (GP 5464, GP 5325, J. Tabell) (JT, KN); 1 ♂, Ukraine, "Kamyani Mohyly" Nature Reserve, 28.05.1999, at light (Bidzilya) (gen. slide 626/14, O. Bidzilya) (ZMKU).



Figs 1–2. *Multicoloria jukkai* Budashkin & Bidzilya, sp. n.: 1 — adult, male, holotype; 2 — male genitalia (gen. slide 626/14, O. Bidzilya).



Figs 3–4. *Multicoloria jukkai* Budashkin & Bidzilya, sp. n.: 3 — female genitalia (GP 5325 JT); 4 — abdominal tergites with paired patches of spinules (gen. slide 626/14, O. Bidzilya).

Description. Adult (fig. 1). Wingspan 14.5–18.2 mm. Labial palpus rather short, straight, upper surface dirty-white, greyish-brown laterally. Distal brush of segment 2 well developed. Segment 3 about 1.2 times as long as segment 2. Scape dirty-white, with erected dense brush of long hairy yellowish scales anteriorly. Flagellum dirty-white with indistinct dark rings. Head dirty-white, tegulae covered frontally mainly with yellowish brown scales,

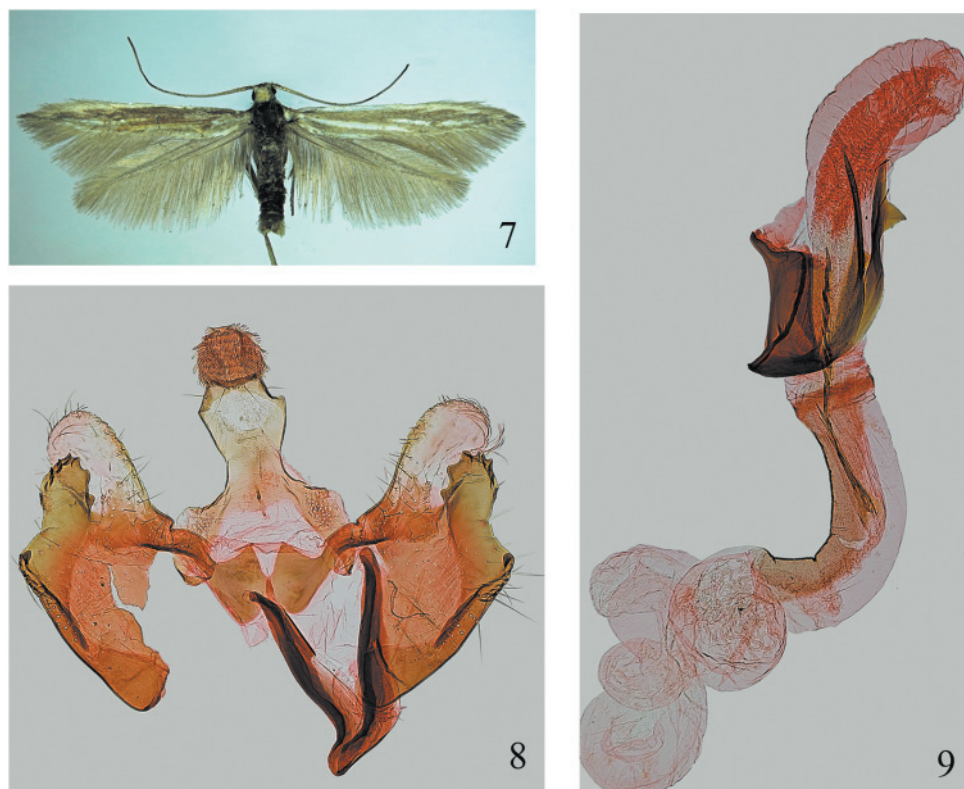
caudally — with dirty-white scales. Thorax dirty-white with broad yellowish brown median longitudinal stripe. Forewing pattern is typical for the genus, yellowish brown, with brown wedge-shaped spot and with four silky-white longitudinal stripes. Costal strip wide, tightly pressed to the anterior margin of the forewing, does not reach its root, projecting from $1/5$ length to the apex of the costal margin. Medial stripe narrow, rather long, from $2/3$ length to the tip of cilia; anal stripe broadest in middle, projecting from the root of the wing to about $2/3$ length of the dorsal margin; dorsal stripe very long, projecting from the base of the forewing to about $1/2$ length of the dorsal margin. Cilia of forewing greyish brown, with a large white patch in front of the medial strip. Hindwing light grey with a greyish-brown cilia. Abdominal tergites with moderately narrow paired patches of spinules (fig. 4).

