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Notes on Scythrididae from the Turanian region, with descriptions of six new species (Lepidoptera: Scythrididae)

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Abstract

A list of 28 species embracing 264 specimens of the family Scythrididae from the Turanian region is presented. The material was collected between 14/27-VII-2009 in Uzbekistan, and 29-IV / 18-V-2008 in south-western Kazakhstan. Six new species are described: *Scythris cramella* Nupponen, sp. n., *S. deserticola* Nupponen, sp. n., *S. karvoneni* Nupponen, sp. n., *S. reticulella* Nupponen, sp. n., *S. rotundella* Nupponen, sp. n. and *S. semifascia* Nupponen, sp. n. The previously unknown females of *Scythris angustella* Nupponen, 2009, *S. deresella* Falkovitsh, 1969, *S. falkovitshi* Nupponen, 2009 and *S. obliqua* Falkovitsh, 1969 are described. Three species are reported as new to Uzbekistan, two as new to Kazakhstan and two as new to Tajikistan. The known distribution range of each species is given.
KEY WORDS: Lepidoptera, Scythrididae, new species, first records, Turanian region, Uzbekistan, Kazakhstan, Tajikistan.

Notas sobre Scythrididae de la región de Turan, con descripción de seis nuevas especies (Lepidoptera: Scythrididae)

Resumen

Se presenta una lista de 28 especies abarcando 264 ejemplares de la familia Scythrididae de la región de Turan. El material fue colectado durante 14/27-VII-2009 en Uzbekistán, y 29-IV / 18-V-2008 en el sudoeste de Kazajstán. Se describen seis nuevas especies: *Scythris cramella* Nupponen, sp. n., *S. deserticola* Nupponen, sp. n., *S. karvoneni* Nupponen, sp. n., *S. reticulella* Nupponen, sp. n., *S. rotundella* Nupponen, sp. n. y *S. semifascia* Nupponen, sp. n. Se describen también las hembras desconocidas, hasta ahora, de *Scythris angustella* Nupponen, 2009, *S. deresella* Falkovitsh, 1969, *S. falkovitshi* Nupponen, 2009 y *S. obliqua* Falkovitsh, 1969. Tres especies se citan como nuevas para Uzbekistán, dos como nuevas para Kazajstán y dos como nuevas para Tayikistán. Se da el rango de distribución conocida de cada especie.
PALABRAS CLAVE: Lepidoptera, Scythrididae, nuevas especies, primeras citas, región de Turan, Uzbekistán, Kazajstán, Tayikistán.

Introduction

The Scythrididae fauna of the Turanian region was subsequently treated and published data on the subject listed by NUPPONEN (2009). The present article is based on new materials of Scythrididae collected during the Finnish-Estonian expedition to Uzbekistan in July 2009. A few records from other collectors are reported as well.

Material and methods

The Finnish-Estonian expedition to Uzbekistan was made during 14/27-VII-2009. The investigated area is situated in the central and eastern parts of the country. The habitats were mainly desert steppes and semideserts, but also foothill steppe slopes, a riverside wood at the western bank of the River Syr-Darya and alpine meadows at high elevations in the Chatkal Mountain range. Altogether 26 species embracing 252 specimens of Scythrididae were recorded during the trip. The majority of the material was collected by artificial light at night. The moths were active at daytime only at high elevations, probably due to a very hot weather. For further notes on the collecting localities, see NUPPONEN (2009).

During 29-IV / 18-V-2008, Mr. Pavel Gorbunov made a collecting trip to the semideserts of southwestern Kazakhstan. The majority of that material is already reported (NUPPONEN, 2009). Later I got a small further portion of Microlepidoptera for determining. The material embraced a few specimens of Scythrididae, which are reported in the present article, as well as two specimens from Tajikistan collected by Vladimir Gurko.

List of Scythrididae species

The species are listed alphabetically in generic and specific order. The known distribution of each species is given.

Apostibes griseolineata Walsingham, 1907

Uzbekistan, Buchara district, 39º 24' 48.0" N 64º 31' 18.6" E, 233 m, Amu-Buchara canal, 17-VII-2009, 5 ♂♂, K. Nupponen leg. Genitalia slide: K. Nupponen prep. no. 1/7-II-2010. SW-Kazakhstan, 42º 36' N 54º 08' E, 47 m, Ustyurt Res., Oneri cordon, 16-V-2008, 1 ♂, P. Gorbunov leg. Genitalia slide: K. Nupponen prep. no. 1/6-II-2010.

Distribution: Afghanistan, Algeria, Israel, Kazakhstan, Libya, Saudi-Arabia, Tunisia, Uzbekistan.

Remarks: **New to Kazakhstan** and **Uzbekistan**.

Falkovitshella asema (Falkovitsh, 1972)

Uzbekistan, Buchara district, 39º 24' 48.0" N 64º 31' 18.6" E, 233 m, Amu-Buchara canal, 17-VII-2009, 1 ♂, K. Nupponen leg.; Uzbekistan, Buchara district, 40º 44' 59.6" N 63º 47' 07.5" E, 404 m, Kuldchuktau mnts, Churuk village 7 km N, 18-VII-2009, 2 ♂♂, K. Nupponen leg. One genitalia preparation preserved in glycerol.

Distribution: Turkmenistan, Uzbekistan.

Falkovitshella hypolepta (Falkovitsh, 1972)

Uzbekistan, Buchara district, 40º 34' 30.8" N 64º 07' 03.4" E, 195 m, Turt Kuduk village 20 km SW, 20-VII-2009, 1 ♂, K. Nupponen leg. Genitalia preparation preserved in glycerol.

Distribution: Uzbekistan.

Falkovitshella mongholica (Passerin d'Entrèves & Roggero, 2006)

Uzbekistan, Buchara district, 40º 34' 30.8" N 64º 07' 03.4" E, 195 m, Turt Kuduk village 20 km SW, 19-VII-2009, 1 ♂, K. Nupponen leg. Genitalia slide: K. Nupponen prep. no. 3/8-VIII-2009.

Distribution: Mongolia, Uzbekistan.

Remarks: The species is previously known only by the type series from Mongolia. **New to Uzbekistan**.

Falkovitshella physalis (Falkovitsh, 1972)

Uzbekistan, Buchara district, 39º 24' 48.0" N 64º 31' 18.6" E, 233 m, Amu-Buchara canal, 17-VII-2009, 1 ♂, K. Nupponen leg.

Distribution: Mongolia, Uzbekistan.

Scythris angustella Nupponen, 2009

Uzbekistan, Buchara district, 40º 34' 30.8" N 64º 07' 03.4" E, 195 m, Turt Kuduk village 20 km SW, 20-VII-2009, 1 ♀, K. Nupponen leg. Genitalia slide: K. Nupponen prep. no. 4/27-XII-2009.

Distribution: Uzbekistan.

Remarks: The previously unknown female genitalia of the species are illustrated and described below.

Female genitalia (Figs. 13-14): Sterigma subrectangular, basally slightly wider than distally, 0.6 x as wide as high; medioposteriorly a short and stout digitate process; ostium large, circular, situated medially at anterior 1/3 of sterigma. Sternum VII rectangular, 0.75 x as high as wide; anterior margin medially widely incised rectangularly, posterior margin straight. Anterior margin of tergum VII slightly convex and sclerotized. Apophyses anteriores 0.8 x length of apohyses posteriores.

Scythris asthena Falkovitsh, 1972

Uzbekistan, Buchara district, 39º 24' 48.0" N 64º 31' 18.6" E, 233 m, Amu-Buchara canal, 17-VII-2009, 9 ♂♂, 5 ♀♀, K. Nupponen leg., 1 ♂, A. Pototski leg.; Uzbekistan, Buchara district, 40º 44' 59.6" N 63º 47' 07.5" E, 404 m, Kuldchuktau mnts, Churuk village 7 km N, 18-VII-2009, 1 ♀, K. Nupponen leg., 2 ♀♀, A. Pototski leg., 1 ♀, A. & A. Selin leg. Nine genitalia preparations preserved in glycerol.

Distribution: Turkmenistan, Uzbekistan.

Scythris bagdadiella Amsel, 1949

Uzbekistan, Sidaryo district, 40º 40-58' N 68º 37-42' E, 260 m, Syr-Darya river, near Tash-Aul village, 14-VII-2009, 6 ♂♂, K. Nupponen leg.; Uzbekistan, Sidaryo district, 41º 01' 30.5" N 68º 36' 28.7" E, 260 m, Syr-Darya river, Tugai forest, 23-VII-2009, 7 ♂♂, 2 ♀♀, 24-VII-2009, 5 ♂♂, 4 ♀♀, K. Nupponen leg., 1 ♀, A. Pototski leg., 2 ♀♀, A. & A. Selin leg.

Distribution: Algeria, Iraq, Russia (S. Ural), Turkey, Uzbekistan.

Scythris caballoides Nupponen, 2009

Uzbekistan, Sidaryo district, 41º 01' 30.5" N 68º 36' 28.7" E, 260 m, Syr-Darya river, Tugai forest, 23-VII-2009, 6 ♂♂, 4 ♀♀, K. Nupponen leg., 1 ♂, A. Pototski leg., 1 ♂, A. & A. Selin leg., 24-VII-2009, 7 ♂♂, 2 ♀♀, K. Nupponen leg., 4 ♂♂, A. Pototski leg., 1 ♂, A. & A. Selin leg. One genitalia preparation preserved in glycerol.

Distribution: Uzbekistan.

