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Article

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

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Abstract
The article describes four species of plume moths from Argentine, new to science: *Lioptilodes lauri* sp. nov., *Hellinsia katja* sp. nov, *Emmelina inna* sp. nov., *Adaina nina* sp. nov. *Stenoptilia tenuis* (Felder & Rogenhofer, 1875) is given for Argentine for the first time.

Key words: biodiversity, South America, new taxa, new records.

Introduction

The Pterophoridae fauna of Argentine, according to publications, counts 71 species (Berg 1885; Staudinger 1899; Meyrick 1908, 1931, 1932; Gielis 1989, 1991, 1996, 2003, 2006, 2011, 2012, 2013; Pastrana 1989; Ustjuzhanin *et.al.* 2021a). In the expedition materials of 2017 by Finnish entomologists Kari Nupponen and Risto Haverinen, who provided us the specimens for examination, we found four species new to science, and one species, *Stenoptilia tenuis* (Felder & Rogenhofer, 1875), is reported for the fauna of Argentine for the first time. Currently, the species composition of Argentinian plume moths increased by 5 species and now has 76 species.

Abbreviations

CUK − Collection by P. Ustjuzhanin and V. Kovtunovich (Novosibirsk and Moscow, Russia)

IZBE − Institute of Agricultural and Environmental Sciences, Estonian University of Life Sciences, Tartu, Estonia (sub-collection A. Pototski).
NUPP − Research collection of Kari & Timo Nupponen, Espoo, Finland.

Result

Lioptilodes lauri sp. nov.
https://zoobank.org/urn:lsid:zoobank.org:act:B3CEDCE2-6EF8-4635-831F-63780F8D318E
(Figs 1 – 4)

Type material: **Holotype**, ♂ (IZBE, gen.pr. № 221001), **ARGENTINA**, Andes Mts., Cordilerra del Tiere, Mendoza River valley near Uspallata vill., 1900 m, 32°35'S, 69°22'W, 25.i.2017. K. Nupponen, R. Haverinen & A. Pototski leg.; **Paratypes**, 1♀ (IZBE, gen.pr. № 221006), 5 ♂, 1 ♀: (IZBE; NUP, CUK) same data as holotype.

Description: **External characters**. Head, thorax and tegulae in white scales. Labial palpi light, directed forward, slightly expanded distally, 1.5 times longer than longitudinal eye diameter. Antennae yellowish-brown. Wingspan 15−18 mm, in holotype – 17 mm. Fore wings unicolorous, yellowish-brown, with slightly lightened rear edge. Hind wings unicolorous, of the same color as fore wings. Fringe on all wings light-brown. Hind legs pale-yellow.

Male genitalia. Valves symmetric, slightly narrowing distally. Uncus wide from apex to base, noticeably narrowing distally. Anellus arms relatively wide, of equal length. Saccus triangle, apically narrowing. Aedeagus thin, long, equal to valve in length, strongly curved. Basal process of aedeagus located perpendicular.

Female genitalia. Papillae anales narrow, oval. Posterior apophyses long, slightly thickened at apices. Anterior apophyses thin, short. Lamina vaginalis bilobed. Antrum sclerotized, shaped as narrow and long funnel, from base of which gradually narrowing and smoothly passing into short narrow wavy ductus. Bursa copulatrix large, oval. Two narrow spiky signa with acute apices.

Figure 1. ***Lioptilodes lauri*** Ustjuzhanin & Kovtunovich sp. nov. Adult male (Holotype, IZBE).

Differential diagnosis. In the male genitalia, the species is similar to *Lioptilodes friasi* Vargas & Parra, 2005, but differs in the longer and thinner aedeagus and a different female genital structure. In *L. friasi* the antrum is twice shorter than in the new species, the signa in the bursa copulatrix are wide, while in the new species they are needle-like, narrow, apically acute. In the external characters, the adult is also similar to *L. friasi* and *Lioptilodes zapalaicus* Gielis, 1991.

Figure 2. ***Lioptilodes lauri*** Ustjuzhanin & Kovtunovich sp. nov. Male genitalia (Holotype, IZBE, gen.pr. Nr. 221001).

Figure 3. ***Lioptilodes lauri*** Ustjuzhanin & Kovtunovich sp. nov. Female genitalia (Paratype, IZBE, gen.pr. Nr. 221006).

