

New species of plume moths (Lepidoptera: Pterophoridae) from Colombia

Новые виды пальцекрылок (Lepidoptera: Pterophoridae) из Колумбии

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KEY WORDS: New species, Pterophoridae, Colombia, new data.

КЛЮЧЕВЫЕ СЛОВА: Новые виды, Pterophoridae, Колумбия, новые данные.

ABSTRACT. The article describes five new plume moths species from Colombia: *Platyptilia yakovlevi* Kovtunovich et Ustjuzhanin **sp.n.**, *Amblyptilia natali* Kovtunovich et Ustjuzhanin **sp.n.**, *Lioptilodes arcabuco* Kovtunovich et Ustjuzhanin **sp.n.**, *Hellinsia sofia* Kovtunovich et Ustjuzhanin **sp.n.**, *Hellinsia staskalnoii* Kovtunovich et Ustjuzhanin **sp.n.** For *Hellinsia ochricostatus* (Zeller, 1877), the female genitalia are described for the first time.

РЕЗЮМЕ. Описываются пять новых видов пальцекрылок из Колумбии: *Platyptilia yakovlevi* Kovtunovich et Ustjuzhanin **sp.n.**, *Amblyptilia natali* Kovtunovich et Ustjuzhanin **sp.n.**, *Lioptilodes arcabuco* Kovtunovich et Ustjuzhanin **sp.n.**, *Hellinsia sofia* Kovtunovich et Ustjuzhanin **sp.n.**, *Hellinsia staskalnoii* Kovtunovich et Ustjuzhanin **sp.n.** Для *Hellinsia ochricostatus* (Zeller, 1877) впервые описаны гениталии самки.

Introduction

The nature of Colombia is rich and diverse (Fig.1). In the equatorial and sub-equatorial climate, more than 130 thousand plant species grow, and a huge number of

animals, many of which are endemic. The plume moths fauna of Colombia was described in the publications: Arenberger and Bond [1995], Gielis [2006, 2011, 2013, 2014], Kovtunovich et al. [2016]. In the materials on Pterophoridae, collected by V. Sinyaev and his assistants in Colombia, we found five species new to science, and for the species *Hellinsia ochricostatus* (Zeller,



Fig. 1. Colombia, Villa Pinzon, h=3000 m. Photo by V. Sinyaev.
Рис. 1. Колумбия, Вилла Пинзон, h=3000 м. Фото В. Синяева.

1877), the image of the female genitalia is provided for the first time. The studied specimens are deposited in the collection of the Zoological Institute St. Petersburg, Russia (ZISP) and in the Collection of P. Ustjuzhanin and V. Kovtunovich (Novosibirsk and Moscow, Russia, CUK).

Results

Platyptilia yakovlevi Kovtunovich et Ustjuzhanin, **sp.n.** Figs 2–4.