Male genitalia (fig. 2). Gnathos broad, sub-trapezoidal with rounded corners. Tegumen rather broad and long. Transtilla lobes not connected medially, narrow, band-shaped, slightly broadened apically. Saccus very broad and short, apex with rather large tooth. Base of valva very broad (more than twice broader than long). Costa of valva without elongated curved setae. Valva deeply divided, cucullus comparatively short and broad, club-shaped. Sacculus strongly sclerotized, narrow and very long, reaching to about top of cucullus. Phallosome rods short and very broad, strongly fused with each other except for membranous lower surface in distal half. The left rod narrow, apically pointed more than 5 times shorter and considerably narrower than the right rod. Cornutus very long and curved, consists of several filaments, twice longer as the length of the phallosome.



Figs 5–6. Habitats of *Multicoloria jukkai* Budashkin & Bidzilya, sp. n.: 5 — “Kamyani Mohyly” Nature Reserve, SE Ukraine (photo A. Zhakov); 6 — Charyn River Canyon, SE Kazakhstan (photo K. Nupponen).

Female genitalia (fig. 3). Ovipositor relatively long. Papillae analis medium in size, slightly narrowed and rounded apically, mostly membranous, densely covered with long setae, base with a distinct area of broad-banded sclerotization with an uneven, more or less serrated posterior margin. Both pair of apophyses relatively long and thin, apophyses posteriores more than twice as long and much more thinner than the apophyses anteriores. Sternum VIII relatively broad and short, its lateral parts rhomboid, the posterior lobes prolonged, bearing several thick long bristles. Ostium wide, cup-shaped, opens in the center of the sternum VIII. Antrum funnel-shaped, sharply narrowed towards the ductus bursae. The ductus bursa of moderate length and width,



Figs 7–9. *Casignetella pokrovkella* (Baldizzone & Tabell, 2007), comb. n.: 7 — adult male; 8 — male genitalia (gen. slide 220/14, O. Bidzilya); 9 — phallosome (gen. slide 220/14, O. Bidzilya).

sclerotized in the caudal part, with a rather long spiny patch with a central bent that is nearly as long as a length of the spiny patch and extends far beyond its top. Bursa copulatrix medium in size, membranous, egg-shaped. Signum large, basal plate stout, terminal process long, broad on base.

Bionomics. *M. jukkai* sp. n. is most likely an univoltine species with adult flying during the early-summer phenological period (mid-May to mid-June). The new species was collected at light in mixed fescue-feather-grass steppe in SE Ukraine (fig. 5) and in steep river canyon with rocky slopes on both sides in SE Kazakhstan (fig. 6). Host plant and other aspects of bionomy are unknown.

Case of mature larva. Unknown.

Distribution. The species is known from Charyn valley (south-eastern Kazakhstan) and “Kamyani Mohyly” Nature Reserve (south-eastern Ukraine, Donetsk and Zaporizhzhya Regions).

Diagnosis. According to classification by S. J. Reznik (1977), the new species belongs to the *fuscociliella* (*medicaginis*)-section of the *Multicoloria*-genus and is closely related to *Multicoloria fuscociliella* (Zeller, 1849). Externally, a new species well differs from *M. fuscociliella* in the larger size and lighter coloration of both pairs of wings. In the male genitalia *M. jukkai* sp. n., unlike *M. fuscociliella*, has wider gnathos, the shorter cucullus, and, especially, much more longer terminal process of sacculus and considerably longer cornutus. The female genitalia *M. jukkai* sp. n. differ from those of *M. fuscociliella* in the papillae analis more rounded apically, the thinner and longer apophyses posteriores, the much wider cup-shaped ostium, the presence a well sclerotized funnel-shaped antrum, the considerably longer spiny plot and central bent of the ductus bursa, and in much larger signum.

Etymology. The new species is named in the honor of Mr. Jukka Tabell (Hartola, Finland), one of the leading specialists for the family Coleophoridae in the World.

Casignetella pokrovkella (Baldizzone & Tabell, 2007), **comb. n.**



Figs 10–12. *Casignetella pokrovkella* (Baldizzone & Tabell, 2007), **comb. n.**: 10 — female genitalia (gen. slide 221/14, O. Bidzilya); 11 — abdominal tergites with paired patches of spinules (gen. slide 221/14, O. Bidzilya); 12 — cases of mature larva.

