

Two Newly Recorded Species of the Genus *Lispe* (Diptera: Muscidae) from Korea

Dongmin Kim¹, Sang Jae Suh^{2,3,*}

¹Department of Applied Biology, Kyungpook National University, Daegu 41566, Korea

²Department of Plant Medicine, Kyungpook National University, Daegu, 41566, Korea

³Institute of Plant Medicine, Kyungpook National University, Daegu 41566, Korea

ABSTRACT

Flies of the genus *Lispe* Latreille are widely distributed worldwide, with over 150 species recorded, of which 57 are distributed in the Palearctic region. Larvae mainly live in sandy or muddy environments, and adults are found nearby. Both adults and larvae are predators of a variety of small aquatic insects. Until now, a total of six species have been recorded in the Korean fauna. In the course of taxonomic research of Korean house flies, the authors discovered two new unrecorded species, *L. leucospila* (Wiedemann, 1830) and *L. pygmaea* Fallén, 1825. The diagnoses and illustrations of these species are provided with the key to the Korean *Lispe* species.

Keywords: new record, *Lispe leucospila*, *Lispe pygmaea*, Muscidae, Korea

INTRODUCTION

The genus *Lispe* Latreille, 1796 is belonging to the subfamily Coenosiinae under the family Muscidae. Until now, it is widely distributed worldwide, and about 150 species have been recorded. Among them, 57 species are distributed in the Palearctic region (Vikhrev, 2020). Larvae mainly live in sandy or muddy environments such as the borders of marshes, seashore areas, swamps, lakes, ponds, streams, and rice paddy fields, and adults are found nearby. Both adults and larvae are predators of a variety of small aquatic insects (Snyder, 1954; Bae and Suh, 2021).

Up to now, a total of six species have been recorded in the Korean fauna: *L. assimilis* Wiedemann, 1824, *Lispe consanguinea* Loew, 1858, *L. litorea* Fallén, 1825, *L. orientalis* Wiedemann, 1824, *L. patellitarsis* Becker, 1914, and *L. tentaculata* (DeGeer, 1776) (Bae and Suh, 2021). In the course of taxonomic research of Korean house flies, the authors discovered two new unrecorded species, *L. leucospila* (Wiedemann, 1830) and *L. pygmaea* Fallén, 1825. The diagnoses and illustrations of these species are provided in addition to the key to the Korean *Lispe* species.

MATERIALS AND METHODS

The morphological terminology that used in the study follows Vikhrev (2020). Taxonomic characters were examined under either stereo or optical microscopes (Olympus SZX16, BX51), with a digital camera (Tucsen DigiRetina 16) attached for photography. All the specimens examined in the present study have been deposited in the collection of the Department of Plant Medicine at Kyungpook National University, Daegu, Korea.

SYSTEMATIC ACCOUNTS

Order Diptera Linnaeus, 1758

Family Muscidae Latreille, 1802

Subfamily Coenosiinae Verrall, 1888

Genus *Lispe* Latreille, 1796

¹**Lispe leucospila* (Wiedemann, 1830) (Fig. 1)

Coenosia leucospila Wiedemann, 1830: 441 (type locality: India).

Korean name: ¹*길쭉물집파리 (신칭)