Remarks: Contrary to the holotype, some fresh specimens are much paler coloured. On the forewings there are only one distinct and two indistinct spots, and the ground colour is overall greyish white with sparsely scattered dark brown scales (Fig. 3).

Scythris canescens (Staudinger, 1880)

Uzbekistan, Qushqadaryo distr., 38º 40' 01.1" N 66º 55' 07.7" E, 2360 m, Hissar mnts, near Maidanak village, 21-VII-2009, 1 ♂, K. Nupponen leg. Genitalia slide: K. Nupponen prep. no. 2/08-VIII-2009. Tajikistan, Pianj River, 30-VIII / 10-IX-2006, 1 ♂, V. Gurko leg. (coll. A. Pototski). Genitalia preparation preserved in glycerol.

Distribution: Afghanistan, Algeria, Libya, Morocco, Pakistan, Syria, Tajikistan, Tunisia, Turkey, Uzbekistan.

Remarks: The specimens from C Asia are much paler coloured than typical specimens of *S. canescens* from Turkey. However, the male genitalia are identical with those of Turkish *canescens*. The Uzbek specimen was collected at high altitude, but possibly it was an occasional immigrant from adjacent desert steppes. **New to Tajikistan** and **Uzbekistan**.

Scythris caroxylella Falkovitsh, 1969

Uzbekistan, Buchara district, 40º 44' 59.6" N 63º 47' 07.5" E, 404 m, Kuldchuktau mnts, Churuk

village 7 km N, 18-VII-2009, 2 ♂♂, K. Nupponen leg. 1 ♂, A. Pototski leg.; Uzbekistan, Buchara district, 40º 34' 30.8" N 64º 07' 03.4" E, 195 m, Turt Kuduk village 20 km SW, 19-VII-2009, 4 ♂♂, 20-VII-2009, 3 ♂♂, 1 ♀, K. Nupponen leg. Genitalia slides: K. Nupponen prep. no. 1/31-XII-2009 ♂, 5/30-XII-2009 ♀. Two genitalia preparations preserved in glycerol. SW-Kazakhstan, 42º 57' N 54º 41' E, 128 m, Ustyurt Res., Kendyrli, 29-IV-2008, 4 ♂♂, P. Gorbunov leg.; SW-Kazakhstan, 42º 55' N 54º 15' E, Ustyurt Res., Karynzharyk Sands at Akkuduk, 15-V-2008, 2 ♂♂, P. Gorbunov leg. Tajikistan, Pianj river, 30-VIII / 10-IX-2006, 1 ♂, V. Gurko leg. (coll. A. Pototski). Genitalia preparation preserved in glycerol.

Distribution: Kazakhstan, Tajikistan, Uzbekistan.

Remark: **New to Tajikistan**.

Scythris cirra Falkovitsh, 1969

Uzbekistan, Buchara district, 40º 44' 59.6" N 63º 47' 07.5" E, 404 m, Kuldchuktau mnts, Churuk village 7 km N, 18-VII-2009, 1 ♀, K. Nupponen leg. Genitalia slide: K. Nupponen prep. no. 3/27-XII-2009.

Distribution: Kazakhstan, Mongolia, Turkmenistan, Uzbekistan.

Remark: The sterigma of the present specimen is somewhat broader than that of compared specimens from Uzbekistan and Kazakhstan. I consider it an individual variation.

Scythris cramella Nupponen, sp. n.

Type material. Holotype: ♂ (Fig. 4): Uzbekistan, Buchara district, 39º 24' 48.0" N 64º 31' 18.6" E, 233 m, Amu-Buchara canal, 17-VII-2009, K. Nupponen leg. In coll. T. & K. Nupponen. Paratypes (53 ♂♂, 7 ♀♀): Idem, 39 ♂♂, 5 ♀♀; Ibidem, 17-VII-2009, 7 ♂♂, 1 ♀, A. Pototski leg., 5 ♂♂, 1 ♀, A. & A. Selin leg.; Uzbekistan, Buchara district, 40º 34' 30.8" N 64º 07' 03.4" E, 195 m, Turt Kuduk village 20 km SW, 19-VII-2009, 2 ♂♂, K. Nupponen leg. Genitalia slides: K. Nupponen prep. no. 4/30-XII-2009 ♀, 2/31-XII-2009 ♂, 4/31-XII-2009 ♂. Three further genitalia preparations preserved in glycerol. In coll. T. & K. Nupponen.

Diagnosis: Externally *S. cramella* Nupponen, sp. n. resembles *S. caroxylella* and *S. rotundella* sp. n. (see below), but differs from those by a creamy white ground colour of the forewings (dirty greyish white or pale beige in *caroxylella*, beige in *rotundella*). The male genitalia of *S. cramella* are superficially similar to those of *S. caroxylella*, *S. fluxilis* and *S. rotundella,* but differ in details of shape of the uncus, gnathos and aedeagus (Table 1, figs. 35-36). There are small differences in shape of the valvae and vinculum between the four species, as well (Fig. 35). In the female genitalia, the rectangular sterigma of *S. cramella* is wider than in *S. caroxylella* but narrower than in *S. rotundella*, and the ostium is drop-shaped and opening near anterior margin of the sterigma (Table 1; fig. 37).

Description: Wingspan 8.5-10.5 mm. Head, collar, neck tuft, haustellum and scape creamy white, more or less mixed with beige. Antenna beige, serrate. Labial palp creamy white, medial third of segments II and III at lower surface pale beige. Thorax and abdomen pale beige. Legs creamy white, upper surface pale beige. Forewing pale creamy beige, slightly darker in female; irregular dark beige areas at dorsal half of wing at 0.2, 0.5 and at tornus, defining two large whitish beige patches between fold and dorsum at 1/3 and 2/3. Hindwing whitish beige, basal half paler.

Male genitalia (Figs. 15-16): Uncus stout, Y-shaped, posterior branches rather short and distally cut off, connected to each other by transverse sclerotization. Gnathos basally broad, evenly tapered from base to 2/3; distal 1/3 slender and distinctly hooked, hook directed downwards. Tegumen wide, semicircular, dorsal V-shaped incision 0.8 x length of tegumen. Aedeagus longer than valva, slightly tapered and curved 110º at basal 1/3; distal 2/3 of equal width, straight, tip bent and pointed. Valva spatulate, subbasal part from 0.15 to 0.3 of equal width; near inner margin a longitudinal reinforcement from base to apex; distal half bent inwards, apex with 8 short and thick thorns. At basal attachment of valvae a small semicircular process. Vinculum narrow, tongue-like, 0.75 x length of valva; diameter at middle 1.3 x that of narrowest part of valva. Sternum VIII triangular, anterior corners elongated,

anterior margin widely incised, apex blunt. Tergum VIII subpentagonal, twice wider than high, posterior margin concave.

Female genitalia (Fig. 17): Sterigma a rectangular plate, 1.7 x higher than wide, posterior corners rounded; ostium large, drop-shaped, situated near anterior margin of sterigma at middle. Sternum VII rectangular, 0.75 x as high as wide; posterior margin with wide U-shaped medial incision; anterior margin medially indented. At sternum V sclerotized ring attached to ductus bursae. Apophyses posteriores 1.5 x length of apophyses anteriores.

Bionomy: The type series was found in mid-July. The habitat is a sandy desert (Fig. 1).

Distribution: Uzbekistan.

Etymology: Lat. *cramum* = cream colour. The species name refers to the creamy white ground colour of the forewings.

Remarks: *S. cramella* Nupponen, sp. n. belongs to the species complex, comprising four species: *S. caroxylella* Falkovitsh, 1969, *S. fluxilis* Falkovitsh, 1986, *S. cramella* Nupponen, sp. n. and *S. rotundella* Nupponen, sp. n. In addition, *S. parafluxilis* Passerin d'Entrèves & Roggero, 2007 may belongs to the same complex, but this cannot be confirmed until a male of the species is found. The species can be separated from each other by details in the genitalia of both sexes (see Table 1). For further notes on differences between *S. caroxylella*, *S. fluxilis* and *S. parafluxilis,* see PASSERIN d'ENTRÈVES & ROGGERO (2007). The complex belongs to the heterogeneous *pascuella* species-group.

Scythris deresella Falkovitsh, 1969

Uzbekistan, Buchara district, 39º 24' 48.0" N 64º 31' 18.6" E, 233 m, Amu-Buchara canal, 17-VII-2009, 1 ♂, A. Pototski leg.; Uzbekistan, Buchara district, 40º 34' 30.8" N 64º 07' 03.4" E, 195 m, Turt Kuduk village 20 km SW, 19-VII-2009, 2 ♂♂, 1 ♀, 20-VII-2009, 1 ♀, K. Nupponen leg. Genitalia slide: K. Nupponen prep. no. 3/30-XII-2009 ♀. One genitalia preparation preserved in glycerol.

Distribution: Kazakhstan, Uzbekistan.

Remark: The present specimens are somewhat paler coloured than most specimens in the type series (Fig. 10), possibly reflecting pale colour of the soil in the locality. The hindwings of the female are characteristic: black scales cover marginal areas at upper surface and apical 1/3 of lower surface. Black scales exist also at lower surface of the forewings, densely at apical half and sparsely in basal area. The previously unknown female genitalia of the species are illustrated and described below.

Female genitalia (Fig. 18): Sterigma a large, vase-shaped and furrowed structure, basally attached to an arched and strongly sclerotized band. Ostium oval, situated near anterior margin of sterigma. Antrum broad and sclerotized, pouch-like. Sternum VII pentagonal, posteriorly elongated, tip weakly sclerotized; anterior margin straight and strongly sclerotized, attached to a sclerotized longitudinal medial cross section. Apophyses anteriores 0.45 x length of apophyses posteriores.

