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A review of the genus *Athrips* (Lepidoptera, Gelechiidae) in the Palaearctic region

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Abstract

The Palaearctic representatives of the genus *Athrips* Billberg, 1820, are reviewed; 34 species are recognized as valid, seven species and one subspecies are described as new, two new synonyms are established. Keys to the species are provided and all species and their male and female genitalia are described and illustrated. Biological data, as far as known, are given for each species and the host-plant relationships are briefly discussed. The genus *Athrips* is redefined and its position within Gelechiidae is discussed and a provisional classification of the species based on a cladistic analysis is provided.

Introduction

The gelechiid genus *Athrips* Billberg, 1820, comprises 34 Palaearctic species, three of which also occur in the Nearctic region. Six species are recorded for the Afrotropical region (South Africa) (Janse 1950).

The genus has never been revised in the Palaearctic region. The most valuable contribution to the systematics of *Athrips* was made by Sattler (1967, 1978), who clearly defined the taxonomic structure of the genus and proposed the current list of synonyms. He recognized 16 species in the Palaearctic region.

Subsequently a number of additional new species were described and some contributions to the systematics of *Athrips* made by various authors (Povolná 1979, Piskunov 1980, Emelyanov & Piskunov 1982, Lvovsky & Piskunov 1989, 1993, Piskunov 1990a, b, Park 1991, Li & Zheng 1998). Recently ten European species were partially revised by Huemer & Karsholt (1999). As a result the number of Palaearctic species has increased to 26.

In the course of my studies at least eight undescribed taxa of *Athrips* were discovered in collections, and new data on the host-plants and distribution of several species were obtained. All previously published (Bidzilya 2000, Falkovitsh & Bidzilya 2003) and new data on the taxonomy, biology and distribution of Palaearctic *Athrips* are here summarized and analyzed in detail.

It is the purpose of this study to describe new taxa, provide detailed descriptions of all species and a key to the species, accompanied by illustrations of the adults and the genitalia of both sexes. It is also intended to provide an improved diagnosis of the genus *Athrips* based on the morphology of all Palaearctic species and taking related genera from other zoogeographic regions into consideration.

Material and methods

The present study is based primarily on material in the collections of ZIN, ZMKU and ZMHU. Additional material was received from ZMUC, BMNH, TLMF, IZ ShNU, SZMN, KNU and others, as well as from private collections. The types of 20 nominal species have been examined.

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Male genitalia were prepared using the unrolling technique, as described by Pitkin (1986) and Huemer (1988). The abdomen was macerated for five minutes in 10% KOH, then rinsed and cleaned in water whilst the abdominal scales were removed. The genitalia were then separated from the abdomen and dissected in 70% ethanol. The abdomen was cut laterally and placed for three minutes in a solution of Chlorazol Black. After dehydration in absolute alcohol, the genitalia and abdomen were transferred into Euparal and covered with a cover slip.

Female genitalia were prepared accordingly.

Images of the genitalia of most species have been taken with the aid of the Nikon Eclipse 600 microscope in combination with the photomicrographic equipment Nikon H-III. Images of the moths have been taken with the same photographic equipment but with Stereomicroscope Nikon SMS-U. In some instances images of both moths and their genitalia were taken with the Nikon Coolpix 4500 in combination with binocular MBS-9.

Biological data were mainly extracted from bibliographic sources. For some species personal observations and label data were also available.

The distribution of species is established primarily from material examined and is supplemented by literature data. Dubious literature records are discussed in the text. The "Material examined" is arranged in geographical order from north-west to south-east; countries are referred to by their current names. Where these names differ significantly from those on the specimen labels the latter are also cited.

Abbreviations of institutions

BMNH	British Museum (Natural History) London, U.K.
HNHM	Hungarian Natural History Museum, Budapest, Hungary
KNU	Center for Insect Systematics, Kangweon National University, Chuncheon, Korea
IZ ShNU	Institute of Zoology, Shaanxi Normal University, Xi'an, China
MNHN	Museum National d'Histoire Naturelle, Paris, France
RMNH	Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands
SZMN	Siberian Zoological Museum of Institute of Systematics and Ecology of Animals, Novosibirsk, Russia
TLMF	Tiroler Landesmuseum Ferdinandeum, Innsbruck, Austria
ZIN	Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia
ZMHU	Zoologisches Museum der Humboldt-Universität, Berlin, Germany
ZMKU	Zoological Museum, Kiev National Taras Shevchenko University, Kiev, Ukraine
ZMUC	Zoologisk Museum, University of Copenhagen, Copenhagen, Denmark
ZSM	Zoologische Staatssammlung, Munich, Germany

Check-list of Palaearctic *Athrips*

Athrips Billberg, 1820
- *Rhynchopacha* Staudinger, 1871
- *Epithectis* Meyrick, 1895
- *Leobatus* Walsingham, 1904
- *Ziminiola* Gerasimov, 1930
- *Cremona* Busck, 1934

***tigrina*-**group
- ***tigrina*** (Christoph, 1877)
  - *agnathos* Li & Zheng, 1998

nitrariella-group
- ***nitrariella*** (Chrétien, 1908)
- ***bidilatata*** Li & Zheng, 1998
- ***mongolorum*** Piskunov, 1980
  - *crassivalva* Li & Zheng, 1998 **syn. n.**

***gussakovskii*-**group
- ***gussakovskii*** (Gerasimov, 1930)
  - *gussakovskii gobica* I. Emelyanov & Piskunov, 1982 **syn. n.**
- ***autumnella*** Falkovitsh & Bidzilya, 2003
- ***carthaginella*** (D. Lucas, 1940)

thymifoliella-group
- ***thymifoliella*** (Constant, 1893)

***nigricostella*-**group
- ***nigricostella*** (Duponchel, 1842)
- ***tetrapunctella*** (Thunberg, 1794)
  - *lathyri* (Stainton, 1865)
  - *lathyrella* (Doubleday, 1866) (emendation)
- ***amoenella*** (Frey, 1882)
  - *allgunnensis* Svensson, 1993 n. inv.
- ***stepposa*** sp. n.
- ***kerzhneri*** Piskunov, 1990
- ***rutjani*** sp. n.

falkovitshi-group
- ***falkovitshi*** Piskunov, 1990

fagoniae-group
- ***fagoniae*** (Walsingham, 1904)
  - *cervinella* Turati, 1934
  - *rosinansella* Lucas, 1942

gerasimovi-group
- ***gerasimovi*** Piskunov, 1982

septempunctata-group
- ***septempunctata*** Li & Zheng, 1998
- ***tcharyna*** sp. n.
- **sp. 1**
- ***peteri*** sp. n.

tsaidamica-group
- ***tsaidamica*** I. Emelyanov & Piskunov, 1982
- **sp. 2**

***pruinosella*-**group
- ***polymaculella*** Park, 1991
- ***nigrogrisea*** (Kolmakova, 1958)
- ***rancidella*** (Herrich-Schäffer, 1854)
  - *triatomea* (Mühlig, 1864)
  - *vepretella* (Zeller, 1870)
  - *superfetella* (Peyerimhoff, 1877)
  - *cotoneastri* (Busck, 1934)
  - *cerasivorella* (Kuznetzov, 1960)
- ***rancidella*** *tadzhika* ssp. n.
- ***pruinosella*** (Lienig & Zeller, 1846)
- ***adumbratella*** (Snellen, 1884)
- ***spiraeae*** (Staudinger, 1871)
- ***kostjuki*** sp. n.
- ***sibirica*** sp. n.
- ***medjella*** (Chrétien, 1900)
- ***patockai*** (Povolný, 1979)
- **sp. n.** (Junnilainen, in litt.)
- ***eugenii*** sp. n.
- **sp. 3.**
- ***mouffetella*** (Linnaeus, 1758)
  - *pedisequella* ([Denis & Schiffermüler], 1775)
  - *punctifera* (Haworth, 1828)

Taxa incertae sedis
- ***asarinella*** (Chrétien, 1930)

The systematic position of *Athrips*

Up to date the position of many genera within Gelechiidae remains unclear due to the lack of a

cladistic analysis of the whole family. The division of Gelechiidae into subfamilies and tribes is still controversial. That is partly a result of difficulties in correctly homologizing the male genital structures in different gelechiid genera. The situation is complicated by the absence of comparative morphological data for many tropical genera.

Hodges (1998) divided the family into four subfamilies, using the structure of the sternal support system of the abdomen, but this view is not generally accepted. According to Ponomarenko (1994, 1997), the musculature of the male genitalia, as well as other traditional morphological characters, should be taken into consideration for the infrafamiliar classification of the Gelechiidae. She has shown that at least Dichomeridinae has other synapomorphies and consequently a taxonomic structure different from that proposed by Hodges.

In the few publications which dealt with the systematic position of *Athrips*, its place within Gelechiidae and relationships with allied genera were defined intuitively or based on isolated characters. Piskunov (1982) placed *Athrips* near *Megacraspedus* Zeller, 1839 and *Aristotelia* Hübner [1825], based on some similarity in the shape of the aedeagus and gnathos in the male genitalia. Omelko (1999) considered *Athrips* to be a member of Chelariinae, together with *Dendrophilia* Ponomarenko, 1993, *Faristenia* Ponomarenko, 1991, *Hypatima* Hübner [1825], *Anarsia* Zeller, 1839, *Nothris* Hübner [1825], *Paranarsia* Raganot, 1895 and other genera. His opinion is based on similarities in the shape of the ostium bursae and signum in the female genitalia.

In a recent revision of European Gelechiinae (Huemer & Karsholt 1999) *Athrips* was placed in this subfamily on the basis of such characters as abdominal sternum II with pair of venulae, terminating in distinct apodemes. Within Gelechiinae *Athrips* was considered as similar to the tribes Gelechiini, Teleiodini and Gnorimoschemini, which all share the laterally unfused male abdominal segment VIII (Huemer & Karsholt 1999). Amongst the last-mentioned tribes *Athrips* was recognized as a member of the Gelechiini, based on such character as the presence of a culcitula and a free aedeagus.

A critical review of the above views on the position within the Gelechiidae has shown that *Athrips* cannot be considered as a member of Chelariinae sensu Omelko (1999), as it differs distinctly in the main characters of the male (shape of sacculus, transtilla region, saccus and tegumen) and female (ductus bursae) genitalia, being more closely related to Gelechiini (see below). Piskunov's views (1982) on the similarity of the genus to *Megacraspedus* seem dubious too, as the latter genus is now considered to be a member of the Anomologini, with which it shares such characters as a pecten on the antennal scape.

The consideration of *Athrips* as a member of the subfamily Gelechiinae seems better grounded. *Athrips* does not share any synapomorphies with Dichomeridinae as defined by Hodges and Ponomarenko. The differences from Pexicopiinae are also evident. By contrast, *Athrips* has similarities in the musculature of the male genitalia to Gelechiinae (Ponomarenko, pers. comm.).

Within that subfamily the genus shares with Teleiodini the presence of tufts of raised scales on the forewings, with Gnorimoschemini the presence of cellular sclerotizations ("honeycomb structure") on abdominal sternite VIII of the female, and with Gelechiini the pillow-like structure at base of the gnathos (culcitula) in the male. Nevertheless, *Athrips* is distinguished from Teleiodini in the free aedeagus, not elongated uncus, well developed gnathos and absence of the additional group of sensory setae (sensilla trichodea) on abdominal sternite II. The differences between *Athrips* and Gnorimoschemini are rather evident due to the shape of the signum in the female and the general structure of the male genitalia. From the representatives of all suprageneric taxa within Gelechiinae (Apatetrini, Anomologini, Anacampsini, etc.), *Athrips* also differs clearly in such characters as a well developed transtilla with paired medial lobes, the uncus covered with strong setae, the narrow subtriangular vinculum, distally sclerotized ductus bursae and others.

Thus, I follow the opinion of Huemer & Karsholt (1999) treating *Athrips* as a member of Gelechiini, although the definition of that tribe remains still unclear.

The relation of *Athrips* to Gelechiini could be indirectly confirmed by analyzing the morphology of genera closely related to *Athrips*, namely *Prolita* Leraut, 1993, *Neofriseria* Sattler, 1960 and especially *Parapsectris* Meyrick, 1911, *Pseudathrips* Povolná, 1986 and *Schizovalva* Janse, 1951. Most of these genera have the rhomboid signum with serrated transverse ridges typical for Gelechiini, a ductus bursae with distal sclerotization, and female abdominal sternite VIII similar to that of *Gelechia* Hübner [1825]. All these genera resemble *Athrips* in the more or less developed

transtilla, distally sclerotized ductus, uncus covered with strong setae and basally bulbous aedeagus. The close relationship of these genera was originally established by Hodges (1966), who united *Prolita* Leraut, 1993, *Arla* Clarke, 1942, *Neodactylota* Busck [1903], *Eudactylota* Walsingham, 1911, *Sriferia* Hodges, 1966, *Rifseria* Hodges, 1966, *Friseria* Busck, 1939, *Parapsectris* Meyrick, 1911, *Araeovalva* Janse, 1960, *Leuronoma* Meyrick, 1918, *Schizovalva* Janse, 1951 in the "*Lita*-group" based on the presence of strong modified setae at the apex of the uncus.

The monophyly of *Athrips* was traditionally established by several autapomorphies: transtilla with more or less developed medial lobes, saccus with X-shaped sclerotized supports, female sternite VIII with cellular sclerotized lobes and uncus covered with setae. However, most of these characters are also present in *Parapsectris*, *Pseudathrips* and *Schizovalva*, predominantly African genera which still await taxonomic revision. It is thus possible that the Palaearctic *Athrips* species, with the relatively short and broad uncus, covered with strong long setae as a presumed autapomorphy, constitute merely a subordinate clade of a much larger genus. In *Parapsectris* and *Pseudathrips* the uncus is normally elongated and covered with short dense setae. A long and strongly curved gnathos is probably a second autapomorphy of *Athrips*; in the allied genera the gnathos is straight distally and curved only near base. Both those characters could not considered as strong autapomorphies of *Athrips*, as some species within that genus are characterized by a hairy uncus (*septempunctata*-group) or a weakly curved gnathos (*gussakovskii*-group).

The preceding considerations indicate the desirability of a special worldwide revision of the group in order to clarify the relationships between *Athrips*, *Parapsectris* and *Pseudathrips*, to refine their diagnoses and to establish the correct generic assignment of some species. New data obtained in the course of such work will undoubtedly result in some refinements of the diagnosis of *Athrips*, but is unlikely to have a serious effect on the present results of the revision of the Palaearctic species.

Classification of *Athrips* species

The phylogenetic scheme of *Athrips* presented here was constructed using cladistic methods. To reconstruct the relationships between individual species and species-groups within *Athrips*, apomorphic and plesiomorphic states of 34 morphological characters within the genus were estimated. Following an initial analysis using all characters, those that were the result of secondary reduction and convergence and those characters with mosaic distribution were excluded from further consideration. The remaining 34 characters formed the matrix (Table 1) used as the basis for estimating the cladogram.

The phylogenetic analysis used mainly characters that represented the structure of the imago, first the genitalia of both sexes, namely the shape of the uncus, gnathos and transtilla in males, and shape of sclerotization of sternite VIII and degree of sclerotization of distal part of ductus bursae in females. Other genital characters the polarities of which are doubtful, such as the shape of the aedeagus, shape of the signum, length and shape of the sacculus, apophyses etc., as well as external characters were used additionally to reveal the relationships between individual species within species-groups in some cases only. The states of some characters in species known from only one sex, as well as autapomorphies of most individual species within species-groups were also not included.

The polarities of characters were estimated by the method of outgroup comparison. Although *Parapsectris* and *Pseudathrips* are more closely related to *Athrips*, they could not be considered as outgroups, because their taxonomic status remains unclear. Thus, other genera of Gelechiini (*Schizovalva*, *Neofriseria*, *Prolita*) were chosen as outgroups to reveal the direction of character transformation. The plesiomorphic states of characters at base of the clade were used to reconstruct the hypothetical ancestor of *Athrips* and this was used as outgroup in the next step, to reveal the relationships between individual species and species-groups within the genus, as well as for estimating the presumed direction of *Athrips* evolution (see below).

The characters used in the classification are listed below. The main trends of evolution of characters and their polarities are briefly discussed here and more detailed in the following part.

Male genitalia

Uncus:

1. (0) long and narrow, length exceeding width more than three times
   (1) short and wide, length exceeding width less than three times
   (2) reduced

2. (0) covered with hair-like setae
   (1) covered with strong setae

The relatively elongate uncus covered with hair-like setae is common in most other Gelechiini and treated here as plesiomorphic; a relatively broad uncus covered with strong setae is a synapomorphy of Palaearctic *Athrips*, excluding the *septempunctata*-group, and some related genera (*Prolita, Rifseria, Schizovalva*); a secondary reduction of the uncus is characteristic for *A. tigrina* and *A. falkovitshi*.

Gnathos:

3. (0) short, weakly curved at base only, distal part straight
   (1) long, strongly curved at base and in middle
   (2) reduced

A gnathos weakly curved at base only is widely distributed in Gelechiini and considered as plesiomorphic; within *Athrips* the plesiomorphic state of this character is found only in the *gussakovskii*-group; a secondary reduction of the gnathos is characteristic for *A. tigrina* and *A. falkovitshi*.

Cucullus:

4. (0) of even width
   (1) narrowed distally
   (2) widened in distal third
   (3) widened in distal quarter
5. (0) straight
   (1) strongly curved basally or S-curved

The simple, uniformly straight rather than curved, cucullus is treated as plesiomorphic; the apomorphic states of this character (its narrowing, broadening or curving at base) are independently developed in unrelated species and may be explained as convergence (*A. fagoniae, rancidella*-group, *A. thymifoliella*).

Sacculus:

6. (0) less than half length of cucullus
   (1) more than half length of cucullus
7. (0) straight or narrowed distally
   (1) widened distally and curved spirally
8. (0) short and narrow
   (1) long and wide
   (2) very long and narrow
9. (0) placed near base of cucullus
   (1) placed medially from the base of cucullus
10. (0) not curved inwards
    (1) weakly curved inwards

Shape and length of the sacculus vary extensively and were used only as additional characters for an analysis of relationships between individual species; the medial position of the sacculus is restricted to *A. fagoniae* and *A. polymaculella* and is considered here as an apomorphy of these species.

Transtilla:

11. (0) weakly developed, with knee-shaped lobes
    (1) well developed with lobes of different shapes (not knee-shaped)

A weakly developed transtilla with long knee-shaped lobes is developed in most of the genera related to *Athrips* (*Neofriseria, Schizovalva, Rifseria, Pseudathrips*); within Palaearctic *Athrips* the plesiomorphic state of this characters is found only in the *gussakovskii*-group; the evolutionary trends of this structure are its enlargement and differentiation into medial lobes.

Transtilla lobes:

12. (0) absent or very small
    (1) broad and short
    (2) long and narrow
    (3) extremely broad, sub-rectangular

The simple, small transtilla lobes are treated as plesiomorphic, the evolutionary trends of this structure are its enlargement and elongation.

Posterior margin of vinculum:

13. (0) without processes
    (1) with very small indistinct processes
    (2) with well developed long processes

The well developed medial processes, which function as a juxta for supporting of aedeagus, are considered as the autapomorphy of the *nitrariella*-group; elsewhere within *Athrips* weakly developed processes occur independently in the *gerasimovi*-, *fagoniae*- and some species of the *pruinosella*-groups.

Aedeagus:

14. (0) distal part relatively broad
    (1) distal part extremely narrow
15. (0) distal part more than three times length of basal part, straight or weakly curved
    (1) distal part the same length or shorter than basal part, strongly S-curved

An aedeagus with long and weakly curved distal part is common in Gelechiini (*Gelechia* Hbn., *Neofriseria* Sattler, *Rifseria* Hodges, *Sriferia* Hodges) and treated as plesiomorphic; it should be noted that apomorphic and plesiomorphic states of this character show mosaic distribution within *Athrips* and can be used only for the analysis of relationships between individual species: for example an aedeagus with extremely short and S-curved distal part is considered as an autapomorphy of the *polymaculella*- and *septempunctata*-groups.

Female genitalia

sternite VIII:

16. (0) evenly sclerotized posteriorly
    (1) unevenly sclerotized posteriorly
17. (0) without well developed honeycomb pattern
    (1) with well developed honeycomb pattern
18. (0) without honeycomb patches near ostium
    (1) with honeycomb patches near ostium
19. (0) anterior margin with long and narrow incision
    (1) anterior margin with triangular incision
20. (0) without wrinkles near ostium
    (1) wrinkled near ostium

It is hypothesized that the evolution of this structure in general involved a trend towards the differentiation of uniformly sclerotized, wide and elongated periostial lobes into separate parts with distinct honeycomb pattern followed by their subsequent division and, in parallel, a narrowing of sternite VIII as a whole; different apomorphic states of this character are consequently used mainly to establish phylogenetic connections between species within groups.

Ductus:

21. (0) narrow, not sclerotized distally
    (1) broad, sclerotized distally
22. (0) distal part without additional lateral sclerotization
    (1) distal part with additional lateral sclerotization

A narrow ductus without a distal sclerotization is treated as plesiomorphic; its further evolution is the broadening and developing of a distal sclerotization.

Signum:

23. (0) presence
    (1) absence
24. (0) flattened funnel
    (1) narrow band or sickle-shaped
25. (0) well developed, large
    (1) small, funnel-shaped
26. (0) in middle part of corpus bursae
    (1) at entrance of corpus bursae

The signum in the shape of a flattened funnel or sub-triangular plates is considered as plesiomorphic, as a signum of this shape is quite common in most of the related genera of Gelechiini; the further directions in signum evolution are its complete or partial reduction, that occurs independently in unrelated group of species, or its narrowing into a band; a signum at entrance of the corpus bursae is treated as an apomorphy, although this character is not very reliable within *Athrips*.

Bursa copulatrix:

27. (0) elongated
    (1) rounded

The elongated corpus bursae of the *nitrariella*- and *tigrina*-groups, which imperceptibly merges with the ductus bursae is considered as plesiomorphic.

Apophyses posteriores:

28. (0) less than three times length of apophyses anteriores
    (1) more than three times length of apophyses anteriores

The extremely long apophyses posteriores of the *gussakovskii*-group are treated as apomorphic.

Abdomen

Male tergite VIII:

29. (0) width twice its length
    (1) width equals length

The uniquely long male tergite VIII of *A. gussakovskii* is a presumed autapomorphy of this species, although the phylogenetic significance of this structure is unclear.

Metascutum:

30. (0) with paired plate of long, hair-like setae
    (1) with paired plate of very short modified scales

The metascutum with a paired plate covered by very short modified scales occurs in some gelechiid genera only and is considered here as an apomorphy of the *gussakovskii*-group.

Head:

31. (0) without frontal process
    (1) with frontal process
32. (0) segment 2 of labial palpus less than three times width of segment 3; segment 3 long and curved.
    (1) segment 2 of labial palpus more than three times width of segment 3; segment 3 short and direct.