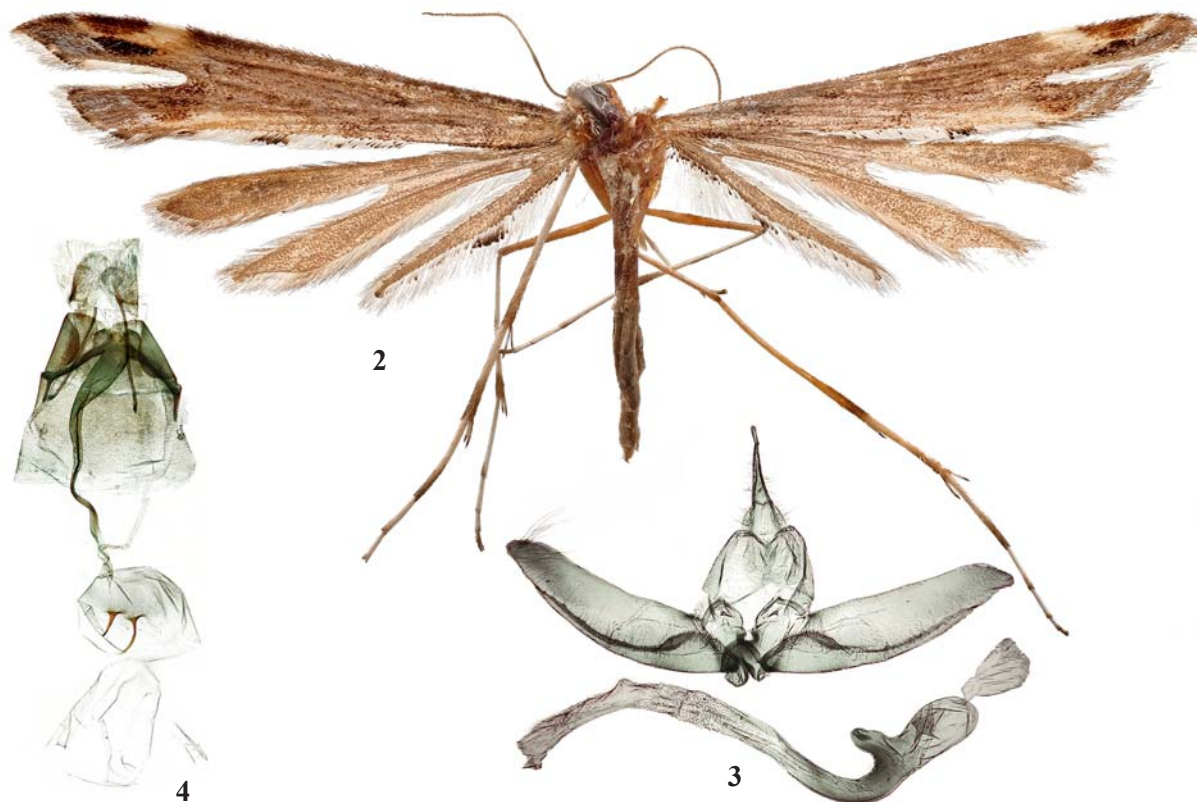
TYPE MATERIAL: Holotype, ♂, (ZISP, gen.pr. Nr. 1963), COLOMBIA, Boyaca Vereda La Germania, Carretera Villa Pinzon Tunja, 05°29'30"N, 73°21'48"W, 3027m, 30.XI.2015, V. Sinyaev leg. Paratypes, 1 ♀, (ZISP, gen.pr. Nr. 1964), COLOMBIA, Boyaca Villa Pinzon, Paramo de Guanacheque, 05°13'54"N, 73°31'12"W, 3360m, 25–28.IV.2014, V. Sinyaev, M. Marquez leg.; 2 ♂♂, (CUK), COLOMBIA, Santander rd., Barbosa-Arcabuco km.23, 2360m, 05°49'14"N, 73°30'14"W, 18–22. IX. 2014, V. Sinyaev, M. Marquez leg.; 1 ♂ (CUK), COLOMBIA, Cundinamarca dept., Bosque, La Guajira, 04°47'34"N, 75°46'60"W, 09–12.IV.2014, 2910m, V. Sinyaev, M. Marquez leg.; 1 ♀, (CUK), COLOMBIA, Boyaca Carretera Villa Pinzon, Tunja, 3080m, 05°29'30"N, 73°24'48"W, 23–25.IV.2014, V. Sinyaev, M. Marquez leg.; 1 ♂, 1 ♀, (CUK), COLOMBIA, Boyaca Villa Pinzon, Paramo de Guanacheque, 05°13'54"N, 73°31'12"W, 3360m, 25–28.IV.2014, V. Sinyaev, M. Marquez leg.; 1 ♂, (CUK), COLOMBIA, Boyaca Carretera Umbita-Villa Pinzon, 05°13'54"N, 73°31'12"W, 3365m, 29.XI.–02.XII. 2013, V. Sinyaev & M. Marquez leg.; 1 ♂, (ZISP),

COLOMBIA, same data as holotype; 1 ♂, (ZISP), COLOMBIA, Boyaca Arcabuco, road Arcabuco-Toqui, 05°49'16"N, 73°28'54"W, 2700m, 01–04.XII. 2015, V. Sinyaev leg.; 1 ♂, (CUK), COLOMBIA, Cundinamarca Road Cuasca-Gacheta Alto El Paramo, 04°53'N, 73°45'W, 3270m, 30–31. V. 2018, V. Sinyaev & L. Gomoglio leg.