Scythris deserticola Nupponen, sp. n.

Type material. Holotype: ♂ (Fig. 6): Uzbekistan, Buchara district, 39º 24' 48.0" N 64º 31' 18.6" E, 233 m, Amu-Buchara canal, 17-VII-2009, K. Nupponen leg. Genitalia slide: K. Nupponen prep. no. 1/5-II-2010. In coll. T. & K. Nupponen.

Diagnosis: Externally *S. deserticola* Nupponen, sp. n. is similar to *S. falkovitshi* Nupponen, 2009 and *S. anchophylli* Falkovitsh, 1969, and may be mixed also with several other white, black speckled species, like *F. ammobia* (Falkovitsh, 1972), *S. dicroa* Falkovitsh, 1972 and *S. angustella* Nupponen, 2009. Examination of genitalia is needed for safe determination. A deep incision and two processes at posterior margin of the uncus, a basally widened sigmoid aedeagus, posterolateral triangular extensions of tegumen and triangular basal processes at costal margin of the valvae in the male genitalia separate *S. deserticola* Nupponen, sp. n. from closely related species.

Description: Wingspan 10.5 mm. Head white with dark brown spot at middle of neck. Collar, neck tuft, haustellum and scape white. Labial palp white, outer lateral surface mixed with brown. Antenna

pale beige. Thorax white; more or less densely suffused with dark brown scales. Abdomen dorsally pale beige, ventrally creamy white. Legs: creamy white, tibia and inner surface of forelegs more or less suffused with dark brown. Forewing ground colour white; dark brown scales forming the following pattern: distinct spots in fold at 0.2, 0.4 and 0.55, at 0.15 and 0.3 in costa, at 0.15 and 0.85 in dorsum and at 0.8 in midwing; sparsely scattered dark brown scales exist over the wing. Hindwing pale fuscous.

Male genitalia (Figs. 19-20): Uncus laminar, elongate, basically Y-shaped, only slightly widening towards apex; medioposterior incision deep and narrow, with short processes on each side at posterior margin; apex slightly asymmetrical; at base of uncus medially a small sclerotized plate. Gnathos base posteriorly with small, medial incision; distal arm short, basal half tapered, distally slender, tip pointed. Tegumen with large triangular posterolateral extensions; anterior margin incised; medially longitudinal, sclerotized band. Aedeagus slightly shorter than valva, sigmoid, enlarged at base, subapically slightly bulged. Valva club-shaped; costal margin with conspicuous triangular process at base; longitudinal sclerotized ridge medially at outer surface from base to middle of widened distal portion; at inner surface a longitudinal medial flap from base to 2/3; tip cup-shaped; dorsal margin straight. Vinculum semicircular, elongated plate. Sternum VIII subpentagonal, posterior margin with deep and wide medial incision, posterior prongs rather thin and apically blunt; anterior margin concave; at middle a sclerotized, transverse reinforcement. Tergum VIII rather membranous subtriangular plate, anterior margin deeply concave and sclerotized.

Female genitalia: Unknown.

Bionomy: The holotype was found in mid-July. The habitat is a sandy desert (Fig. 1).

Distribution: Uzbekistan. Only known from the type locality.

Etymology: Lat. *desertus* = desert; *colo* = to inhabit. From the habitat. The type locality of the new taxon is a desert.

Remarks: *S. deserticola* Nupponen, sp. n. is tentatively placed in the *canescens*-group of the genus *Scythris*. For further notes on the group and the genus *Falkovitshella*, see NUPPONEN (2009).

Scythris dicroa Falkovitsh, 1972

Uzbekistan, Buchara district, 39º 24’ 48.0” N 64º 31’ 18.6” E, 233 m, Amu-Buchara canal, 17-VII-2009, 2 ♂♂, 1 ♀, K. Nupponen leg.; Uzbekistan, Buchara district, 40º 34’ 30.8” N 64º 07’ 03.4” E, 195 m, Turt Kuduk village 20 km SW, 19-VII-2009, 2 ♂♂, 1 ♀, 20-VII-2009, 2 ♂♂, 1 ♀, K. Nupponen leg. Genitalia slide: K. Nupponen prep. no. 5/28-XII-2009 ♀. Three genitalia preparations preserved in glycerol.

Distribution: Uzbekistan.

Scythris falkovitshi Nupponen, 2009

Uzbekistan, Buchara district, 40º 34’ 30.8” N 64º 07’ 03.4” E, 195 m, Turt Kuduk village 20 km SW, 19-VII-2009, 11 ♂♂, 10 ♀♀, K. Nupponen leg., 1 ♂, A. Pototski leg., 1 ♂, A. & A. Selin leg., 20-VII-2009, 6 ♂♂, 6 ♀♀, K. Nupponen leg.; Uzbekistan, Buchara district, 40º 44’ 59.6” N 63º 47’ 07.5” E, 404 m, Kuldchuktau mountains, Churuk village 7 km N, 18-VII-2009, 1 ♂, 2 ♀♀, K. Nupponen leg. Genitalia slide: K. Nupponen prep. no. 5/27-XII-2009 ♀. Three genitalia preparations preserved in glycerol.

Distribution: Uzbekistan.

Remarks: There is some variation in the external appearance of *S. falkovitshi*, as black pattern on the forewings is more or less reduced in some specimens. Females are on the average paler than males. The holotype (see NUPPONEN, 2009) represents dark side of the scale. The previously unknown female genitalia of the species are illustrated and described below. They resemble those of *S. anchophylli*, but differ by a basally circular, longer and furrowed sterigma, and anteriorly incised sternum VII.

Female genitalia (Fig. 21-22): Sterigma anteriorly subcircular, right side slightly elongated; posterior portion narrow and almost straight, over three times longer than basal part, furrowed, distally bifurcate, furcation arms broader than basal branch. Sternum VII subrectangular, 1.5 x as wide as high;

posterior margin slightly concave, with small oval medial flap, anterior margin medially widely incised. Anterior margin of tergum VII straight and sclerotized. Apophyses anteriores as long as apophyses posteriores, and joined by a narrow straight band.

Scythris fluxilis Falkovitsh, 1986

Uzbekistan, Buchara district, 40º 44' 59.6" N 63º 47' 07.5" E, 404 m, Kuldchuktau mnts, Churuk village 7 km N, 18-VII-2009, 2 ♂♂, K. Nupponen leg., 1 ♂, A. Pototski leg.; Uzbekistan, Buchara district, 40º 34'30.8" N 64º 07' 03.4"E, 195 m, Turt Kuduk village 20 km SW, 20-VII-2009, 1 ♂, K. Nupponen leg.

Distribution: Mongolia, Uzbekistan.

Scythris haloxylella Falkovitsh, 1969

SW-Kazakhstan, 42º 55' N 54º 15' E, Ustyurt Res., Karynzharyk Sands at Akkuduk, 15-V-2008, 1 ♂, P. Gorbunov leg.

Distribution: Kazakhstan, Turkmenistan, Uzbekistan.

Remark: **New to Kazakhstan**.

Scythris karvoneni Nupponen, sp. n.

Type material. Holotype: ♂ (Fig. 7): Uzbekistan, Buchara district, 39º 24' 48.0" N 64º 31' 18.6" E, 233 m, Amu-Buchara canal, 17-VII-2009, K. Nupponen leg. Genitalia slide: K. Nupponen prep. no. 2/27-XII-2009. In coll. T. & K. Nupponen.

Diagnosis: By external appearance *S. karvoneni* Nupponen, sp. n. is similar to several species of the *canescens* species-group and the genus *Falkovitshella*. *S. karvoneni* may be separated from related species by scarce pattern of the forewings, although patterns are quite variable in many species of the group. The asymmetrical male genitalia of *S. karvoneni* indicate its close relationship to *F. asema* Falkovitsh, 1972, *F. asthena* Falkovitsh, 1972, *F. hypolepta* Falkovitsh, 1972 and an undescribed species from Pakistan (Bengtsson, pers. comm.). These species are readily separated from each other by shape, position and amount of processes and flaps in the valvae.

Description: Wingspan 8 mm. Head, collar, neck tuft, haustellum, scape, labial palp, thorax and legs creamy white. Antenna pale brown, serrate. Abdomen pale beige. Forewing creamy white; three dark brown spots in fold at 0.2, 0.4 and near tornus at 0.6, and one similar spot at cell end; a few scattered pale brown scales at basal 1/3 of costa, basal half of dorsum and in apical area. Hindwing white, apical half mixed with pale beige.

Male genitalia (Figs. 23-24): Uncus rather robust, elongate, Y-shaped, basal branch long with longitudinal medial ridge, superior lobes with flat dorsal flaps. Gnathos base posterolaterally with small, inwards directed digitate processes; distal arm shorter than uncus, slender, tapered and slightly bent, tip pointed. Aedeagus half length of valva, bent and tapered. Valvae slightly asymmetrical, broad, widening terminally. Left valva broader than right one, with longitudinal medial fold; basal half of equal width, rapidly broadened at 0.5, forming a downwards directed flap at outer margin; outer margin with a wide notch subapically; inner margin straight, with triangular downwards directed extension at apex; valva distally cut off; at 0.5 two processes in middle of valva, upper one digitate and bent, the other short, stout and rather complex. Right valva of equal width at basal and distal half; inner margin almost straight, with triangular downwards directed extension at apex; valva distally cut off; medial half of outer margin extended subrectangularly, distal margin elongated, basally with semicircular flap; at distal half of valva a large and complex process with one semicircular and three digitate extensions; longitudinal fold at middle of valva from base to subapical area. Sternum VIII subpentagonal, posterior margin with deep and wide medial incision, posterior prongs apically hooked inwards; anterior margin concave; at middle a sclerotized, transverse reinforcement. Tergum VIII a subrectangular plate, medioposteriorly slightly incised; anterior margin concave, posterior corners rounded.