© This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

eISSN 2234-8190

*To whom correspondence should be addressed

Tel: 82-53-950-7767, Fax: 82-53-950-6758

E-mail: sjsuh@knu.ac.kr

Copyright © The Korean Society of Systematic Zoology

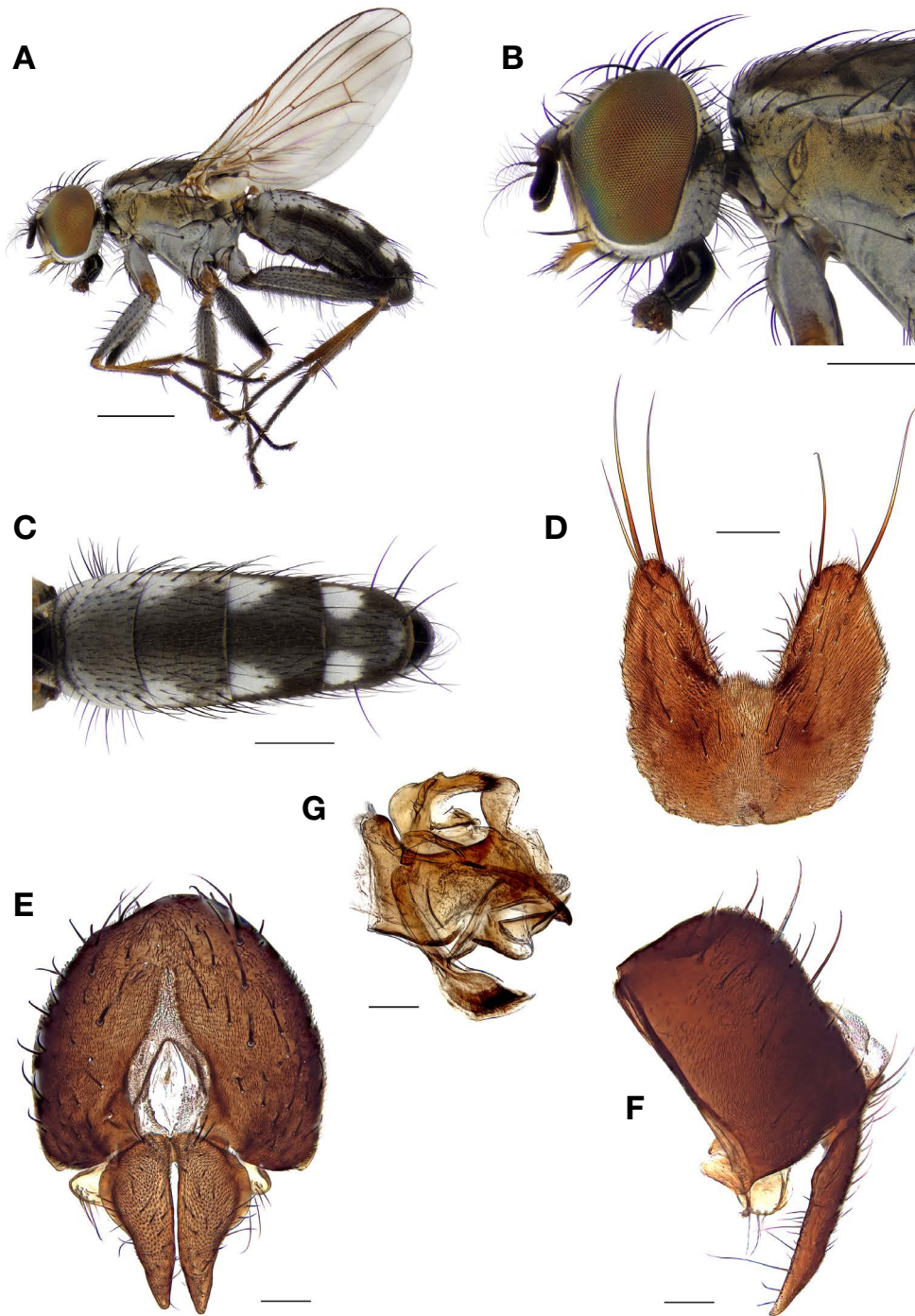


Fig. 1. *Lispe leucospila* (Wiedemann, 1830), male. A, Habitus, lateral view; B, Head, lateral view; C, Abdomen, dorsal view; D, Fifth sterniter, dorsal view; E, Terminalia, dorsal view; F, Terminalia, lateral view; G, Aedeagus, lateral view. Scale bars: A=1 mm, B, C=0.5 mm, D-G=0.1 mm.

Lispe vittata Stein, 1900: 153 (type locality: Singapore).

Lispe lateralis Stein, 1906: 70 (type locality: Mozambique).

Lispe eidsvoldica Malloch, 1925: 336 (type locality: Queensland, Australia).

Lispe leucospila sinica Hennig, 1960: 440 (type locality: Charbin, China).

Lispe albipuncta Shinonaga, 2010: 103 (type locality: Khyber Pakhtunkhwa, Pakistan).

