

Two new species and two new record species of the *pruinose* species group of genus *Athrips* Billberg, 1820 from China (Lepidoptera: Gelechiidae)

Hyonju Oh & Houhun Li

Abstract

Two species, *Athrips albimacula* Oh & Li, sp. nov. and *A. lingchuana* Oh & Li, sp. nov., are described as new; two species, *A. pruinose* (Lienig & Zeller, 1846) and *A. spiraeae* (Staudinger, 1871), are newly recorded for China. Images of adults and genitalia of the above four species are illustrated.

Keywords: Lepidoptera, Gelechiidae, taxonomy, *Athrips*, China.

Dos nuevas especies y dos nuevos registros del grupo de especies *pruinose* del género *Athrips* Billberg, 1820 de China (Lepidoptera: Gelechiidae)

Resumen

Se describen dos nuevas especies, *Athrips albimacula* Oh & Li, sp. nov. y *A. lingchuana* Oh & Li, sp. nov.; dos especies, *A. pruinose* (Lienig & Zeller, 1846) y *A. spiraeae* (Staudinger, 1871), se registran por primera vez para China. Se ilustran la imagen del adultos y la genitalia de las cuatro especies mencionadas.

Palabras clave: Lepidoptera, Gelechiidae, taxonomía, *Athrips*, China.

Introduction

The genus *Athrips* was established by Billberg (1820), with *Phalaena mouffetella* Linnaeus, 1758 as the type species. It is characterized by having a broad and short uncus covered with strong setae, a strongly curved long gnathos, a transtilla with strongly developed medial lobes and a saccus with X-shaped sclerotized support (Bidzilya & Li, 2009). *Athrips* species were united into eleven species groups based on the phylogenetic analysis and their phylogenetic relationships established in broad terms (Bidzilya, 2005). To date, 44 species are recorded in the Palaearctic Region (Bidzilya & Li, 2009; Junnilainen & Nupponen, 2010; Bidzilya & Nupponen, 2018).

Bidzilya & Li (2009) reviewed 22 *Athrips* species of the Chinese fauna, belonging to seven species groups. The aim of this study is to study the *pruinose* species group from China.

The *pruinose* group is characterized by the forewing of most species relatively broad, and grayish black with indistinct black spots; in the male genitalia by the well-developed transtilla with digitate medial lobes; in the female genitalia by the sternite VIII with well-developed patches of honeycomb pattern and wrinkles, the ostium bursae with dorsomedial sclerite, and distal part of the

ductus bursae with additional lateral sclerite (Bidzilya, 2005). Nine species of the *pruinoseella*-group were described from China previously. In this paper we describe two new species and to newly record two species for China.

Materials and methods

Specimens were collected in China by using light traps. All the studied specimens, including the types, are deposited in the Insect Collection of Nankai University, Tianjin, China (NKU).