A frontal process is a presumed autapomorphy of *A. gussakovskii*; this structure occurs independently in several gelechiid genera (and members of many other Lepidoptera families), but its function as well as its importance for the classifications remains unknown. An extremely enlarged segment 2 in conjunction with a very short and straight segment 3 of the labial palpus is treated as a synapomorphy of four species within the *pruinosella*-group, namely *A. adumbratella, A. pruinosella, A. spiraeae* and *A. kostjuki.*

Table 1

Data-matrix of more important morphological characters used for *Athrips* classification. 0 – plesiomorphic state of character; 1 – apomorphic state of character; "–" – the characters is inapplicable; ? – character state unknown.

characters/taxa	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
tigrina	2	0	2	0	0	0	0	–	0	0	1	3	0	1	–	0	0	–	–	–	0	0	1	–	–	–	0	0	0	0	0	0	0	0
mongolorum	1	1	1	2	0	1	1	–	0	1	1	0	2	1	–	0	0	–	–	–	0	0	1	–	–	–	0	1	0	0	0	0	1	0
nitrariella	1	1	1	3	0	1	1	–	0	1	1	0	2	0	–	0	0	–	–	–	0	0	1	–	–	–	0	1	0	0	0	0	1	0
bidilatata	1	1	1	2	0	1	1	–	0	1	1	0	2	0	–	?	?	?	?	?	?	?	?	?	?	?	?	?	0	0	0	0	1	0
carthaginella	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	1	1	–	–	–	?	?	?	?	?	?	?	?	?	?	?	?	?	?
autumnella	1	1	0	0	0	0	0	–	0	0	0	2	0	0	0	1	1	–	–	–	1	1	0	0	0	–	1	1	0	1	0	0	0	0
gussakovskii	1	1	0	0	0	0	1	–	0	0	0	2	0	0	0	1	1	–	–	–	1	1	0	0	0	–	1	1	1	1	0	0	0	0
thymifoliella	1	1	1	0	1	0	0	–	0	0	1	2	0	0	1	1	1	–	–	–	1	0	0	–	1	0	1	0	0	0	0	1	1
amoenella	1	1	1	0	0	0	0	1	0	0	1	2	0	0	0	1	0	0	–	–	1	0	0	1	–	0	1	0	0	0	0	0	1	0
stepposa	1	1	1	0	0	0	0	1	0	0	1	2	0	0	0	1	0	0	–	–	1	0	0	1	–	0	1	0	0	0	0	0	1	0
kerzhneri	1	1	1	0	0	0	0	1	0	0	1	2	0	0	0	?	?	?	?	?	?	?	?	?	?	?	0	?	?	0	0	0	0	1	0
rutjani	1	1	1	0	0	0	0	1	0	0	1	2	0	0	0	?	?	?	?	?	?	?	?	?	?	?	0	?	?	0	0	0	0	1	0
tetrapunctella	1	1	1	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	–	–	1	0	0	1	–	0	1	0	0	0	0	0	1	0
nigricostella	1	1	1	0	0	0	0	0	0	0	1	2	0	0	0	1	0	1	–	–	1	0	0	1	–	0	1	0	0	0	0	0	1	0
falkovitshi	2	0	2	0	0	0	0	–	0	0	1	1	0	1	0	1	1	–	–	–	1	1	0	–	1	1	1	0	0	0	0	0	1	0
fagoniae	1	1	1	0	1	0	0	–	1	0	1	1	1	0	1	1	1	–	–	–	1	1	0	1	–	1	1	0	0	0	0	0	1	0
gerasimovi	1	1	1	0	0	0	0	2	0	0	1	2	1	0	1	1	1	–	–	–	1	1	0	0	–	1	1	0	0	0	0	0	1	0
peteri	?	?	?	?	?	?	?	–	?	?	?	?	?	?	?	1	0	–	–	–	1	1	0	0	0	1	1	0	0	0	0	0	0	0
tcharyna	1	0	1	1	0	0	0	–	0	1	1	1	0	0	1	?	?	?	?	?	?	?	?	?	?	?	?	?	0	0	0	0	0	0
septempunctata	1	0	1	1	0	0	0	–	0	1	1	1	0	0	1	1	0	–	1	–	1	1	0	0	0	1	1	0	0	0	0	0	0	0
tsiadamica	1	1	1	0	0	0	0	–	0	0	1	1	0	0	0	?	?	–	?	?	?	?	?	?	?	?	1	?	?	0	0	0	0	0
polymaculella	1	1	1	0	0	0	0	–	1	0	1	1	0	1	0	1	1	–	1	1	1	1	0	0	0	1	1	0	0	0	0	0	0	0
nigrogrisea	0	1	1	1	0	0	0	–	0	0	1	1	0	0	1	1	1	–	1	1	1	1	0	0	0	1	1	0	0	0	0	0	0	0
rancidella	0	1	1	1	0	0	0	–	0	0	1	1	0	0	0	1	0	–	1	1	1	1	0	0	0	1	1	0	0	0	0	0	1	0
adumbratella	1	1	1	0	0	0	0	–	0	0	1	1	0	0	0	?	?	?	?	?	?	?	?	?	?	?	?	?	0	0	0	1	0	0
pruinosella	1	1	1	0	0	0	0	–	0	0	1	1	0	0	0	1	1	–	1	1	1	1	0	0	0	1	1	0	0	0	0	1	0	0
spiraeae	1	1	1	0	0	0	0	–	0	0	1	1	0	0	0	1	1	–	1	1	1	1	0	0	0	1	1	0	0	0	0	1	0	1
kostjuki	1	1	1	0	0	0	0	–	0	0	1	1	0	0	0	1	1	–	1	1	1	1	0	0	0	1	1	0	0	0	0	1	0	1
sibirica	1	1	1	0	0	0	0	–	0	0	1	1	0	0	0	1	1	–	1	1	1	1	0	0	0	1	1	0	0	0	0	0	0	0
medjella	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	1	1	–	1	1	1	1	0	0	0	1	1	0	0	0	0	0	0	0
patockai	1	1	1	0	0	0	0	–	0	0	1	1	0	0	0	1	1	–	1	1	1	1	0	0	0	1	1	0	0	0	0	0	0	0
eugenii	1	1	1	0	0	0	0	–	0	0	1	1	0	0	0	1	0	–	0	–	1	1	0	0	0	1	1	0	0	0	0	0	0	0
sp. n. (Junnilainen, in litt.)	1	1	1	0	0	0	0	–	0	0	1	1	0	0	0	1	0	–	0	–	1	1	0	0	0	1	1	0	0	0	0	0	0	0
mouffetella	1	1	1	0	0	0	0	–	0	0	1	1	0	0	0	1	1	–	1	–	1	1	0	0	0	1	1	0	0	0	0	0	0	0

Forewing:

33. (0) broad
    (1) narrow
34. (0) without ochreous patches
    (1) with ochreous patches

A broad, blackish grey forewing without raised scales is considered here as plesiomorphic.

Discussion of phylogenetic relationships within *Athrips*

The reconstruction of the genus phylogeny is complicated by a number of difficulties connected with the relatively low rank of the considered taxon, namely by uncertain relevance on limited number of closely related species of the cases of parallel development, convergences, independent appearance of character state, and also by the paucity of characters, which differentiate certain species. Nevertheless, useful results were obtained that allow grouping the species and establishing in broad terms their phylogenetic relationships.

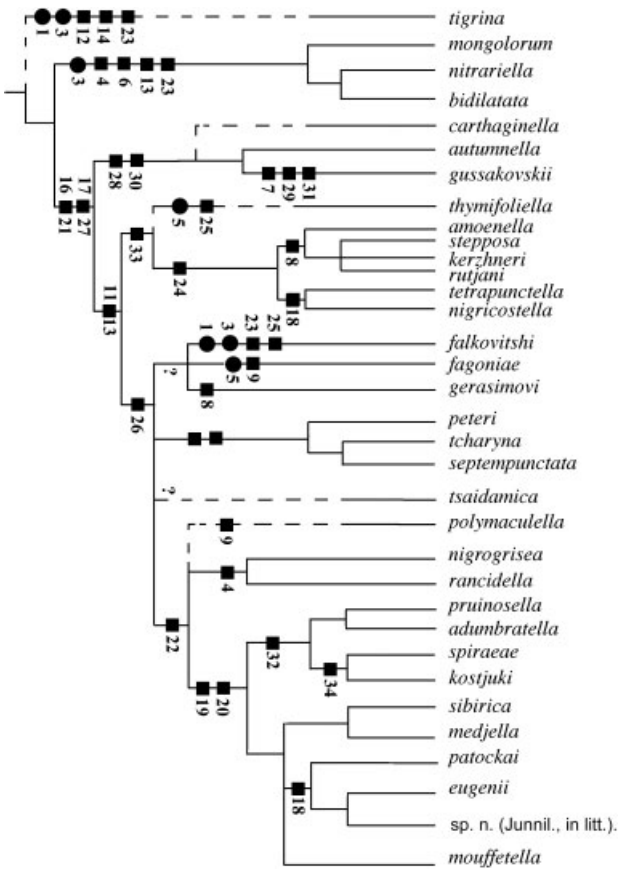


Fig. 1. Cladogram representing presumed phylogeny of *Athrips* species. Apomorphic character states denoted by black squares, secondary reductions and convergence denoted by black circles; the numbers of the character states in the cladogram are those in the matrix. Uncertain phylogenetic relationships are indicated by a broken line.

The most isolated position in the genus is occupied by the *nitrariella*-group characterized by some unique apomorphies, principally the very long specialized sacculus (6) and distally expanded cucullus (4). Two of the three species in that group feed on plants of the family Nitrariaceae, which is also unique to this species group. At the same time, they exhibit in their female genitalia plesiomorphic character states like a thin ductus bursae without a sclerotized distal part, an elongated corpus bursae and a uniformly sclerotized sternite VIII.

The position of *A. tigrina* within the genus still remains unclear due to the plesiomorphic state of most characters and, possibly, due to secondary reduction of the gnathos and uncus. The very large, massive lobes of the transtilla (12) are an autapomorphy. The systematic position of this species and its correct placement in the genus *Athrips* at one time was controversial (Sattler 1978; Emelyanov & Piskunov 1982; Piskunov 1990a). Later, the view of it being a member of the genus *Athrips* prevailed (Lvovsky & Piskunov 1990) and was confirmed subsequently by the discovery of *A. falkovitshi* with its reduced uncus and membranous lamellar gnathos representing an intermediate link between *A. tigrina* and the rest of the *Athrips* species (Piskunov 1990b). *A. tigrina* may be distantly associated with the *nitrariella*-group on the grounds of the distally thin aedeagus (as in *A. nitrariella*) and the lack, due to suspected reduction, of the signum. The plesiomorphic state characters like the thin ductus and uniformly sclerotized sternite VIII in the female genitalia are characteristic of this species. In most other characters *A. tigrina* fundamentally differs from both *nitrariella*-group species and from the rest of the *Athrips* species, sharing none of the synapomorphies 16, 21, 27.

The *gussakovskii*-group is clearly characterized by synapomorphies 28 and 30. The taxon *A. carthaginella* known only from females could not be re-examined, so that its placement in this species group, and in *Athrips* in general, is tentative, based only on the structure of sternite VIII in the female genitalia. *A. gussakovskii* has unique characteristics such as a frontal head projection, extremely wide sternite VIII in the male genitalia and knee-like bend of the transtilla lobes, that gave a reason to separate this species as a distinct subgenus (Povolný 1979). In my opinion, a placement of this species into a separate subgenus is not appropriate, at least not at the present stage, as *A. gussakovskii* shares all synapomorphies 16, 21, 27 and 28 with *Athrips*. The species

of this group are also characteristic in the plesiomorphic gnathos state, with the base just slightly bent.

A. falkovitshi could be separated from most other *Athrips* by the very small signum, weakly sclerotized distal part of the ductus bursae, membranous lamellar gnathos and shortened uncus. The species may be related to *A. fagoniae* and *A. gerasimovi* on the basis of autapomorphy 18. The last two species are characterized by several autapomorphies (5, 9, 8), therefore their relationships to each other and with the rest of the *Athrips* species remain unclear. Indirectly the close relationship of *A. falkovitshi* and *A. fagoniae* is confirmed by the relationship of their host plants (Peganaceae and Zygophyllaceae).

The *nigricostella*-group is characterized by autapomorphy 24. All species of this group are trophically dependent on Fabaceae, have a similar structure of the genitalia in both sexes, and the adults of all species resemble each other externally. *A. thymifoliella* is tentatively placed in this group on account of the weakly sclerotized distal part of the ductus bursae. However, apomorphy 5 and some biological specializations (larvae on Cistaceae and adult flight period in the autumn) suggest that it may be distinct.

The *septempunctata*-group is tentative, comprising three species sharing synapomorphies 10 and 15. *A. peteri* is known only from females, so its inclusion in the group is provisional. At the same time, *A. tcharyna* is known only from males.

The position of *A. tsaidamica* in the genus is also not completely clear. It has unusually long lanceolate wings with small tufts of raised scales, which differ from those of the *pruinosella*-group, although it is close to that group in the male genitalia. Moreover, *A. tsaidamica* is characterized by a wavy bend in the distal part of the gnathos. The position of this species within this genus may become clearer after the discovery of the female.

The *pruinosella*-group is characterized by the presence of a wide transtilla with finger-like medial projections, an additional, distal, lateral sclerotization of the ductus bursae (22) and peculiar sclerotization of sternite VIII in the female (19) which is, however, not present in all species of the group. Most species are connected with Rosaceae, except *A. mouffetella,* the larvae of which are feeding on Caprifoliaceae. The most isolated position is occupied by *A. polymaculella,* with autapomorphy 9; its relationship to this group requires confirmation. A somewhat isolated position within this group is also occupied by *A. rancidella* and *A. nigrogrisea* due to a narrow uncus and the specialized, distally sharply thinned cucullus (4). *A. pruinosella, A. adumbratella, A. spiraeae* and *A. kostjuki* are characteristic in having a very wide segment 2 of the labial palpus (32), but the phylogenetic significance of this character is not clear as some species undoubtedly similar in the genitalia in both sexes have a normal segment 2. Placement of the rest of the species is not completely clear. An as yet undescribed species (Junnilainen, in litt.) and *A. eugenii* may be related on the basis of elongated periostial lobes in the female. *A. patockai* is close to the last in sternite VIII of the female. *A. mouffetella* is somewhat isolated due to the presence of raised scales on the fore wings; however, this character occurs highly mosaically and has been excluded from the analysis.

The hypothetical ancestor and presumed directions in the evolution of *Athrips* species.

It is assumed here that the speciation centre of *Athrips* was situated in the arid regions of Central Asia, where most of the existing species are currently found. The hypothetical ancestor had wide fore wings with tufts of raised scales (as in *A. tigrina*) and was characterized in the male genitalia by an elongated rectangular uncus covered with thin hair-like setae, short and relatively weakly curved gnathos, broad sacculus situated at base of the valvae, straight and narrow cucullus, weakly developed transtilla with long medial lobes connected to the sacculus, narrow vinculum without projections at the posterior margin, basally swollen aedeagus with long and straight distal part. The female genitalia were characterized as follows: segment VIII with wide periostial lobes with honeycomb pattern, ductus bursae thin, not sclerotized distally, corpus bursae elongated, with sub-triangular signum.

In the course of evolution most of the structures described above have undergone modification along lines that may be deduced from transformation sequences observed in recent species. In the gnathos a trend towards elongation and stronger curving is seen, whilst the uncus displays slight changes towards shortening on the one hand, and towards thinning and elongation on the other, at the same time replacing the cover of thin hair-like setae with strong and long ones. The sacculus is transformed from being strong and broad to becoming thinner and longer, being displaced in some species medially and lacking the connection with the cucullus. The transtilla displaces the long medial lobes that

lack the connection with the sacculus, or it is reduced or lost completely whilst simultaneously the posterior margin of the vinculum gains medial projections that support the aedeagus from below and function as a juxta. In sternite VIII of the female there is a trend towards narrowing of the periostial lobes, their progressive differentiation into parts with honeycomb pattern and wrinkles and their subsequent separation; some sclerotization of the posterior margin of sternite VIII also occurs. The ductus bursae is widening and its distal part becomes progressively sclerotized, often gaining an additional lateral sclerotization, whilst the corpus bursae changes from elongate-oval to spherical and the triangular signum becomes narrow strip-like in some species. A reduced signum, gnathos and uncus, together with the secondary simplification of segment VIII in the female are also characteristic of some species.

It is postulated here that speciation within the genus *Athrips* was initiated by the adaptation of an ancestral form to different host plants, followed by adaptive radiation leading to groups of morphologically similar species. Within the general trends noted above, the group evolution may be presented, in a generalized form, as follows.

A. tigrina separated early from the main stem and has retained a number of primitive characters such as broad wings, uniformly wide unspecialized saccus, elongated corpus bursae and thin, completely membranous ductus bursae. Uncus and gnathos apparently were subjected to secondary reduction, and segment VIII in the female was secondarily simplified. The aedeagus underwent significant progressive changes, with its distal part sharply thinned, whilst the transtilla lobes significantly widened.

The *nitrariella*-group, specialized on Nitrariaceae, also separated early and underwent significant changes. The sacculus significantly elongated, the cucullus widened distally and the aedeagus became distally thin or bent. The transtilla widened, almost losing the medial lobes, whilst the posterior margin of the vinculum acquired projections to support the aedeagus from below. The females retained primitive characters (long corpus bursae, thin ductus bursae); sternite VIII apparently was simplified secondarily, losing its differentiation into periostial lobes. The specialization of the larvae in facultative mining was accompanied by a reduction in the size of the adults and an acceleration of the life cycle.

The *gussakovskii*-group, retained a number of primitive characters (gnathos bent only at base, long transtilla lobes bent knee-like, broad cucullus, broad periostial lobes) but at the same time obtained certain advanced characters such as the distally bent aedeagus, wide ductus bursae with an additional sclerotization. There are also some unique characters of uncertain phylogenetic importance such as modified scales present on the metascutum and a frontal projection on the head (*A. gussakovskii*). The presence of such advanced characters suggests a long isolated development of this species group.

The rest of the species connected with arid habitats (*A. fagoniae*, *A. gerasimovi*, *A. tsaidamica*, *A. falkovitshi* and *septempunctata*-group) have undergone modification common to all *Athrips* species: transtilla displaced the long medial lobes, periostial lobes became a progressive differentiation into parts with honeycomb pattern and wrinkles, aedeagus enlarged and bended. In *A. septempunctata* further advanced transformations in the females were the sclerotization of the posterior margin of the segment VIII and transformation of the signum to a narrow dentate strip. Unique autapomorphies for each of those species (or species group) suggest that they had separated long ago and evolved independently.

The ancestral form of the *nigricostella*-group, adapted to legume-feeding, penetrated further to the North, to humid regions of the Palaearctic, where it gave rise to six currently known species characterized by several synapomorphies (see above).

Specialization on Roseaceae gave rise to the species-rich *pruinosella*-group with species distributed in large parts of the temperate Palaearctic. Within the *pruinosella*-group those species feeding on *Spiraea* form a subgroup of morphologically similar species (*A. patockai, A. pruinosella, A. spiraeae*). Another subgroup (*A. rancidella* and *A. nigrogrisea*) represents a shift to feeding on rosaceous trees and shrubs and is accompanied by some reduction in the size of the adults and progressive thinning of the cucullus towards its apex. The apparently unique utilization of three different plant families by the larvae of *A. pruinosella* shows potential for further speciation but there is as yet no indication of clear morphological differentiation. In general, the *pruinosella*-group is characterized within *Athrips* by maximal differentiation of the female sternite VIII into parts of different sclerotization and by a well developed additional lateral sclerotization in the distal part of the ductus bursae. In

the male genitalia most species retain the characteristic and, in comparison with other *Athrips* species, advanced transtilla and gnathos, as well as a minimally specialized long and slightly bent aedeagus. Most of the species are characterized by primitive broad fore wings without tufts of raised scales.

Athrips Billberg, 1820

Athrips Billberg, 1820, Enumeratio Insect. Mus. G. L. Billberg: 93. Type-species: *Phalaena (Tinea) mouffetella* Linnaeus, 1758, Syst. Nat. (edn 10), 1: 540, by subsequent designation (Sattler 1978: 57).

Rhynchopacha Staudinger, 1871, Berl. ent. Z., 14: 303. Type-species: *Gelechia spiraeae* Staudinger, 1871, ibidem, 14: 302, by monotypy. [Synonymized by Sattler 1978: 57].

Epithectis Meyrick, 1895, Handbk Br. Lepid.: 580. Type-species: *Gelechia lathyri* Stainton, 1865, Entomologist's Annual, 1865: 130 pl., fig. 1, by subsequent designation (Walsingham 1910: 47). [Synonymized by Sattler 1978: 57].

Leobatus Walsingham, 1904, Entomologist's mon. Mag., 40: 220. Type-species: *Leobatus fagoniae* Walsingham, 1904, ibidem, 40: 221, by original designation and monotypy. [Synonymized by Sattler 1978: 57].

Ziminiola Gerasimov, 1930, Dt. ent. Z. Iris, 44: 72. Type-species: *Ziminiola gussakovskii* Gerasimov, 1930, ibidem, 44: 73, pl. 1, figs 1–7, by original designation and monotypy. [Synonymized by Sattler 1968: 111]; recalled from synonymy as a subgenus of *Rhynchopacha* by Povolný 1979: 119.

Cremona Busck, 1934, Proc. ent. Soc. Wash., 36: 82. Type-species: *Cremona cotoneastri* Busck, 1934, ibidem, 36: 83, pl. 14, figs 1–5, by original designation and monotypy. [Synonymized by Sattler 1968: 111].

Diagnosis. Head usually without frontal process (except *A. gussakovskii*) (Fig. 59), covered with short smooth scales. Ocelli present. Proboscis long, well developed. Labial palpus usually recurved, more or less unicolorous or light with two distinct dark rings, inner side usually lighter than outer; segment 1 short, weakly curved; segment 2 covered with short simple scales, but often with moderate brush of elongated scales beneath, usually recurved, distinctly longer and slightly broader than segment 3, but sometimes segment 2 straight and extremely broad; segment 3 usually thin, acute, weakly curved, rarely short and straight. Antenna simple, scape without pecten, flagellum with alternating dark and light rings.

Thorax, tegulae and abdomen usually same colour as head and forewing, genital segments usually lighter than preceding abdominal segments. Scutellum at anterior margin with more or less rounded plate of very short, modified scales. Posterior margin of metascutum of most species with paired group of long hair-like setae; in *A. gussakovskii* and *A. autumnella* with group of very short modified scales (resembling those on anterior part of scutellum) (Figs 60, 61).

Adults small or average, wingspan 8–19 mm. Forewing of differing shape: broad to narrow, more or less elongate, rarely lanceolate; ground colour blackish grey to light cream; wing patterns widely varying but usually represented by small black spots and patches more or less evenly distributed through greyish black ground colour; contrasting yellowish or orange patches, raised scales arranged in ochreous brown tufts, spots or fascia also present. Hindwing light grey, narrow to broad, with more or less distinctly excavated termen. No sexual dimorphism in wing pattern.