Material examined. Korea: Daegu: 2♀, Daegu, Sangyeok-dong, KNU Campus, 35.890136°N, 128.607904°E, 16 Jul 2016, Suh SJ Coll.; 1♂ 1♀, Daegu, Sangyeok-dong, KNU Campus, 35.890136°N, 128.607904°E, 16 Jul 2017, Suh SJ Coll.; 6♂ 8♀, Daegu, Sangyeok-dong, KNU Campus, 35.890136°N, 128.607904°E, 11 Aug 2017, Suh SJ Coll.; Gyeongsangnam-do: 1♂, Hadong-gun, Guemnam-myeon, Isl. Daedo, 34.934167°N, 127.831043°E, 6 Aug 2022, Kim DM; Jeollanam-do: 2♀, Wando-gun, Wando-eup, 34.353118°N, 126.701956°E, 15 Aug 2022, Kim DU; Jeju-do: 1♂, Seogwipo-si, Yerae-dong, 33.246449°N, 126.396217°E, 23 Oct 2020, Suh SJ Coll.; 1♂ 1♀, Seogwipo-si, Yeongnam-dong, 33.289535°N, 126.495096°E, 23 Oct 2020, Suh SJ Coll.

Description. Male: Body length: 4.2–5.6 mm, wing length: 3.5–4.4 mm. Head dichoptic, frons broad and slightly narrower than half of head width; eyes bare; frontal triangle with dense golden pollen, reached to lunule; frontal vittae black with golden pollen; 2 reclinate and 4 inclinate fronto-orbital setae; parafrontalia and parafacialia with golden pollen and some proclinate setulae, outer margin of parafrontalia silvery; occiput with a horizontal dark median band; antenna black, joint of pedicel and postpedicel yellow; arista plumose, longest hair less than twice of postpedicel width; face and clypeus with golden pollen; gena with silvery gray pollen; palpus wholly yellow and flat oval; proboscis glossy black (Fig. 1A, B). Thorax black with white-gray pollen; scutum and scutellum with 3 black longitudinal stripes; acrostichal setae 0+0; dorsocentral setae 1+3; prealar seta absent; basal scutellar setae slightly longer than half of apical scutellar setae; pleura with olive-black stripe from lower half of postpronotal lobe to proepisternum; 2 upper proepisternal setae; 1 upper proepimeronal seta; halter black with yellow stem. All coxae and femora black with gray pollen; all trochanters, apex of femora and tibiae yellow; all tarsi darkish brown; fore tibia with 1 submedial posteroventral and 1 preapical dorsal setae; mid femur with 1 anterior and 2 preapical posterodorsal setae, and anteroventral and posteroventral rows which formed ctenidial comb like on apical third; mid tibia with 1 medial posterodorsal seta; hind femur with complete anterodorsal row in full surface, and anteroventral and posteroventral erected setulae rows in basal 2/3, and 1 posteroventral seta; hind tibia with 2 anteroventral, 1 medial anterodorsal, 5 erected posterior setulae on apical half and 1 preapical dorsal setae. Wing infuscate, broadly brownish clouded around veins; yellowish-brown veins; calypter whitish yellow, lower calypter protruded beyond as twice of upper calypter. Abdomen long and cylindrical,

black with glossy; tergite 1+2 with one pair of white-gray bands; tergites 3–5 with one pair of oval white-gray spots, respectively; lateral margin of tergites 1+2–5 with gray pollen (Fig. 1C); fifth sternite and genitalia shown in Fig. 1D–G.

Female: Body length: 4.0–5.7 mm, wing length: 3.4–4.5 mm. The females and males are almost the same except following characters. Mid femur without anteroventral and posteroventral rows; hind femur without any erected hair setulae on anteroventral and posteroventral rows; hind tibia with 1 anteroventral seta, and without any erected posterior setae.

Distribution. Korea (new record), China, Japan, Russia (Far East), Mediterranean subregion; Afrotropical, Oriental, and Australasian regions.

¹**Lispe pygmaea* Fallén, 1825 (Fig. 2)

- Lispe pygmaea* Fallén, 1825: 94 (type locality: Esperod, Sweden).
Lispe metatarsalis Thomson, 1869: 562 (type locality: Hawaii, USA).
Lispe argenteifacies Grimshaw, 1901: 30 (type locality: Hawaii, USA).
Lispe cupreigena Grimshaw, 1901: 31 (type locality: Hawaii, USA).
Lispe ponti Hardy, 1981: 87 (type locality: Hawaii, USA).
Lispe aureola Shinonaga, 2014: 43 (type locality: Tokyo, Japan).
Lispe japonica Shinonaga, 2014: 43 (type locality: Tokyo, Japan).