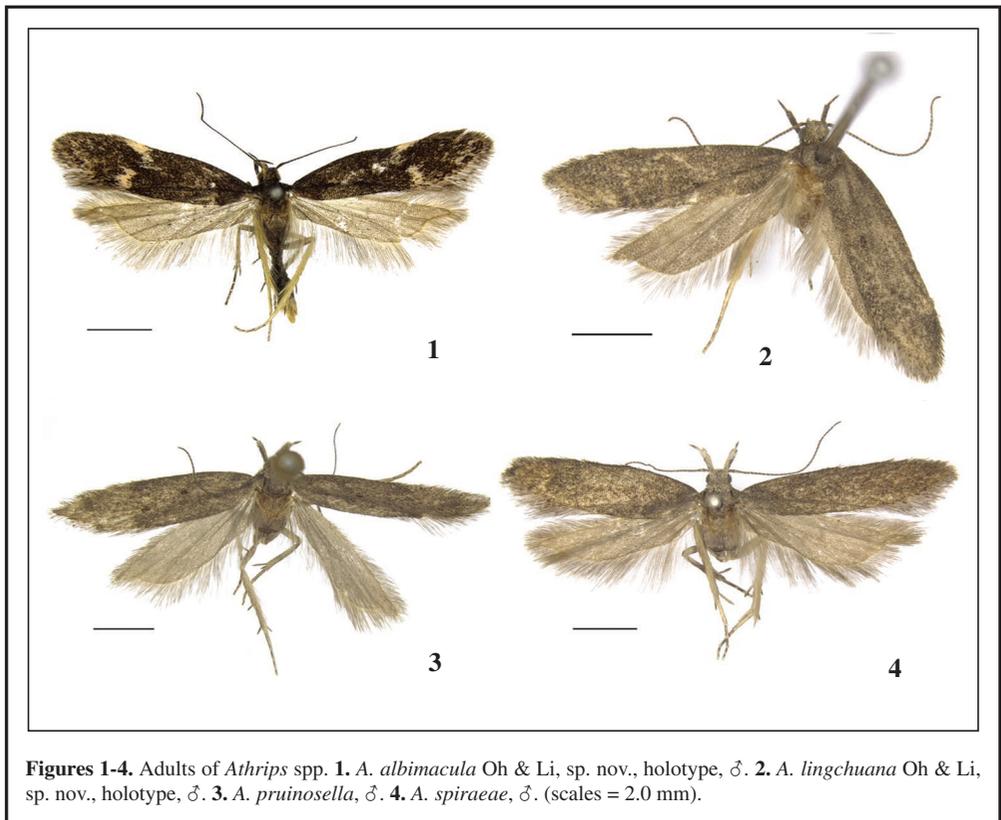
Morphological characteristics of adults and genitalia were observed under an Olympus SZX7 stereomicroscope and an Olympus CH30 microscope. Dissection and slide mounting of genitalia followed the methods introduced by Li (2002). Images of adults and genitalia were taken with Leica M205A and Leica DM750 microscopes respectively, coupled with a Leica Application Suite 4.2 software, and were manipulated subsequently in Adobe Photoshop CS.

Taxonomy

Athrips Billberg, 1820

Athrips Billberg, 1820, 93

Type-species: *Phalaena (Tinea) mouffetella* Linnaeus, 1758, by subsequent designation.



Figures 1-4. Adults of *Athrips* spp. 1. *A. albimacula* Oh & Li, sp. nov., holotype, ♂. 2. *A. lingchuana* Oh & Li, sp. nov., holotype, ♂. 3. *A. pruinoseella*, ♂. 4. *A. spiraeae*, ♂. (scales = 2.0 mm).

***Athrips albimacula* Oh & Li, sp. nov.** (Figures 1, 5)

Type material: CHINA, Qinghai, Holotype ♂, Baiyanggou Village, Qilian County (38.22°N, 100.26°E), 2935 m, 24-VII-2019, leg. SL Hao & XJ Zhu, slide No. OHJ20753 (NKU). Paratypes: 8 ♂♂, other same data as holotype, slide No. OHJ20735.

Diagnosis: This species is externally similar to *A. ravidata* Bidzilya & Li, 2009 in male genitalia, but differs from the latter in the forewing with distinctly large cream spot at basal 3/5 of costal margin and dorsum respectively, and in the male genitalia by the rectangular uncus, and the width of the anteriorly rounded saccus 2.5 times of its length; in the latter species, the forewing lacks a costal and a dorsal spot; the uncus is trapezoid-shaped, and the width of the anteriorly obtuse saccus is 2 times of its length in the male genitalia.

Description Adult (Figure 1): Wingspan 14.0-15.0 mm. Head grayish black, with long grayish white scales on upper margin of compound eyes. Labial palpus: second segment dark brown, with cream scales at apex, at base and on inner surface; third segment black except white at base on inner surface. Antenna: Scape black; flagellum black with dark brown rings. Thorax and tegula dark grayish brown. Forewing dark brown, with two large cream spots: one spot at basal 3/5 of costal margin, another at dorsum opposite to costal spot; fringe grayish brown. Hindwing and fringe light grayish brown. Fore- and midleg dark brown on outer surface, grayish yellow on inner surface, tarsi dark brown with grayish yellow rings; femora of hindleg grayish yellow, tibia dark brown on outer surface, grayish yellow on inner surface, tarsi dark brown and grayish yellow on outer surface, grayish yellow on inner surface.