Venation (Fig. 2). In forewing Sc to middle of costa; R1 from middle of cell, R2 from three-quarters of cell, R3 from corner of cell; R4, R5 and M1 on common stalk, R5 to costa before apex; R4 from one-third and M1 from two-thirds of R5; M1–M3, Cu1–CuA2 to termen; CuP absent; 1A + 2A forked at base. In hindwing Sc to middle of costa; Rs and M1 with long common stalk, R5 to costa before apex; M1–M3, CuA1 to termen; M3 connate CuA1 in corner of cell; 1A–2A indistinct.

Frenulum of female consisting of three acanthae, retinaculum row of raised scales at base of Sc and R. Frenulum of male simple, retinaculum membranous hook under Sc near base.

Foretibia with epiphysis, midtibia with two and hindtibia with four spurs.

Male sternite and tergite VIII separated laterally, but in distal part only; sternite VIII normally weakly sclerotized, broader than long, with medial incision at posterior margin (Fig. 75); in *A. gussakovskii* extremely broad and long, strongly sclerotized (Fig. 74). Female segment VII about twice length of other abdominal segments, weakly narrowed posteriorly (Fig. 76), but sometimes (*A. fagoniae*) about same shape as other segments. Sternite II of both sexes with pair of venulae, medially with group of sensory setae (sensilla trichodea); apodemes distinct.

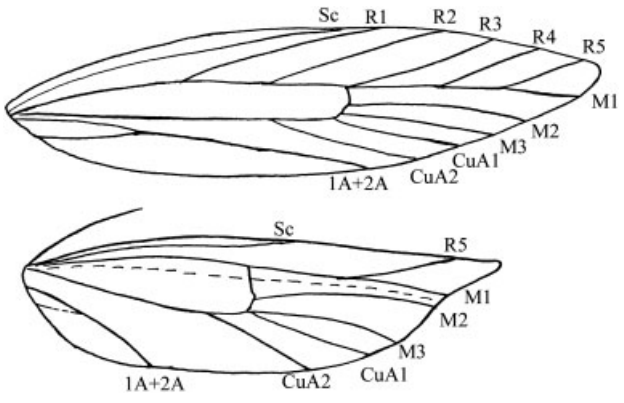


Fig. 2. *Athrips eugenii*, sp. n., ♂. Wing venation.

Male genitalia (Fig. 77). Uncus usually subrectangular, laterally and posteriorly covered with strong and long, rarely hair-like, setae; sometimes uncus very short (*A. tigrina, A. nitrariella*). Gnathos normally long and narrow, strongly curved, hook- or sickle- shaped, with pointed apex, but sometimes partially (*A. falkovitshi*) or completely (*A. tigrina*) reduced; gnathos attached to margins of tegumen by pair of narrow band-like sclerites. Tegumen anteriorly broadening, deeply emarginated at anterior margin, lateral folds extended to form pair of medial processes, fused through delicate membranes with dorsal margin of transtilla. Valva divided into cucullus and sacculus. Cucullus usually long and straight, tapered or rounded apically, covered in distal half with dense setae. Sacculus of variable shape, usually short, finger-like, more or less curved medially, sometimes medial margin weakly serrated and sparsely covered with short setae.

Vinculum slender with more or less prominent processes at posterior margin. In *nitrariella*-group these processes well developed, functioning as juxta, lightly supporting aedeagus underneath. Valvae completely or partially connected at base by well developed membranous structure; their dorsal margin weakly setose, ventral margin usually strongly sclerotized with paired medial lobes of varying shape.

Saccus broadly rounded with more or less developed X-shaped sclerotized supports. Aedeagus basally bulbous, its distal part of varying shape: straight or weakly curved, pointed or abruptly truncated apically, short or oblong; cornuti absent. Aedeagus fixed by means of delicate membranes between transtilla and posterior margin of vinculum.

Remarks. The complex structure at base of valvae in male genitalia was associated by different authors with the anellus (Busck 1934), inner basal lobes of valva (Janse 1950), transtilla (Piskunov 1990a, b, 1991; Park 1991; Li 1998), sacculus (Povolný 1979; Omelko 1999) or juxta (Karsholt & Huemer 1999). Here I tentatively treat this structure as a transtilla. It should be noted that homology of this structure in *Athrips* with transtilla of others Lepidoptera (and even with others Gelechiidae) required special investigation. I can only assume here that within palaearctic Gelechiinae transtilla of *Athrips* is rather homologous to a long bent part of valva (harpe) of *Neofriseria* than transtilla of members of the tribe Gnorimoschemini. Usually transtilla medial lobes short, finger-like, sometimes very small (*nitrariella*-group, *A. polymaculella*). Some palaearctic species (*A. gussakovskii*, *A. autumnella*) and most of S. African *Athrips* has weakly developed membranous transtilla, but their medial lobes long, knee-shaped and connected with the base of sacculus.

Female genitalia (Fig. 78). Segment VIII broader than long, tergite VIII weakly sclerotized, usually with pair of posteriolateral sclerites. Papilla analis sub-oval, elongated, covered with short setae. Apophyses posteriores long and slender, weakly extended at apex; apophyses anteriores one-half to one-quarter length of apophyses posteriores, straight or weakly curved. Ovipositor usually short, rarely long (*A. gussakovskii*).

Sternite VIII sclerotized laterally and anteriorly; its anterior margin usually weakly projected anteriorly or straight, in *nitrariella*-group deeply emarginated posteriorly. Posterior margin of sternite VIII normally with medial triangular, drop-shaped or narrow incision. Sternite VIII of *A. tigrina* without medial incision at posterior margin and not divided into lobes. Sternite VIII more or less evenly sclerotized (*A. tigrina, nitrariella*-group) or, usually, sclerotized structures arranged in patches and sclerites of various shapes; among them so-called "honeycomb" (cellular) patterns more common. Usually separate lateral and medial patches present; sometimes honeycomb pattern covering almost entire surface of sternite VIII. Medial margins of sternite VIII also often modified by wrinkles or cellular sclerotized structures, forming lobes around ostium bursae. In some species sternite VIII with strongly sclerotized posterior margin (*A. rancidella, A. septempunctata*). Medially prolonged lateral sclerites of sternite VIII sometimes also well developed.

Ostium bursae between lobes of sternite VIII, near posterior margin, usually distinct, sclerotized laterally, with dorsomedial sclerites or simple. Ductus bursae membranous, usually long and relatively broad, often coiled near corpus bursae, often with strongly sclerotized posterior part. Some species with ductus bursae extremely thin, weakly sclerotized posteriorly (*A. tigrina*). Antrum short, distinctly sclerotized but sometimes membranous (*A. tigrina*). Corpus bursae membranous, rounded or sub-oval, clearly differentiated from ductus bursae, sometimes (*nitrariella*-group) long and narrow. Signum plate-like, of varied shape, near entrance of ductus bursae; usually funnel-shaped; sometimes signum partially or completely reduced.

Remarks. Most *Athrips* species are easily distinguished externally by their wing patterns, colour and the shape of the labial palpus, but the structure of the male (shape of sacculus, transtilla lobes, cucullus and aedeagus) and female (shape of sclerotized patches of sternite VIII, signum and length of sclerotized part of ductus bursae) genitalia has to be used for the correct identification of some uniformly blackish grey species.

Biology. Many gelechiid genera are associated with only one particular host-plant family (*Caryocolum* Gregor & Povolný, 1954, *Mirificarma* Gozmány, 1955, *Teleiopsis* Sattler, 1960, *Ornativalva* Gozmány, 1955), whilst some (*Gelechia* Hübner, [1825], *Carpatolechia* Cápuse, 1964, *Teleiodes* Sattler, 1960, *Pseudotelphusa* Janse, 1958) utilize plants from several families. Host plants are known for only 18 of the 34 currently known *Athrips* species (Table 2) but their larvae show rather wide trophic specialization, feeding on ten different plant families. Most species feed on one or two host-plant genera; the larvae of only one species (*A. pruinosella*) have been found on more than one host plant family (Salicaceae, Rosaceae and Ericaceae).

The paucity of biological observations on *Athrips* species makes it difficult to assess to what extent host-plant selection reflects phylogenetic relationships within that genus; however, Table 2 shows that there is some correlation, at least within the *nigricostella*-, *nitrariella*- and *pruinosella*-groups.

Within the family Gelechiidae the larvae of *Athrips* share most of their host-plants with species both from unrelated (*Aristotelia* Hübner, [1825], *Gladiovalva* Sattler, 1960, *Stomopteryx* Heinemann, 1870 – Polygonaceae; *Anarsia* Z., *Gelechia* Hbn., *Teleiodes* Sattler – Rosaceae; *Evippe* Chambers, 1873, *Aroga* Busck, 1914 *Syncopacma* Meyrick, 1925 and others – Fabaceae) and more or less closely related genera (*Neofriseria* – Polygonaceae; *Prolita* – Ericaceae, Salicaceae, Rosaceae). Feeding on Nitrariaceae is known in Gelechiidae only for some *Metanarsia* Stgr. I am unaware of any other species in the subfamily Gelechiinae feeding on Caprifoliaceae and Peganaceae. There are no host-plant records for *Pseudathrips* and *Parapsectris*, the genera most closely related to *Athrips*.

The majority of species feeds on shrubs (*Cotoneaster, Calligonum, Caragana, Vaccinium, Crataegus, Spiraea*) or small trees (*Salix, Malus, Prunus*), less frequently on herbaceous plants (*Lathyrus, Vicia, Medicago*). Most larvae feed on the leaves, buds and shoots, living usually in silken tubes between spun leaves or under a silken cover; mining was only observed in *A. mongolorum*, the larvae of which can sometimes feed within the leaf tissue. Larvae of most species hibernate and continue feeding in the following spring. Pupation takes place mainly in a cocoon between spun leaves, either in the larval habitation or, in some species, in the ground (*A. thymifoliella*) and in leaf litter (*A. nigrogrisea*). Overwintering in the pupal stage is known in *A. mongolorum* and *A. nigrogrisea*. Aestivation (summer diapause) of the pupa was observed in two desert species (*A. autumnella, A. mongolorum*).

Moths usually fly during the warm season from mid-spring to late summer in one generation. A second generation was reliable recorded only for *A. nigricostella, A. stepposa* and *A. mongolorum*, but may also occur in *A. tigrina* and *A. nitrariella*. The adults of some desert species (*A. thymifoliella, A. autumnella, A. carthaginella, A. fagoniae*) fly in the autumn or even in winter. The moth are mainly nocturnal and easily attracted to the light, but often can be found in early morning or before sunset especially in the higher mountains.

Distribution. The genus is found throughout the Palaearctic region. The most northerly localities are in the Scandinavian countries, the most southerly in North Africa and Central China. The upper limits of the vertical distribution lie by 2000 m in the European Alps (*A. medjella*) and 2600 m in the mountains of southern Siberia (*A. sibirica, A. pruinosella*). An analysis of the distribution of individual species in the different ecological zones shows that in arid semi-desert and desert regions occur 20 species, 18 of which (*A. fagoniae, A. gussakovskii, A. rutjani* sp. n., *A. gerasimovi, A. tsaidamica,* A. sp. 3, *A. septempunctata, A. tcharyna* sp. n., *A. peteri* sp. n., *A. falkovitshi, A. tigrina, A. nitrariella, A. mongolorum, A. bidilatata, A. autumnella, A. carthaginella, A. eugeni* sp. n., *A. kostjuki* sp. n.) are known from those regions only; eight species are recorded from the steppe zone. Only one species (*A. medjella*) can be considered as alpine endemic and another (*A. thymifoliella*) as endemic to western Mediterranean. *A. adumbratella* is known from the zone of mixed and deciduous forest of the Russian Far East. *A. nigrogrisea* must probably be considered as an endemic of the forest-steppes of Transbaikalia. No species have been

Table 2
Host-plant relationships of *Athrips* species.

species	Host-plant family	Host-plant	Remarks
***tigrina*-group**			
tigrina Chr.	?		
***nitrariella*-group**	Nitrariaceae		
nitrariella Chrét.		*Nitraria tridentata*	
mongolorum Pisk.		*Nitraria schoberi*	between spun leaves and/or mining leaves
bidilatata Li & Zheng	?		
***gussakovskii*-group**			
gussakovskii Grsm.	?		
autumnella Flkv. & Bidz.	Polygonaceae	*Calligonum juncteum, C. leucocladum, C. microcarpum*	in silken tubes among twigs feeding on young shoots
carthaginella Luc.	?		
***thymifoliella*-group**	Cistaceae		
thymifoliella Const.		*Fumana thymifolia*	in silken tube near ground and among spun leaves
***nigricostella*-group**	Fabaceae		
nigricostella Dup.		*Medicago sativa, M. minima, Caragana* sp.	in spun leaves
tetrapunctella Thnbg.		*Lathyrus palustris* (?) *Vicia cracca*	in delicate web on leaves and stalks
amoenella Frey		(?) *Vicia cracca*	
stepposa sp. n.		*Caragana frutex*	
kerzhneri Pisk.	?		
rutjani sp. n.	?		
***falkovitshi*-group**	Peganaceae		
falkovitshi Pisk.		*Peganum harmala*	in silken tube among twigs and leaves
***fagoniae*-group**	Zygophyllaceae		
fagoniae Wlsm.		*Fagonia cretica*, *F. sinaica*	
***gerasimovi*-group**			
gerasimovi Pisk.	?		
***septempunctata*-group**			
septempunctata Li & Zh.	?		
peteri sp. n.	?		
tcharyna sp. n.	?		
***tsaidamica*-group**			
tsaidamica I. Em. & Pisk.	?		
***pruinosella*-group**	Rosaceae, Salicaceae, Ericaceae, Caprifoliaceae		
polymaculella Park	?		
rancidella H.-S.	Rosaceae	*Prunus spinosa, Cerasus microcarpa, Crataegus monogyna, Cotoneaster* sp.	in spun tubes on small branches, feeding on underside of leaves
tadzhika ssp. n.	Rosaceae	*Cotoneaster hissarica*, *Malus domestica*, *Crataegus turkestanica*, *Pyrus communis*, *Amygdalus bucharica*, *Amelanchier* sp.	
nigrogrisea Kolm.	Rosaceae	*Malus baccata, M. domestica*	between two leaves connected by silken threads, then on leaf surface under silken cover
pruinosella Lien. & Z.	Rosaceae, Salicaceae, Ericaceae	*Vaccinium myrtilus, V. uliginosum, Andromeda* sp., *Spiraea sericea, S. salicifolia*	between spun leaves or buds
adumbratella Snell.	?		
spiraeae Stgr.	Rosaceae	(?) *Spiraea* sp.	(?) on flowers
kostjuki sp. n.	?		
sibirica sp. n.	?		
patockai Pov.	Rosaceae	*Spiraea media*	between spun leaves
medjella Chrét.	Rosaceae	*Cotoneaster inergerrimus*	betwen spun leaves
sp. n. (Junnilainen, in litt.)	Rosaceae	*Spiraea* sp.	between spun leaves
eugenii sp. n.	?		
mouffetella L.	Caprifoliaceae	*Lonicera xylosteum, L. caprifolium, L. periclymenum, Symphoricarpos rivularis*	in web spun along twigs and leaves

recorded as yet from the Polar tundras, although *A. pruinosella* is quite common in the mountainous tundras of southern Siberia and occurs up to at least 69°45′ N (northern Norway). Other species (*A. amoenella, A. pruinosella, A. sibirica* sp. n., *A. polymaculella, A. rancidella, A. mouffetella, A. nigricostella, A. patockai, A. tetrapunctella*) are not restricted to a particular ecological zone; their distribution reflects the distribution of their host-plant.

The previous analysis of the recent distribution of *Athrips* species shows that the genus is represented by the largest number of species in the arid regions of the Palaearctic. Considering the fact that the genera most closely related to *Athrips* (*Pseudathrips* and *Parapsectris*) are also restricted to mainly arid regions (Arabian Peninsula and South Africa respectively), it seems realistic to assume that the center of origin of these genera lies in the deserts or semi-deserts of the Palaearctic and Afrotropical regions.

Keys to the species of Palaearctic *Athrips*

Key to the adults
(differences between *A. mongolorum, A. bidilatata* and *A. nitrariella* remains unclear due to lack of adequate material)

1. Head with frontal projection, labial palpus segment 3 one-quarter length of 2, forewing yellowish white . . ***A. gussakovskii***
– Head without frontal projection **2**
2. Labial palpus segment 2 straight, more than three times width of 3, segment 3 straight **3**
– Labial palpus segment 2 less than three times width of 3. . . . . **6**
3. Forewing with ochreous scales **4**
– Forewing greyish brown without ochreous scales. **5**
4. Ochreous scales arranged in prominent spots and patches. . . . . ***A. spiraeae***
– Ochreous scales randomly spread over wing, not arranged in distinct spots and patches . . . . . ***A. kostjuki* sp. n.**
5. Labial palpus segment 2 about four times broader and longer than 3, forewing uniformly greyish brown . ***A. adumbratella***
– Labial palpus segment 2 about 2.5–three times broader and longer than 3, forewing with distinct black spots. . . . . ***A. pruinosella***
6. Forewing grey with numerous distinct black spots. **7**
– Forewing uniformly greyish brown, dark spots indistinct or forewing of others colour. **10**
7. Forewing broad, light grey, with contrasting black spots of raised scales, wingspan 14–17 mm. . . . . ***A. mouffetella***
– Forewing narrow, with numerous small black spots. **8**
8. Labial palpus segment 3 whitish with two black rings. **9**
– Labial palpus segment 3 grey with whitish cream apex, without black rings, forewing dark grey, wingspan 10–11 mm. . . . . ***A. nigrogrisea***
9. Labial palpus segment 2 whitish cream with two black rings, forewing light grey or whitish cream, often with small tufts of ochreous black raised scales, wingspan 9–12 mm . . . . . ***A. mongolorum, A. bidilatata, A. nitrariella***
– Labial palpus segment 2 grey without distinct black rings, forewing grey, without raised scales, wingspan 13–16 mm. . . . . ***A. polymaculella***
10. Forewing broad, uniformly greyish brown, dark spots indistinct, moths relatively large (13–17 mm) **11**
– Forewing usually narrow, of other colour **15**
11. Forewing with two dark spots at two-thirds length **12**
– Forewing without two dark spots at two-thirds length **14**
12. Labial palpus segment 3 one-half length and distinctly thinner than 2, black with white scales between base and one-half to two-thirds . . . . . ***A. sibirica* sp. n.**
– Labial palpus segment 3 about one-third length and barely thinner than 2, grey with few white scales at apex and near base. **13**
13. Forewing relatively broad. . . . . ***A. patockai***
– Forewing relatively narrow . . . . . ***A.* sp. n. (Junnilainen, in litt.)**
14. Forewing with distinct black spot at two-thirds, wingspan 13 mm . . . . . ***A. medjella***
– Forewing without black spot at two-thirds, wingspan 14–17 mm . . . . . ***A. eugenii* sp. n., *A.* sp. 3**
15. Forewing variegated, with yellow or orange patches, without tufts of raised scales. **16**
– Forewing rather plain or variegated with raised scales **23**
16. Head uniformly ochreous brown or yellowish brown, wingspan 12–15 mm **17**
– Head light grey, off-white or grey mottled with darker-tipped scales, wingspan 8–12 mm. **18**
17. Head dark, ochreous brown, forewing relatively broad, ochreous brown . . . . . ***A. fagoniae***
– Head light, yellowish brown, forewing relatively narrow, yellowish grey. . . . . ***A. gerasimovi***
18. Forewing primarily grey, yellow patches poorly expressed. **19**
– Forewing primarily yellow or oranges **20**
19. Forewing with broad, prominent subapical fascia and distinct spot at two-thirds of posterior edge . . . . . ***A. rutjani* sp. n.**
– Forewing with narrow subapical fascia and indistinct spot at two-thirds of posterior edge. . . . . ***A. stepposa* sp. n.**
20. Forewing with distinct orange spots . . . . . ***A. amoenella***
– Forewing primarily with yellow apex, costal and posterior margin black. **21**
21. Forewing yellow with only small black tornal spot . . . . . ***A. kerzhneri***
– Forewing yellow with distinct black tornal spot and some distinct black spots near base. **22**
22. Forewing with one black spot at base, wingspan 10–12 mm . . . . . ***A. tetrapunctella***
– Forewing with two black spots at base, wingspan 8–10 mm . . . . . ***A. nigricostella***

23. Forewing with raised scales **24**
– Forewing without raised scales **27**
24. Forewing variegated, cream with two ochreous-brown fasciae near base and joined tornal and subapical spots ... ***A. tigrina***
– Forewing cream or grey, with small spots, without ochreous-brown fasciae **25**
25. Forewing yellowish cream with seven distinct tufts of ochreous-brown raised scales ..... ***A. septempunctata***
– Forewing with five to six indistinct tufts of yellowish white scales, without dark spots **26**
26. Forewing off-white ..... ***A. tcharyna* sp. n.**
– Forewing yellow ..... ***A.* sp. 1**
27. Forewing light, cream with dark spots **28**
– Forewing dark, grey or black, without distinct small dark spots **30**
28. Wingspan more than 15 mm, forewing elongate, with small dark spots near base and at about two-thirds to three-quarters **29**
– Wingspan 11–12 mm, forewing with distinct large spots near middle and at two-thirds or forewing uniformly grey ..... ***A. falkovitshi***
29. Wingspan 19 mm, labial palpus segment 3 one-third length of 2 ..... ***A. tsaidamica***
– Wingspan 15.5 mm, labial palpus segment 3 almost same length as 2 ..... ***A.* sp. 2**
30. Forewing black, relatively broad and short **31**
– Forewing grey, narrow, elongate **32**
31. Forewing uniformly black, rarely with indistinct white subapical fascia ..... ***A. rancidella rancidella***
– Forewing with distinct white subapical fascia ..... ***A. rancidella tadzhika* ssp. n.**
32. Forewing uniformly grey, labial palpus segment 2 2.5 times broader than 3, inner surface yellowish white with isolated brown scales near apex, outer surface light brown, yellowish crem ventrally ..... ***A. peteri* sp. n.**
– Forewing with dark costal and light posterior parts, labial palpus segment 2 1.5 times broader than 3, cream with brown rings at base and near apex ..... ***A. autumnella***

Key to the males
(The males of *A. carthaginella, A. peteri* sp. n. and *A. medjella* are unknown)