Material examined. Korea: Gangwon-do: 1♂ 1♀, Yangyang-gun, Yangyang-eup, Namdaecheon, 38.092655°N, 128.638434°E, 11 Jun 2020, Suh SJ Coll.; 2♂, Samcheok-si, Gagok-myeon, Gagokcheon, 37.130451°N, 129.170195°E, 19 Jul 2015, Suh SJ Coll.; 3♂ 1♀, Jeongseon-gun, Jeongseon-eup, Joyanggang, 37.373419°N, 128.670164°E, 9 Aug 2017, Suh SJ Coll.; 3♂, Samcheok-si, Seongnam-dong, Osipcheon, 37.440722°N, 129.158971°E, 26 May 2018, Suh SJ Coll.; Chungcheongnam-do: 1♂, Taean-gun, Taean-eup, Donae Port, 36.818024°N, 126.321990°E, 29 Sep 2017, Suh SJ Coll.; Jeollabuk-do: 6♂ 3♀, Gochang-gun, Simwon-myeon, 35.527589°N, 126.544229°E, 2 Sep 2017, Suh SJ Coll.; 1♀, Gunsan-si, Okdo-myeon, Isl. Munyeodo, 35.802716°N, 126.421678°E, 28 May 2021, Suh SJ Coll.; 6♂ 6♀, Buan-gun, Haseo-myeon, Saemangeum, 35.699210°N, 126.570620°E, 23 Sep 2019, Suh SJ Coll.; 7♂ 3♀, Gunsan-si, Okdo-myeon, Isl. Munyeodo, 35.803235°N, 126.426474°E,

Korean name: ¹*애물집파리 (신칭)