Distribution. Argentina.

Flight period. January.

Etymology. The new species is named after Risto Haverinen's twin brother Lauri Haverinen, with whom the Lepidopterology study started together in 1971.

Figure 4. ***Lioptilodes lauri*** Ustjuzhanin & Kovtunovich sp. nov. Biotope: Argentina, Andes Mts., Cordilerra del Tiere, Mendoza River valley near Uspallata vill., 1900 m, Photo by A. Pototski.

Hellinsia katja sp. nov.
https://zoobank.org/urn:lsid:zoobank.org:act:564F2C57-099E-4B75-B89C-63F94A513637
(Figs 5 – 7)

Type material: **Holotype**, ♂ (IZBE, gen.pr. № 221002), **ARGENTINA**, Andes Mts., Siera de Famatina, Famatina vill., 15 km NNW, 27.i.2017, 28°46'S, 67°35'W, 2085 m, K. Nupponen, R. Haverinen & A. Pototski leg.

Description: **External characters.** Head, thorax and tegulae yellowish-brown**.** Labial palpi light-brown**,** thin, straight. Antennae yellowish-brown, scape noticeably thickened. Wingspan 14 mm. Fore wings pale yellow. Hardly visible sputtering of brown scales at cleft base. Fringe inside cleft brown. Hind wings unicolorous, light-brown. Hind legs pale-yellow.

Male genitalia. Valves asymmetric, left valve slightly wider than right valve. Saccular process on left valve narrow, almost straight, apically sharp, hardly not reaching apex of valve. Right valve with two longitudinal folds, one long, in upper part of valve, the second short, in basal part. Anellus arms asymmetric, right arm slightly longer and more narrow than left, left arm apically extended. Saccus arched. Uncus narrow, thin, slightly curved. Aedeagus almost straight, slightly shorter than right valve in length, distally with sputtering of tiny spiky cornuti.

Diagnosis. In the male genitalia, in the shape of the saccular process on the left valve, the new species is similar to *Hellinsia joinville* Gielis, 2016, but clearly differs in the cornuti in the aedeagus distally, in the totally different color of the wings and in the significantly smaller size.

Flight period. September.

Distribution. Argentina.

Etymology. The new species is named after Katja Soininen, a life partner of Risto Haverinen. Katja's help, assist and support for expeditions has been irreplaceable.

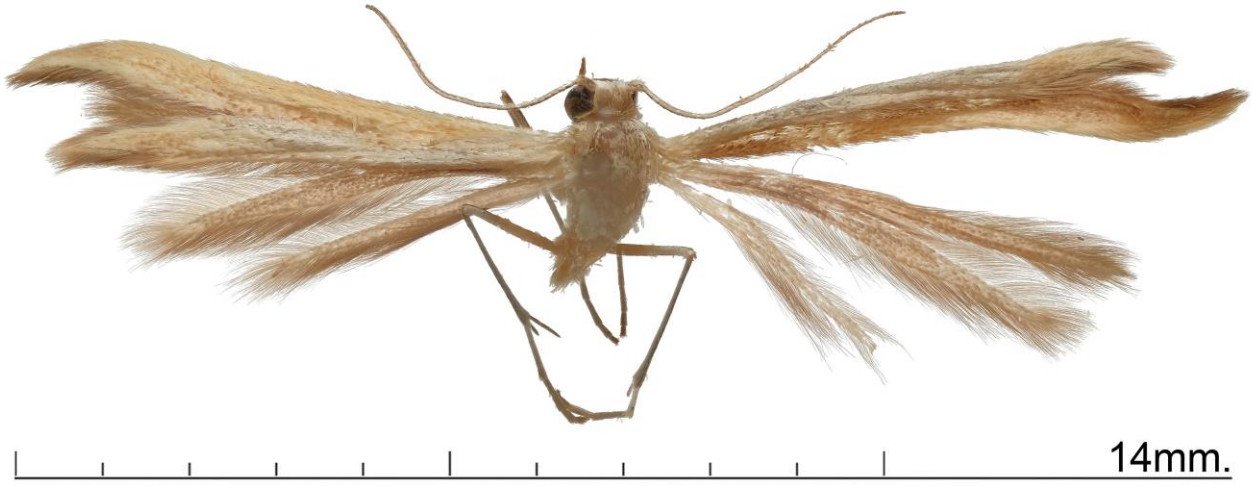

Figure 5. ***Hellinsia katja*** Ustjuzhanin & Kovtunovich sp.nov. Adult male (Holotype, IZBE).