Material. Ukraine: Crimea, western vicinities of the Karadag Nature Reserve, cape Krabi, 20, 23.07.2007, ex larvae from *Climacoptera brachiata* (Pall.) Botsch. 2 ♂, 3 ♀ (Budashkin), (gen. slide 220/14 ♂, 221/14 ♀, O. Bidzilya) (ZMKU, ZISP).

Description. Adult (fig. 7) Wingspan 13.0–14.0 mm. Sexual dimorphism poorly expressed. Labial palpus rather short, nearly straight, weakly up-curved, dirty-white on upper surface, light-brown laterally. Segment 2 with terminal brush, sub-equal in length with segment 3. Scape brownish white, covered with smooth scales including the anterior side. Flagellum brownish white, distal half brown, with poorly developed dark rings. Head dirty-white with broad brown longitudinal medial stripe. Tegulae silver-white, thorax light grey to brown. Forewing brown to light brown with four diffuse radial silver white strips. The first one, the broadest, on costal margin from base to 2/3 length in male and nearly to the top of the wing in female. The second strip from 1/2 length and 2/3 width to the top of wing, angular or interrupted in middle, not reaching 2/3 length of dorsal margin. The third rather broad oblique strip from base of wing along first anal vein to about 0.65 length of the dorsal margin. The fourth strip on dorsal margin from its base to the beginning of cilia (about 1/3–1/2 length of forewing). Subapical portion of wing mottled with several white streaks of different size. Cilia unicolourous, greyish brown, lighter than ground colour of the forewing. Hindwing grey. Cilia greyish brown, lighter than the forewing cilia. Abdominal tergites with moderately broad paired patches of spinules (fig. 11).

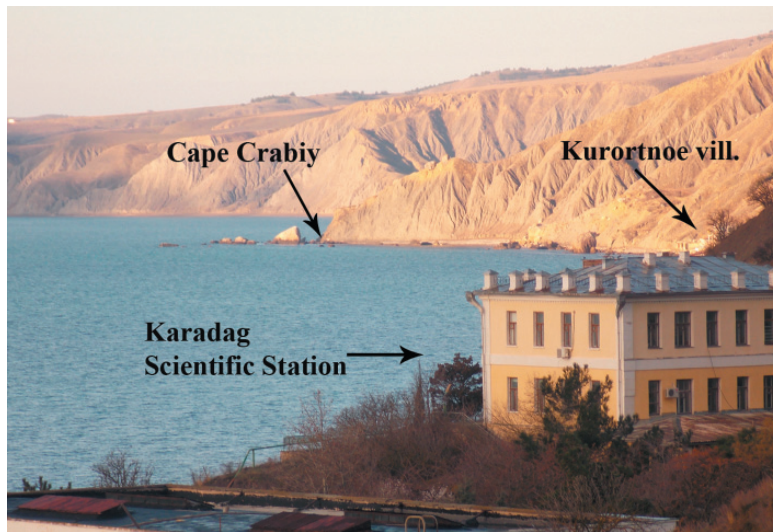


Fig. 13. Cape Crabiy — the habitat of *Casignetella pokrovkella* (Baldizzone & Tabell, 2007), comb. n. View from the Karadag Scientific Station.

Male genitalia (figs 8, 9). Gnathos broadly semi-ovate. Tegumen moderately broad and long. Transtilla lobes medially connected, very broad, subrectangular with rounded corners except for dorsal one that is sharpened. Valva broad, cucullus short, broad, of even width, rounded apically. Sacculus broad, well sclerotized, distally with well developed dorso-caudal process bearing 7–9 strong teeth. Ventro-caudal corner of the sacculus well developed, nearly right angled, with small subapical tooth. Long and narrow fold along the caudal margin of sacculus from 1/4 to 1/2 length nearly to ventro-caudal corner. Phallosome rods moderately long, narrow, the left one weakly arcuate, naked, narrowed and pointed apically. The right phallosome rod slightly shorter than the left rod, broadened in proximal half, then narrowed, but apex rounded, with well developed dorsal triangular tooth on 2/3 length. Ductus ejaculatoris comparatively short and broad, with very broad tape-like sclerotization beneath. Needle-shaped cornuti grouped in a long (1.2 times longer than the length of the longest of the phallosome rod) bundle, in number of 15.