Male genitalia (Figure 5): Uncus rectangular, anterior margin emarginated, posterior margin obtuse, with long setae. Gnathos sickle-shaped, strongly curved before middle, apex pointed, slightly hooked. Tegumen sub-triangular, anterior margin deeply emarginated. Valva straight, slightly narrowed distally, narrower than uncus; apex obtuse, exceeding tip of uncus. Sacculus narrow and short, with hair-like setae in distal part; apex pointed, beak-shaped. Transtilla lobes shorter than sacculus, digitate, with hair-like setae. Saccus short, broadly rounded, width 2.5 times of length. Phallus swollen basally, straight distally, distal 1/3 tapered.

Female: Unknown.

Distribution: China (Qinghai).

Etymology: The specific name is derived from the Latin *albus* and *macula*, referring to the large cream spots at costal and dorsal 3/5 of the forewing.

***Athrips lingchuana* Oh & Li, sp. nov.** (Figures 2, 6, 9)

Type material: CHINA, Shanxi: Holotype ♂, Xizha Shui Village, Magedang Township, Lingchuan County, Jincheng City, 900 m, 12-VII-2010, leg. HY Bai & LL Yang, slide No. OHJ20732 (NKU). Paratype: 1 ♀, other same data as holotype, slide No. OHJ20754 (NKU).

Diagnosis: This species is similar to *A. patockai* (Povolný, 1979) in both appearance and male genitalia. It can be distinguished from the latter of the forewing grayish brown with indistinct markings and in the male genitalia by the rectangular uncus, the distal end of the valva is blunt, and the transtilla lobe shorter than 2 times of its width; while in the latter species, the forewing black with distinct markings (Bidzilya, 2005, figures 53-55) and the uncus is trapezoid, the distal end of the valva is sharp, and the transtilla lobe is longer than 3 times of its width (Bidzilya, 2005, figures 120-122). The female genitalia of this species is diagnostic by the ductus bursae with sclerotized part distinctly longer than the apophyses anteriores; while in *A. patockai*, the female genitalis ductus bursae with sclerotized part approximately equal to the apophyses anteriores (Bidzilya, 2005, figures 151, 152).

Description Adult (Figure 2): Wingspan 13.0 mm. Head light grayish brown, with grayish white

tipped scales. Labial palpus grayish brown except rather pale on inner surface of second segment and on both inner and ventral surface of third segment, scales tipped with whitish gray; second segment about 1.5 times length of third segment. Antenna: scape dark brown; flagellum dark brown with grayish brown rings. Thorax and tegula grayish brown, with gray tipped scales. Forewing grayish brown, with grayish white tipped scales; indistinct dark brown spot at basal 1/3 and 2/3 of fold respectively; fringe grayish brown. Hindwing and fringe light grayish brown. Fore- and midlegs grayish brown, tibia grayish brown alternated with grayish yellow; femur and tibia of hindleg brownish yellow on outer surface, grayish yellow on inner surface, tarsi grayish brown with grayish yellow rings.

Male genitalia (Figure 6): Uncus rectangular, anterior margin emarginated, posterior margin with long setae. Gnathos sickle-shaped, strongly curved at basal 2/5, apex pointed, slightly hooked. Tegumen with a large semicircular anterior emargination. Valva straight, subparallel from near base to apex; apex far exceeding top of uncus. Sacculus wide basally, narrowed towards apex, distally, slightly bent inward, pointed at apex. Transtilla lobes thumber-like, length shorter than 2 times of width. Saccus short and broad, width about twice of length. Phallus swollen basally, distal portion straight, tapered from distal 1/3 to apex.

Female genitalia (Figure 9): Papillae analis subovate, with hair-like setae. Apophyses posteriores about twice length of apophyses anteriores. Sternite VIII trapezoid, as long as apophyses anteriores, lateral patches of honeycomb pattern at base of apophyses anteriores and near ostium. Ostium bursae with a dorsomedial sclerite. Ductus bursae with sclerotized part longer than apophyses anteriores, slightly broadened towards corpus bursae, coiled once near corpus bursae, with honeycomb pattern at distal 1/5. Corpus bursae ovoid, smooth on inner surface; signum saddle shaped, placed in distal part of ductus bursae.

Distribution: China (Shanxi).