Female genitalia: Unknown.

Bionomy: The holotype was found in mid-July. The habitat is a sandy desert (Fig. 1).

Distribution: Uzbekistan. Only known from the type locality.

Etymology: The species is dedicated to Dr. Jaakko Karvonen, a Finnish entomologist.

Remarks: *S. karvoneni* Nupponen, sp. n. is tentatively placed in the *canescens*-group of the genus *Scythris*. For further notes on the group and the genus *Falkovitshella*, see NUPPONEN (2009).

Scythris obliqua Falkovitsh, 1969

Uzbekistan, Buchara district, 40º 44' 59.6" N 63º 47' 07.5" E, 404 m, Kuldchuktau mnts, Churuk village 7 km N, 18-VII-2009, 6 ♂♂, 5 ♀♀, K. Nupponen leg., 1 ♀, A. Pototski leg., 1 ♂, 1 ♀, A. & A. Selin leg. (Fig. 20). Genitalia slide: K. Nupponen prep. no. 2/28-XII-2009 ♀. Two genitalia preparations preserved in glycerol.

Distribution: Mongolia, Uzbekistan.

Remarks: The previously unknown female genitalia of the species are illustrated and described below.

Female genitalia (Fig. 25): Sterigma a rectangular sclerite, attached to a large molar tooth shaped and anteriorly elongated plate. Sternum VII rectangular, 0.7 x as high as wide; anterior margin concave; posterior margin straight, medially with U-shaped incision and a membranous flap. Sternum VII quadrangular; medially two broad sclerotized bands. Apophyses anteriores 0.55 x length of apophyses posteriores.

Scythris reticulella Nupponen, sp. n.

Type material. Holotype: ♂ (Fig. 9): Uzbekistan, Tashkent district, 41º 30' 38.4" N 70º 01' 2.5" E, 2150 m, Chatkal mountains, Chimgan, 26-VII-2009, K. Nupponen leg. In coll. T. & K. Nupponen. Paratypes (2 ♂♂): Idem. Genitalia slide: K. Nupponen prep. no. 1/28-XII-2009. In coll. T. & K. Nupponen.

Diagnosis: Externally *S. reticulella* Nupponen, sp. n. may be confused with several dark Scythrididae having a pale streak in fold of the forewings. In the male genitalia of *S. reticulella*, diagnostic characters are long and slender, distally racket-shaped valvae, and a long aedeagus with a swollen tip.

Description: Wingspan 10.5-11.5 mm. Head, collar, neck tuft, haustellum, scape antenna and thorax dark brown. Labial palp dark brown, upper surface almost covered by pale brown scales. Abdomen dark fuscous, terminal half of ventral side paler. Forewing dark brown; distinct pale brown streak in fold from base to 0.5, and a patch of same colour at 0.75 in midwing; a few pale brown scales in apical area near margins. Hindwing dark fuscous.

Male genitalia (Figs. 26-27): Uncus robust, bifurcate; prongs long, distally tapered and pointed, basally united, with pouch-like subbasal lateral processes. Gnathos short, half length of uncus, basally broad, basal half tapered, distal half slender and bent. Aedeagus long and slender, bent at 0.6, distal 0.4 slightly twisted, tip swollen. Valva long, basally rather broad, basal 1/3 tapered, medial part slender and bent at middle; distal portion broadened, racket-shaped, setose. Sternum VIII semicircular, with wide medioposterior incurvation, anterior margin concave. Tergum VIII subrectangular, twice wider than high; posterior margin convex, anterior margin medially widely concave.

Female genitalia: Unknown.

Bionomy: The specimens were swept on alpine meadow (Fig. 2) in late July.

Distribution: Uzbekistan. Only known from the type locality.

Etymology: Lat. *reticulum* = tennis-racket; from shape of the valvae, resembling a tennis-racket.

Remark: *S. reticulella* sp. n. belongs to the *knochella* species-group.

Scythris rotundella Nupponen, sp. n.

Type material. Holotype: ♀ (Fig. 10): Uzbekistan, Buchara district, 40º 34' 30.8" N 64º 07' 03.4"

E, 195 m, Turt Kuduk village 20 km SW, 20-VII-2009, K. Nupponen leg. In coll. T. & K. Nupponen. Paratypes (1 ♂, 1 ♀): 1 ♀ Idem; 1 ♂ Uzbekistan, Buchara district, 40º 44' 59.6" N 63º 47' 07.5" E, 404 m, Kuldchuktau mnts, Churuk village 7 km N, 18-VII-2009, K. Nupponen leg. Genitalia slides: K. Nupponen prep. no. 2/30-XII-2009 ♂, 4/28-XII-2009 ♀. In coll. T. & K. Nupponen.

Diagnosis: Externally *S. rotundella* Nupponen, sp. n. resembles *S. caroxylella* and *S. cramella* sp. n. (see above), but differs from those by a beige ground colour of the forewings (dirty greyish white or pale beige in *caroxylella*, creamy white in *cramella*). The male genitalia of *S. rotundella* are superficially similar to those of *S. caroxylella*, *S. fluxilis* and *S. cramella,* but differ in details of shape of the uncus, gnathos and aedeagus (Table 1; Figs. 35-36). There are small differences in shape of the valvae and vinculum between the four species, as well (Fig. 35). In the female genitalia, the rectangular sterigma of *S. rotundella* is wider than in *S. caroxylella* and *S. cramella*, and the ostium is circular, laterally defined by a furrowed oblique rim and opening near anterior margin of the sterigma (Table 1, fig. 37).

Description: Wingspan 9-10.5 mm. Head, collar, neck tuft, haustellum, scape and thorax beige, more or less mixed with paler scales. Antenna beige, serrate. Labial palp pale beige. Thorax beige. Legs pale beige. Abdomen beige, ventrally paler. Forewing beige, darker in female, costal area more or less widely paler; irregular brown patches in fold at 0.2 and 0.45, near tornus, in cell end and apically, those in fold extended to dorsum; patches are partly attached, defining wide pale areas between fold and dorsum at 1/3, 0.6 and subapically; scattered pale beige scales exist over the wing, more sparsely at basal half. Hindwing pale fuscous, basal half paler.

Male genitalia (Figs. 28-29): Uncus stout, Y-shaped, posterior branches almost as long as basal portion, distally rounded, connected to each other by transverse sclerotization that doesn't reach tip of lobes. Gnathos basally broad, rapidly tapered at 1/3; distal 2/3 of equal width, tip slightly elongated downwards. Tegumen wide, semicircular, dorsal V-shaped incision half length of tegumen. Aedeagus shorter than valva, straight, tapered at distal 1/4, tip pointed. Valva spatulate, slightly bent inwards; subbasal part from 0.15 to 0.6 of equal width, apex with 11 short and thick thorns. Vinculum narrow, tongue-like, 0.7 x length of valva; diameter at middle 1.7 x that of narrowest part of valva. Sternum VIII triangular, anterior corners slightly elongated, anterior margin widely but not very deeply incised, apex blunt. Tergum VIII rectangular, 0.6 x as high as wide, posterior margin slightly concave, anterior margin widely incised.

Female genitalia (Fig. 30): Sterigma a rectangular plate, 1.4 x higher than wide; ostium circular, situated near anterior margin of sterigma at middle; at lateral sides of ostium a furrowed oblique rim. Sternum VII rectangular, 0.75 x as high as wide; posterior margin widely V-shaped, medially a tongue-shaped flap; anterior margin medially indented. Apophyses posteriores 1.35 x length of apophyses anteriores.

Bionomy: The specimens came to artificial light at night in mid-July. The habitats are rocky and saline deserts with halophytic vegetation. For further notes on the habitats, see NUPPONEN (2009).

Distribution: Uzbekistan.

Etymology: The species name refers to a circular ostium in the female genitalia.

Remarks: *S. rotundella* Nupponen, sp. n. belongs to the heterogeneous *pascuella* species-group. See also Remarks of *S. cramella* above.

Scythris semifascia Nupponen, sp. n.

Type material. Holotype: ♂ (Fig. 11): Uzbekistan, Sidaryo district, 41º 01' 30.5" N 68º 36' 28.7" E, 260 m, Syr-Darya river, Tugai forest, 24-VII-2009, K. Nupponen leg. In coll. T. & K. Nupponen. Paratypes (2 ♂♂, 2 ♀♀): Idem, 1 ♀; Ibidem, 23-VII-2009, 2 ♂♂, 1 ♀, K. Nupponen leg. Genitalia slides: K. Nupponen prep. no. 1/8-VIII-2009 ♂, 3/28-XII-2009 ♀. In coll. T. & K. Nupponen.

Diagnosis: Externally *S. semifascia* Nupponen, sp. n. is easy to separate from other known Scythrididae by colouration of the forewings, with a dark brown medial part and a small but conspicuous oblique fascia at middle of dorsal half of the forewing. The male genitalia of *S. semifascia*

resemble those of *S. caballoides* Nupponen, 2009 and *S. tugaiensis* Nupponen, 2009, but differ from them in several details, like shape of the uncus, gnathos and aedeagus, and a large club-shaped distal portion of tergum VIII. The female genitalia of *S. semifascia* are readily separated from related species by a peculiar sterigma and a large arched structure in segment VII.