Figure 6. ***Hellinsia katja*** Ustjuzhanin & Kovtunovich sp.nov. Male genitalia (Holotype, IZBE, gen.pr. Nr. 221002).

Emmelina inna sp. nov.
https://zoobank.org/urn:lsid:zoobank.org:act:F7B3A300-15F6-4719-90E0-015605AECBAE
(Figs 8 – 10)

Type material: **Holotype**, ♂ (IZBE, gen.pr. № 221003), **ARGENTINA**, Siera de Manchao, 23.ix.2017, 28°43'S, 66°21'W, 1185 m, K. Nupponen & R. Haverinen leg.; **Paratypes**, 1♀ (IZBE, gen.pr. № 221004), 1 ♂, 1 ♀, (CUK), same data as holotype.

Description: **External characters.** Head, thorax and tegulae with pale-yellow scales. Collar at head light-brown. Labial palpi short, straight, almost twice smaller than longitudinal eye diameter. Antennae thin, light-yellow, alternating with small brownish scales, scape noticeably extended. Wingspan 18-21 mm (in holotype 19 mm). Fore wings yellowish-grey. Small elongated dark-brown spot along costal margin, above cleft. Brownish spot in front of cleft. Brown fringe inside cleft and along rear margin of wing. Hind wings unicolorous, of the same color as fore wings. Hind legs yellowish-grey.

Figure 7. ***Hellinsia katja*** Ustjuzhanin & Kovtunovich sp.nov. Biotope: Argentina, Andes Mts., Siera de Famatina, 2085 m, Photo by A. Pototski.

Male genitalia. Valves asymmetric. Saccular process on left valve sclerotized, arched at right angle, distally narrowing, apically acute. Saccular process on right valve shaped as wide fold, located in medium part. Apices of both valves bluntly rounded. Uncus simple, thin, slightly curved. Anellus arms asymmetric, left shorter and more narrow than right. Vinculum arched. Aedeagus thin, slightly curved, twice shorter than valve.