DESCRIPTION. External characters. Head, thorax and tegulae with light-brown hairs. Labial palpi grey, straight, apically acute, twice longer than longitudinal eye diameter. Antennae thin, brown. Wingspan 24–29 mm, in holotype 24 mm. Fore wings greyish-brown. Distinct bright wide spot on first lobe above cleft base, oblique light band closer to end of first lobe, also extending to second lobe. Poorly expressed brown spot on fore wings medially. Fringe on outer edge of both lobes brown at base, light-grey at ends. Fringe on outer edge of fore wings with alternating portions of brown and light portions of hairs. Hind wings of the same color as fore wings, fringe on third lobe light with distinct bundle of brown hairs in medium part. Hind legs yellow with brown portions of scales at bases of spurs.

Male genitalia. Valves narrow, symmetric, apices slightly narrowing. Sacculus basally wide, smoothly narrowing distally. Uncus narrow, long, apically acute. Tegumen bilobed. Anellus arms basally wide, then passing to narrow long bar-like processes. Saccus round. Aedeagus curved at a right angle, basal process directed forwards, perpendicular to aedeagus.

Female genitalia. Papillae anales wide, oval. Posterior apophyses narrow, long. Anterior apophyses 4–5 times shorter than anterior ones. Antrum tubulate, relatively wide, smoothly passing into narrow sclerotized ductus. Bursa copulatrix oval with two thin slightly curved needle-like signa.



Figs 2–4. *Platyptilia yakovlevi*, **sp.n.**: 2 — adult (Paratype, CUK); 3 — male genitalia (Holotype, ZISP, gen.pr. Nr. 1963); 4 — female genitalia (Paratype, ZISP, gen.pr. Nr. 1964).

Рис. 2–4. *Platyptilia yakovlevi*, **sp.n.**: 2 — имаго (паратип, CUK); 3 — гениталии самца (голотип, ZISP, gen.pr. Nr. 1963); 4 — гениталии самки (паратип, ZISP, gen.pr. Nr. 1964).

DIAGNOSIS. Externally and in the male genitalia, the new species is close to *Platyptilia wojtusiaki* Gielis, 2014, but differs in the presence of the wide light spot above the cleft of the first lobe and in the lighter color of the wings. In the male genitalia, it differs in the narrow valves, narrow uncus, and the shape of the saccus. Additionally, the new species differs in the basal process of the aedeagus, directed forwards, perpendicular to the aedeagus, while in *P. wojtusiaki* it is clinging to the aedeagus.

Flight period: September–December, April, May.

DISTRIBUTION. Colombia.

ETYMOLOGY. The species is named after Alexey Yakovlev, doctor, naturalist and traveler, participant of Russian entomological expeditions, candidate of medical sciences (Moscow, Russia).

Amblyptilia natali Kovtunovich et Ustjuzhanin, **sp.n.**
Figs 5–6.

TYPE MATERIAL: Holotype, ♂, (ZISP, gen.pr. Nr.1965), COLOMBIA, Boyaca Villa Pinzon Paramo de Guanacheque, 05°13'54"N, 73°31'12"W, 3360m, 25–27. X.2014, V. Sinyaev & M. Marquez leg.; Paratype, 1 ♂, (CUK), same data as holotype.

DESCRIPTION. External characters. Head and tegulae white. Labial palpi basally brown, slightly longer than longitudinal eye diameter, third segment white, apically acute. Antennae cross-striped, with alternating white and brown segments. Wing-

span 24 mm. Fore wings with greenish narrow transverse stripes. Distinct V-shaped pattern of two green stripes on first lobe, first lobe apically acute. Fringe on both lobes yellow-green with small portions of brown hairs. Hind wings unicolorous, yellowish-grey, fringe of the same color. Hind legs light-yellow with portions of brown scales at bases of spurs and on chela.

Male genitalia. Valves symmetric, apex of valve isolated, slightly elongated, then bluntly rounded, with well-expressed narrow spike acute at end. Tegumen bilobed. Saccus ribbon-like, of equal width along all length. Uncus lanceolate, basally wide, smoothly narrowing to apex, apex bluntly rounded. Saccus with rounded edge. Anellus arms narrow, ribbon-like, slightly extended to apices. Aedeagus curved almost at a right angle, with narrow needle-like cornutus which is apically acute. Basal process of aedeagus short, round, directed perpendicular to aedeagus.