1. Gnathos absent ..... ***A. tigrina***
– Gnathos present **2**
2. Gnathos as indistinct, weakly sclerotized membranous plate ..... ***A. falkovitshi***
– Gnathos hook-shaped, strongly sclerotized **3**
3. Sacculus extending to one-half to three-quarters length of cucullus, uncus very short, cucullus broadly expanded distally, posterior margin of vinculum with pair of distinct medial processes, transtilla lobes extremely broad, rounded **4**
– Sacculus less than one-third length of cucullus, uncus well developed, cucullus distally narrowed or evenly expanded. . **6**
4. Cucullus expanded in distal quarter, sacculus relatively broad, distal part of aedeagus slender **5**
– Cucullus expanded in distal half or third, sacculus relatively narrow, aedeagus distally broad and strongly curved ..... ***A. mongolorum***
5. Distal part of aedeagus straight, cucullus exceeds apex of uncus, sacculus about one-half length of cucullus .. ***A. bidilatata***
– Distal part of aedeagus weakly curved apically, cucullus not exceeding apex of uncus, sacculus about three-quarters length of cucullus ..... ***A. nitrariella***
6. Gnathos extremely long and slender, strongly curved; cucullus straight, distal part of aedeagus longer than basal, straight **7**
– Gnathos stout, shorter and broader **12**
7. Sacculus slender, distinctly shorter than transtilla lobes **8**
– Sacculus broad, about length of transtilla lobes **9**
8. Sacculus thin, triangular; transtilla lobes thin and extremely long ..... ***A. nigricostella***
– Sacculus broad with distinctly curved apex, transtilla lobes short ..... ***A. tetrapunctella***
9. Cucullus broadened distally ..... ***A. rutjani* sp. n.**
– Cucculus of evenly width **10**
10. Sacculus evenly broad ..... ***A. amoenella***
– Sacculus constricted basally **11**
11. Sacculus strongly constricted basally ..... ***A. stepposa* sp. n.**
– Sacculus weakly constricted basally ..... ***A. kerzhneri***
12. Transtilla lobes long, far exceeding length of sacculus, extending to about one-third length of cucullus **13**
– Transtilla lobes about same length or shorter than sacculus **15**
13. Cucullus medially curved inwards, transtilla lobes undulating in distal part ..... ***A. thymifoliella***
– Cucullus straight, transtilla lobes not undulating in distal part **14**
14. Cucullus slender, sacculus finger-like, with small hump at lateral margin, with triangular apex ..... ***A. autumnella***
– Cucullus broad, sacculus constricted basally, with broadly rounded apex ..... ***A. gussakovskii***
15. Transtilla rounded, with small medial lobes ..... ***A. polymaculella***
– Transtilla oblong or triangular, lobes well developed **16**
16. Transtilla lobes extremely slim and short, pointed, sacculus very slender and narrow, with the apex abruptly truncated and strongly curved medially ..... ***A. gerasimovi***
– Transtilla lobes relatively broad **17**
17. Cucullus strongly curved basally, posterior margin of vinculum with distinct medial processes ..... ***A. fagoniae***
– Cucullus straight or weakly curved **18**
18. Uncus long and narrow, rounded apically, cucullus with strongly narrowed apex **19**
– Uncus broad and short, cucullus straight or evenly narrowed distally **21**
19. Sacculus at angle of about 90 degrees to the cucullus, distal part of aedeagus with narrow pointed apex **20**
– Sacculus at angle of about 45 degrees to the cucullus, distal part of aedeagus with small triangular apex ... ***A. nigrogrisea***
20. Sacculus with small triangular apex, distal part of aedeagus curved basally ..... ***A. rancidella rancidella***
– Sacculus with distinctly prolonged, pointed apex, distal part of aedeagus straight ..... ***A. rancidella tadzhika* ssp. n.**

21. Distal part of aedeagus shorter than basal, slightly curved after half of the length **22**
– Distal part of aedeagus longer than basal part **24**
22. Sacculus broad, weakly curved, cucullus expanded distally, with narrow pointed apex . . . . . ***A. tcharyna* sp. n.**
– Sacculus slender, strongly curved, cucullus evenly narrowed distally **23**
23. Sacculus strongly curved inwards . . . . . ***A.* sp. 1**
– Sacculus weakly curved inwards . . . . . ***A. septempunctata***
24. Sacculus slender, distinctly curved inwards, cucullus relatively slender, exceeding apical setae of uncus **25**
– Sacculus straight or weakly curved inwards **27**
25. Cucullus broad, weakly curved inwards, not exceeding apical setae of uncus . . . . . ***A.* sp. n. (Junnilainen, in litt.)**
– Cucullus slender, straight, exceeding apical setae of uncus **26**
26. Cucullus slightly exceeding apical setae of uncus, gnathos narrowed distally . . . . . ***A. eugenii* sp. n.**
– Cucullus far exceeding apical setae of uncus, gnathos weakly expanded distally . . . . . ***A.* sp. 3**
27. Sacculus relatively long and slender, medial margin straight, slightly serrated, gnathos distally undulating **28**
– Sacculus relatively broad and short, medial margin with small triangular incision **29**
28. Uncus quadrangular . . . . . ***A. tsaidamica***
– Uncus long, trapezoid . . . . . ***A.* sp. 2**
29. Sacculus apically expanded, sub-rectangular **30**
– Sacculus apically narrowed, sub-triangular **31**
30. Sacculus small and slender . . . . . ***A. adumbratella***
– Sacculus relatively long and broad . . . . . ***A. sibirica* sp. n.**
31. Sacculus at angle of about 90 degrees to the cucullus . . . . . ***A. mouffetella***
– Sacculus at angle of about 45 degrees to the cucullus **32**
32. Base of sacculus broader than transtilla lobes . . . . . ***A. patockai***
– Base of sacculus about width as transtilla lobes **33**
33. Distal part of aedeagus weakly curved, with long pointed apex, uncus long and slender, sacculus short, cucullus far exceeding apical setae of uncus . . . . . ***A. kostjuki* sp. n.**
– Distal part of aedeagus straight, with small pointed apex **34**
34. Distal part of aedeagus evenly tapered from base . . . . . ***A. spiraeae***
– Distal part of aedeagus narrowed apically after three-quarters length . . . . . ***A. pruinosella***

Key to the females

(*A. spiraeae* and *A. medjella* are probably indistinguishable in the female genitalia; *A. carthaginella* could not be included in the key due to unavailability of material; the females of *A. adumbratella, A. bidilatata*, *A. tcharyna* sp. n., *A. tsaidamica*, *A.* sp. 1, *A.* sp. 2, *A.* sp. 3, *A. kerzhneri* and *A. rutjani* sp. n. are unknown)

1. Signum reduced or very small, indistinct plate **2**
– Signum well developed, triangular, rhomboid plate or narrow elongate band **6**
2. Signum reduced, sternite VIII evenly sclerotized anteriolaterally, without incision at posterior margin, corpus bursae sub-oval, antrum situated under sclerotized part of sternite VIII . . . . . ***A. tigrina***
– Signum very small indistinct plate **3**
3. Sternite VIII without honeycomb pattern, corpus bursae long and narrow, posterior part of ductus bursae weakly sclerotized **4**
– Sternite VIII with honeycomb pattern, posterior part of ductus bursae strongly sclerotized, corpus bursae short and rounded **5**
4. Sternite VIII broadly sclerotized, corpus bursae relatively narrow . . . . . ***A. mongolorum***
– Sternite VIII narrowly sclerotized in medial part mainly, corpus bursa relatively broad . . . . . ***A. nitrariella***
5. Sternite VIII with broad posteriomedial honeycomb patches, posterior part of ductus bursae with long strongly sclerotized plate, corpus bursae rounded . . . . . ***A. thymifoliella***
– Sternite VIII with two rounded, honeycomb sclerotized medial lobes, posterior part of ductus bursae with short, posteriorly broadened plate, corpus bursae sub-oval . . . . . ***A. falkovitshi***
6. Signum narrow elongate plate **7**
– Signum sub-triangular or rhomboid plate **11**
7. Sternite VIII with patches of honeycomb pattern **8**
– Sternite VIII without patches of honeycomb pattern, posterior margins strongly sclerotized with pair of triangular projections . . . . . ***A. septempunctata***
8. Sternite VIII with pair of narrow, sub-oval patches of weak honeycomb pattern around ostium bursae . . . ***A. nigricostella***
– Sternite VIII with well developed, broad patches of honeycomb pattern **9**
9. Sternite VIII with distinct lateral and broad, rounded medial patches of honeycomb pattern . . . . . ***A. stepposa* sp. n.**
– Sternite VIII without lateral patches of honeycomb pattern **10**
10. Patches of honeycomb pattern broad, sub-rectangular . . . . . ***A. amoenella***
– Patches of honeycomb pattern moderate, rounded . . . . . ***A. tetrapunctella***
11. Sternite VIII without patches of honeycomb pattern **12**
– Sternite VIII with patches of honeycomb pattern **13**
12. Posterior margins of sternite VIII strongly sclerotized with triangular projections . . . . . ***A. rancidella rancidella***
– Posterior margin of sternite VIII weakly sclerotized with sub-rectangular projections . . . . . ***A. rancidella tadzhika* ssp. n.**
13. Sternite VIII with lateral honeycomb pattern and medial wrinkles **14**
– Sternite VIII uniformly with broad honeycomb pattern or with separate lateral and medial patches **20**
14. Sclerotized zones of sternite VIII usually broader than long, without curved, anteromedially narrowed honeycomb patches; posterior margin of sternite VIII usually with small triangular projections and small triangular medial incision **15**
– Honeycomb pattern on sternite VIII arranged in long and broad, curved and anteromedially narrowed patches; posterior margin of sternite VIII without posterior triangular processes and with deep medial incision **19**
15. Paired triangular sclerites of sternite VIII wrinkled near ostium bursae **16**

– Paired triangular sclerites of sternite VIII not wrinkled near ostium bursae ..... ***A. mouffetella***
16. Lateral patches of honeycomb pattern with moderately broad medially elongated sclerites, apophyses anteriores slightly exceeding length of sclerotized part of ductus bursae ..... ***A. sibirica* sp. n.**
– Lateral patches of honeycomb pattern with narrow, medially elongated sclerites..... **17**
17. Sclerotized part of ductus bursae far shorter than apophyses anteriores, lateral patches of honeycomb pattern with medially prolonged sclerites ..... ***A. kostjuki* sp. n.**
– Sclerotized part of ductus bursae about length or slightly exceeds apophyses anteriores, lateral patches of honeycomb pattern with narrow, medially elongated sclerites **18**
18. Sclerotized part of ductus bursae about length as apophyses anteriores ..... ***A. spiraeae, A. medjella***
– Sclerotized part of ductus bursae slightly longer than apophyses anteriores ..... ***A. pruinosella***
19. Sclerotized patches of sternite VIII distinctly tapered anteromedially, medially strongly wrinkled, posterior margin of sternite VIII with broad sub-rhomboid medial incision..... ***A. eugenii* sp. n.**
– Sclerotized patches of sternite VIII not narrowed anteromedially, broad, weakly wrinkled medially, posterior margin of sternite VIII with narrow medial incision ..... ***A.* sp. n. (Junnilainen, in litt.)**
20. Sternite VIII with uniform honeycomb pattern **21**
– Sternite VIII with separated lateral and rounded medial patches of honeycomb pattern ..... ***A. polymaculella***
21. Patches of honeycomb pattern on sternite VIII arranged in pair of curved, relatively narrow transversal lobes, which partially cover surface of sternite VIII **22**
– Patches of honeycomb pattern arranged in broad and long lobes, which almost entirely cover surface of sternite VIII. **25**
22. Patches of honeycomb pattern on sternite VIII broad, not or only weakly narrowed anteromedially **23**
– Patches of honeycomb pattern on sternite VIII distinctly narrowed anteromedially **24**
23. Patches of honeycomb pattern on sternite VIII weakly narrowed anteromedially, posterior margin of sternite VIII with broad triangular medial incision, signum plate rhomboid..... ***A. nigrogrisea***
– Patches of honeycomb pattern on sternite VIII not narrowed anteromedially, posterior margin of sternite VIII with deep narrow medial incision, signum plate triangular ..... ***A. patockai***
24. Patches of honeycomb pattern on sternite VIII laterally broad, exceeding lateral margin of sternite VIII .. ***A. gerasimovi***
– Patches of honeycomb pattern on sternite VIII narrowed laterally, not exceeding lateral margin of sternite VIII..... ***A. fagoniae***
25. Patches of honeycomb pattern on sternite VIII rounded ..... ***A. peteri* sp. n.**
– Patches of honeycomb pattern on sternite VIII sub-rectangular **26**
26. Sternite VIII without patches of honeycomb pattern near base of apophyses anteriores ..... ***A. autumnella***
– Patches of honeycomb pattern entirely cover surface of sternite VIII ..... ***A. gussakovskii***

Species review

tigrina-group

Transtilla extremely broad, sub-rectangular; distal part of aedeagus very narrow, weakly curved; uncus and gnathos reduced; female sternite VIII evenly sclerotized, not divided into separated lobes; ductus bursae thin, without sclerotization in distal portion; bursa copulatrix large, elongate; signum absent; forewing with prominent tufts of ochre raised scales.

Athrips tigrina (Christoph, 1877)

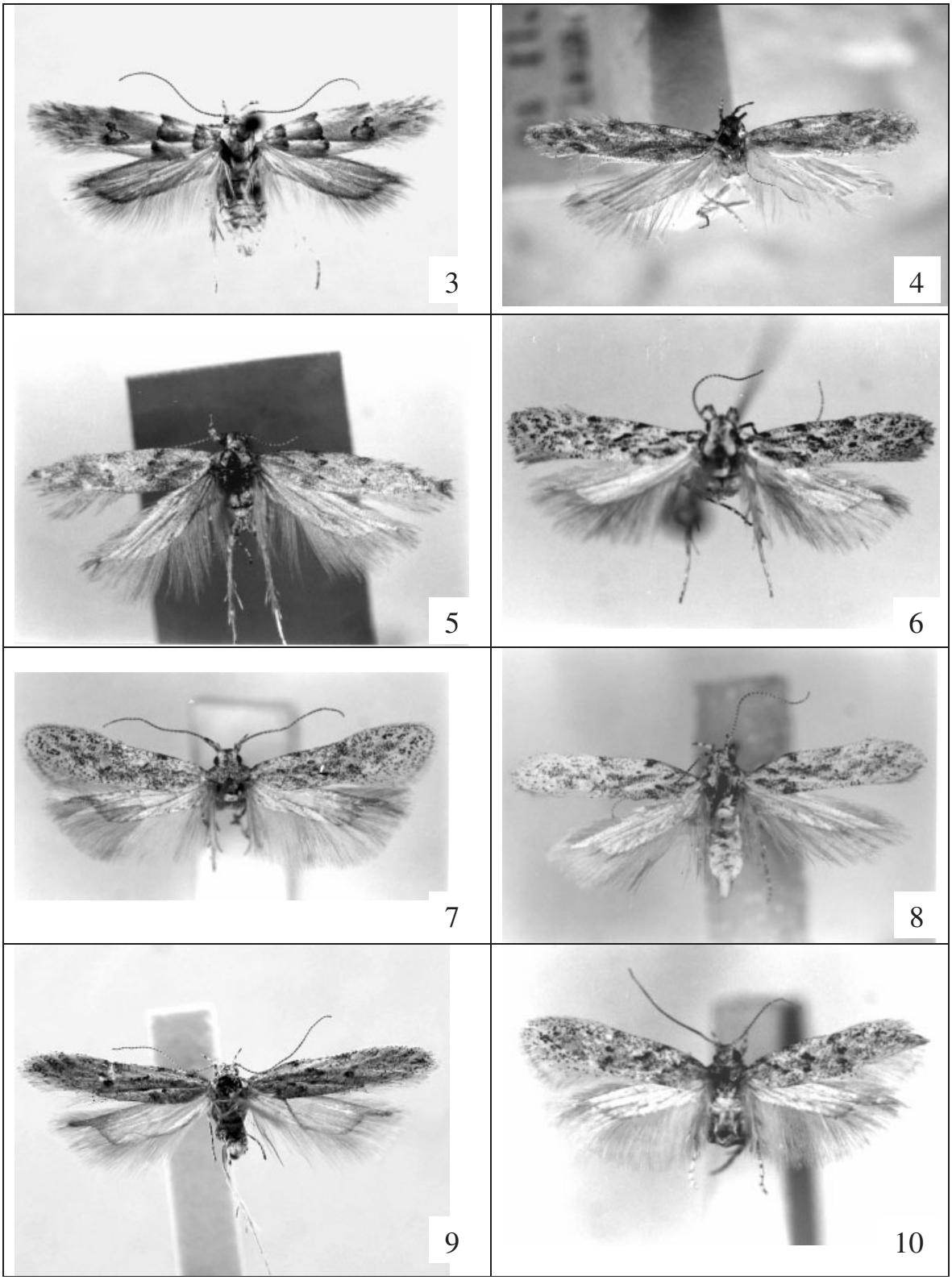
Teleia tigrina Christoph, 1877, Horae Soc. ent. ross., 12: 296, pl. 8, fig. 68. Lectotype ♀, Turkmenistan: Krasnovodsk, 6. vi. 1872, Christoph (BMNH), designated by Sattler (1978: 60), [not examined].
Athrips tigrina (Christoph, 1877) Sattler 1978: 60; Lvovsky & Piskunov 1989: 535.
Calyptrotis tigrina (Christoph, 1877) Emelyanov & Piskunov 1982: 375.
Athrips agnathos Li & Zheng, 1998, Acta zootaxonomica Sinica, 23 (3): 293–294, figs 1–2 [male genitalia]. Holotype ♂, China: Zhongning, Ningxia Hui Autonomous Region, 1170 m, 16. vii. 1993, Li Hou-Hun (gen. slide No. L95337) (IZ ShNU), [not examined]. [Synonymized by Bidzilya 2000: 102]. Li 2002: 150 [key], 151, text-fig. 182, pl. 9, fig. 72.

Material examined. **Turkmenistan:** 2 ♂♂, Krasnovodsk, Tura, Chr. (gen. prep. No. 14, No. 29, O. Bidzilya, 2001) (ZMHU). **Uzbekistan:** 1 ♀, Ajakguzhumdu, 40 km O Dzhingil'dy, Uzbek.[istan], 2. ix. 1969, M. Falkovitsh (gen. prep. No. 64, O. Bidzilya, 2001); 5 ♂♂, 3 ♀♀, same data, but 4. v. 1976; 29. vi; 2, 7, 23. ix. 1969, M. Falkovitsh (gen. prep. No. 65, O. Bidzilya, 2001) (all ZIN). **Mongolia:** 2 ♂♂, 3 ♀♀, Yuzhno-Gobiiskiy Aimak, 60 km V kljucha Talyn-Bilgeh-Bulak, 17.–19. vii. [1]969, Gurjeva; 2 ♂♂, Sr.[edne]-Gob.[iiskiy] Aim.[ak], Ulgiin-Ula, 80 km SSW Mandal-Gobi, svet, 11. viii. [1]971, Kerzhner (all ZIN). **China:** ♂ (paratype of *A. agnathos*), Jinghe, Xinjiang Uigur Autonomous Region, 22. viii. 1994, Duoliken Baishanbayi (IZ ShNU).

Adult (Fig. 3). Wingspan 11–17 mm. Head, thorax and tegulae cream, some scales with ochreous brown tips. Antenna cream, each segment with white ring at base. Labial palpus recurved, segment 2 white with ochre rings near base and before apex, its inner surface uniformly white. Segment 3 white with two ochreous brown rings – at base and near apex. Forewing light, cream, contrast: ochreous brown raised scales forming two distinct fasciae near base, large prominent tornal and smaller subapical spots. Subapical and costal area with grey scales. Cilia cream. Hindwing grey, cilia lighter.

Variation. There is some variation in the ground colour of the forewing – from white to darker ochreous. The subapical and tornal spots may merge.

Male genitalia (Fig. 79). Uncus small, apically with short setae, gnathos absent. Tegumen relatively broad, evenly narrowed distally, about



Figs 3–10. Adult of *Athrips* species. **3** – *A. tigrina*, ♀, Uzbekistan (ZMKU), wingspan 16 mm; **4** – *A. nitrariella*, ♂, Algeria (ZMKU), gen. prep. No. 71/02, wingspan 13 mm; **5** – *A. bidilatata*, ♂ (holotype), China (IZShNU), gen. slide No. L95361, wingspan 11.5 mm; **6** – *A. mongolorum* (*crassivalva*, paratype), ♂, China (IZShNU), gen. prep. No. 68, wingspan 12 mm; **7** – *A. mongolorum*, ♀, Turkmenistan (ZIN), gen. prep. No. 78, wingspan 11 mm; **8** – *A. mongolorum*, ♂, Mongolia (ZIN), wingspan 12 mm; **9** – *A. mongolorum*, ♂, Uzbekistan (ZIN), wingspan 13 mm; **10** – *A. mongolorum*, ♂, Uzbekistan (ZIN), wingspan 11 mm.

one-third shorter than cucullus. Cucullus broad, densely covered with setae in distal half, apex rounded. Sacculus short, rectangular. Transtilla lobes massive, broad, sub-rectangular, about twice width and some shorter as sacculus. Saccus broad. Basal part of aedeagus swollen, rounded, distal part extremely slender, weakly curved with pointed apex.

Female genitalia (Fig. 127). Papilla analis narrow, sparsely covered with short setae. Apophyses posteriores twice length of apophyses anteriores. Sternite VIII evenly sclerotized anteriomedially, not divided into separate lobes, with two small posterior projections. Ostium simple, indistinct. Antrum short, indistinct, covered by sternite VIII. Ductus bursae extremely slender, corpus bursae broad, elongate, without signum.

Variation. There is some variation in the shape of the caudal projections of sternite VIII.

Remarks. Externally *A. tigrina* is characterized by the cream wing with ochreous fasciae and spots. In the male genitalia it is easily distinguished by the small uncus, reduced gnathos and extremely massive transtilla lobes. In the female genitalia *A. tigrina* can be separated from all other species by sternite VIII, that is not divided into lobes, and in the absence of the signum bursae.

Due to lack of an uncus the species takes a separate position within *Athrips* being slightly similar to *A. falkovitshi* only. It differs reliably from the last species in the completely reduced gnathos, slimmer distal part of the aedeagus and extremely broad transtilla lobes. In the female genitalia it differs clearly in sternite VIII, which is not divided into separate lobes, and in the absence of the signum bursae.

Biology. Host-plant unknown. Adults occur from the end of June to the end of September, mainly in desert habitats.

Distribution. Deserts of Central Asia: Turkmenistan; Uzbekistan; China: Ningxia, Xinjiang; Mongolia: Kobdoskiy, Gorno-Altaiskiy, Sredne-Gobiiskiy, Yuzhno-Gobiiskiy, Bajan-Khongorskiy, Uver-Khangaiskiy Aimaks.

nitrariella-group

Sacculus extremely long, exceeding half length of cucullus; posterior margin of vinculum with distinct medial processes; cucullus expanded distally, short; transtilla extremely broad, rounded; uncus very short; gnathos long, strongly curved; in female sternite VIII evenly sclerotized, its anterior margin deeply emarginated posteriorly; ductus bursae extremely slender, weakly sclerotized distally; corpus bursae elongate; signum absent or present as indistinct triangular plate; larvae feeding on Nitrariaceae.

Athrips nitrariella (Chrétien, 1908)

Epithectis nitrariella Chrétien, 1908, Bull. Soc. ent. Fr., 1908: 56. Syntypes unspecified, Algeria: Biskra, ex *Nitraria tridentata*, em. ix; adults also iii–v. (Chrétien) (MNHN), [not examined].
Rhynchopacha nitrariella (Chrétien, 1908) Sattler 1968: 114.
Athrips nitrariella (Chrétien, 1908) Sattler 1978: 58.