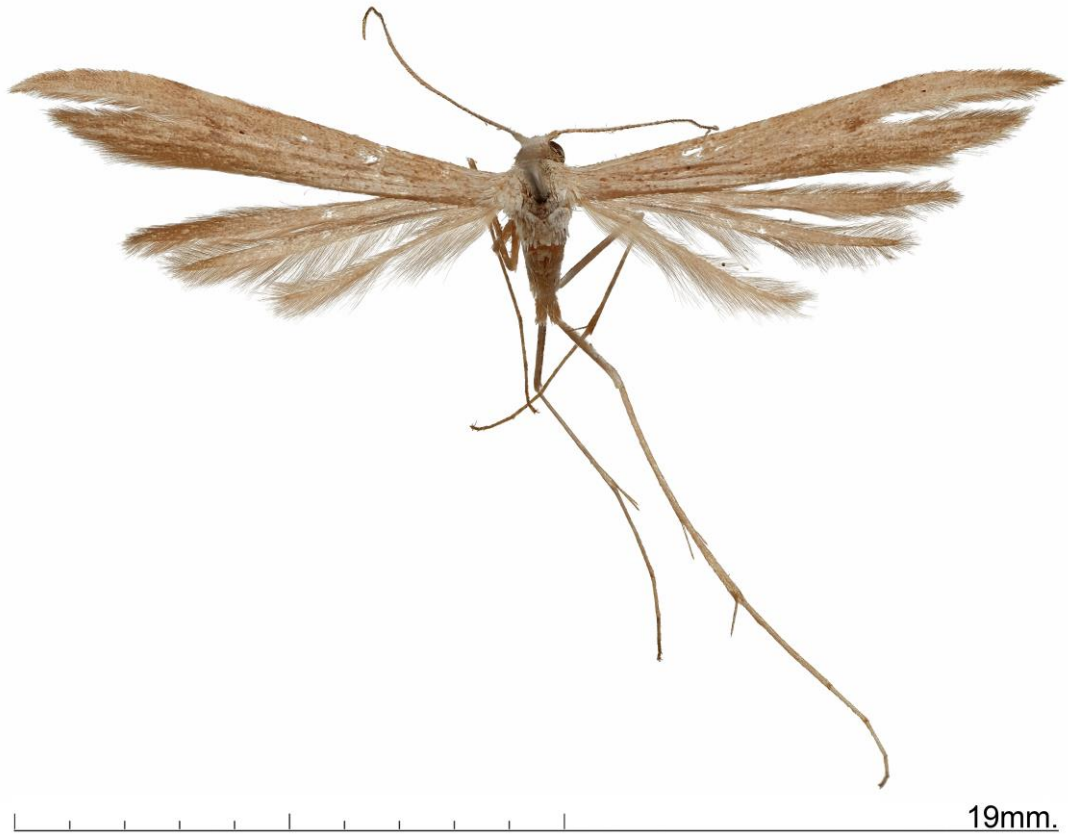

Figure 8. ***Emmelina inna*** Ustjuzhanin & Kovtunovich sp.nov. Adult male (Holotype, IZBE).

Figure 9. ***Emmelina inna*** Ustjuzhanin & Kovtunovich sp.nov. Male genitalia (Holotype, IZBE, gen.pr. Nr. 221003).

Female genitalia. Papillae anales wide. Posterior apophyses almost straight, three times longer than anterior apophyses. Anterior apophyses short, thick, slightly narrowing apically. Antrum short, tubulate. Ductus bursae long, thin, membranous. Ductus seminalis slightly wider and shorter than ductus bursae. Bursa copulatrix long, narrow-oval, poorly sclerotized, without signa.

Diagnosis. Externally, the new species remotely resembles *Emmelina monodactyla* (Linnaeus, 1758). In the male genitalia, in the curved saccular process on the left valve, the new species resembles *Emmelina aethes* (Walsingham, 1915)**,** but in *E. aethes* this process is hook-like, while in the new species it is arched. The left valve in the new species is apically rounded, while in ***E. a****ethes* it has a robust crest-like process on apex. There is also difference in the anellus arms and aedeagus.

Flight period. September.

Distribution. Argentina.

Etymology. The new species is named after Risto Haverinen's daughter Inna Antikainen, who has been a source of innovation and a driving force during expeditions.

Adaina nina Ustjuzhanin & Kovtunovich sp. nov**.**
https://zoobank.org/urn:lsid:zoobank.org:act:BC245E9D-7264-4FF9-9D79-6D34B5CA51BF
(Figs 11 – 12a, b)

Type material: **Holotype**, ♂ (IZBE, gen.pr. № 221005), **ARGENTINA,** Andes Mts., Siera de Famatina, Famatina vill., 15 km NNW, 27.i.2017, 28°46'S, 67°35'W, 2085 m, K. Nupponen, R. Haverinen & A. Pototski leg.; **Paratype**, 1 ♂, (CUK), same data as holotype.

Description: **External characters.** Head, thorax and tegulae light-yellow**.** Labial palpi white, thin, straight. Antennae light-brown. Wingspan 12-13 mm (in holotype - 12.5 mm). Fore wings ocher-yellow, with sputtering of small brown scales. Small brown spot at cleft base. Three short longitudinal brown strokes on first lobe, along costal margin and apically. Brown stroke on inner margin of first lobe distally. Two short brown strokes on outer margin of second lobe distally. Fringe inside cleft yellowish-brown. Hind wings unicolorous, light-yellow. Hind legs pale-yellow.

Male genitalia. Valves asymmetric, left significantly wider than right. Saccular process on left valve narrow, wavy, apically curved as ring. Sacculus on right valve with two small spikes. Anellus arms asymmetric**,** right arm slightly longer and wider than left. Saccus arched. Uncus narrow, thin, slightly curved. Aedeagus almost straight, twice shorter than right valve in length, with angle-like cornutus distally.

Figure 10. ***Emmelina inna*** Ustjuzhanin & Kovtunovich sp.nov. Female genitalia (Paratype, IZBE, gen.pr. Nr. 221004).