Etymology: The specific name is from the type locality.

Athrips pruinoseella (Lienig & Zeller, 1846) (Figures 3, 7, 10)

Gelechia pruinoseella Lienig & Zeller, 1846. *Isis von Oken*, 1846, 288

Material examined: CHINA, Heilongjiang, Tahe County, 3 ♂♂, 29-VII-2009, leg. WC Li & JY Liu, slide Nos. OHJ20234, OHJ20251, OHJ20725 (NKU); Xinjiang: Hemu Township, Burqin County, 1114 m, 1 ♂, 23-VII-2007, leg. XP Wang, slide No. OHJ20726; Baihaba Village, Habahe County, 1264 m, 1 ♀, 27-VII-2007, leg. XP Wang, slide No. OHJ20751.

Diagnosis Adult (Figure 3): Wingspan 13.5-15.0 mm. This species is similar to *A. spiraeae* (Staudinger, 1871), but slightly differs from the latter by the rather dark grayish-brown head, thorax and tegula (Figure 3), the L-shaped gnathos with the straight distal part more than 2/5 of the total length (Figure 7), and the triangular ostium bursae (Figure 10); in the latter species, the head, thorax and tegula are rather pale grayish-brown (Figure 4), the straight distal part of the crescent-shaped gnathos is less than 1/3 of the total length (Figure 8), and the ostium bursae is conical (Figure 11).

According to Bidzilya (2005), *A. pruinoseella* differs slightly in the phallus tapered only in its distal quarter whilst in *A. spiraeae* it is evenly tapered from the base to apex; the female genitalia could be separated by the shape of medially elongated lateral sclerites of sternite VIII and the length of sclerotized part of the ductus bursae.

Distribution: China (Heilongjiang, Hebei, Xinjiang), Finland, Russia, Europe, Canada, USA.

Note: This species is **newly recorded in China**.

Athrips spiraeae (Staudinger, 1871) (Figures 4, 8, 11)

Gelechia spiraeae Staudinger, 1871. *Berl. Ent. Ztschr.*, 14, 303

Material examined: CHINA, Shanxi, Luya Mountain, Ningwu County, 1450 m, 1 ♂, 1 ♀, 19-VII-2011, leg. SL Hao, JY Liu, slide No. OHJ20729, OHJ20730 (NKU).

Diagnosis Adult (Figure 4): Wingspan 13.5-14.5 mm. *Athrips spiraeae* is diagnostic in the male genitalia by the sub-rectangular uncus, the crescent-shaped gnathos strongly curved at basal 2/3, the valva with apex exceeding tip of the uncus, the sacculus gradually narrowed towards beak-shaped apex, the digitate transtilla lobes, and the phallus evenly tapered to apex (Figure 8). *Athrips spiraeae* is characterized in the female genitalia by the trapezoid sternite VIII as long as the apophyses anteriores and with lateral patches of honeycomb pattern, the conical ostium bursae with a narrow sclerite, and the rounded corpus bursae with spinules on the inner wall and with a saddle-shaped signum (Figure 11).

Athrips spiraeae is similar to *A. pruinoseella* internally and externally. The differences between them are stated in the diagnosis of the latter species.

Distribution: China (Shanxi), Russia, Kazakhstan, Ukraine.

Note: This species is **newly recorded in China**.

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Hyonju Oh
College of Life Sciences
Nankai University
Tianjin 300071
R. P. CHINA / P. R. CHINA
E-mail: ohj1234@163.com
<https://orcid.org/0000-0002-4648-7024>

*Houhun Li
Key Laboratory of Biological
Resources and Ecology of Pamirs
Plateau in Xinjiang
College of Life and Geographic Sciences
Kashi University
Kashi 844000
R. P. CHINA / P. R. CHINA
E-mail: linouhun@nankai.edu.cn
<https://orcid.org/0000-0002-8953-3422>

y / and

College of Life Sciences
Nankai University
Tianjin 300071
R. P. CHINA / P. R. CHINA