Description: Wingspan 10-10.5 mm. Head, collar, neck tuft, haustellum, scape, labial palp, antenna and thorax greyish creamy white, more or less mixed with blackish brown. Antenna fuscous. Abdomen in male dorsally grey, ventrally dirty white; in female dorsal segments I-IV grey and V-VIII pale beige, ventral segments I-VI dirty white and VII-VIII pale beige. Forewing ground colour softy white; costal, dorsal and apical areas with sparsely scattered blackish brown scales; medial section from base to subapical area almost covered by more or less united blackish brown dashes; a separate blackish brown spot at 0.4 between fold and dorsal margin, defining a characteristic white oblique fascia from dorsal margin to fold at 0.35 (Fig. 12). Hindwing fuscous.

Male genitalia (Figs. 31-32): Uncus two parallel, large and spatulate prongs with folded medioposterior cleft. Gnathos as long as uncus, slender, tongue-like. Tegumen anteriorly enlarged. Aedeagus broad and robust, twisted and medially angulated, forming a sclerotized cup at distal half; lateral margin with triangular flap. Valva short and broad, rectangular, bent upwards. Sternum VIII trapezoid; distally two long and robust, slightly bent processes with blunt tip; at middle of anterior margin an eye shield –shaped process. Basal part of tergum VIII arched, with blunt posterolateral extension on each side; distal portion large and robust, club-shaped.

Female genitalia (Figs. 33-34): Sterigma a complex spiral, ending in a cup-shaped sclerotization; at base of spiral two large, diverging and bent processes with uneven upper margin. Sternum VII rectangular, 1.5 x wider than high. Sternum VI broad and sclerotized, anteriorly folded belt, attached to a large arched structure in segment VII. Apophyses posteriores twice longer than apophyses anteriores.

Bionomy: The habitat is a tugai wood. The specimens came to artificial light at night. For further notes on the habitat, see NUPPONEN (2009).

Distribution: Uzbekistan. Only known from the type locality.

Etymology: Lat. *semi* = half, *fascia* = a band. The species name alludes to an incomplete oblique fascia on the forewings (see Fig. 30).

Remarks: *S. semifascia* Nupponen, sp. n. is a close relative of *S. caballoides* Nupponen, 2009 and *S. tugaiensis* Nupponen, 2009. All three species occur sympatrically in the locality, and are probably connected to Central Asian tugai woods. The species may belong to the *bagdadiella* species-group, although the group appears to be quite heterogeneous (see NUPPONEN, 2009).

Scythris timoi Nupponen, 2009

Uzbekistan, Sidaryo district, 41º 01’ 30.5” N 68º 36’ 28.7” E, 260 m, Syr-Darya river, Tugai forest, 23-VII-2009, 1 ♂, K. Nupponen leg., 1 ♂, A. Pototski leg., 24-VII-2009, 3 ♂♂, K. Nupponen leg.

Distribution: Uzbekistan.

Scythris tsherkesella Falkovitsh, 1969

SW-Kazakhstan, 42º 57’ N 54º 41’ E, 128 m, Ustyurt Res., Kendyrli, 29-IV-2008, 3 ♂♂, P. Gorbunov leg.

Distribution: Kazakhstan, Turkmenistan, Uzbekistan.

Scythris tugaiensis Nupponen, 2009

Uzbekistan, Sidaryo district, 41º 01’ 30.5” N 68º 36’ 28.7” E, 260 m, Syr-Darya river, Tugai forest, 24-VII-2009, 5 ♂♂, 1 ♀, K. Nupponen leg. Two genitalia preparations preserved in glycerol.

Distribution: Uzbekistan.

Scythris tytrella Falkovitsh, 1969

Uzbekistan, Buchara district, 40º 34’ 30.8” N 64º 07’ 03.4” E, 195 m, Turt Kuduk village 20 km

SW, 20-VII-2009, 1 ♂, K. Nupponen leg.; Uzbekistan, Buchara district, 40º 44' 59.6" N 63º 47' 07.5" E, 404 m, Kuldchuktau mnts, Churuk village 7 km N, 18-VII-2009, 1 ♀, A. Pototski leg., 1 ♂, 2 ♀♀, A. & A. Selin leg. Three genitalia preparations preserved in glycerol. SW-Kazakhstan, 42º 57' N 54º 41' E, 128 m, Ustyurt Res., Kendyrli, 11/12-V-2009, 1 ♂, P. Gorbunov leg.

Distribution: Kazakhstan, Uzbekistan.

	S. fluxilis	*S. caroxylella*	*S. cramella*	*S. rotundella*
Male: distal lobes of uncus	Rather short, rounded	Elongated, distal margin rounded	Short, distally cut off	Long, elongated, distal margin rounded
Male: shape of gnathos	Basal half very broad, swollen; distal half of equal width, slender	Basally broad, evenly tapered from base to 2/3; distal 1/3 slender	Basally broad, evenly tapered from base to 2/3; distal 1/3 slender	Basally broad, rapidly tapered at 1/3; distal 2/3 of equal width, slender
Male: distal part of gnathos	Slightly bent upwards; at tip three small triangular processes	Bent downwards, tip hooked and pointed	Widely and distinctly hooked, hook directed downwards, tip blunt	Thick and straight; tip pointed and directed downwards
Male: aedeagus	Longer than valva, S-shaped	Longer than valva, slightly curved, basally enlarged	Longer than valva, slightly tapered and curved 110º at basal 1/3; distal 2/3 of equal width, straight, tip bent and pointed	Shorter than valva, straight, tapered at distal 1/4, tip pointed
Female: sterigma	Trapezoidal plate, anterior margin triangularly incised	Rectangular plate, 2.3 x higher than wide, posterior margin medially slightly incised	Rectangular plate, 1.7 x higher than wide, posterior corners rounded	Rectangular plate, ca. 1.4 x higher than wide
Female: ostium		Oval, opening at middle of sterigma	Drop-shaped, opening near anterior margin of sterigma	Circular, opening near anterior margin of sterigma; at lateral sides a furrowed oblique rim

Table 1. Diagnostic differences in the genitalia among *Scythris fluxilis*, *S. caroxylella*, *S. cramella* and *S. rotundella* (see also Figs. 35-37).

Discussion

The flight period of many Scythrididae species in the deserts seems to be irregular, continuing from April to September without clear gaps. Most specimens flying in the middle part of the summer are smaller in size than those flying in April-May. Probably this irregularity is an adaptation to climatic circumstances in desert regions. During our trip in July, the weather was extremely hot and dry. The maximum temperature at daytime rose to + 43º C in Kyzylkum desert, and nights were also very warm. According to a local legend, there shouldn't be any flying insects in that area in the hottest part of the summer. At daytime we didn't see any active animals in nature, excluding a few grasshoppers. The Lepidoptera were rather infrequent also at night, dominantly belonging to four families: Gelechiidae, Scythrididae, Cossidae and Coleophoridae. For example Noctuidae and Geometridae were represented only by single specimens, indicating that field conditions are very hard for larger moths, as well as for collectors. As our driver said to me in the middle of Kyzylkum desert:" You are crazy! You forced us to come here and suffer from the conditions, which even donkeys dislike!".