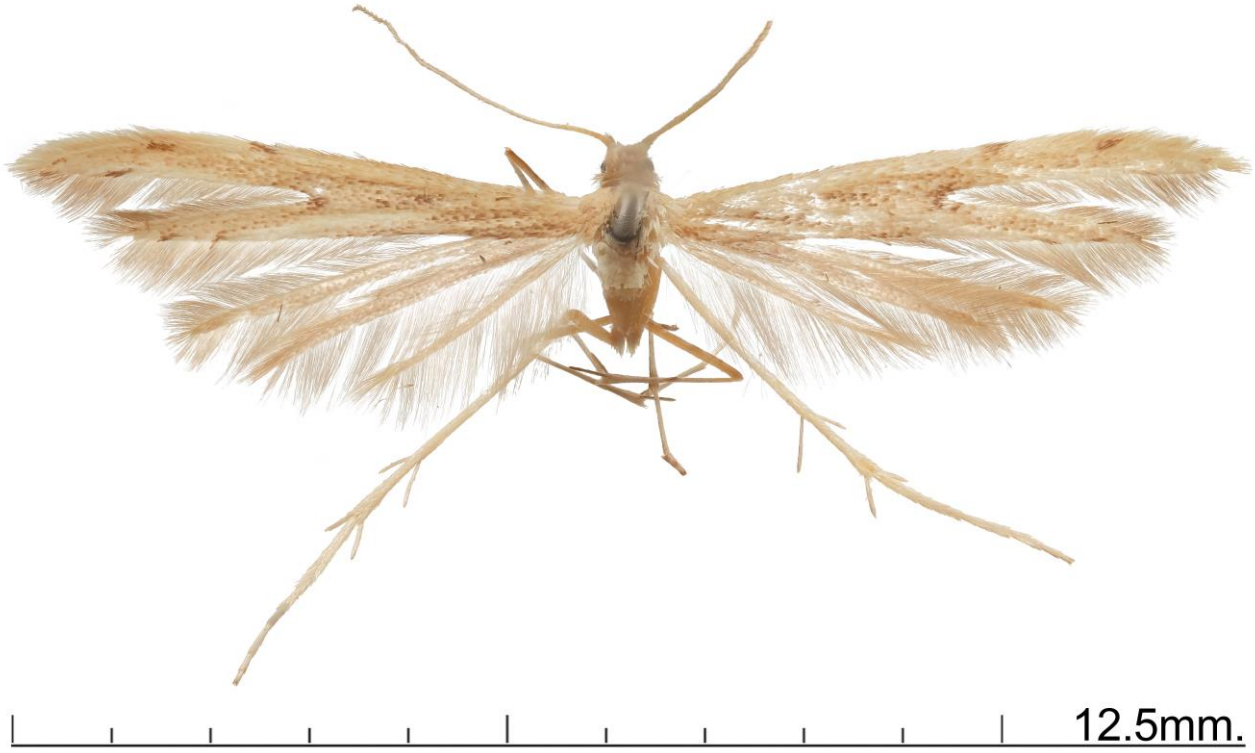

Figure 11. ***Adaina nina*** Ustjuzhanin & Kovtunovich sp. nov**.** Adult male (Holotype, IZBE).

Figure 12a. ***Adaina nina*** Ustjuzhanin & Kovtunovich sp. nov**.** Male genitalia (Holotype, IZBE, gen.pr. Nr. 221005).