Material examined. **Algeria:** 1 ♂, Biskra, Algeria, 24. ii. 1903, Wlsm. 89802, Walsingham collection 1910-427, *Athrips nitrariella* (Chrétien), ♂, det. K. Sattler, 2002 (gen. prep. No. 71/02, O. Bidzilya) (ZMKU); 1 ♀, Algeria, Hammam-es-Salahin, larva 28. iii on *Nitraria tridentata*, em. 18. iv. 1904 (Walsingham) (slide No. 12713) (BMNH).

Adult (Fig. 4). Wingspan 12 mm. Head, thorax and tegulae cream. Labial palpus white with two brown rings; segment 2 about the length of segment 3, but twice width. Antennal segments with alternated white and black rings. Forewing greyish white. White scales concentrated mainly along costal margin. Grey scales formed diffuse dark spots at one-third and two-thirds of costa. At two-thirds two very small spots of raised brown scales. Cilia white with brown tips. Hindwing and cilia light grey, with slight sheen.

Variation. There is slight variation in the expression of dark spots.

Male genitalia (Fig. 80). Uncus very short, covered apically with few setae. Gnathos very long, weakly curved near base and strongly curved at about middle. Cucullus extending to the apical setae of the uncus, in distal quarter strongly expanded and densely covered with long setae. Sacculus extending to three-quarters length of cucullus, relatively broad, weakly inwards-curved, evenly tapered towards the apex. Transtilla broad, rounded with very small medial processes. Posterior margin of vinculum with pair of triangular medial processes. Saccus broad, short. Aedeagus basally swollen, distal part narrow, weakly apically curved, about length as basal part.

Female genitalia (Fig. 128). Papilla analis sparsely covered with short setae. Apophyses posteriores about four times length of apophyses anteriores. Sternite VIII evenly sclerotized with strong sclerotization along anterior margin, which is deeply emarginated posteriorly. Posterior margin of sternite VIII with two small trian-

gular projections and narrow deep incision. Antrum indistinct. Ostium with slightly sclerotized dorsomedial sclerite. Ductus bursae extremely thin, posterior part weakly sclerotized, shorter than apophyses anteriores. Corpus bursae elongate, broadened basally, about length of ductus bursae. Signum absent.

Remarks. *A. nitrariella* is externally similar to *A. mongolorum* and *A. bidilatata*. In the male genitalia it differs from *A. mongolorum* in the shorter and strongly expanded distal quarter of the cucullus, longer and wider sacculus, and the narrow and straight rather than curved distal part of the aedeagus. It is extremely similar to *A. bidilatata*, but distinguished reliably in the shorter cucullus, longer sacculus and distally curved aedeagus. In the female genitalia it resembles *A. mongolorum* but differs slightly in the broad corpus bursae and the narrower sclerotized sternite VIII.

E. nitrariella was described from an unspecified number of specimens (sex not stated) bred from *Nitraria tridentata* in September and also observed as adults in March–May. According to K. Sattler (pers. com.) there are authentic specimens in MNHN (colour transparency in BMNH) but as yet no lectotype has been designated.

Biology. Host-plant is *Nitraria tridentata* (Nitrariaceae). Adults were recorded in September and from February to May.

Distribution. Algeria.

Athrips mongolorum Piskunov, 1980

Athrips mongolorum Piskunov, 1980, Nasekomye Mongolii, 7: 386, figs 1, 2 [male genitalia], fig. 3 [female genitalia]. Holotype ♂, Mongolia: Bajan-Khongorskiy Aimak, 14 km E Talyn-Bilgeh-Bulak, 16. viii. 1969, Kerzhner, M. Kozlov" (in cyrillic), (gen. prep. No. 14775, ♂) (ZIN), [examined].

Athrips crassivalva Li & Zheng, 1998, Acta zootaxonomica Sinica, 23 (3): 295, figs 5–6 [male genitalia], fig. 7 [female genitalia]. Holotype ♂, China: Zhongninig, Ningxia Hui Autonomous Region, 1170 m, 16. vii. 1993, Li Hou-Hun, (gen. slide No. L95329) (IZ ShNU), [not examined]. **Syn. n.**

Material examined. **Mongolia:** holotype of *mongolorum* as above; 1 ♀ (paratype of *A. mongolorum*), Mongolia, Bajan-Khongorskiy Aimak, 14 km E Talyn-Bilgeh-Bulaka, 16. viii. 1969, Kerzhner, M. Kozlov (gen. prep. No. 14775); 1 ♂, 1 ♀, Mongolia, Yuzhno-Gobiiskiy Aimak, Bain-Dzag, 30 km SSE Bulgana, 26.–28. vii. 1967, Kerzhner; 1 ♂, Mongolia, Yuzhno-Gobiskiy Aimak, 20 km WNW Bajan-Dalaja, svet, 31. vii. 1967, Zaitzev; 3 ♂♂, 1 ♀, Mongolia, Yuzhno-Gobiskiy Aimak, 20 km WNW Bajan-Dalaja, svet, 31. vii. 1967, Kerzhner; 1 ♂, 1 ♀, Mongolia, Bajan-Khongorskiy Aimak, kljuch Talyn-Bilgeh-Bulak, 16. viii. 1969, Gurjeva (gen. prep. No. 79, ♀, O. Bidzilya, 2001) (all ZIN). **China:** 1 ♂, 1 ♀, (paratypes of *crassivalva*), Zhongninig, Ningxia Hui Autonomous Region, 1170 m, 16. vii. 1993, Li Hou-Hun (gen. prep. No. 68, No. 83, O. Bidzilya, 2001) (IZ ShNU). **Uzbekistan:** 1 ♂, Ajakguzhumdu, 40 km O Dzhingildy, Kyzylkum, 10. iv. 1965, Pastuhov (gen. prep. No. 37, O. Bidzilya, 2001); 6 ♂♂, 3 ♀♀, Ajakguzhumdu, 40 km O Dzhingildy, Kyzylkum, 14. iii. 1968, ex larva *Nitraria schoberi*, 18. iv. 1966, 23., 25. iv. 1972, 1. v. 1975, 4. v. 1969, 2., 3. ix. 1969, 16. ix. 1967, Falkovitsh (all ZIN). **Turkmenistan:** 1 ♀, Turkmenia, Badkhyz, Kyzyldzhar, 30. viii. [1]982 e. l. *Nitraria,* M. Falkovitsh (gen. prep. No. 78, O. Bidzilya, 2001); **Kazakhstan:** 1 ♂, SE Kazakhstan, dolina reki Tcharyn, okr. Tchundzhy, Jasenevaja roshcha, 28. vi. 1990, I. Pljushtch; 1 ♀, same data, but 13. vi. 1992, I. Pljushtch (gen. prep. No. 1/02, O. Bidzilya); 1 ♂, same data, but 24. vi. 1992, svet, I. Kostjuk (gen. prep. No. 146/01, O. Bidzilya) (all ZMKU).

Adult (Figs 6–10). Wingspan 9–12 mm. Head, thorax and tegulae covered with white brown-tipped scales. Front almost white, some scales with brown tips. Antennal segments with alternated white and black rings. Segment 2 of the labial palpus white with brown rings at base and near apex. Segment 3 white with brown ring at base, apex black with some white scales (Fig. 62). Ground colour of forewing whitish yellow to cream, forewing covered with white and grey scales. Two or three dark spots at base, three dark spots surrounded by tufts of ochreous scales in about middle of wing and two very small spots at two-thirds. Numerous small dark scales randomly spread over the wing. Cilia yellowish white, some scales with dark tips. Hindwing and cilia light grey, with slight sheen.

Variation. The number of dark spots, their locations and expressions of ochreous tufts vary extensively. Some specimens lack the tufts of ochreous scales and dark spots and look very light, almost white. Occasional specimens have dark, contrasting forewings, covered with numerous black scales.

Male genitalia (Figs 82–84). Uncus very short, covered with long setae. Gnathos long, strongly curved at base and about half length. Cucullus extending to about the apical setae of the uncus, in distal half distinctly expanded and densely covered with long setae. Sacculus about half length of cucullus, basally broad and tapered towards the apex, weakly curved, apex pointed. Transtilla extremely broad, rounded, with very small medial lobes. Posterior margin of vinculum with pair of long triangular medial processes. Saccus broad with deep posterior emargination. Aedeagus basally swollen, distal part very short, strongly curved and apically abruptly truncated.

Variation. In some specimens from Turkmenistan the cucullus is strongly distally expanded and the aedeagus is strongly tapered towards the apex.

Female genitalia (Figs 129, 130). Papilla analis sparsely covered with short setae. Apo-

physes posteriores four times length of apophyses anteriores. Sternite VIII evenly sclerotized, with hard sclerotization along anterior margin. Posterior margin of sternite VIII with two small triangular projections and deep narrow incision. Antrum indistinct. Ostium with slightly sclerotized dorsomedial sclerite. Ductus bursae extremely thin, weakly sclerotized posteriorly. Corpus bursae narrow, elongate, about length as ductus bursae. Signum absent or present as very small indistinct triangular plate.

Remarks. *A. mongolorum* is externally similar to *A. nitrariella* and *A. bidilatata*. In the male genitalia it can be distinguished reliably from both by the cucullus, which is broadened in the distal half (not the distal quarter), narrower sacculus and relatively broad and strongly curved distal part of the aedeagus. In the female genitalia it is similar to *A. nitrariella* but differs slightly in the narrow corpus bursae and more broadly sclerotized sternite VIII.

Biology. According to observations by M. Falkovitsh in the Kyzylkum desert there are two generations. The larva feeds on *Nitraria schoberi* (Nitrariaceae) from mid-May to mid-June and then (second generation) from the middle of September to the middle of November. It ties the leaves with delicate threads of silk, feeding inside that shelter or mines the terminal leaves. The larva is light green, sometimes with distinct dorsoventral lines. Adults fly from mid-March to early June and again in September (second generation). The pupa overwinters, a summer diapause (aestivation) of the pupa probably also takes place (Falkovitsh & Bidzilya 2003: 117).

Distribution. Turkmenistan; Uzbekistan; SE Kazakhstan; Mongolia: Bajan-Khongorskiy, Uver-Khangaiskiy, Yuzhno-Gobiiskiy, Kobdoskiy, Gobi-Altaiskiy Aimaks; China: Ningxia Hui Autonomous Region.

Athrips bidilatata Li & Zheng, 1998

Athrips bidilatata Li & Zheng, 1998, Acta zootaxonomica Sinica, 23 (3): 294–295, figs 3–4 [male genitalia]. Holotype ♂, China: Liancheng, Yongdong, Gansu Province, 9. v. 1985, Li Hou-Hun, (gen. slide No. L95361) (IZ ShNU), [examined].

Material examined. Holotype of *bidilatata* as above.

Adult (Fig. 5). Wingspan 11.5 mm. Head and tegulae covered with off-white scales with brown tips. Labial palpus recurved, segment 2 twice width of 3, light cream with two brown rings at base and in middle. Segment 3 cream, with black rings at base and near apex. Antennal segments with alternated light grey and black rings. Forewing greyish white mottled with numerous black scales. Two dark spots at base, three black spots in middle and two indistinct dark spots at about three-quarters of wing. Cilia grey with black tips. Hindwing and cilia light grey.

Male genitalia (Fig. 81). Uncus short covered apically with strong long setae. Gnathos long, sickle-shaped. Cucullus extending to apical setae of uncus, in distal quarter strongly expanded and densely covered with long setae. Sacculus about half length of cucullus, broad, evenly tapered towards the apex. Transtilla broad, rounded, without medial lobes. Posterior margin of vinculum with pair of triangular medial processes. Saccus broad, short. Aedeagus basally swollen, distal part straight, narrow, about length as basal part.

Female genitalia. Unknown.

Remarks. The only available specimen (holotype male) is externally indistinguishable from *A. mongolorum.* In the male genitalia it is similar to *A. nitrariella*, but differs in the longer cucullus, shorter sacculus and straight distal part of the aedeagus.

Biology. Host-plant unknown.

Distribution. China: Gansu Province.

***gussakovskii*-group**

Posterior margin of metascutum with two patches of very short modified scales; transtilla lobes very long, knee-shaped; distal part of aedeagus long with acute apex; female sternite VIII with deep incision at posterior margin, entirely covered with patches of honeycomb pattern.

Athrips gussakovskii (Gerasimov, 1930)

Ziminiola gussakovskii Gerasimov, 1930, Dt. ent. Z. Iris, 44: 73, t. 1, fig. 1 [imago, drawing], fig. 2 [head], figs 3–4 [venation], figs 5–6 [male genitalia], fig. 7 [female genitalia]. Lectotype ♂, Uzbekistan: Khiva, 4. viii. [1]927, L. Zimin (ZIN), here designated.

Rhynchopacha gussakovskii (Gerasimov, 1930) Sattler 1968: 113.

Athrips gussakovskii (Gerasimov, 1930) Sattler 1978: 58.

Rhynchopacha (Ziminiola) gussakovskii Gerasimov, 1930. Povolný, 1979: 119.

Athrips gussakovskii gobica I. Emelyanov & Piskunov, 1982, Nasekomye Mongolii, 8: 373, fig. 5 [right forewing, drawing], figs 19–21 [male genitalia]. Holotype ♂, Mongolia: Sredne-Gobiiskiy Aimak, Ulgiyn-Ula, 80 km SSW Man-

dal-Gobi, svet, 11. viii. 1971, Kerzhner (gen. prep. No. 45 = 14832, O. Bidzilya, 2001) (ZIN), [examined]. **Syn. n.**

Material examined. **Uzbekistan:** Lectotype of *gussakovskii* as above. Paralectotypes: 1 ♂, Khiva, 4. viii. [1]928, L. Zimin (gen. prep. 30/02, O. Bidzilya) (ZSM); 1 ♀, Khiva, 2. viii. [1]927, L. Zimin, (gen. prep. No. 94, O. Bidzilya, 2001) (ZIN); 1 ♀, Khiva, 4. viii. [1]927, L. Zimin, (gen. prep. No. 35/02, O. Bidzilya) (ZSM); 1 ♂, Khiva, 4. viii. [1]928, L. Zimin, (gen. prep. No. 62, O. Bidzilya, 2001) (ZIN); 1 ♂, Buchara, Baga-Absa, 15. viii. [1]927, A. Gerasimov; 1 ♂, Khiva, Ravat, 25. vii. [1]927, V. Gussakovskij (all ZIN). **Mongolia:** holotype of *gobica* as above; 2 ♂♂, Mongolia, Sredne-Gobiiskiy Aimak, Ulgiyn-Ula, 80 km SSW Mandal-Gobi, svet, 11. viii. [1]971, Kerzhner, (gen. prep. No. 29/02, O. Bidzilya); 1 ♂, 2 ♀♀, Mongolia, Yuzhno-Gobiiskiy Aimak, 20 km WNW Bajan-Dalaja, 31. vi, 31. vii. [1]967, Kerzhner, (gen. prep. No. 31/02, ♂, No. 32/02, ♀, No. 80/02, ♀, O. Bidzilya); ♂, Mongolia, Bajan-Khongorskiy Aimak, kljuch Talyn-Bilgekh-Bulak, 16. viii. [1]969, Gurjeva (all ZIN).

Adult (Figs 11–13). Wingspan 11–13.5 mm. Head, thorax and tegulae light yellow, cream. Head with distinct frontal process (Fig. 59). Antenna yellowish white, each segment with dark ring at base. Segment 2 of the labial palpus weakly curved, cream, the outer surface with slender brown ring at base and broader ring before apex. Segment 3 one-quarter length of segment 2, straight, cream with broad brown medial ring (Fig. 63). Forewing yellowish white, with brown tornal spot at three-quarters of posterior margin, the veins darker. Few brown-tipped scales concentrated mainly in subapical areas. Cilia light yellow with brown tip. Hindwing including cilia light grey. Posterior margin of metascutum with two patches of very short modified scales (Fig. 60).

Variation. Some specimens with reduced tornal spot; forewing vary from uniformly yellow to cream or to yellowish white; head sometimes with brown medial line on vertex.

Male genitalia (Figs 85, 86). Uncus oblong, sub-rectangular covered with long setae laterally and apically. Gnathos hook-shaped, curved at one-third length. Cucullus broad, exceeding the apical setae of the uncus. Sacculus weakly curved medially, constricted at base, distal part broad and rounded. Transtilla lobes extremely long, knee-shaped, exceeding length of sacculus. Saccus broad, short, sub-rectangular. Aedeagus basally swollen, distal part relatively broad with elongate, curved apex.

Variation. The specimens from Mongolia differ from those of from Uzbekistan in shorter and distally wider sacculus as well as in the different shape of the apex of the aedeagus.

Female genitalia (Fig. 131). Papilla analis elongate, sparsely covered with short setae. Apophyses posteriores 3.5 to four times length of apophyses anteriores. Sternite VIII with deep incision at posterior margin; patches of honeycomb pattern long, narrowing anteriomedially. Antrum small, indistinct. Sclerotized part of the ductus bursae a little shorter than apophyses anteriores. Ductus bursae long, broadened and coiled before corpus bursae. Corpus bursae small, rounded. Signum sub-triangular plate near entrance of ductus bursae.

Remarks. *A. gussakovskii* is easily distinguished externally from all other *Athrips* species by the distinct frontal process of the head, the unique wing pattern and the presence of two patches of very short modified scales on the posterior margin of the metascutum (in contrast to long hair-like scales of other *Athrips*, except *A. autumnella*). The male genitalia resemble those of *A. autumnella* in the long transtilla lobes, but differ clearly in the shape of the sacculus and cucullus. The female genitalia are also similar to those of *A. autumnella* but differ clearly in the extent of the honeycomb pattern that completely covers sternite VIII.

Z. gussakovskii was described from an unspecified number of specimens from the vicinity of Khiva and Buchara. Most syntypes are deposited in ZIN, two in ZSM and seven in BMNH. All specimens bear only one label "Khiva, Ravat, 25. vii. [1]927, V. Gussakovskij" or "Khiva, 30. vii. (or 2. viii, 4. viii) [1]928 (or [1]927), L. Zimin". All type-labels (golden rings with "Typus" handwritten by Gerasimov) are pinned on separate pin. Four specimens from ZIN and two specimens from ZSM were erroneously labelled by Piskunov as "Paratypus". The male with label "Khiva, 4. viii. [1]927, L. Zimin" is here designated as the lectotype.

The subspecies *gobica* I. Em. & Pisk. was described from a single male from Mongolia. The examination of additional material has shown that the characters used to establishing that subspecies (reduced tornal spot, uniformly yellow forewing, long gnathos) extensively vary. The only constant characters in which Mongolian specimens differ from those from Uzbekistan are the shape of the sacculus and subapical part of the aedeagus (see above), which to my mind don't go beyond the intraspecific variation.

Biology. Host-plant unknown. Adults occur from July to August.

Distribution. Uzbekistan; Mongolia: Sredne-Gobiiskiy, Yuzhno-Gobiiskiy, Bajan-Khongorskiy Aimaks; China: Ningxia Hui Autonomous Region (Li 2002: 156).

Athrips autumnella Falkovitsh & Bidzilya, 2003

Athrips autumnella Falkovitsh & Bidzilya, 2003, Proc. Zool. Mus. Kiev Taras Schevchenko Nat. Univ., 1 (1): 130, fig. 3 [imago, foto], fig. 12 [male genitalia], fig. 21 [female genitalia]. Holotype ♂, Uzbekistan: Ajakguzhumdy, 40 km O Dzhingil'dy, Uzbekistan, 4. x. 1969, M. Falkovitsh, (ZIN), [examined].

Material examined. **Turkmenistan:** 2 ♂♂, 1 ♀, 70 km S Ashkhabada, Karakul', Turkmenia, 27. ix. 1967, M. Falkovitsh (gen. prep. No. 58/02, O. Bidzilya); 1 ♂, Repetek, Turkmenia, 4. x. 1969, M. Falkovitsh; 1 ♂, 2 ♀♀, Badkhyz, Kyzyldzhar, 3. x. 1980, light, V. Pechen' (gen. prep. No. 83, No. 84, ♀♀, O. Bidzilya, 2001). **Uzbekistan:** holotype of *autumnella* as above; 5 ♂♂ (paratypes), same data as holotype, but 1. x. 1968; 2 ♀♀ (paratypes), same data as holotype, but 7, 10. x. 1969; 1 ♂, same data, but e. l. *Calligonum juncteum*, 27. ix. 1966; 4 ♂♂, 1 ♀, Zhamansai, 140 km NW Shafrikana, Uzbek., 22, 27. ix. 1968 (gen. prep. No. 5, O. Bidzilya, 2001; gen. prep. No. 53, O. Bidzilya, 2001; gen. prep. No. 11, O. Bidzilya, 2001; gen. prep. No 59/02, O. Bidzilya) (ZIN, ZMKU). **Tadzhikistan:** 3 ♂♂, 2 ♀♀ (paratypes), St.[araja] Pristan', 12 km S Dzhilikulja, r. Vakhsh, 16. x. 1949, Shchetkin; 3 ♂♂, 3 ♀♀, dolina r. Vakhsh, Molotovobadskiy r-n., 6-oi poselok, peski, svet, 15, 17, 22. x. 1952, Shchetkin (all ZMHU).

Adult (Figs 14–16). Wingspan 12–16.5 mm. Head light grey. Labial palpus recurved, segment 2 cream with brown rings at base and near apex. Segment 3 cream with two brown rings (Fig. 64). Antenna with alternated grey and black rings. Thorax and tegulae grey with some brown scales. Forewing narrow, elongate, divided by black longitudinal stripe into dark grey costal and light grey posterior parts. Cilia grey, some scales with dark spots. Hindwing and cilia light grey, with slight sheen. Posterior margin of metascutum with two patches of very short modified scales.

Variation. There is extensive variation in the expression of the black medial line and colour of the costal and posterior parts of the wing: some specimens are uniformly grey with black spots at the base or grey mottled with numerous ochreous brown scales mainly along the veins; the black medial line may extend to one-half or two-thirds of the wing, sometimes it is divided into separate spots or patches.

Male genitalia (Figs 87, 88). Uncus sub-rectangular covered with strong long setae. Gnathos long, sickle-shaped, apically pointed. Cucullus long, slender, far exceeding the apical setae of the uncus. Sacculus short, weakly tapered towards the apex, outer margin with small hump in middle. Transtilla lobes very long, slender, weakly apically broadened, apex rounded. Posterior margin of vinculum with pair of small medial processes. Saccus short, rounded. Aedeagus basally swollen, distal part long, weakly curved in distal half, apex pointed.

Variation. Many structures of the male genitalia show extensive variation: the uncus varies from elongate, rectangular to short, trapezoid with rounded apex; the apex of the cucullus is normally pointed, but sometimes rounded; the sacculus varies in length, the hump at its outer margin may be reduced; the transtilla lobes are sometimes broadly expanded distally; the saccus extensively varies in length (see also "Remarks").