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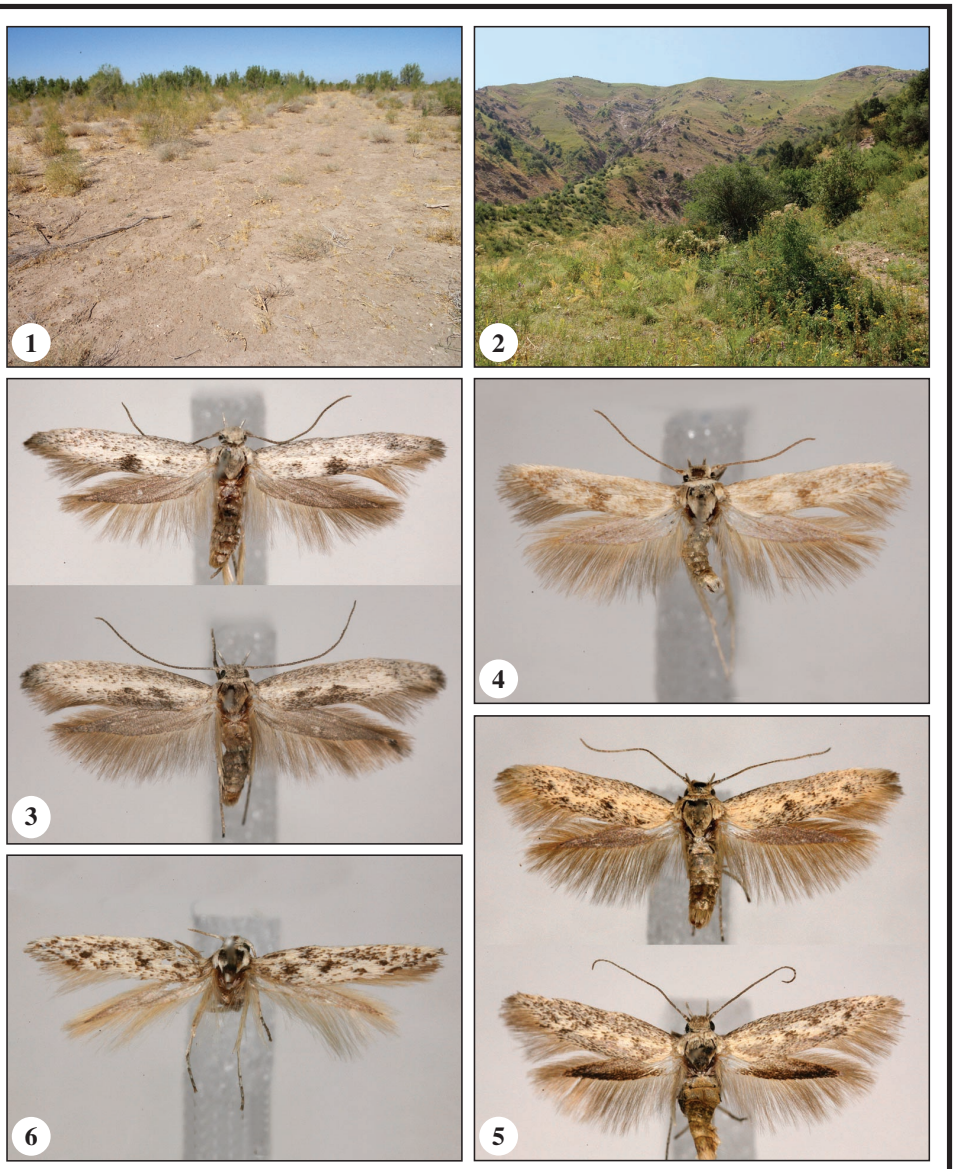
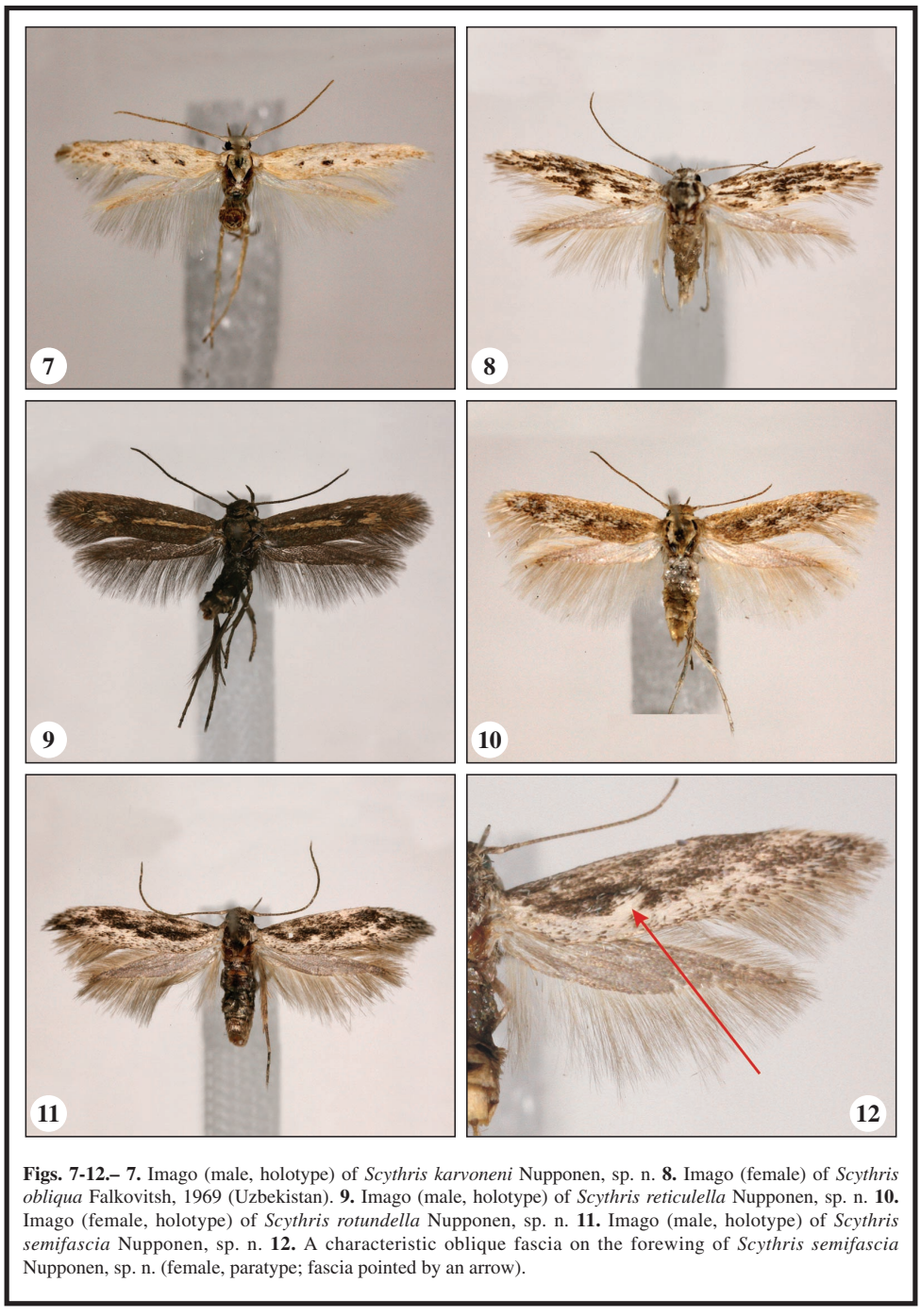
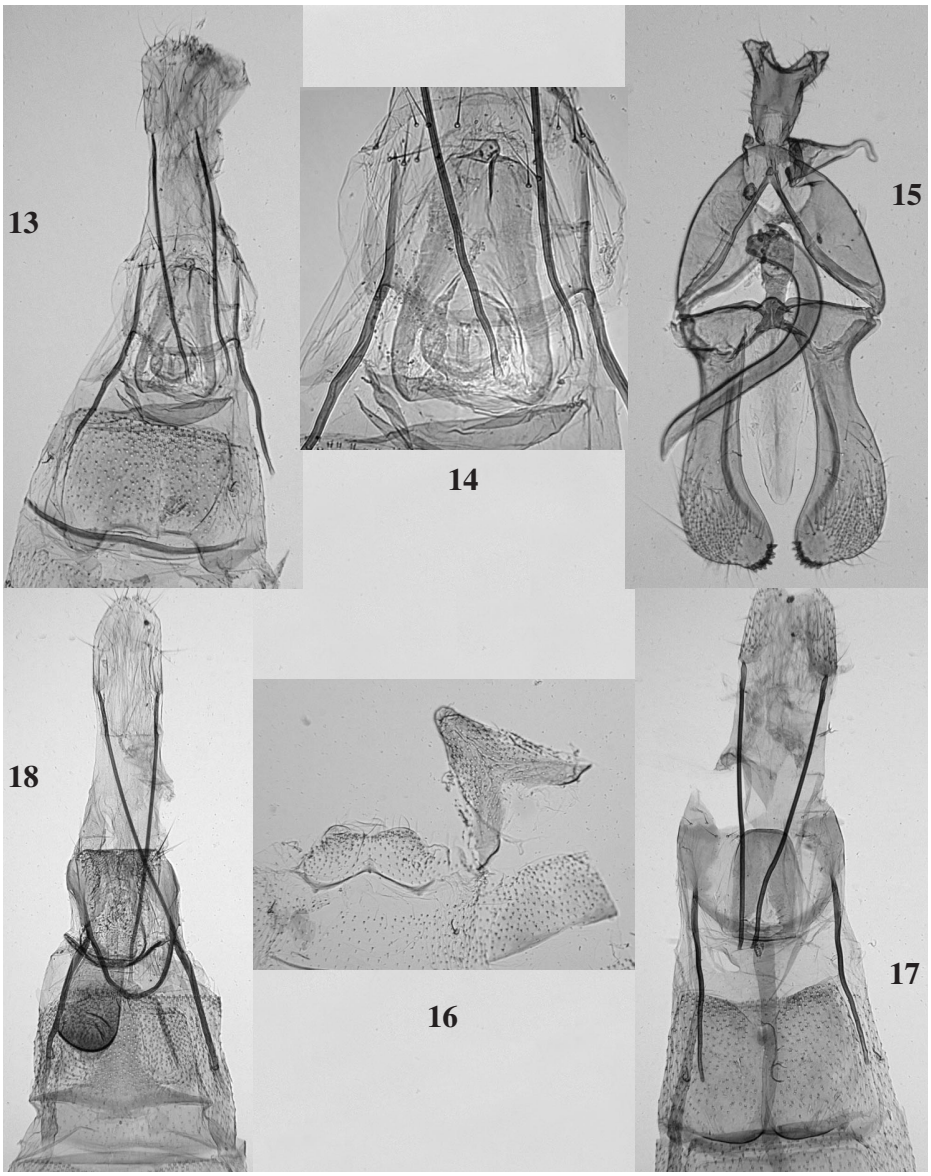