Female unknown.

DIAGNOSIS. In the male genitalia, in the shape of the valves, the new species is close to *Amblyptilia punoica* Gielis, 1996, but differs in the shape of the uncus, the narrow arms of the anellus and the cornutus in the aedeagus.

Flight period: October.

DISTRIBUTION. Colombia.

ETYMOLOGY. The species is named after Natalia Viktorovna Permyakova, teacher and historian, school administrative officer (Novosibirsk, Russia).



Figs 5–6. *Amblyptilia natali*, **sp.n.**: 5 — adult (Holotype, ZISP); 6 — male genitalia (Holotype, ZISP, gen.pr. Nr .1965).

Рис. 5–6. *Amblyptilia natali*, **sp.n.**: 5 — имаго (голотип, ZISP); 6 — гениталии самца (голотип, ZISP, gen.pr. Nr .1965).

Lioptilodes arcabuco Kovtunovich et Ustjuzhanin, **sp.n.**
Figs 7–8.

TYPE MATERIAL: Holotype, ♂, (ZISP, gen.pr. Nr.1966), COLOMBIA, Boyacá Arcabuco, road Arcabuco-Togui, 5°49'16"N, 73°28'54"W, 30.VII.2017, 2700m, V. Sinyaev leg.

DESCRIPTION. **External characters.** Head grey-brown. Labial palpi brown, thin, straight 1,5 times longer than longitudinal eye diameter. Antennae dark-brown. Wingspan 27 mm. Cleft of fore wings very short, located next to costal edge. Fore wings greyish-brown. Oblique narrow brown stroke in front of cleft. Fringe on outer edge of fore wings grey, only in medium part with dark portions of scales. Hind wings unicolorous, of the same color as fore wing. Fringe on outer edge of third lobe basally and medially with dark-brown bundles of hairs. Hind legs light-grey, darkened with dark-brown scales at bases of spurs and on chela.

Male genitalia. Valves symmetric, apices isolated, slightly narrowing. Sacculus basally wide, smoothly narrowing to distal part. Uncus narrow, long, apically acute. Tegumen bilobed. Anellus arms basally wide, apically narrowing. Saccus with triangular notch. Aedeagus curved almost at a right angle, basal process directed forwards, perpendicular to aedeagus.

Female unknown.

DIAGNOSIS. In the short cleft of the wings and in the general structure of the male genitalia, the new species is close to *Lioptilodes gualaceo* Gielis, 2014, but differs in another color of the wings and in the bigger size. In the male genitalia, the new species differs from *L. gualaceo* in the narrowing, isolated apices of the valves, the shape of the anellus arms and the basal process of the aedeagus which sticks out perpendicularly to the aedeagus, while in *L. gualaceo* the process is clinging to it.

Flight period: July

DISTRIBUTION. Colombia.

ETYMOLOGY. Toponymic name: from Spanish, a place surrounded by hills.

Hellinsia sofia Kovtunovich et Ustjuzhanin, **sp.n.**
Figs 9–11.

TYPE MATERIAL: Holotype, ♂, (ZISP, gen.pr. Nr. 1967), COLOMBIA (NE), Norte de Santander W of Presidente, 7°00'N, 72°41'W, 19–20.IV.2017, 3500m, V. Sinyaev leg.; Paratype, ♀, (ZISP, gen.pr. Nr. 1968), same data as holotype; Paratype, 1 ♂, (ZISP), same data as holotype; 1 ♀, (CUK), COLOMBIA, Capital de Bogota, road to San Juan, PNC Sumapas, 04°01'27"N, 74°20'13"W, 21–22.II.2016, 3400m, V. Sinyaev leg.; 1 ♂, (CUK), COLOMBIA, Boyaca Arcabuco, road Arcabuco-Toqui, 05°49'16"N, 73°28'54"W, 2700m, 01–04.XII.2015, V. Sinyaev leg.; 1 ♂, (CUK), COLOMBIA, Cundinamarca dept., Guasca Reserva Natural El, Chochal de Siecha 4°47'40"N, 73°51'59"W, 01–03.V.2017, 3150m, V. Sinyaev leg.; 8 ex., (ZISP, CUK), COLOMBIA (NE), Norte de Santander W of Presidente, 7°00'N, 72°41'W, 17–18.IV.2017, 3450m, V. Sinyaev leg.