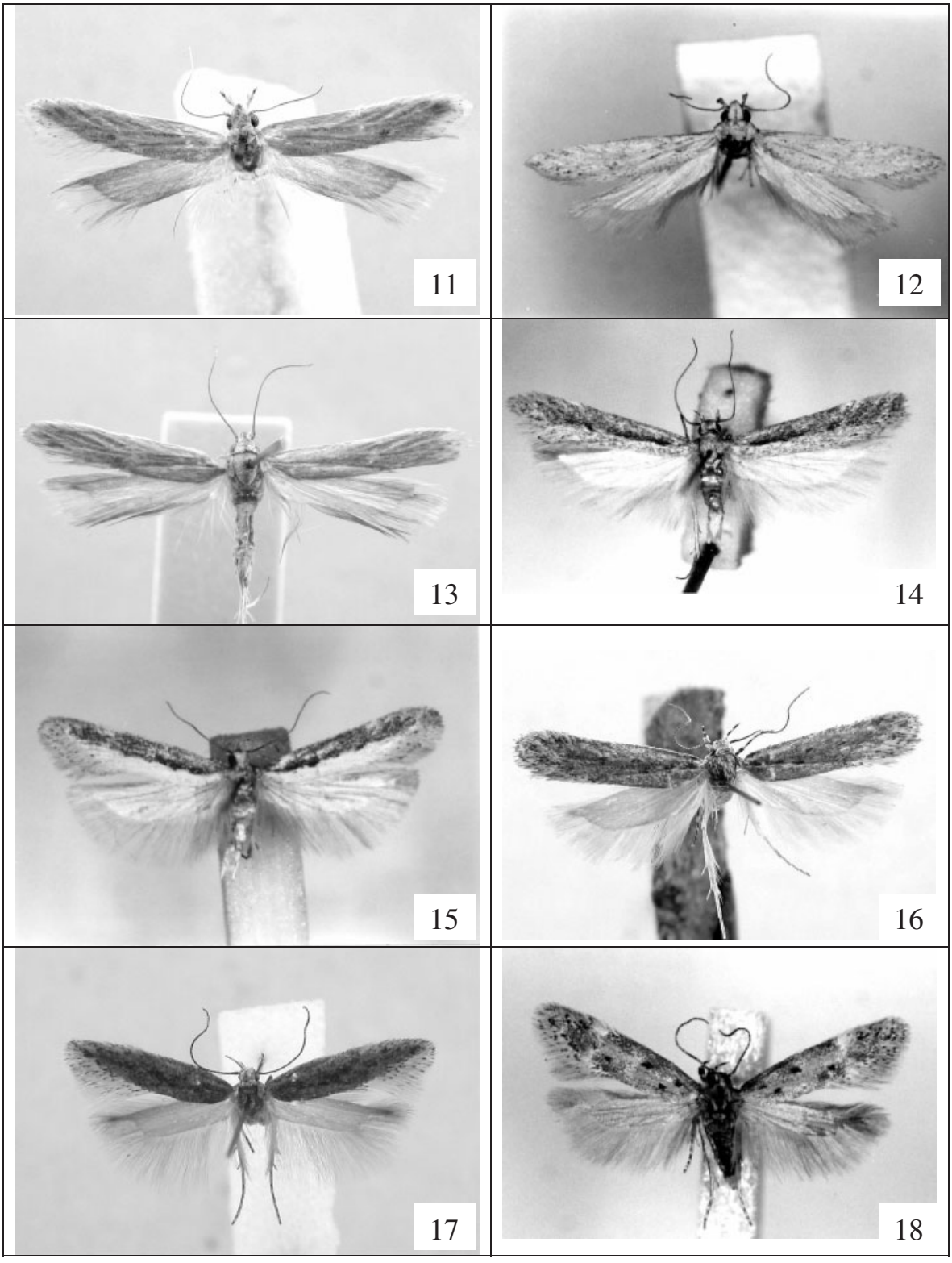
Female genitalia (Fig. 132). Papilla analis broad, covered with short setae. Apophyses posteriores three times length of apophyses anteriores. Sternite VIII with deep incision at posterior margin, patches of honeycomb pattern broad and long, sub-rectangular, narrowing anteriomedially. Ostium simple, indistinct. Sclerotized part of the ductus bursae broadened posteriorly, shorter than apophyses anteriores. Ductus bursae long, coiled before corpus bursae. Corpus bursae small, rounded. Signum sub-triangular plate with rounded, weakly sclerotized base.

Variation. There is slight variation in the length of the apophyses anteriores and in the shape of the patches of honeycomb pattern.

Remarks. *A. autumnella* differs from other *Athrips* species in the unique wing pattern as well as in the presence of two patches of very short modified scales on the posterior margin of the metascutum, being similar in this last character only to *A. gussakovskii*. The male genitalia are easily recognizable by the shape of the sacculus and the extremely long transtilla lobes. The female genitalia are similar to those of *A. gussakovskii*, but differ in the absence of patches of honeycomb pattern at the base of the apophyses anteriores.

Two specimens from Uzbekistan differ noticeably in the male genitalia (see Fig. 88 and description below) and habitually (Fig. 16) from other specimens of *A. autumnella* including ones collecting in the same locality. This variation goes beyond what is normally accepted as intraspecific, but I tentatively consider these two specimens as *A. autumnella*, until their status as probably distinct species will be confirmed by additional material including females.

Biology. Host-plants are *Calligonum leucocladum*, *C. junceum* and *C. microcarpum* (Polygonaceae). Larva lives from middle April to middle May in silken tube between stalks feeding on young shoots. Larva about 15 mm, green with blue hue or light brown; head black or brown, with slight sheen; thoracic shield very dark, anal shield light brown. Pupation takes place in the



Figs 11–18. Adult of *Athrips* species. **11** – *A. gussakovskii*, ♀, Uzbekistan (ZSM), gen. prep. No. 35/02, wingspan 11 mm; **12** – *A. gussakovskii gobica*, ♂ (holotype), Mongolia (ZIN), gen. prep. No. 14832 = 34, wingspan 13.5 mm; **13** – *A. gussakovskii*, ♂, Mongolia (ZIN), wingspan 13 mm; **14** – *A. autumnella*, ♂ (paratype), Uzbekistan (ZMKU), wingspan 12 mm; **15** – *A. autumnella*, ♂, Uzbekistan (ZIN), wingspan 14 mm; **16** – *A. autumnella*, ♂, Turkmenistan (ZMKU), gen. prep. No. 58/02, wingspan 13 mm; **17** – *A. thymifoliella*, ♂, Spain (ZMUC), gen. prep. No. 112, wingspan 10 mm; **18** – *A. nigricostella*, ♂, Slovakia (ZMKU), wingspan 11 mm.

second half of May, adults emerge since September and fly until early November. Summer diapause (aestivation) of pupa probably also takes place during hot season – from last third of May to early September (Bidzilya & Falkovitsh 2003: 131).

Distribution. Turkmenistan; Uzbekistan; Tadzhikistan.

Athrips carthaginella (D. Lucas, 1940)

Phthorimaea carthaginella D. Lucas, 1940, Bull. Soc. ent. France, 229. Lectotype ♀, Tunisia: Cap Bon, 15. x. 1938 (Lucas) (unnumbered genitalia slide, Povolný; MNHN), designated by Povolný (1983: 186, fig. 35, as "Holotypus"), [not examined].
Athrips carthaginella (D. Lucas, 1940) Povolný 1983: 186, fig. 35 [female genitalia].

Adult. (Free translation from the original description by Lucas 1939: 229). Wingspan 9 mm. Small species. Forewing dark grey, irregularly mottled by very small spots and points. In centre of wing black fascia interrupted basally with uneven margins. Hindwing grey. The underside and upperside both of forewing and hindwing are same as their upperside.

Male genitalia. Unknown.

Female genitalia. (After drawing by Povolný 1983, fig. 35). Sternite VIII with narrowed anteriomedial patches of honeycomb pattern and with deep broad incision at posterior margin.

Remarks. *Ph. carthaginella* was described from an unspecified number of specimens (sex not stated). A single female in MNHN was examined by Povolný (1983: 186, fig. 35) and its genitalia illustrated as "Holotypus"; this is here accepted as constituting a valid lectotype designation. According to the illustration of the female genitalia (Povolný 1983, fig. 35) *A. carthaginella* is similar to *A. autumnella* and *A. gussakovskii*. The same structure of female sternite VIII is also found in some *Pseudathrips* species and further material, including the hitherto unknown male, is required to clarify the status and generic position of *carthaginella*.

Biology. Host-plant unknown. The lectotype was collected in October.

Distribution. Tunisia.

thymifoliella-group

Transtilla lobes long and narrow; cucullus strongly inwards-curved; distal part of aedeagus short, apex small; uncus short and broad; signum very small; adults small, fly in late autumn; larva feeds on Cistaceae.

Athrips thymifoliella (Constant, 1893)

Lita thymifoliella Constant, 1893, Annls Soc. ent. Fr., 62: 394, pl. 11, fig. 5. Syntypes 2 ♀♀, France: Cannes, *Helianthemum*, Constant (BMNH), [not examined].
Athrips thymifoliella (Constant, 1893) Sattler 1978: 60.

Material examined. **Spain:** 1 ♂, Hispania, Andalusia, Marbella-Casa y Campo, ca. 100 m, 22. xi. 1984, E. Traugott-Olsen (gen. prep. No. 112, O. Bidzilya, 2001). 1 ♀, same data, but 27. xi. 1984, E. Traugott-Olsen (gen. prep. No. 64/2, O. Bidzilya) (all ZMUC). **France:** 1 ♂, Gall. mer., 15, ex coll. Hinneberg (ZMHU); 2 ♂♂, 1 ♀, Cannes, Const., ex coll. Staudinger (gen. prep. No. 20, No. 21, No. 97, O. Bidzilya, 2001) (all ZMHU).

Adult (Fig. 17). Wingspan 10–12 mm. Head grey mottled with brown scales. Antenna brown with light grey ring at base of each segment. Segment 2 of the labial palpus on outer surface covered with grey and brown scales, inner and dorsal surfaces lighter, grey; segment 3 brown, with white rings in middle. Thorax, tegulae and forewing brown mottled with grey scales; two black spots at fold surrounded by orange, an indistinct spot at one-third near costa and another spot at three-quarters length; two elongate orange spots in middle of wing; subapical areas grey with some black scales. Cilia light grey, some scales with brown tips. Hindwing including cilia grey.

Variation. Specimens show some variation in the distribution of orange scales and number of black spots. The orange scales may merge to form short dashes.

Male genitalia (Fig. 89). Uncus broad, short, covered with numerous strong long setae. Gnathos long, hook-shaped. Cucullus slender, elongate, weakly curved inwards, slightly exceeding the apical setae of the uncus. Sacculus straight with small torn on outer margin, apically pointed. Transtilla lobes long, slender, weakly curved, apically pointed. Saccus broad, short. Aedeagus basally swollen, distal portion short, apex small, rounded.

Female genitalia (Fig. 133). Papilla analis broad, sparsely covered with short setae. Apophyses posteriores twice length of apophyses anteriores. Sternite VIII with deep incision on posterior margin and with two broad patches of honeycomb pattern. Ostium simple. Sclerotized part of the ductus bursae shorter than apophyses anteriores. Corpus bursae nearly rounded. Signum very small rounded plate.

Remarks. *A. thymifoliella* is easily recognizable externally by the small size and slender forewing with orange scales. In the male genitalia it is good distinguished by the inwards-curved cucullus, extremely broad uncus and long transtilla lobes. In the female genitalia it differs clearly from other *Athrips* species in very small rounded signum, short sclerotized part of the ductus bursae and broad patches of honeycomb pattern of sternite VIII.

A lectotype of *Lita thymifoliella* has not yet been designated. The identity of *A. thymifoliella* is based on two syntypes in BMNH, which are labelled "Cannes, France, *Helianthemum*, Constant". These specimens were received by Walsingham in 1894 from Ragonot and probably are part of the type-series (Sattler 1985: 228).

Biology. Larva feeds between spun leaves of *Fumana thymifolia* (Cistaceae) living in silken tube near the ground. Pupation takes place in late May in the ground. Adults fly in October and November (Huemer & Karsholt 1999: 181).

Distribution. Spain, Southern France.

nigricostella-group

Signum narrow elongate plate; ductus bursae relatively thin with weakly sclerotized distal portion; gnathos extremely long, slender, strongly curved; distal part of aedeagus long and straight; adult small, wing narrow, mainly yellow or orange with black patterns; larva feeds on Fabaceae.

Athrips nigricostella (Duponchel, 1842)

Lita nigricostella Duponchel, 1842, Hist. nat. Lep. Fr., Suppl. 4: 288, pl. 74, fig. 9 [imago, colour]. Lectotype ♂, France (Duponchel) (MNHN) (Joannis 1915: 118–119), [not examined].

Rhynchopacha nigricostella (Duponchel, 1842) Sattler 1968: 114.

Athrips nigricostella (Duponchel, 1842) Sattler 1978: 58.

Material examined. **Hungary:** 1 ♂, 1 ♀, Hungaria, No. 232, 1898, A. Hoffmann, coll. L. Sheljuzhko, ex coll. Krulikovsky (ZMKU). **Ukraine:** 1 ♂, Krym, Karadagh, 4. vi. 1983, Yu. I. Budashkin (gen. prep. No. 2, O. Bidzilya, 2001); 1 ♂, same data, but 17. vii. 1998, A. Bidzilya (gen. prep. No. 17, O. Bidzilya, 2001); 4 ♂♂, 3 ♀♀, zap-k Khomutovskaya step', 17.–20. v. 1996, A. Bidzilya (gen. prep. No. 59, ♂; No. 80, ♀, O. Bidzilya, 2001); 1 ♂, same data, 24. iv. 2002, E. Rutjan; 2 ♂♂, Luganskaja obl., zap-k Strel'tzovskaya step', 8. vii. 2002, O. Bidzilya (all ZMKU). **Kazakhstan:** 2 ♂♂, Akm.[olensk], Kokch.[etav], Shchuchie-Barmashi, 4. vi. [19]28, 12. vi. [19]28, N. Filipjev (gen. prep. No. 10, O. Bidzilya, 2001) (ZIN); 1 ♂, V.[ostochnyi] Kazakhstan, Bukhtarminskoe vodokhranilishche, okr. Svinchatka, 1. vi. 2000, P. Ustjuzhanin (ZMKU). **Kyrgyzstan:** 2 ♂♂, Tian-Shan, prov. Dzhalal-Abad, distr. Kotshkor-Ata, prope pag. Toskool, fauc. Alash-Saj, alt. 1100 m, 30–31. v. 2003, lum., E. Rutjan leg.; 1 ♂, Tian-Shan, prov. Dzhalal-Abad, prope Tash-Kumyr, loc. Ak-Mula, alt. 800–850 m, 28. v. 2002, E. Rutjan leg. (all ZMKU). **Russia:** 1 ♂, Novgorod, 3. vii. [19]25 (ZIN); 1 ♂, Minussinsk, gub. Jenissej, Tagarskij ostrov, 12. vi. 1927, S. Tsygankov (gen. prep. No. 3, O. Bidzilya, 2001) (ZMKU); 3 ♂♂, Minussinsk, [no data]vii. [19]24, N. Filipjev; 1 ♀, Primorskiy kray, Pogranichnyi r-n, Barabash-Levada, 28. vii. [1]989, S. Sinev (gen. prep. No. 54, O. Bidzilya, 2001) (all ZIN).

Adult (Fig. 18). Wingspan 8–10 mm. Head thorax and tegulae covered with greyish-light scales with brown tips, front off-white. Labial palpus white with two broad black rings. Segment 3 2.5 to two times slender than segment 2. Scape brown, antennal segments with alternated white and brown rings. Forewing yellow, the costal margin and apical area greyish black. Two dark spots near base, one spot near costa and another dark spot at two-thirds near posterior margin. Subapical fascia white, diffuse. Hindwing and cilia light grey, some scales with black tips.

Variation. There is some variation in the size of black areas.

Male genitalia (Fig. 90). Uncus sub-quadrangular, covered apically with strong long setae. Gnathos long, slender, strongly curved in basal half. Cucullus weakly narrowed at the first half, extending the apical setae of the uncus. Sacculus very small, triangular. Transtilla lobes extremely long, about one-third length of cucullus, evenly tapered distally. Saccus broad. Aedeagus basally swollen, distal part long, slender, apex small, pointed.

Female genitalia (Fig. 134). Papilla analis broad, sparsely covered with short setae. Apophyses posteriores about 2.5 times length of apophyses anteriores. Sternite VIII weakly sclerotized anteriorly, with deep drop-shaped incision at posterior margin and with pair of narrow, sub-oval patches of weak honeycomb pattern around ostium bursae. Ostium with a small, narrow dorsomedial sclerite. Sclerotized part of the ductus bursae about length of apophyses anteriores. Corpus bursae rounded. Signum narrow elongate plate.

Remarks. *A. nigricostella* resembles *A. tetrapunctella* externally but differs in the presence of second black spot at base of forewing, yellowish posterior margin of forewing and usually smaller size. In the male genitalia it is easily recognizable by extremely long transtilla lobes and very small triangular sacculus. In the female genitalia it can be separated by two narrow, sub-oval patches of weak honeycomb pattern around ostium bursae.

Biology. Larva feeds on *Medicago sativa* and *M. minima* (Fabaceae) in May–June and then in August–September; record from *Caragana frutex* (Martynova 1952: 90) refers to *A. stepposa* sp. n. (see below). It spins a terminal leaves together and feeds on upper side. Pupation takes place in a white cocoon between spun leaves. Adults fly in two generations: April–June – July–August. It prefers warm dry slopes (Huemer & Karsholt 1999: 182).

Distribution. Europe; Turkey (Huemer & Karsholt 1999: 182); North and East Kazakhstan; Kyrgyzstan; Russia: European part eastwards to Southern Urals, South of Krasnojarskiy kray (Minussinsk), Southern Primorie.

Athrips tetrapunctella (Thunberg, 1794)

Tinea tetrapunctella Thunberg, 1794, D. D. Dissert. ent. sistens Insect. Svecica, 7: 96. Lectotype ♂, Sweden: Vestergötland, (Zoological Institut of University, Uppsala), designated by Karsholt (Karsholt & Nielsen 1985: 457), [not examined].

Gelechia lathyri Stainton, 1865, Ent. Annual, 1865: 130, pl., fig. 1 [imago, drawing]. Lectotype ♀, England: Cambridge, (BMNH), designated by Sattler (1968: 115), [not examined]. [Synonymized by Benander 1961: 247].

Gelechia lathyrella Doubleday, 1866: [2]; unjustified emendation of *Gelechia lathyri* Staintion, 1865.

Rhynchopacha tetrapunctella (Thunberg, 1794) Sattler 1968: 115.

Athrips tetrapunctella (Thunberg, 1794) Sattler 1978: 58.

Material examined. **Denmark:** 1 ♂, NEJ, Læsø, Bovet, 30. vi. 1983, O. Karsholt (gen. prep. No. 81, A. Bidzilya); 1 ♀, Bastemose, 11. vii. 1978, O. Karsholt (ZMKU). **Sweden:** 1 ♀, Suecia, Sm. Högsby, 5. vi. 1982, O. Karsholt (ZMUC). **Finland:** 1 ♂, Suomi, U: Vantaa, Keimola, 12. vii. 1993, Jari Junnilainen leg. (ZMKU). **Russia:** 1 ♂, [Leningradskaja oblast'] Bol'shoi Berezovyi Ostrov, Vyborgskiy r-n, 3. vii. 1980, M. Falkovitsh (gen. prep. No. 14, O. Bidzilya, 2001); 1 ♂, Irkutsk, coll. Vel. Kniazja Nikolaja Mikhailovitcha (all ZIN); 1 ♂, Transbaikalia, Sokhondinskiy zap-k, r. Agutsakan, 1100 m, svet, 19. vii. 1997, A. Bidzilya, I. & O. Kostjuk (ZMKU); 2 ♂♂, [Yuzhnoe Primorye] Yakovlevka, Spas. u.[ezd], Ussur. kr.[ay], 29. v. [1]926, 12. viii. [1]926, Djakonov, Filipjev (gen. prep. No. 12, O. Bidzilya, 2001); 1 ♂, Yu. Primorie, Gorno-Taiozhnaya St., 22. vii. [1]978, S. Seksjaeva (gen. prep. No. 15, O. Bidzilya, 2001); 1 ♀, Primorskiy kray, Pogranichnyi r-n, Barabash-Levada, 22. vii. [1]989, S. Sinev (all ZIN).

Adult (Fig. 19). Wingspan 10–12 mm. Head off-white, vertex grey black; thorax and tegulae covered with light grey scales with black tips. Labial palpus recurved; segment 2 off-white with two broad black rings at base and near apex, about twice width of segment 3; segment 3 brown with white ring in middle and some white scales at pointed apex. Scape brown, others antennal segment with alternated light grey and brown rings. Forewing yellow, costal margin and apical areas black; posterior margin more or less completely covered with dark scales; one prominent dark spot near base, two others at one-third and two-thirds length, additional small black spot at one-quarter near costa and another spot at two-thirds near posterior margin. Cilia light grey, some scales with black apex. Hindwing grey, cilia slightly lighter.

Variation. Occasional specimens have completely black posterior margin, others one with only one small black spot. The small black spots near costal and posterior margins may be often completely reduced.

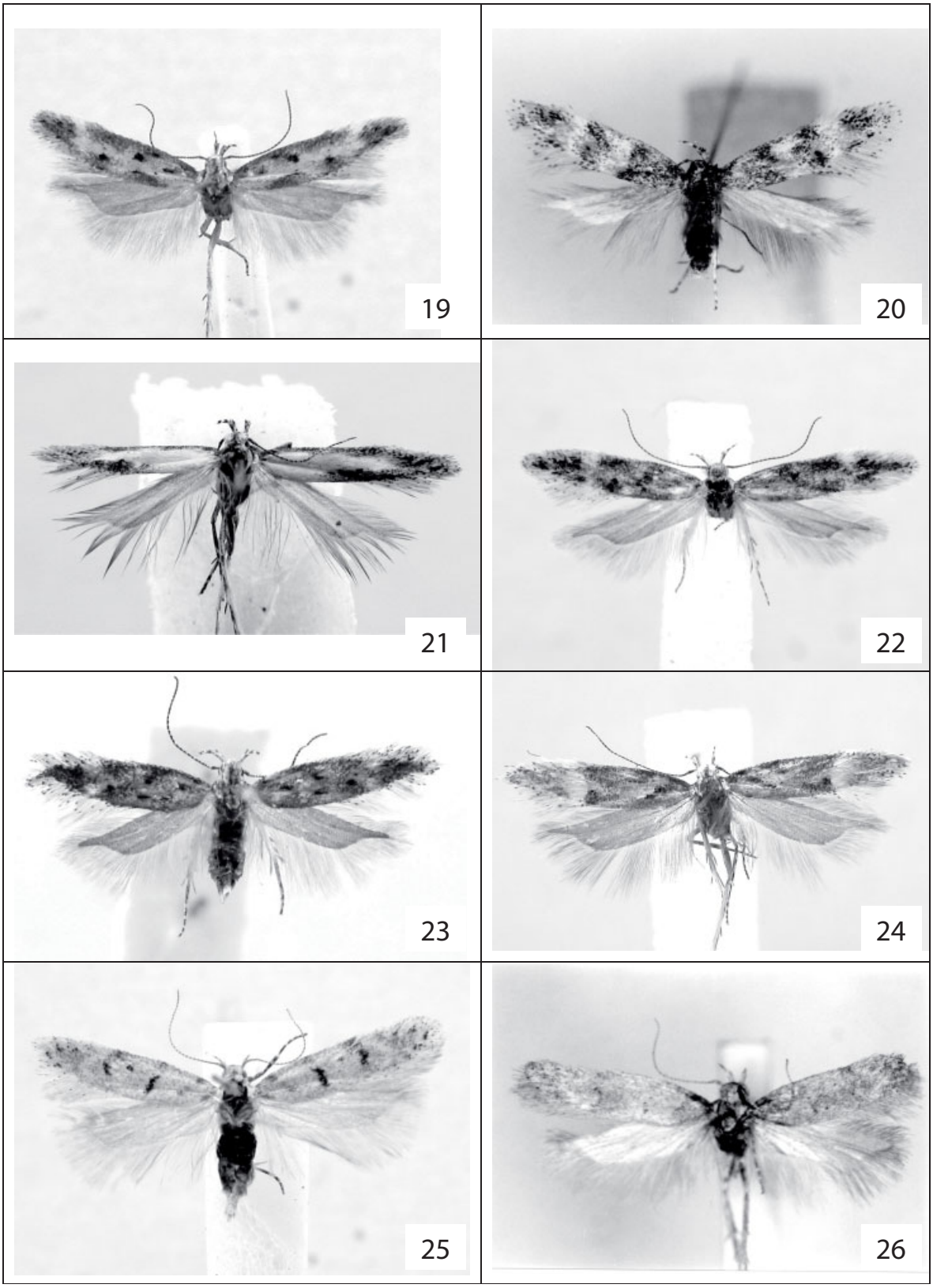
Male genitalia (Fig. 91). Uncus trapezoid, narrow, covered apically with long setae. Gnathos long, slender, strongly curved at half length, apex pointed. Cucullus digitate, weakly expanded distally, apex rounded, extending to or slightly exceeding the apical setae of the uncus. Sacculus short, basally broad, with very thin, pointed and curved apex. Transtilla lobes triangular, longer than sacculus. Saccus broad, short. Aedeagus basally swollen, distal part long, apex small, pointed.