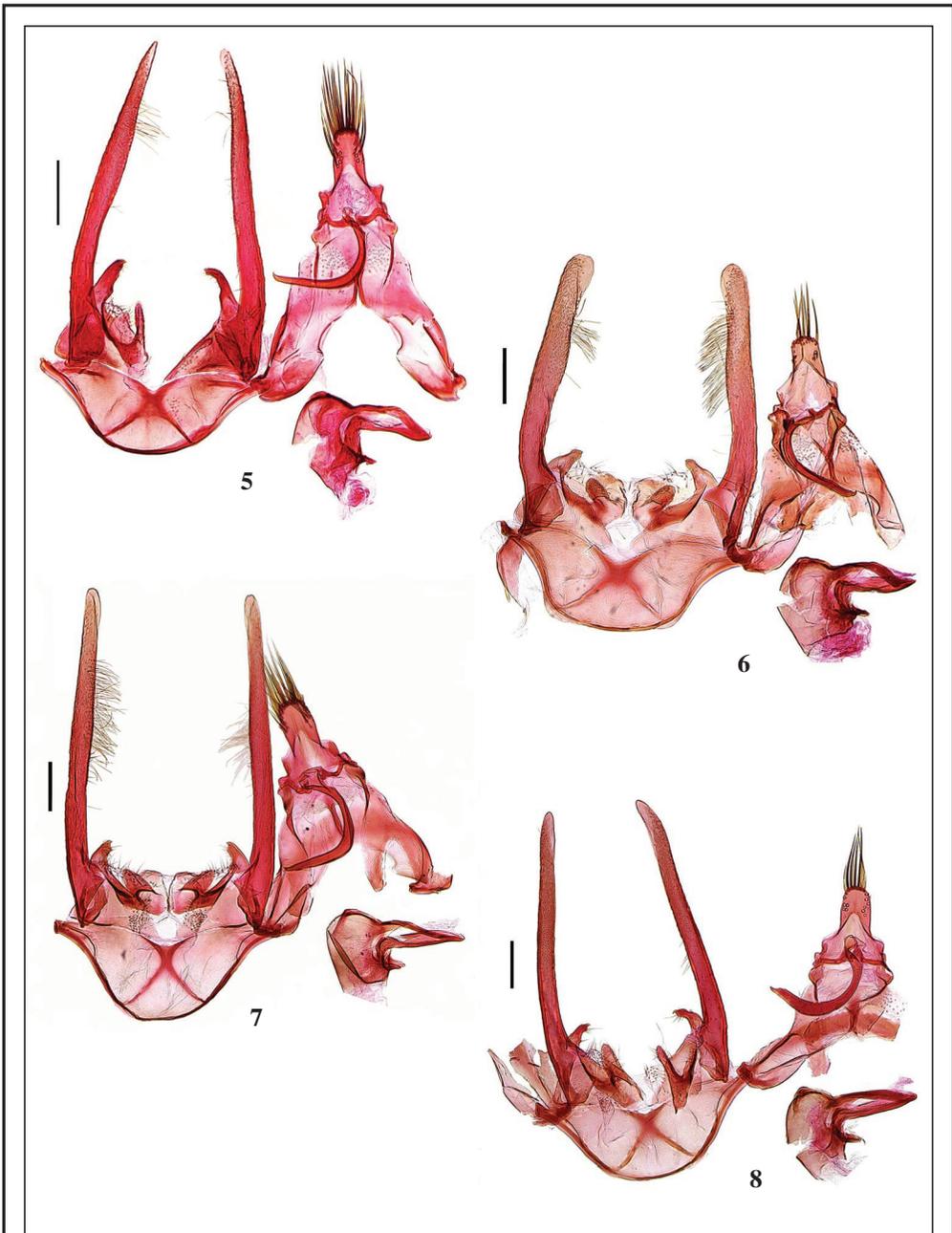
*Autor para la correspondencia / *Corresponding author*