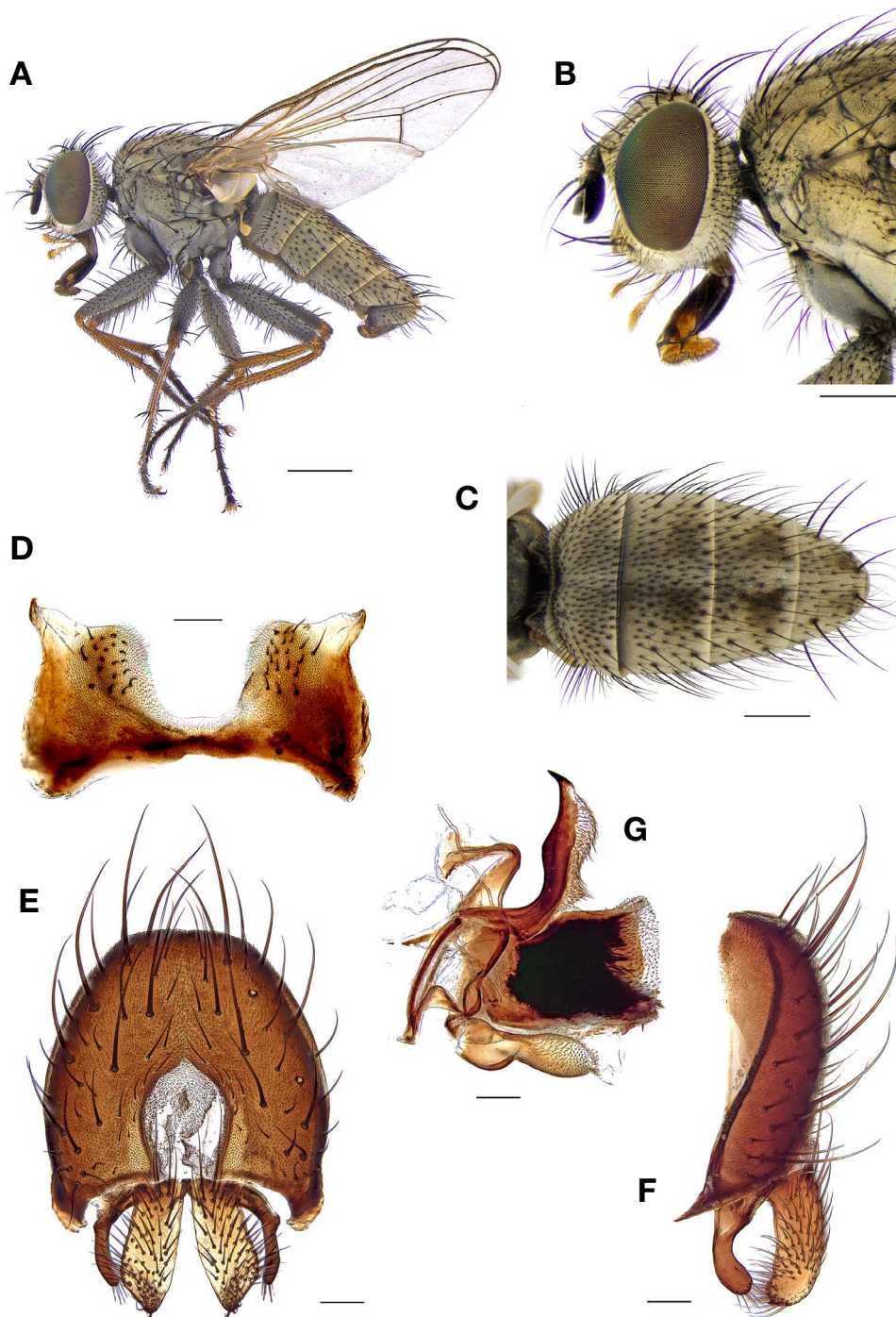


Fig. 2. *Lispe pygmaea* Fallén, 1825, male. A, Habitus, lateral view; B, Head, lateral view; C, Abdomen, dorsal view; D, Fifth sternite, dorsal view; E, Terminalia, dorsal view; F, Terminalia, lateral view; G, Aedeagus, lateral view. Scale bars: A=1 mm, B, C=0.5 mm, D-G=0.1 mm.

24 Nov 2019, Suh SJ Coll.; Jeollanam-do: 1♂ 1♀, Sinan-gun, Heuksan-myeon, Isl. Gageodo, 34.075021°N, 125.110509°E, 13 Aug 2023, Suh SJ Coll.; 1♂ 2♀, Yeosu-si, Isl. Myodo, 34.888775°N, 127.700612°E, 15 Nov 2019, Suh SJ Coll.

Description. Male: Body length: 5.4–6.4 mm, wing length: 4.3–5.3 mm. Head dichoptic, frons broad and narrower than half of head width; eyes bare; frontal triangle reached to lunul; frontal vittae black with golden pollen; 2 reclinate and

4 inclinate fronto-orbital setae; parafrofrontalia and parafacialia with golden pollen, some setulae which longest setulae subequal with genal height; antenna black, joint of pedicel and postpedicel yellow; postpedicel pointed angularly apically; arista plumose, longest hair about 1.5 times of genal height; face and clypeus with golden pollen; gena with silvery gray pollen; palpus wholly yellow, narrow spoon-like; proboscis glossy black (Fig. 2A, B). Thorax black with gray pollen; scutum and scutellum with 3 longitudinal vittae; acrostichal setae 0 + 1, 4–5 rows of presutural acrostichal setulae; dorso-central setae 2 + 3; prealar seta absent; basal scutellar setae subequal with apical scutellar setae; 2 upper proepisternal setae; 2 upper proepimeronal setae; 3 katepisternal setae, posterior seta distinctly long and strong; halter yellow. All coxae, trochanters and femora black with gray pollen; all apexes of femora, tibiae and tarsomere 1 yellow to brown; tarsomeres 2–5 black; fore tibia without median seta; mid femur with 1 distinct supramedial anteroventral, 2 anterior, 2 basal posteroventral, and 2 preapical posterodorsal setae; mid tibia with 1 submedial posterior seta; hind femur with anterodorsal row in full surface, anteroventral and posteroventral rows in basal 2/3, and 1 anteroventral seta; hind tibia with 1 submedial anterodorsal seta. Wing hyaline; veins yellow; calypter whitish yellow, lower calypter protruded beyond as twice of upper calypter. Abdomen long and cylindrical, black with gray pollen; medial vitta and each apical margin of tergites 1 + 2–5 whitish yellow; 1 + 2–5 tergites with a pair of triangular dark marking, respectively, but sometimes indistinct on tergites 1 + 2 and 5 (Fig. 2C); fifth sternite and genitalia shown in Fig. 1D–G.

Female: Body length: 5.3–5.6 mm, wing length: 4.9–5.3 mm. The females and males are almost the same except following characters. Mid femur without any anteroventral setae, and posteroventral row, but anterior row on basal half and 2 preapical posterodorsal setae present; hind femur without any anteroventral and posteroventral rows.