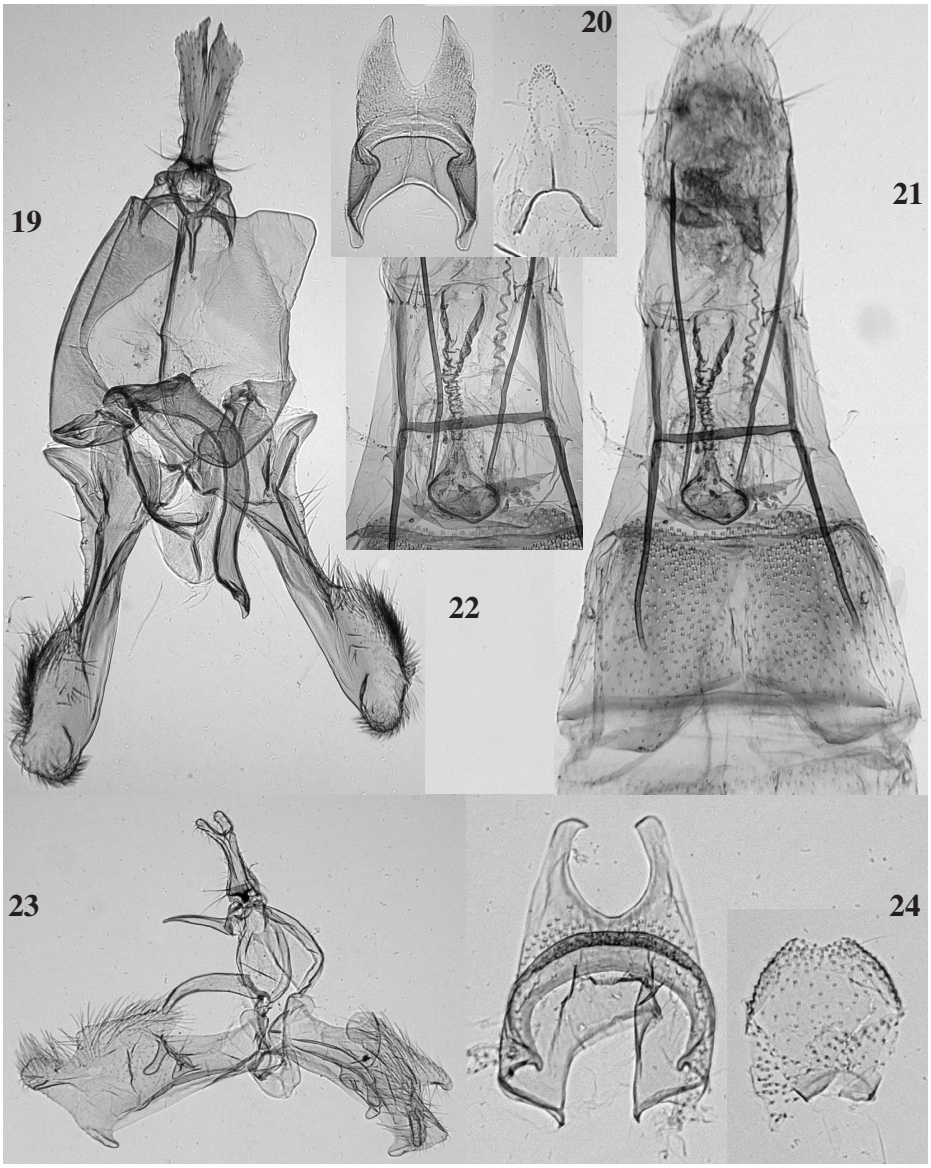
Figs. 1-6.–1.– A sandy desert at Amu-Buchara canal, Buchara district, Uzbekistan. A habitat of *Scythris cramella* Nupponen, sp. n., *S. deserticola* Nupponen, sp. n., *S. karvoneni* Nupponen, sp. n., and six other Scythrididae species reported in the present article. (Photo: K. Nupponen). **2.** Alpine meadows at NW-slope of Chimgan mountain in the Chatkal mountain range, Uzbekistan. A habitat of *Scythris reticulella* Nupponen, sp. n. (Photo: K. Nupponen). **3.** Imagos (males, topotypes) of *Scythris caballoides* Nupponen, 2009. **4.** Imago (male, holotype) of *Scythris cramella* Nupponen, sp. n. **5.** Imagos (up: male; down: female) of *Scythris deresella* Falkovitsh, 1969 (Uzbekistan). **6.** Imago (male, holotype) of *Scythris deserticola* Nupponen, sp. n.



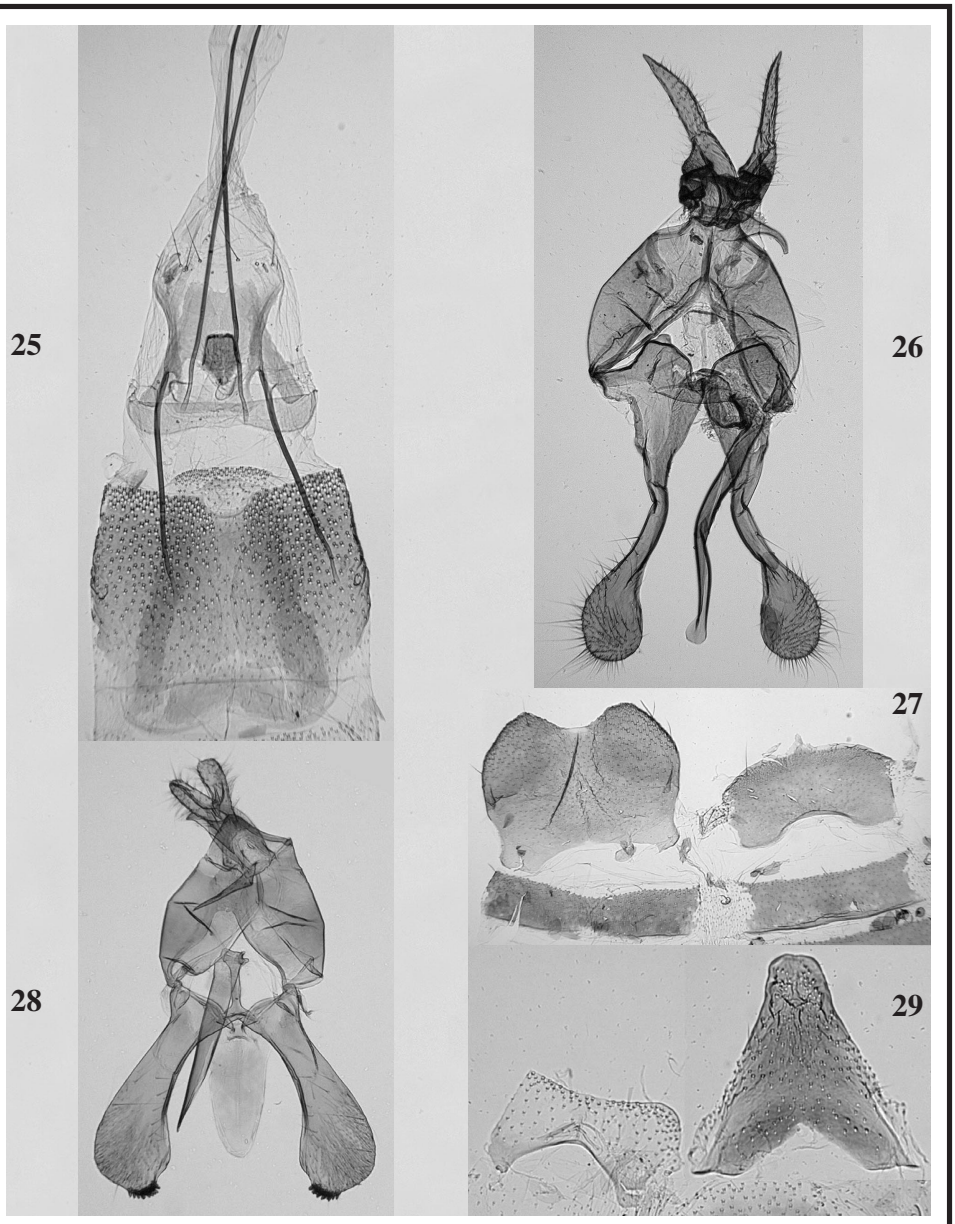
Figs. 7-12.– 7. Imago (male, holotype) of *Scythris karvoneni* Nupponen, sp. n. **8.** Imago (female) of *Scythris obliqua* Falkovitsh, 1969 (Uzbekistan). **9.** Imago (male, holotype) of *Scythris reticulella* Nupponen, sp. n. **10.** Imago (female, holotype) of *Scythris rotundella* Nupponen, sp. n. **11.** Imago (male, holotype) of *Scythris semifascia* Nupponen, sp. n. **12.** A characteristic oblique fascia on the forewing of *Scythris semifascia* Nupponen, sp. n. (female, paratype; fascia pointed by an arrow).