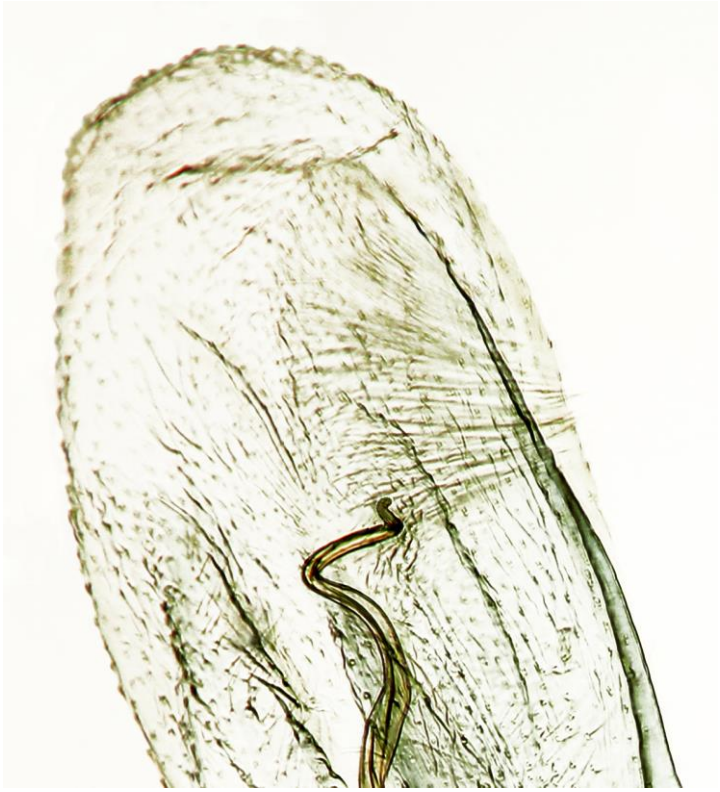

Figure 12b. ***Adaina nina*** Ustjuzhanin & Kovtunovich sp. nov**.** 12b. Male genitalia, saccular process on left valve.

Diagnosis. In the male genitalia, in the shape of the sacculus on the right valve, the cornutus in the aedeagus and the anellus arms, the new species is similar to *Adaina invida* (Meyrick, 1908) and *Adaina jobimi* Vargas, 2020, but differs in both species in the **s**accular process on the left valve, which is ring-likely curved distally.

Flight period. January.

Distribution. Argentina.

Etymology. The new species is named after the school teacher of Biology of the first author, Nina Vasilyevna Solnyshkova (Novosibirsk, Russia), whose wonderful lessons and professionalism were the example for the first author of this article.

Taxonomical part

Stenoptilia tenuis (Felder & Rogenhofer, 1875)
Mimeseoptilus tenuis Felder & Rogenhofer, 1875: plate 140, fig. 50. (Type locality: Colombia).
Material examined. 1 ♀, **ARGENTINA**, Rio San Francisco by Algarrobal vill., 16.ix.2017, 24°38'S, 64°54'W, 619 m, K. Nupponen & R. Haverinen leg. (CUK).

Distribution. Colombia, Ecuador, Peru (Gielis 2003), Paraguay, (Ustjuzhanin *et al*. 2016), Argentina. New record for Argentina.

Uroloba calycospila (Meyrick, 1932)
Utuca calycospila Meyrick, 1932: 336. (Type locality: Argentina, Alta Gracia).
Material examined. 4 ♂, **ARGENTINA**, Siera de Famatina, Famatina vill., 15 km NNW, 27.i.2017, 28°46'S, 67°35'W, 619 m, K. Nupponen, R. Haverinen, & A. Pototski leg.; 1 ♂, **ARGENTINA**, Siera de Manchao, 21.ix.2017, 28°47'S, 66°23'W, 972 m, K. Nupponen & R. Haverinen leg.; 2 ♂, **ARGENTINA**, Siera de Manchao, 23.ix.2017, 28°43'S, 66°21'W, 1185 m, K. Nupponen & R. Haverinen leg. (IZBE, CUK).

Distribution. Argentina (Gielis 2003).

Lioptilodes aguilaicus Gielis, 1991
Lioptilodes aguilaicus Gielis, 1991: 23. (Type locality: Argentina, Neuquen, Piedra del Aguila).
Material examined. 2 ♂, **ARGENTINA**, Andes Mts., Siera de Famatina, Famatina vill., 15.km NNW, 27.i.2017, 28°46'S, 67°35'W, 2085m, K. Nupponen, R. Haverinen, & A. Pototski leg. (IZBE, CUK).
Distribution. Argentina, Chile (Gielis 2003).