Distribution. Korea (new record), China, Japan, whole Palaearctic region, N. Oriental and N. Afrotropical regions, and Hawaii.

Key to the Korean *Lispe* species

1. Hind first tarsomere with scoop-shaped process
..... *patellitarsis* Becker
– Hind first tarsomere without scoop-shaped process 2
2. Mid tibia with anterodorsal seta *litorea* Fallén
– Mid tibia without anterodorsal seta 3
3. Hind tibia with anteroventral set 4
– Hind tibia without anteroventral seta 5
4. Hind tibia with 1 anteroventral seta
..... *assimilis* Wiedemann

- Hind tibia with 2 anteroventral setae
..... *leucospila* (Wiedemann)
- 5. Hind tibia without posterodorsal seta *pygmaea* Fallén
– Hind tibia with 1 short posterodorsal seta 6
- 6. Fore first tarsomere without a finger-like protuberance
..... *orientalis* Wiedemann
– Fore first tarsomere with a finger-like protuberance 7
- 7. Mid and hind tibiae mostly yellow to yellowish-brown
..... *consanguinea* Loew
– Mid and hind tibiae entirely black *tentaculata* (DeGeer)

ORCID

Dongmin Kim: <https://orcid.org/0000-0002-8629-2889>
Sang Jae Suh: <https://orcid.org/0000-0002-7489-3193>

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

Bae E, Suh SJ, 2021. Record of *Lispe consanguinea* (Diptera: Muscidae), new to Korea. *Animal Systematics, Evolution and Diversity*, 37:15-18. <https://doi.org/10.5635/ASED.2021.37.1.058>

Fallén CF, 1825. *Monographia Muscidum Sveciae*. Berlingianis, Lundae, pp. 81-94.

Grimshaw PH, 1901. Part I. Diptera. *Fauna Hawaiiensis*, 3:1-77.

Hardy DE, 1981. Diptera: Cyclorrhapha IV, series Schizophora, section Calyptratae. *Insects of Hawaii*, 14:1-491.

Hennig W, 1960. Family Muscidae. In: *Die Fliegen der Palaarktischen Region*. Familie 63b (Ed., Lindner E). Schweizerbart'sche Verlagsbuchhandlung, Stuttgart, pp. 433-480.

Malloch JR, 1925. Notes on Australian Diptera with descriptions of thirteen new species. *The Australian Zoologist*, 3:322-338.

Shinonaga S, 2010. Notes on the genus *Lispe* Latreille from Oriental Region (Diptera, Muscidae). *Japanese Journal of Systematic Entomology*, 16:85-104. <https://doi.org/10.15298/rusentj.21.1.14>

Shinonaga S, 2014. Two new *Lispe* Latreille from Japan (Diptera: Muscidae). *Japanese Journal of Systematic Entomology*, 20:43-44. <https://doi.org/10.11646/zootaxa.4457.4.4>

Snyder FM, 1954. A review of nearctic *Lispe* Latreille (Diptera, Muscidae). *American Museum Novitates*, 1675:1-40.

Stein P, 1900. Anthomyiden aus Neu-Guinea, gesammelt von Herrn L. Biro. *Természetrzajzi Füzetek*, 23:129-159.

Stein P, 1906. Die afrikanischen Anthomyiden des Konigl. Zool-

- ogischen Museums zu Berlin. Berliner Entomologische Zeitschrift, 51:33-80.
- Thomson CG, 1869. Diptera. Species nova descripsit. In: Kongliga svenska fregatten Eugénies resa omkring jorden under befäl af C.A. Virgin, åren 1851-1853. 2 (Zoologi) 1, Insecta (Ed., Virgin CA). Almqvist & Wiksells, Uppsala, pp. 443-614.
- Vikhrev NE, 2020. *Lispe* (Diptera, Muscidae) of the Palearctic region. Amurian Zoological Journal, 12:158-188. <https://doi.org/10.33910/2686-9519-2020-12-2-158-188>
- Wiedemann CRW, 1830. Aussereuropäische zweiflügelige Insekten. Als Fortsetzung des Meigenschen Werks. Zweiter Theil. Schulz, Hamm, pp. 1-684.

Received September 26, 2023
Revised October 19, 2023
Accepted October 19, 2023