DESCRIPTION. **External characters.** Head, thorax and tegulae light-green. Collar on head with light-brown scales. Labial palpi thin, pale-yellow, apically acute, slightly bigger than longitudinal eye diameter. Antennae yellow. Wingspan 25–30 mm (in holotype, 27 mm). Fore wings light-green with bright brown longitudinal strokes: one of them extended in front of cleft and narrowing in middle of wings, the second one narrow above cleft base on costal edge of first lobe, the third – narrow, long, passing from middle of first lobe to its apical edge. Fore wings basally darkened with tiny scattered brown scales. Hind wings unicolorous light-green. Hind leg pale-yellow.

Male genitalia. Valves asymmetric, left slightly wider and shorter than right. Saccular process on left valve long, thin, slightly wavy, reaching apex of valve. Small spiky process in middle part of right valve. Uncus narrow, distally



Figs 7–8. *Lioptilodes arcabuco*, **sp.n.**: 7 — adult (Holotype, ZISP); 8 — male genitalia (Holotype, ZISP, gen.pr. Nr .1966).

Рис. 7–8. *Lioptilodes arcabuco*, **sp.n.**: 7 — имаго (голотип, ZISP); 8 — гениталии самца (голотип, ZISP, gen.pr. Nr .1966).

slightly extended, apically acute. Tegumen bilobed. Anellus arms of unequal length, left slightly shorter than right. Both arms of anellus apically slightly extended and uncinately curved. Saccus arched, with triangular notch. Aedeagus slightly bent, with acute end, distally with tiny needle-like cornuti.

Female genitalia. Papillae anales rounded. Posterior apophyses thin, straight. Anterior apophyses thicker, 1.5 times shorter than posterior apophyses. Antrum short, cylindrical, shifted left. Lamina postvaginalis rectangular with small notch on outer edge. Ductus short, smoothly passing into narrow, elongated bursa copulatrix. No signa. Ductus seminalis very long, thin, four times longer than bursa copulatrix.

DIAGNOSIS. In the male genitalia, the new species is close to *Hellinsia lenis* (Zeller, 1877), but differs in the shape of the anellus arms, in the longer saccular process reaching the valve apex and in the special color of the wings. In the female genitalia, the new species is similar to *Hellinsia barbatus* Gielis, 1996, from which it differs in the presence of the anterior apophyses, in the short cylindrical antrum and another color of the wings.

Flight period: April-May, December, February.