Lioptilodes neuquenicus Gielis, 1991
Lioptilodes neuquenicus Gielis, 1991: 21. (Type locality: Argentina, Neuquen, Zapala, El Marucho).
Material examined. 1 ♀, **ARGENTINA**, Andes Mts., Siera de Famatina, Famatina vill., 15.km NNW, 27.i.2017, 28°46'S, 67°35'W, 2085m, K. Nupponen, R. Haverinen, & A. Pototski leg. (CUK).
Distribution. Argentina, Chile (Gielis 2003), Peru (Gielis 2014)

Lioptilodes rionegroicus Gielis, 1991
Lioptilodes rionegroicus Gielis, 1991: 20. (Type locality: Argentina, Rio Negro, San Carlos de Bariloche, Nirihuau).
Material examined. 1 ♂, **ARGENTINA**, Andes Mts., Siera de Famatina, Famatina vill., 15.km NNW, 14.ix.2017, 28°46'S, 67°35'W, 2085m, K. Nupponen & R. Haverinen leg. (CUK).
Distribution. Argentina, Chile, Peru (Gielis 2003), Bolivia (Ustjuzhanin *et al*. 2021b).

Lioptilodes subantarcticus Gielis, 1991
Lioptilodes subantarcticus Gielis, 1991: 15. (Type locality: Argentina, Tierra del Fuego, Ushuaia, Lapataia).
Material examined. 1 ♂, **ARGENTINA**, Siera de Manchao, 21.ix.2017, 28°47'S, 66°23'W, 972m, K. Nupponen & R. Haverinen leg. (CUK).
Distribution. Argentina, Brazil (Gielis 2003).

Lioptilodes zapalaicus Gielis, 1991
Lioptilodes zapalaicus Gielis, 1991: 18. (Type locality: Argentina, Neuquen, Zapala, El Marucho).
Material examined. 1 ♂, **ARGENTINA**, Siera de Manchao, 23.ix.2017, 28°43'S, 66°21'W, 1185m, K. Nupponen & R. Haverinen leg. (CUK).
Distribution. Argentina, Chile, Peru (Gielis 2003), Bolivia (Ustjuzhanin *et al*. 2021b).

Megalorhipida pseudodefectalis Gielis, 1991
Megalorrhipida pseudodefectalis Gielis, 1989: 107. (Type locality: Argentina, Neuquen, Piedra del Aguila).
Material examined. 3 ♂, 1 ♀, **ARGENTINA**, Andes Mts., Siera de Famatina, Famatina vill., 15.km NNW, 27.i.2017, 28°46'S, 67°35'W, 2085m, K. Nupponen, R. Haverinen, & A. Pototski leg. (IZBE, CUK).
Distribution. Argentina, Chile, Paraguay, Brazil (Gielis 2003).

Hellinsia angulofuscus (Gielis, 1991)
Oidaematophorus angulofuscus Gielis, 1991: 89. (Type locality: Argentina, Rosario de la Frontera, Los Baños, Salta).
Material examined. 2 ♂, **ARGENTINA**, Rio San Francisco by Caimancito vil. 397m, 23°43'S, 64°36'W 18.ix.2017. K. Nupponen & R. Haverinen leg. (IZBE, CUK).
Distribution: Argentina, Paraguay, Brazil. (Gielis 2011).

Emmelina doroshkini Ustjuzhanin & Kovtunovich, 2021
Emmelina doroshkini Ustjuzhanin & Kovtunovich, 2021: 441. (Type locality: Argentina, Jujuy Prov.).
Material examined. 1 ♂, 1 ex. (abdomen missing), **ARGENTINA**, Rio San Francisco by Caimancito vil. 397m, 23°43'S, 64°36'W 18.ix.2017. K. Nupponen & R. Haverinen leg. (CUK).
Distribution. Argentina (Ustjuzhanin *et al*. 2021a).

Adaina zephyria Barnes & Lindsey, 1921
Adaina zephyria Barnes & Lindsey, 1921: 366. (Type locality: USA: California).
Material examined. 1 ♂, **ARGENTINA**, Rio Can Francisco by Algarrobal vill., 16.ix.2017, 24°38'S, 64°54'W, 619m, K. Nupponen & R. Haverinen leg. (CUK); 1 ♂, **ARGENTINA**, Rio San Francisco by Caimancito vil. 397m, 23°43'S, 64°36'W 18.ix.2017. K. Nupponen & R. Haverinen leg. (IZBE, CUK).

Distribution. USA, Mexico, Costa Rica, Venezuela, Ecuador, Peru, Bolivia, Brazil (Gielis 2011), Honduras (Kovtunovich *et al.* 2018), Argentina (Ustjuzhanin *et al*. 2021a).

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