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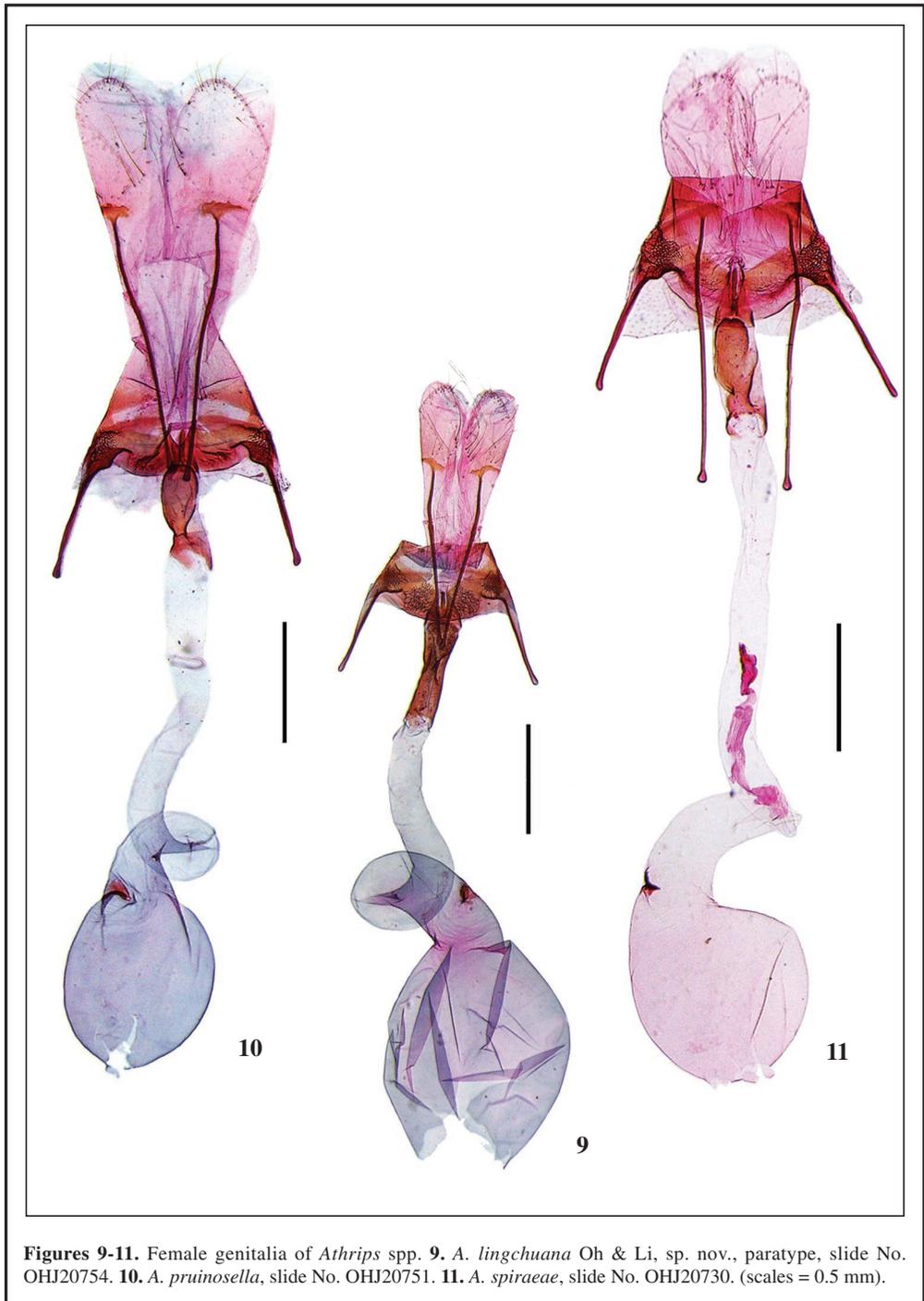
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Figures 5-8. Male genitalia of *Athrips* spp. **5.** *A. albimacula* Oh & Li, sp. nov., holotype, slide No. OHJ20753. **6.** *A. lingchuana* Oh & Li, sp. nov., holotype, slide No. OHJ20732. **7.** *A. pruinoseella*, slide No. OHJ20726. **8.** *A. spiraeae*, slide No. OHJ20729. (scales = 0.2 mm).



Figures 9-11. Female genitalia of *Athrips* spp. **9.** *A. lingchuana* Oh & Li, sp. nov., paratype, slide No. OHJ20754. **10.** *A. pruinosa*, slide No. OHJ20751. **11.** *A. spiraea*, slide No. OHJ20730. (scales = 0.5 mm).