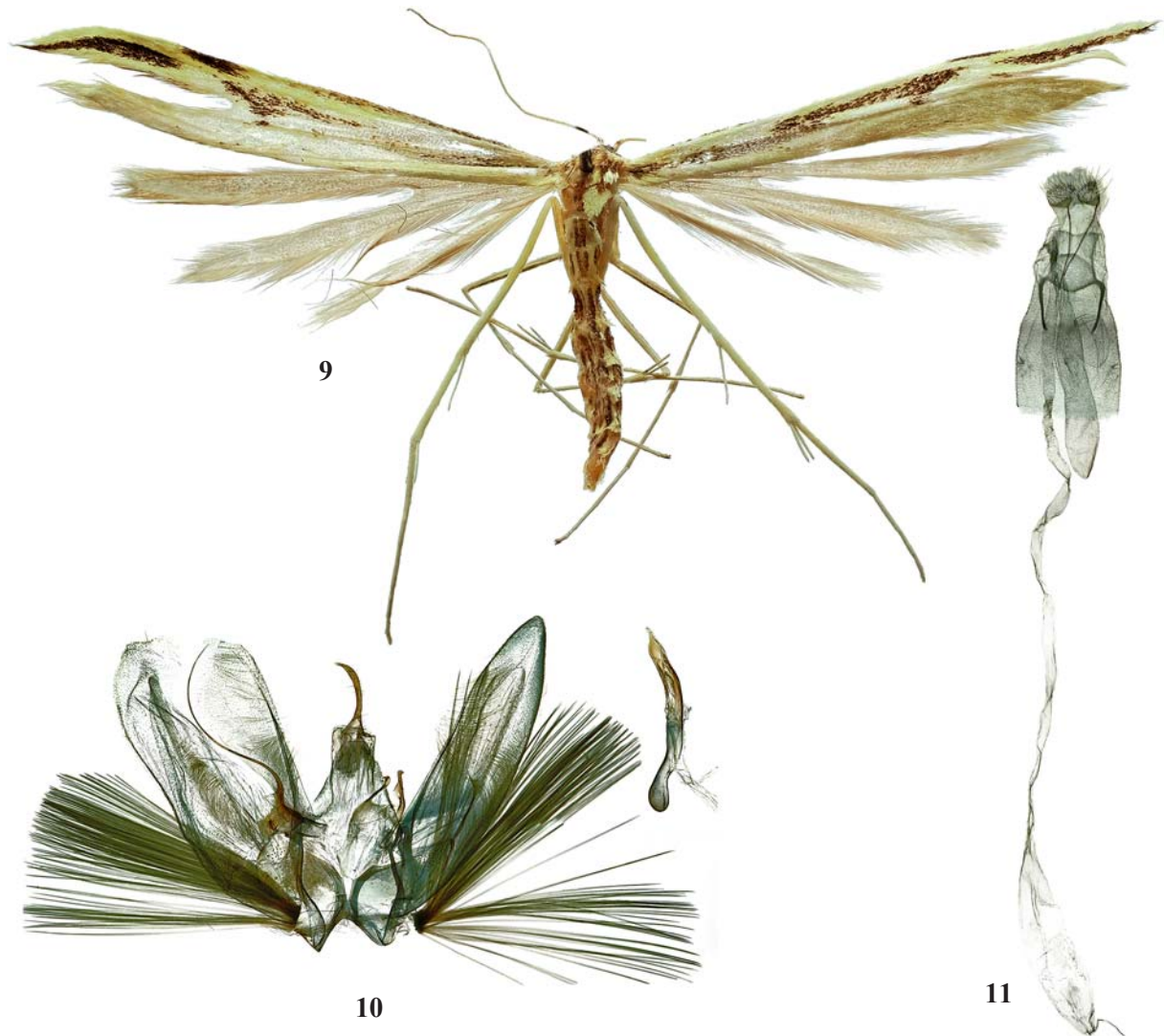
DISTRIBUTION. Colombia.

ETYMOLOGY. The species is named after Sophia, daughter of Oleg Karpov, a well-known specialist in restoration of valuable and endangered species of aquatic biological resources (Moscow, Russia).

Hellinsia staskalnoii Kovtunovich et Ustjuzhanin, **sp.n.**
Figs 12–14.

TYPE MATERIAL: Holotype, ♂, (ZISP, gen.pr. Nr. 1969), COLOMBIA, Putumayo Municipio San Francisco Antenas on Bosque Siberia, 01°08'45"N, 76°50'43"W, 22–26.IV.2018, 2940m, V. Sinyayev & V. Gromenko leg.; Paratype: 1 ♀, (ZISP, gen.pr. Nr. 1970), COLOMBIA, Cundinamarca dept., Bosque, La Guajira, 04°47'34"N, 73°46'33"W, 11–13.XII.2015, 2911m, V. Sinyayev leg.; 1 ex., (CUK), same data as holotype.

DESCRIPTION. External characters. Head, thorax and tegulae light-green. Labial palpi pale-yellow, short, relatively wide, equal to eye diameter in length. Antennae light-brown. Wingspan 20–23 mm (in holotype, 20 mm). Fore



Figs 9–11. *Hellinsia sofia*, **sp.n.**: 9 — adult (Paratype, ZISP); 10 — male genitalia (Holotype, ZISP, gen.pr. Nr. 1967); 11 — female genitalia (Paratype, ZISP, gen.pr. Nr. 1968).