Variation. The specimens from the Russian Far East are characterized by a longer cucullus, which far exceeding the apical setae of the uncus; the male from the Chitinskaja oblast' has a broader uncus with an incision at the apex and an aedeagus that is distinctly curved basally.

Female genitalia (Fig. 135). Papilla analis broad, sparsely covered with setae. Apophyses posteriores twice length of apophyses anteriores. Sternite VIII strongly sclerotized anteriorly with deep sub-rhomboid incision at posterior margin and with two rounded patches of honeycomb pattern near ostium bursae. Ostium bursae with very small, narrow dorsomedial sclerite. Sclerotized part of the ductus bursae slightly exceeding length of apophyses anteriores. Corpus bursae nearly rounded. Signum narrow elongate plate.

Remarks. *A. tetrapunctella* resembles externally *A. nigricostella* but can be distinguished by the absence of second black basal spot, posterior margin of forewing blackish grey and normally of larger size. In the male genitalia it can clearly be separated by unique shape of sacculus. In the female genitalia it is also similar to *A. nigricostella*, but differs in the sternite VIII with wide, rounded rather than narrow, sub-oval patches of honeycomb pattern near ostium bursae.

Biology. The larva feeds on *Lathyrus palustris* (Fabaceae), feeding on leaves and stalks in August and September (Huemer & Karsholt 1999:



Figs 19–26. Adult of *Athrips* species. **19** – *A. tetrapunctella*, ♂, Denmark (ZMKU), wingspan 11 mm; **20** – *A. amoenella*, ♂, Ukraine (ZMKU), wingspan 9 mm; **21** – *A. kerzhneri*, ♂, Russia: Tuva (SZMN), gen. prep. No. 9, wingspan 10 mm; **22** – *A. stepposa* sp. n., ♂ (paratype), Ukraine (ZMKU), wingspan 10 mm; **23** – *A. stepposa* sp. n., ♀ (paratype), Ukraine (ZMKU), wingspan 9 mm; **24** – *A. rutjani* sp. n., ♂ (holotype), Kyrgyzstan (ZMKU), gen. prep. No. 5/03; **25** – *A. falkovitshi*, ♀, Turkmenistan (ZMUC), wingspan 12 mm; **26** – *A. falkovitshi*, ♂ (holotype), Uzbekistan (ZIN), gen prep. No. 15714, wingspan 12 mm.

183); probably feeds also on *Vicia cracca* (Larsen 1927: 195, after Huemer & Karsholt 1999: 183) (Fabaceae). Adults occur from late May to end July in wet meadows.

Distribution. Russia: Leningradskaja oblast', Irkutskaja oblast', Chitinskaja oblast', Primorskiy kray. Also recorded from Great Britain, Northern Europe and France (Huemer & Karsholt 1999: 183).

Athrips amoenella (Frey, 1882)

Gelechia amoenella Frey, 1882, Mitt. schweiz. ent. Ges., 6: 366. Lectotype ♀, [abdomen missing], Switzerland: Valais ["Wallis"], (Anderegg) (BMNH), designated by Sattler (1968: 112), [not examined].
Athrips allgunnensis Svensson, 1993: 31; unavailable, nomen nudum.
Rhynchopacha amoenella (Frey, 1872) Sattler 1968: 112.
Athrips amoenella (Frey, 1872) Sattler 1978: 57.

Material examined. **Switzerland:** 1 ♀, Vispach m., 12/6, *Rhynchopacha amoenella* (Frey), ♀, det. K. Sattler, 1969, (genitalia: K. Sattler 485 b) (ZMHU). **Corse:** 1 ♀, Corse, 800 m, Evisa, 18.–19. v. 1999, O. Karsholt (gen. prep. No. 93, O. Bidzilya, 2001) (ZMUC). **Greece**: 1 ex. [abdomen missing], 27. iv. 1981, CSSA, 400, Collezione G. Bassi, 18610 (ZMUC). **Ukraine:** 1 ♂, Krym, Karadagh, 10. iv. 1986, Yu. I. Budashkin; 6 ♂♂, 1 ♀, same data, but 19, 22. iv, 7. v. 2001, Yu. I. Budashkin (gen. prep. No. 1, No. 16, No. 57, O. Bidzilya, 2001) (ZMKU). **Kazakhstan:** 1 ♂, Kokchetavskaja oblast', Shchukinsk, smesh.[anyi] les, svet, 28. vi. 1987, Z. Gershenzon leg. (ZMKU); 1 ♀, 15 km S Uzun-Agatcha, Alma-Atinskaja oblast', 2. vi. 1981, Sinev S. Yu. (ZIN). **Kyrgyzstan:** 1 ♀, Tian-Shan, prov. Dzhalal-Abad, distr. Kotshkor-Ata, prope pag. Toskool, fauc. Alash-Saj, alt. 1100 m, 30.–31. v. 2003, lum., E. Rutjan leg. (ZMKU).

Adult (Fig. 20). Wingspan 9–11 mm. Head and tegulae grey mottled with dark brown scales, face white. Thorax grey with some yellow scales. Antenna with alternated black and white rings. Labial palpus cream, each segment with two dark rings. Forewing bright, variegated, orange with two broad black spots at costal and posterior margins, apical area black, subapical fascia yellowish white. A small black spot about one-third length near costa, another dark spot at two-thirds near posterior margin. Cilia grey, some scales yellow with dark tips. Hindwing and cilia grey.

Variation. There is variation in the shape and distribution of orange and black patches; black spots sometimes merge to form transversal fasciae.

Male genitalia (Fig. 92). Uncus sub-rectangular, covered apically with strong long setae. Gnathos long, slender, strongly curved at about middle. Cucullus digitate, weakly apically pointed, not exceeding the apical setae of the uncus. Sacculus broad, apex small, pointed. Transtilla lobes longer than sacculus, basally constricted. Saccus broad, short. Aedeagus basally swollen, distal portion weakly curved, apex pointed.

Female genitalia (Fig. 136). Papilla analis broad, sparsely covered with short setae. Apophyses posteriores 2.5 times length of apophyses anteriores. Sternite VIII strongly sclerotized anteriorly with drop-shaped incision at posterior margin; patches of honeycomb pattern broad, sub-rectangular. Sclerotized part of the ductus bursae about length of apophyses anteriores. Ostium simple with small dorsomedial sclerite. Ductus bursae long, slender. Corpus bursae rounded. Signum elongate plate with strongly sclerotized medial ridge.

Remarks. *A. amoenella* differs from *A. nigricostella*, *A. tetrapunctella* and *A. stepposa* sp. n. in bright, contrast forewing with prominent orange patches and indistinct dark spots. In the male genitalia it differs from *A. stepposa* sp. n. and *A. kerzhneri* in evenly broad sacculus, that is not constricted basally. In the female genitalia it is clearly recognizable by extremely broad, sub-rectangular patches of honeycomb pattern of sternite VIII.

Biology. Host-plant unknown, probably *Vicia cracca* (Kaitila 1996: 93, after Huemer & Karsholt 1999: 183) (Fabaceae). In Crimea adults fly from middle April to middle May, in Kazakhstan also in the end of June (probably second generation).

Distribution. South Ukraine (Crimea); Russia: Cheliabinskaja oblast', Orenburgskaja oblast'; North and East Kazakhstan; Kyrgyzstan. According to Huemer & Karsholt (1999: 183) locally in North and Central Europe, also known from Spain and Turkey.

Athrips kerzhneri Piskunov, 1990

Athrips kerzhneri Piskunov, 1990, Nasekomye Mongolii, 11: 287–289, figs 3, 4 [male genitalia]. Holotype ♂, Mongolia, Vost.[ochnyi] Aimak, 50 km ESE Tchoibalsana, 12. vii. 1976, Kerzhner [in cyrillic] [Mongolia, East Aimak, 50 km ESE Tchoibalsan, 12. vii. 1976, Kerzhner], (gen. prep. 15709 = No. 40, O. Bidzilya, 2001) (ZIN), [examined].

Material examined. **Mongolia:** holotype of *kerzhneri* as above. **Russia:** 4 ♂♂, Tuva, 5 km Z Kyzyla, dolina r. Ulug-Khem, 15. v. 1990, svet, V. V. Dubatolov (gen. prep. No. 9, O. Bidzilya, 2001) (SZMN).

Adult (Fig. 21). Wingspan 8–11 mm. Head, thorax and tegulae covered with white dark-tipped scales. Antenna brown with light rings at

base of each segment. Labial palpus recurved, segments 2 and 3 white with two brown rings at base and near apex; apex of segment 3 white, pointed. Forewing yellow, costa, termen and apical half of posterior margin black; small black spot at two-thirds near posterior margin. Cilia yellow, some scales with brown tips. Hindwing and cilia grey.

Male genitalia (Fig. 93). Uncus short, covered apically with strong long setae. Gnathos long and narrow, sickle-shaped, apex pointed. Cucullus straight, extending to the apical setae of the uncus. Sacculus broad, weakly constricted basally, apex pointed, inwards-curved. Transtilla lobes long, slender, exceeding the length of the sacculus, weakly apically narrowed. Saccus broad, short. Aedeagus basally swollen, distal part long, slender, apex pointed.

Female genitalia. Unknown.

Remarks. *A. kerzhneri* clearly differs externally from *A. nigricostella* and *A. tetrapunctella* in primary yellow forewing without distinct black spots. In the male genitalia it is very similar to *A. rutjani* sp. n. but differs in the sacculus, that is not broadened distally and in the shorter transtilla lobes; it is easily distinguished from *A. stepposa* sp. n. by the sacculus, that is weakly constricted basally.

Biology. Host-plant unknown.

Distribution. Russia: Tuva Mountains; Mongolia: East Aimak.

Athrips stepposa sp. n.

Material examined. Holotype ♂, **Ukraine:** "Ukraina, Luganskaya obl., Melovoi r-n, zap-k Strel'tzovskaya step', 6. vii. 2002, A. Bidzilya" [in cyrillic] ["Ukraine, Lugansk reg., Melovoi distr., Strel'tzovskaya steppe Nature Reserve, 6. vii. 2002, A. Bidzilya"]. Paratypes: 5 ♂♂, 5 ♀♀, same data as holotype, but 6–10. vii. 2002, A. Bidzilya. 2 ♂♂, "SE Ukraina, zap-k Proval'skaya step', 15. v. 1989, Pljushtch, Kostjuk" [in cyrillic] ["SE Ukraine, Proval'skaja steppe Nature Reserve, 15. v. 1989, Pljushtch, Kostjuk"]; 5 ♂♂, 4 ♀♀, "SE Ukraina, zap-k Proval'skaja step', 17, 18. v. 2000, A. Bidzilya", (gen. prep. No. 9 ♂, No. 99, ♀, O. Bidzilya, 2001); 4 ♂♂, 3 ♀♀, "SE Ukraina, zap-k Khomutovskaya step', 6. v. 1996, 11. v. 2000, O. Bidzilya", (gen. prep. No. 4, ♂, O. Bidzilya, 2001); 2 ♀♀, "SE Ukraina, Stanichno-Luganskoe, 15. v. 2000, O. Bidzilya" (all ZMKU). **Russia:** 2 ♂♂, 2 ♀♀, S-Ural, Cheliabinsk district, Kizilskoe 15 km S, near Ural river, 27. v. 1998, T & K Nupponen leg. (in coll. T & K Nupponnen); 6 ♂♂, 7 ♀♀, S-Ural, Cheliabinsk district, Mednogorsk, 20 km S, near Kidriasovo village, 28. v. 1998, T & K Nupponen leg.; 1 ♂, S-Ural, Orenburg district, Donskoe village 6 km W, mount Verbljushka, 11. vi. 1998, T & K Nupponen leg.; 1 ♂, 3 ♀♀, S-Ural, Orenburg district, Kuvandyk 12 km S, 20. vii. 1998, T & K Nupponen leg.; 1 ♂, S-Ural, Cheliabinsk district, Arkaim reserve, near Amurskii village, 22. vii. 1998, T & K Nupponen leg.; 1 ♀, S-Ural, Cheliabinsk district, Miass, Ilmen reserve, 25. v. 1998, J. Junnilainen leg.; 1 ♀, S-Ural, Cheliabinsk district, Ajat river, 03.–05. vii. 1997, K. Nupponen & J. Junnilainen leg. (in coll. J. Junnilainen). 1 ♂, Tuva rep., 50°44′ N, 93°08′ E, 1000 m, E Tannu-Ola mts., Irbitei r., stony slopes, 13.–16. vi. 1995, Jalava & Kullberg leg. (gen. prep. No. 73, O. Bidzilya, 2001) (ZMUC). **Kazakhstan:** 3 ♂♂, 1 ♀, "Janvartzevo, prav.[yi] b.[ereg] Urala, Kazakhst.[an], [1]950, Martynova", "No. 291, vyl.[et] 19, 22, 26. vii. [19]50", "*Epithectis nigricostella* Stgr" [in cyrillic] ["Janvartzevo, right bank of Ural river, [1]950 Martynova", "No. 291, em. 19, 22, 26. vii. 50", "*Epithectis nigricostella* Stgr"]; 1 ♂, 1 ♀, "Janvartzevo, prav.[yi] b.[ereg] Urala, Kazakhst.[an], [1]950, Martynova" [in cyrillic] [Janvartzevo, right bank of Ural river, [1]950 Martynova"] (all ZIN). **Kyrgyzstan:** 1 ♂, 3 ♀♀, "Issuk-Kul', prope Kadzhy-Saj, alt. 1650 m, 3–4. viii. 2000, lum., E. Rutjan leg.", (gen. prep. No. 51, ♂, No. 107, ♀, O. Bidzilya, 2001) (ZMKU); 1 ♂, 1 ♀, "Kirgisia [N bank of Issuk-Kul' Lake], Tcholpon-Ata, 29. vii, 5. viii. [19]87, Lvovsky, Nikiforova" (ZIN).

Adult (Figs 22, 23). Wingspan 8.5–10 mm. Head off-white, some scales with dark grey tips. Thorax and tegulae grey. Labial palpus cream with two broad rings at base and near apex of each segment. Antenna grey with white rings at base of each segment. Forewing greyish brown with two black spots at base and about one-third length and one black spot at two-thirds near posterior margin; all spots surrounded by broad rings of ochreous scales; apical areas devided by diffuse white fascia. Cilia grey with some black scales. Hindwing and cilia grey, with slight sheen.

Variation. "Fresh" specimens show more contrast, with obvious dark spots, white subapical fascia and ochre scales concentrated mainly in middle of wing.

Male genitalia (Fig. 94). Uncus short and broad, covered apically with strong long setae. Gnathos long, slender, strongly curved about half length. Cucullus straight, extending to the apical setae of the uncus, apex rounded. Sacculus broad, strongly constricted basally, apex pointed, curved inwards. Transtilla lobes about length of sacculus, weakly narrowed towards the rounded apex. Saccus broad, short. Aedeagus basally swollen, distal part straight, slender, apex pointed.

Variation. There is variation in the shape of uncus among specimens from the different regions.

Female genitalia (Fig. 137). Papilla analis broad, sparsely covered with short setae. Apophyses posteriores twice length of apophyses anteriores. Sternite VIII with deep narrow incision at posterior margin, with two lateral and two medial patches of honeycomb pattern. Ostium bursae simple. Sclerotized part of the ductus bursae about length of apophyses anteriores. Corpus bursae nearly rounded. Signum narrow elongate plate.

Remarks. *A. stepposa* sp. n. differs externally from *A. amoenella, A. nigricostella* and *A. tetrapunctella* in the usually greyish brown forewing with poorly expressed yellow patches. In the male genitalia it is similar to *A. kerzhneri* and *A. rutjani* sp. n. but differs in the strongly constricted basally sacculus. In the female genitalia it differs from the related species in the presence of lateral and medial patches of honeycomb pattern as well as in the deep narrow incision at posterior margin of sternite VIII.

Biology. Larva feeds on *Caragana frutex* (Martynova 1952: 90) (Fabaceae). Adults occur from middle May to middle June and then in July and early August; probably two generations.

Distribution. SE Ukraine; Russia: Cheliabinskaja oblast', Orenburgskaja oblast', Tuva mountains; NW Kazakhstan; Kyrgyzstan.

Athrips rutjani sp. n.

Material examined. Holotype ♂, **Kyrgyzstan:** "Kyrgyzstan, Issyk-Kul', prope pag. Kadzhy-Saj, alt. 1650–1700 m, 4.–6. v. 2003, E. Rutjan leg.", (gen. prep. No. 5/03, O. Bidzilya) (ZMKU). Paratype ♂, same data as holotype.

Adult (Fig. 24). Wingspan 10.5–12.5 mm. Head white, vertex with few brown-tipped scales. Antenna grey, each segment with white ring at base. Labial palpus recurved, segment 2 white with brown rings at base and near apex, inner surface white. Segment 3 greyish brown with white ring in middle, apex white. Thorax grey, tegulae brown, sparsely covered with light scales. Forewing greyish light with yellowish white fascia at one-quarter and diffuse yellow spot in middle; base, costal and posterior margins from the base to three-quarters black greyish; distinct dark spot at three-quarters of posterior margin; subapical fascia broad, yellow; apex yellowish white with few black-tipped scales. Hindwing including cilia grey, with some sheen.

Variation. The paratype differs in the brighter yellow fascia of the forewing.

Male genitalia (Fig. 95). Uncus short, trapezoid, covered apically with strong setae. Gnathos hook-shaped, curved in middle. Cucullus distinctly broadened distally, reachs the apical setae of the uncus. Sacculus weakly constricted at base, apex pointed, curved inwards. Transtilla lobes digitate, exceeding the length of the sacculus, about twice shorter than cucullus. Saccus broad, short. Aedeagus basally swollen, distal part straight, slender, apex pointed.

Female genitalia. Unknown.

Remarks. *A. rutjani* sp. n. is similar externally to *A. amoenella* and *A. stepposa* sp. n. but differs in the white head without grey-tipped scales; from *A. amoenella* it also differs in the absence of orange spots and fasciae on the forewing; it differs from *A. stepposa* sp. n. in the distinct black spot at three-quarters of posterior margin and wide yellow subapical fascia. The male genitalia resemble those of *A. kerzhneri* but differ clearly in the apically broadened cucullus and the longer transtilla lobes.

Biology. Host-plant unknown. Adults were registered in early May.

Distribution. Known only from Kyrgyzsatan.

falkovitshi-group

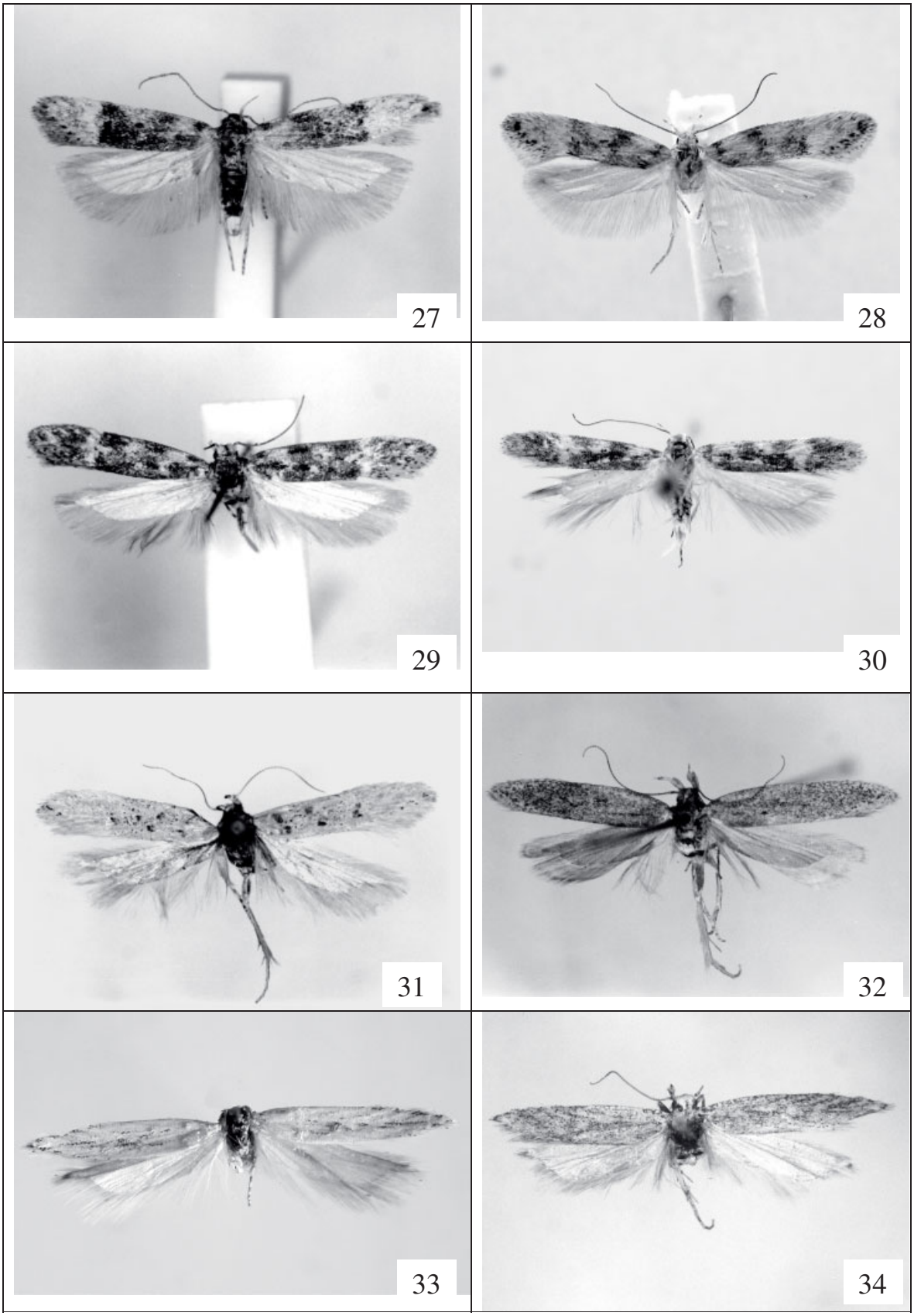
Gnathos membranous triangular sclerite; uncus very short; distal part of aedeagus relatively short; sclerotized part of the ductus bursae short; signum small, indistinct; larva feeds on Peganaceae.