Female genitalia (fig. 10). Ovipositor medium in length. Papillae analis weakly sclerotized, elongated, sub-ovate, rarely covered with short setae. Apophyses posteriores slightly thicker and about 2.25 times longer than the apophyses anteriores. Sternum VIII roundly-trapezoidal, longer than broad, anterior margin sinuate, posterior-lateral corners rounded. Posterior margin of sternum VIII with broad, V-shaped ostial cutout which projecting to about 1/3 of its length. Antrum well sclerotized, broad, tubular, left side weakly invaginated, right side weakly arcuated, base slightly broadened on the left side. Ductus bursae moderately broad and long, differentiated into three portions. The caudal portion (about 1/2 length of the total length of the ductus bursae) with numerous rather large spines and densely spinose filament inside, coiled in proximal half. The medial portion (about 0.36 length) weakly broader than the caudal portion, without modifications, coiled. The proximal portion (about 0.14 length) membranous, narrowed, unmodified. Bursa copulatrix large, egg-shaped, membranous. The first signum hook shaped, basal plate very large, medially divided, with rounded corners. The second signum a narrow elongated plate densely covered with small teeth.

Bionomics. An univoltine species of late summer phenological period with adult flying from late July to mid August. The larva produces mines on the fruit of *Climacoptera brachiata* (Pall.) Botsch. feeding from August to October, then it goes to the upper surface of soil for about 9 months. Pupation most likely occurs in early July. The species inhabits seaside clayish badlands — nearly treeless scarps on the Black sea coast (fig. 13). In spite of the fact that *Climacoptera brachiata* is rather common on badlands in South-Eastern

Crimea, the only single locality of a new species is known at the moment. It is a lower part of seaside scarps on the cape Krabiy on about 10 m from the water boundary in 1 km to the West from Kurortnoe village towards Lisija bukhta. 14 mature larvae were found on two rather large plants of *C. brachiata* in this locality 13.10.2006. The larvae finished the feeding and went to the ground late October in laboratory. Two males and three females emerged 20.07 and 23(?) .07.2007. Later, no additional larvae have been found in this and same biotopes (cape Mehanom, Lisija bukhta, Karadag, Tikhaja bukhta).

Case of mature larva (fig. 12). Length 7–8 mm, broad, silky, tubular, trivalved, grey or, occasionally, greyish-brown, almost entirely covered with small soil particles, longitudinal strips poorly expressed, mouth at 25–45° angle.

Distribution. Russia (Orenburg district, South Ural, Pokrovka village) (Baldizzone, Tabell, 2007), South-Eastern Crimea (the vicinity of Kurortnoe village, cape Krabiy), Ukraine (first record). Undoubtedly, that the species must be broader distributed in South-Eastern Crimea in the same habitats, but probably is rather rare.

Diagnosis. *Casignetella pokrovkella* (Baldizzone & Tabell, 2007) comb. n. belongs to *Casignetella attalicella* (Zeller, 1871) species group. It well differs externally from other species of that group in the darker ground colour of the forewing and a bland silvery sheen of its white longitudinal stripes. The male genitalia of this species are most similar to those of *Casignetella psamata* (Falkovitsh, 1973), comb. n. (Falkovitsh, 1973: fig. 70), but differ in the wider, rounded rectangular (rather than triangular, as in the closely related species) transtilla lobes, the short and wide, rounded dorso-caudal process of the sacculus which bears apically small tooth, the presence a small tooth on the top of the ventro-caudal corner of sacculus, the presence on the dorsal surface of the right rod of the phallosome the postmedial broadly triangular large tooth and, especially, in the very long bundle, consisting of about 15 needle-shaped cornuti. The female genitalia of *C. pokrovkella* resemble those of *Casignetella cyrta* (Falkovitsh, 1973), comb. n. (Falkovitsh, 1973: fig. 69), but well differ in the longer ovipositor and the larger papillae analis, other (pentagonal rather than nearly semicircular) form of the ostial cutout, the shorter antrum, the shorter and quite differently armed ductus bursa, and in much larger lower signum.

Authors are cordially thankful to R. S. Kvetkov (Karadag Scientific Station) for the photograph of the larval cases, Kari Nupponen (Espoo, Finland) and Aleksandr Zhakov (Zaporizhzhya) for the photographs of the habitats of the new species, Juha Tyllinen (Vantaa, Finland) for the photograph of the holotype and Pasi Sihvonen (Veikkola, Finland) for the photograph of female genitalia. We are indebted to J. Tabell (Hartola, Finland) for providing material on a new species, and for his critical comments which improved considerably the manuscript.

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Received 27 March 2017

Accepted 24 October 2017