Рис. 9–11. *Hellinsia sofia*, **sp.n.**: 9 — имаго (паратип, ZISP); 10 — гениталии самца (голотип, ZISP, gen.pr. Nr. 1967); 11 — гениталии самки (паратип, ZISP, gen.pr. Nr. 1968).

wings light-green. Distinct triangular spot at cleft base. Brown stroke on first lobe, next to apex. Costal edge darkened with brown scales. Oblique, wide transverse stroke on fore wing medially. Hind wings unicolorous, light-grey. Hind legs greyish-yellow, with portions of dark-brown scales at bases of spurs and on chela.

Male genitalia. Valves asymmetric, left significantly wider than right. Saccular process on left valve thin, long, arched and narrowing to end. Sacculus on right valve shaped as narrow thin long ribbon. Anellus arms basally very wide, distally narrowing, right arm significantly longer than left. Saccus arched. Uncus narrow, thin, slightly arched. Aedeagus almost straight, medially slightly curved, distally with tiny needle-like cornuti.

Female genitalia. Papillae anales oval. Posterior apophyses thin, straight. Antrum relatively long, goblet-like, smoothly narrowing to confluence of short ductus. Bursa copulatrix oval, without signa. Ductus seminalis narrow, relatively long.

DIAGNOSIS. In the male genitalia, in the different width of the valves and in the shape of the saccular process on the left valve, the new species is similar to *Hellinsia viridia* Gielis, 2014, but differs in the wide anellus arms, in the

saccular process curved inwards and narrowing to end, in the long aedeagus and totally another color of the wings.

Flight period: April, December.

DISTRIBUTION. Colombia.

ETYMOLOGY. At the request of V. Sinyaev, the species was named in memory of his friend's son, Stanislav Kalnoi, who untimely passed away under tragic circumstances; he covered the mine that exploded on the firing field, with his body.

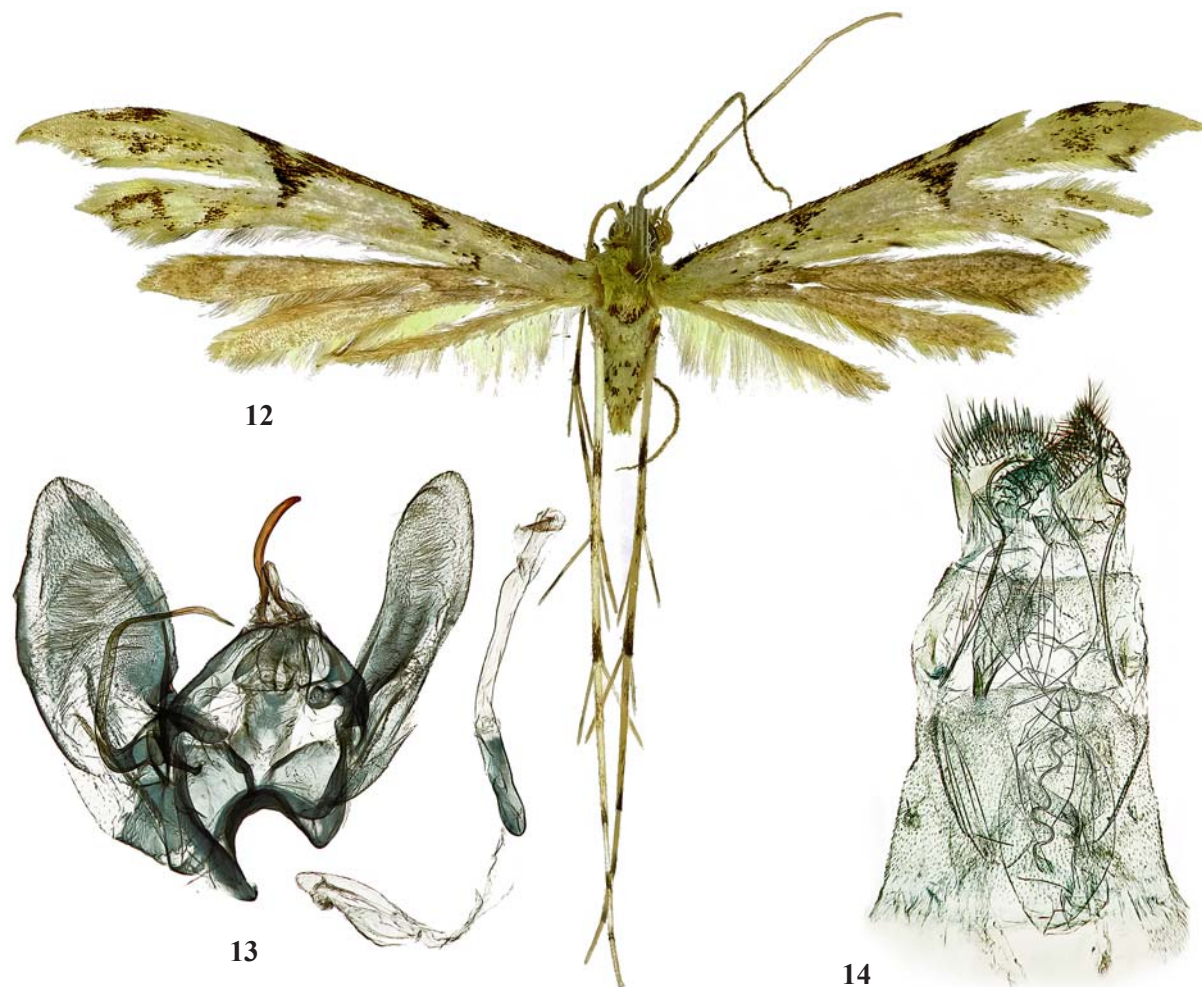
Hellinsia ochricostatus (Zeller, 1877)