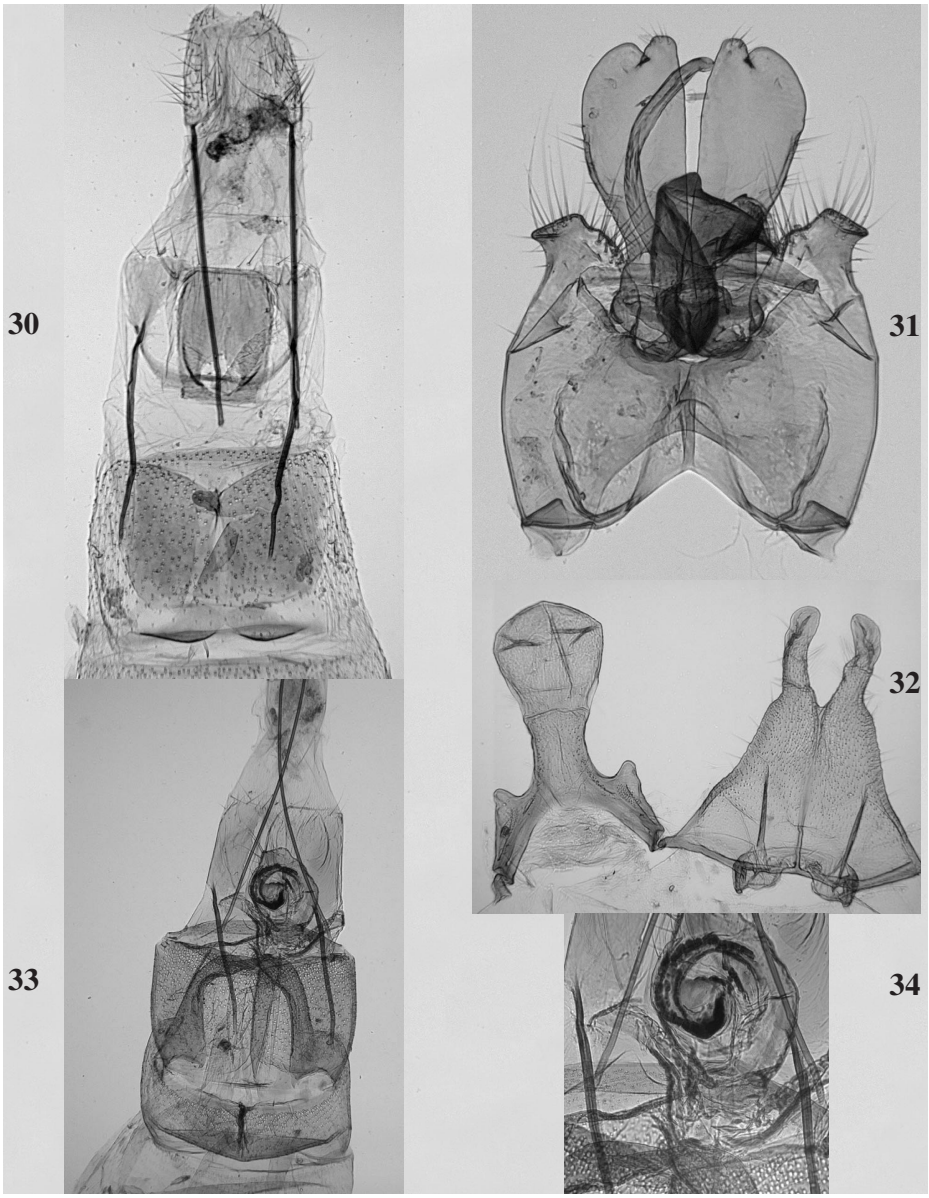
Figs. 13-18.– 13. Female fenitalia of *Scythris angustella* Nupponen, 2009 (topotype; GP 4/27-XII-2009 KN). **14.** Sterigma of *Scythris angustella* Nupponen, 2009 (topotype; GP 4/27-XII-2009 KN). **15.** Male genitalia of *Scythris cramella* Nupponen, sp. n. (paratype; GP 4/31-XII-2009 KN). **16.** Tergum VIII (left) and sternum VIII (right) of *Scythris cramella* Nupponen, sp. n. (paratype; GP 4/31-XII-2009 KN). **17.** Female genitalia of *Scythris cramella* Nupponen, sp. n. (paratype; GP 4/31-XII-2009 KN). **18.** Female genitalia of *Scythris deresella* Falkovitsh, 1969 (Uzbekistan: GP 3/30-XII-2009 KN).



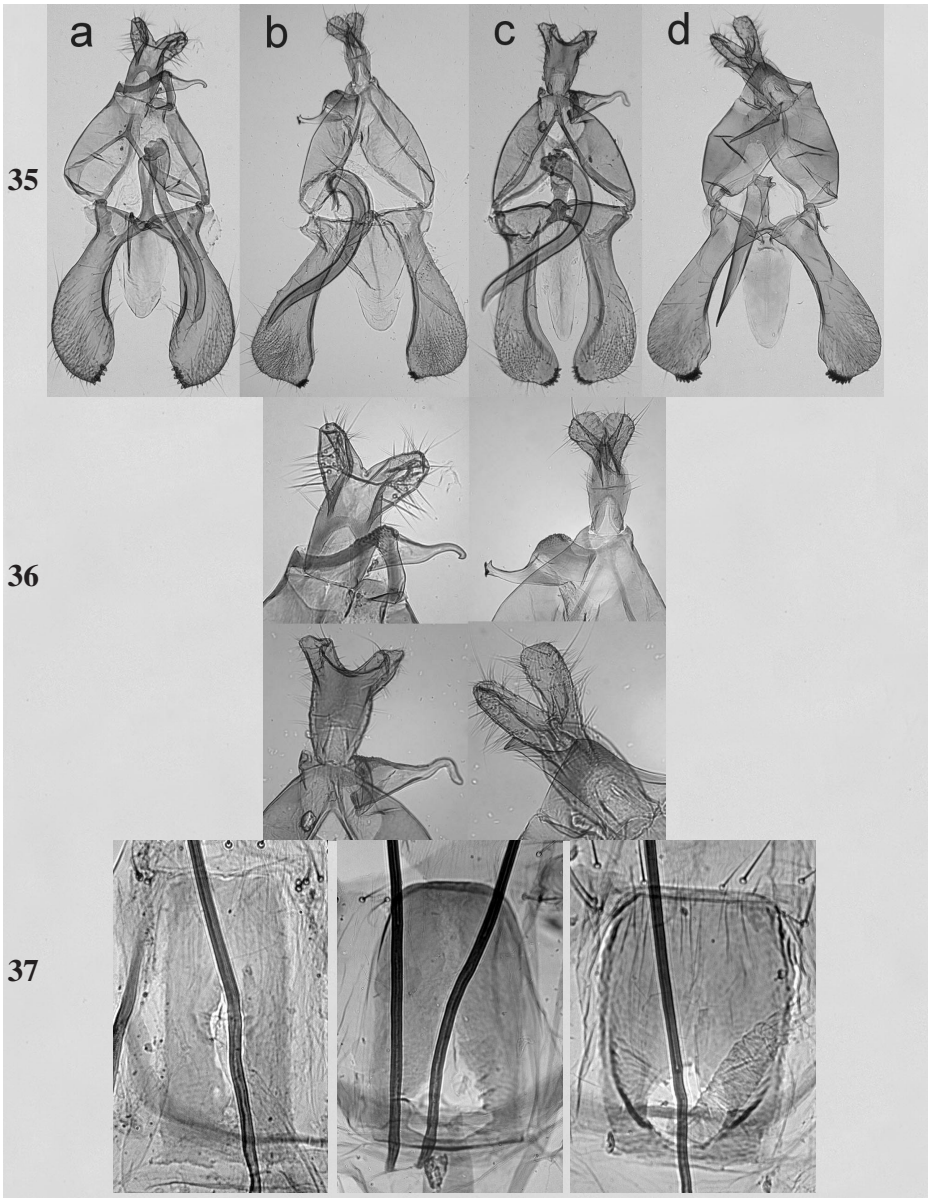
Figs. 19-24.– 19. Male genitalia of *Scythris deserticola* Nupponen, sp. n. (holotype; GP 1/05-II-2010 KN). **20.** Tergum VIII (right) and sternum VIII (left) of *Scythris deserticola* Nupponen, sp. n. (holotype; GP 1/05-II-2010 KN). **21.** Female fenitalia of *Scythris falkovitshi* Nupponen, 2009 (topotype; GP 5/27-XII-2009 KN). **22.** Sterigma of *Scythris falkovitshi* Nupponen, 2009 (topotype; GP 5/27-XII-2009 KN). **23.** Male genitalia of *Scythris karvoneni* Nupponen, sp. n. (holotype; GP 2/27-XII-2009 KN). **24.** Tergum VIII (right) and sternum VIII (left) of *Scythris karvoneni* Nupponen, sp. n. (holotype; GP 2/27-XII-2009 KN).



Figs. 25-29.– 25. Female genitalia of *Scythris obliqua* Falkovitsh, 1969 (Uzbekistan; GP 2/28-XII-2009 KN). **26.** Male genitalia of *Scythris reticulella* Nupponen, sp. n. (paratype; GP 1/28-XII-2009 KN). **27.** Tergum VIII (right) and sternum VIII (left) of *Scythris reticulella* Nupponen, sp. n. (paratype; GP 1/28-XII-2009 KN). **28.** Male genitalia of *Scythris rotundella* Nupponen, sp. n. (paratype; GP 2/30-XII-2009 KN). **29.** Tergum VIII (left) and sternum VIII (right) of *Scythris rotundella* Nupponen, sp. n. (paratype; GP 2/30-XII-2009 KN).



Figs. 30-34.– 30. Female genitalia of *Scythris rotundella* Nupponen, sp. n. (paratype; GP 4/28-XII-2009 KN). **31.** Male genitalia of *Scythris semifascia* Nupponen, sp. n. (paratype; GP 1/08-VIII-2009 KN). **32.** Tergum VIII (left) and sternum VIII (right) of *Scythris semifascia* Nupponen, sp. n. (paratype; GP 1/08-VIII-2009 KN). **33.** Female genitalia of *Scythris semifascia* Nupponen, sp. n. (paratype; GP 3/28-XII-2009 KN). **34.** Sterigma of *Scythris semifascia* Nupponen, sp. n. (paratype; GP 3/28-XII-2009 KN).



Figs. 35-37.– 35. Male genitalia of the species in the *caroxylella* species-group. (a) *S. caroxylella*; (b) *S. fluxilis*; (c) *S. cramella*; (d) *S. rotundella*. **36.** Uncus-gnathos complex of the species in the *caroxylella* species-group. Upper row: *S. caroxylella* (left), *S. fluxilis* (right); Lower row: *S. cramella* (left), *S. rotundella* (right). **37.** Sterigma of the *caroxylella* species-group. Left: *S. caroxylella*; Middle: *S. cramella*; Right: *S. rotundella*. Sterigma of *S. fluxilis* is illustrated in FALKOVITSH (1986).