Fig. 15.

Leioptilus ochricostatus Zeller, 1877: 484 (Type locality: Colombia).

MATERIAL EXAMINED. COLOMBIA, Cundinamarca dept., Guasca Reserva Natural El Chochal de Siecha, 4°47'40" N, 73°51'59" W, 25–26. IV. 2017, 3100m, V. Sinyaev leg.

DESCRIPTION. Female genitalia. Papillae anales oval. Posterior apophyses long, slightly extending at ends. Lamina postvaginalis rounded on outer edge. Antrum cylindrical, located in centre, quite long, smoothly passing to short ductus. Bursa copulatrix elongated, oval, interspersed with tiny signa.



Figs 12–14. *Hellinsia staskalnoi*, sp.n.: 12 — adult (Holotype, ZISP); 13 — male genitalia (Holotype, ZISP, gen.pr. Nr. 1969); 14 — female genitalia (Paratype, ZISP, gen.pr. Nr. 1970).

Рис. 12–14. *Hellinsia staskalnoi*, sp.n.: 12 — имаго (голотип, ZISP); 13 — гениталии самца (голотип, ZISP, gen.pr. Nr. 1969); 14 — гениталии самки (паратип, ZISP, gen.pr. Nr. 1970).

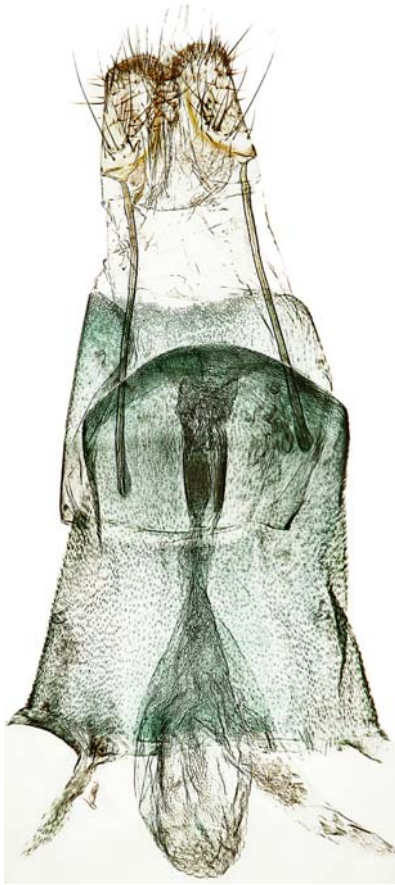


Fig. 15. *Hellinsia ochricostatus*, female genitalia (CUK, gen.pr. Nr. 361).

Рис. 15. *Hellinsia ochricostatus*, гениталии самки (CUK, gen.pr. Nr. 361).

DISTRIBUTION. Colombia, Ecuador.

NOTE. The female of *H. ochricostatus* was previously unknown.

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Competing interests. The authors declare no competing interests.

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