Athrips falkovitshi Piskunov, 1990

Athrips falkovitshi Piskunov, 1990: 51, Biologicheskie nauki [Biological Scienses], 8 (320): 51, fig. 1 [male and female genitalia]. Holotype ♂, Uzbekistan: Ajakguzhumdy, 40 km O Dzhingil'dy, Kyzylkum, 28. iv. 1966, M. Falkovitsh, (gen. prep. 15714, ♂) (ZIN), [examined].

Material examined. **Uzbekistan:** holotype of *falkovitshi* as above; 1 ♀, Ajakguzhumdy, 40 km O Dzhingil'dy, Kyzylkum, 1. vi. [1]965, Zabello (gen. prep. No. 105, O. Bidzilya, 2001); 1 ♀, same data, but 4. vi. [1]966, Pastukhov; 1 ♂, same data, but 30. v. [1]965, M. Falkovitsh; 3 ♂♂, same data, but 5, 25. vi. [1]965, e. l. *Peganum harmala*, M. Falkovitsh; 1 ♀, Zhamansai, 140 km NW Shafrikana, Uzbek.[istan], 23. iv. 1966, M. Falkovitsh (gen. prep. No. 60/02, O. Bidzilya) (all ZIN). **Turkmenistan:** 1 ♀ (paratype), Turkm.[enskaya] SSR, Badkhyz, kord.[on] Kyzyldzhar, 21. iv. 1980, e. l. *Peganum harmala*, V. Pechen' (gen. prep. No. 15714) (ZIN); 4 ♂♂, same data, but 2.–3. vi. [19]80, svet, V. Pechen' (gen. prep. No. 106, No. 34, No. 38, O. Bidzilya, 2001) (ZMKU).

Adult (Figs 25, 26). Wingspan 11–12 mm. Head, thorax and tegulae light grey, some scales with brown tips. Dorsal and inner surfaces of segment 2 of the labial palpus uniformly white, ventral and outer surfaces white mottled with brown scales, which arranged in two diffuse rings at base and near apex. Segment 3 white with brown ring at base and near apex. Antennal segments brown with cream rings at base. Forewing light grey or cream, some scales weakly raised with brown tips. Two small ochreous brown spots near base, two larger distinct spots in middle and



Figs 27–34. Adult of *Athrips* species. **27** – *A. fagoniae*, ♂, Tunisia (ZMUC), wingspan 14 mm; **28** – *A. fagoniae*, ♀, Canary Isl. (ZSM), gen. prep. No. 61/02, wingspan 15 mm; **29** – *A. gerasimovi*, abdomen missing (paratype), Mongolia (ZIN), wingspan 12 mm; **30** – *A. gerasimovi*, ♀, Mongolia (ZIN), gen. prep. No. 77, wingspan 12 mm; **31** – *A. septempunctata*, ♂ (paratype), China (IZShNU), gen prep. No. 69, wingspan 16.5 mm; **32** – *A. peteri* sp. n., ♀ (holotype), Kazakhstan (ZMKU), gen. prep. No. 101, wingspan 15 mm; **33** – A. sp. 1, ♂, Mongolia (ZIN), gen prep. No. 28/02, wingspan 16 mm; **34** – *A. tcharyna*, ♂ (holotype), Kazakhstan (ZMKU), gen. prep. No. 42, wingspan 15 mm.

two spots at two-thirds; indistinct small spot in about middle and two diffuse spots at two-thirds near costal margin. Subapical area darker, grey, devided by light, diffuse, weakly curved at the apex fascia. Termen with small black spots. Cilia grey with a black tips. Hindwing and cilia light grey, with some sheen.

Variation. Segment 2 of the labial palpus sometimes cream mottled with brown scales without brown rings. The holotype and one paratype from Uzbekistan have uniformly grey forewings with indistinct patterns, whereas specimens from Turkmenistan are cream, with prominent ochreous brown spots which may merge to form narrow oblique patches at about one-half and two-thirds length of the wing.

Male genitalia (Fig. 96). Uncus short, trapezoid. Gnathos indistinct, weakly sclerotized membranous plate. Cucullus broad, narrowed near base, apex rounded, exceeding uncus by about one-third. Sacculus short, apex small, pointed. Transtilla lobes longer than sacculus, distinctly tapered towards apex. Saccus broad, short. Basal part of aedeagus swollen, distal part slender, apex pointed.

Variation. There is variation in the length of uncus, width of tegumen, sacculus and transtilla lobes.

Female genitalia (Fig. 138). Papilla analis broad, sparsely covered with short setae. Apophyses posteriores twice length of apophyses anteriores. Sternite VIII with deep narrow incision at posterior margin and with two rounded patches of honeycomb pattern. Ostium bursae with a small dorsomedial sclerites. Sclerotized part of the ductus bursae shorter than apophyses anteriores, broadened posteriorly. Corpus bursae sub-oval. Signum plate very small, sub-triangular.

Remarks. *A. falkovitshi* is easily recognizable externally by wing patterns and relatively small size. The male genitalia differ from those of other *Athrips* species in the short uncus and weakly sclerotized membranous triangular gnathos. In the female genitalia it is similar to *A. peteri* sp. n. but differs reliably in the smaller signum, rounded caudally (without small projections) patches of honeycomb pattern of sternite VIII and corpus bursae sub-oval.

Biology. Larva feeds on leaves of *Peganum harmala* (Peganaceae), living in silken tube on a small twigs. Larva light grey, head and thoracic shield black (Piskunov 1990b: 53; Falkovitsh & Bidzilya 2003: 118). Adults fly from the end of April to early of June.

Distribution. Deserts of Turkmenistan and Uzbekistan.

fagoniae-group

Cucullus strongly curved basally; sacculus placed medially from cucullus; signum elongate ring; female sternite VIII with well developed patches of honeycomb pattern; ductus bursae relatively thin; larva feeds on Peganaceae.

Athrips fagoniae (Walsingham, 1904)

Leobatus fagoniae Walsingham, 1904, Entomologist's mon. Mag., 40: 221. Lectotype ♂, Algeria: Hammam-es-Salahin (BMNH), designated by Sattler (1968: 112), [not examined].

Lita cervinella Turati, 1934, Atti Soc. ital. Sci. Nat., 73: 197; f. [imago, foto]. Holotype, unspecified sex, Lybia: Cyrenaica, Mecheli, 28. iii. 1933 (?Krüger) [not traced]. [Synonymized by Sattler 1968: 113].

Gelechia rosinansella D. Lucas, 1942, Bull. Soc. ent. Fr., 47: 125. Lectotype ♂, Tunisia: Hadjeb el Aioum (MNHN), designated by Sattler (1968: 113), [not examined]. [Synonymized by Sattler 1968: 113].

Rhynchopacha fagoniae (Walsingham, 1904) Sattler 1968: 112.

Athrips fagoniae (Walsingham, 1904) Sattler 1978: 58.

Material examined. **Canary Islands:** 1 ♀, Ins. Canar. Ten. El Medano, 29. xii. 1973 e. l. *Fagonia cretica*, J. Klimesch leg. (gen. prep. No. 96, O. Bidzilya, 2001) (ZSM); 1 ♂, 1 ♀, same data, but 11. i. 1972, e.l. 4. ii. 1974, *Fagonia cretica*, J. Klimesch leg., (gen. prep. No. 61/02, ♀; gen. prep. No. 73/02, ♂. O. Bidzilya) (ZSM); 1 ♂, Canary Island, Tenerife, Costa d. Silencio, 7. i. 1981, 10 m, P. Stadel Nielsen (gen. prep. No. 72, O. Bidzilya, 2001) (ZMUC). **Tunisia:** 1 ♂, Tunesia, N. of Gafsa, 6. iv. 1998, F. Iversen (ZMUC).

Adult (Figs 27, 28). Wingspan 12–15 mm. Head ochreous brown. Antenna brown with white rings at base of each segment. Labial palpus recurved. Segment 2 yellowish dark with broad black ring near base and indistinct thin ring near apex, inner surface uniformly cream. Segment 3 yellowish dark with black apex and black ring at base. Thorax and tegulae brownish grey mottled with ochreous scales. Ground colour of forewing ochreous brown. Black scales concentrated mainly between one-quarter and two-thirds, where they form two diffuse fasciae. Two or three black spots in middle of wing. Subapical part of wing lighter, ochreous grey. Cilia light grey mottled with black scales. Hindwing and cilia light grey.

Variation. There is extensive variation in intensity and distribution of the dark patterns: the black fasciae may be reduced to separate black marginal spots or elements of the black pattern may spread along the posterior margin of the

forewing. The subapical part of the wing may be divided by a cream fascia that is weakly curved at the apex. Head, thorax and tegulae may be uniformly ochre. The ground colour of the forewing varies from reddish brown to ochreous brown.

Male genitalia (Fig. 97). Uncus broad, trapezoid covered with long setae. Gnathos hook-shaped, strongly curved in basal half. Cucullus strongly curved basally, broadened apically, apex rounded, not exceeding the apical setae of the uncus. Sacculus short, slender, curved inwards, apex small, pointed. Transtilla lobes very short and broad, pointed towards apex. Saccus broad, very short. Aedeagus swollen basally, distal part broad and short, tapered towards the apex in distal half.

Variation. The distal part of aedeagus may be slender, weakly S-shaped, with a narrow elongate apex.

Female genitalia (Fig. 139). Papilla analis broad, sparsely covered with short setae. Apophyses posteriores 2.5 times length of apophyses anteriores. Sternite VIII with broad triangular incision at the posterior margin, patches of honeycomb pattern broad, narrowed towards the ostium bursae but not reach the lateral and anterior margins of sternite VIII. Ostium simple. Sclerotized part of the ductus bursae a little shorter or about length as apophyses anteriores, with additional lateral sclerites. Ductus bursae long, coiled before corpus bursae. Corpus bursae pear-shaped. Signum plate triangular.

Remarks. *A. fagoniae* differs externally from other *Athrips* species in unique wing patterns. In the male genitalia it is recognizable reliably by the basally curved cucullus and by the extremely broad transtilla lobes. In the female genitalia it is slightly similar to *A. gerasimovi* but differs in the shape of the signum and shape of patches of honeycomb pattern of sternite VIII.

Biology. Host-plants are *Fagonia cretica* and *F. sinaica* (Zygophyllaceae). Adults fly from December to April and in early June.

Distribution. Canary Islands; Tunisia. Also known from Algeria, Libya (Cyrenaica), Egypt and Jordan (Amsel 1955: 279, Sattler 1967: 113).

gerasimovi-group

Sacculus extremely long, narrow, with weakly serrated inner margin; cucullus long, straight; transtilla lobes very slender, pointed; distal part of aedeagus short, apex abruptly truncated; female sternite VIII with well developed patches of honeycomb pattern.

Athrips gerasimovi Piskunov, 1982

Athrips gerasimovi Piskunov, 1982, Nasekomye Mongolii, 8: 370–373, fig. 3 [forewing]; fig. 13 [male genitalia], figs 14, 15 [female genitalia]. Holotype ♂, Mongolia: Bajan-Khongorskiy Aimak, 55 km SSW Shine-Dzhista, 28. viii. [1]970, Kerzhner, (gen. prep. No. 14812) (ZIN), [examined].

Material examined. **Mongolia:** holotype of *gerasimovi* as above; 3 ♂♂, 2 ♀♀, same data as holotype, (gen. prep. No. 86, ♀; No. 30, ♂; No. 77, ♀, O. Bidzilya, 2001; gen. prep. No. 62/02, ♀, O. Bidzilya); 1ex. (abdomen missing, paratype), Mongolia, Sredne-Gobiiskiy Aimak, Ulgin-Ula, 80 km SSW Mandal-Gobi, svet, 11. viii. [1]971, Kerzhner (all ZIN).

Adult (Figs 29, 30). Wingspan 12–15 mm. Head yellowish brown. Labial palpus recurved, segment 3 about length as segment 2. Segment 2 cream with brown ring at base and some brown scales at lower surface. Segment 3 yellowish cream with brown rings at base and near apex. Antenna black with greyish rings at base of each segment, scape with cream scales. Thorax and tegulae brown mottled with yellow. Forewing long and narrow, greyish brown with three yellow fasciae: at base, in middle and at about three-quarters. First and second fasciae not extending to posterior margin, third (subapical) expanded medially. Five black spots along longitudinal axis of wing: two at base, third at about one-half and two at three-quarters within subapical fascia. Subapical areas with some yellow-tipped scales. Cilia cream, some scales with brown tips. Hindwing including cilia grey.

Variation. There is variation in the shape of the yellow fasciae, which are sometimes reduced to separate spots.

Male genitalia (Fig. 98). Uncus broad, apical setae strong and long. Gnathos sickle-shaped, weakly curved, apex pointed. Cucullus long and narrow, apex rounded, exceeding apical setae of uncus. Sacculus long, slender, straight, apex

►

Figs 35–42. Adult of *Athrips* species. **35** – *A. tsaidamica*, ♂ (holotype), China (ZIN), gen. prep. No. 14831 = 43, wingspan 19 mm; **36** – *A. tsaidamica*, ♂ (abdomen missing), China (ZIN), wingspan 19 mm; **37** – A. sp. 2, ♂, China (IZShNU), gen. slide No. L95326, wingspan 15.5 mm; **38** – *A. polymaculella*, ♀, S. Korea (KNU), gen. prep. No. 70, wingspan 14 mm; **39** – *A. nigrogrisea*, ♀ (paralectotype), Russia: Buryatija (ZIN), gen prep. No. 17422 = 103, wingspan 11 mm; **40** – *A. rancidella*, ♂, Germany (ZMHU), wingspan 11 mm; **41** – *A. rancidella*, ♂, Iran (TLMF), wingspan 14 mm; **42** – *A. rancidella tadzhika* ssp. n., ♀ (paratype), Tadzhikistan (ZIN), wingspan 12.5 mm.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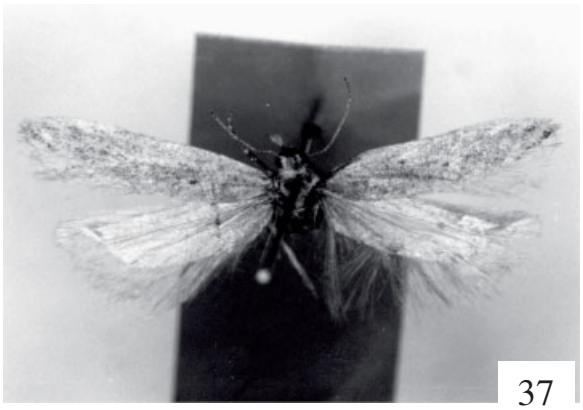
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abruptly truncated, strongly curved inwards. Transtilla lobes short, slender, apically pointed. Posterior margin of vinculum with pair of small medial processes. Saccus broad, rounded. Aedeagus short, distal part about length as basal part, apex abruptly tapered.

Female genitalia (Fig. 140). Papilla analis elongate, sparsely covered with short setae. Apophyses posteriores two to 2.3 times length of apophyses anteriores. Sternite VIII with deep narrow incision at posterior margin and with broad, narrowed anteriomedially patches of honeycomb pattern, which not reach the anterior margins of sternite VIII. Ostium bursae simple. Antrum weakly sclerotized, indistinct. Sclerotized part of the ductus bursae shorter than half length of apophyses anteriores, broadened posteriorly. Ductus bursae long. Corpus bursae suboval. Signum plate small, triangular.

Remarks. *A. gerasimovi* differs externally from other *Athrips* species in the narrow forewing with yellow fasciae. In the male genitalia it is easily distinguished by the long, slender sacculus as well as by the shape of the aedeagus. The female genitalia resemble those of *A. fagoniae* but differ in the broader patches of honeycomb pattern of sternite VIII, which is not narrowed laterally and in the different shape of the signum bursae.

Biology. Host-plant unknown. Adults fly in August – early September.

Distribution. Mongolia: Bajan-Khongorskiy Aimak, Sredne-Gobiiskiy Aimak.

septempunctata-group

Distal part of aedeagus short, S-shaped; uncus covered distally with thin, hair-like setae; forewing with tufts of raised scales.

Athrips septempunctata Li & Zheng, 1998

Athrips septempunctata Li & Zheng, 1998, Acta zootaxonomica Sinica, 23 (3): 296–298, figs 8–9 [male genitalia], fig. 10 [female genitalia]. Holotype ♂, China: Liancheng, Yongdong, Gansu Prov., 85..5..9, Li Hou-Hun, (gen. slide No. L95327) (IZ ShNU), [not examined].

Material examined. 1 ♂, 1 ♀ (paratypes of *septempunctata*), Liancheng, Yongdong, Gansu Prov., 85..5..8, (gen. prep. No. 69, gen. prep. No. 98, O. Bidzilya, 2001) (IZ ShNU).

Adult (Fig. 31). Wingspan 16.5–17.5 mm. Labial palpus strongly recurved. Segment 2 broad, three times width of segment 3, with modified brush of long scales beneath, white with some black scales at base and near apex. Segment 3 white with black rings near base, apex black with few white scales. Head, thorax and tegulae white, some scales with brown tips. Antenna with alternated black and grey rings. Forewing yellowish cream mottled with numerous black-tipped scales. Veins light, white, distinctly visible in apical part of the wing. Forewing with 7 tufts of ochreous brown raised scales: the first pair near base, second pair at one-third, small single spots at one-half length and last pair of spot at two-thirds. Cilia light yellow. Hindwing including cilia grey, with some sheen.

Male genitalia (Fig. 99). Uncus trapezoid, apex with small emargination, densely covered with hair-like setae. Gnathos long, sickle-shaped, curved at base and about half length, weakly undulating distally. Cucullus broad, narrowing near apex, far exceeding the apical setae of the uncus. Sacculus evenly broad, weakly curved inwards, apex triangular. Transtilla lobes broad, a little shorter than sacculus, apex rounded. Saccus short, broad. Aedeagus basally swollen, distal part very short, tapered towards rounded apex.

Female genitalia (Fig. 141). Papilla analis broad, sparsely covered with short setae. Apophyses posteriores twice length of apophyses anteriores. Sternite VIII with small triangular incision at posterior margin, strongly sclerotized posteriorly with two triangular weakly spinulated posterior projections. Sclerotized part of the ductus bursae thin, evenly sclerotized, about length as apophyses anteriores. Ductus bursae thin, not coiled before corpus bursae. Corpus bursae nearly rounded. Signum narrow elongate plate with strongly sclerotized ridge.

Remarks. *A. septempunctata* differs from the related species (*A. peteri* sp. n., *A. tcharyna* sp. n., *A. tsaidamica*) in the unique wing pattern represented by distinct ochreous brown tufts of scales. In the male genitalia it is similar to *A. tcharyna* sp. n., differs slightly in the narrower and weakly inwards-curved sacculus, as well as in the wider distal part of the aedeagus with a rounded rather than pointed apex. The female genitalia resemble those of *A. rancidella* but differ in the narrow, elongate (not triangular) signum and a longer, thinner sclerotized part of the ductus bursae.

Biology. Host-plant unknown.

Distribution. China: Gansu Province.

Athrips tcharyna sp. n.

Material examined. Holotype ♂, **Kazakhstan:** "SW Kazakhstan, Uigurskiy r-n, 15 km SW Tchundzhi, k.[ordon] Jasenevaya roshcha, 22. v. 1991, na svet, Ustjuzhanin P. Ya." [in cyrillic] ["SE Kazakhstan, Uigursk distr., 15 km SW Tchundzha, k.[ordon] Jasenevaja roshcha, 15. v. 1991, on light, Ustjuzhanin P. Ya."], (gen. prep. No. 42, O. Bidzilya, 2001) (ZMKU).

Adult (Fig. 34). Wingspan 15 mm. Head white, sparsely covered with brown scales. Antennal segments with alternated dark and light rings. Segment 2 of the labial palpus weakly curved, inner surface white, outer surface white with black rings near base and near apex. Segment 3 straight, white with black ring at base, apex black (Fig. 66). Thorax and tegulae covered with white brown-tipped scales. Forewing cream with numerous black scales distributed mainly along veins. Six indistinct tufts of yellowish white raised scales along central axis of wing. Hindwing including cilia light grey.

Male genitalia (Fig. 100). Uncus sub-rectangular, apex with small emargination, covered apically with hair-like setae. Gnathos long, strongly curved about half length, distal part slender, apex pointed. Cucullus broadened in distal two-thirds, apex pointed, slightly exceeding the apical setae of the uncus. Sacculus broad, weakly inwards-curved, apex pointed. Transtilla lobes a little shorter than sacculus, broad, apex triangular. Saccus broad, short. Aedeagus basally swollen, distal part narrow, very short, curved before apex.

Female genitalia. Unknown.

Remarks. *A. tcharyna* sp. n. is clearly recognizable externally by the wing pattern and by the colour of the labial palpus. The male genitalia resemble those of *A. septempunctata*, but differ in the wider sacculus and in the slimmer, pointed distal part of the aedeagus.

Biology. Host-plant unknown.

Distribution. SE Kazakhstan.

Athrips sp. 1

Material examined. **Mongolia:** 1 ♂, Urga vicinity, 1. vi. [19]09, Kozlov (gen. prep. No. 28/02, O. Bidzilya); 1 ex. (abdomen missing), Urga vicinity, 1. vi. [19]09, Kozlov (all ZIN); 2 ♂♂, Mongolia, Südgobi Aimak, Gurban Sajchan ul., zw. Somon Churman und Somon Bajandalai, 1550 m, Exp. Dr. KASZAB, 1967/Nr. 800, 14. vi. 1967 (gen. prep. No. 42/02, O. Bidzilya) (HMNH).

Adult (Fig. 33). Wingspan 15–16 mm. Head white mottled with dark scales. Tegulae and thorax white, some scales with black tips. Scape brown, others antennal segment with alternated white and brown rings. Labial palpus weakly curved. Outer surface of segment 2 white with black rings at base and near apex, inner surface uniformly white. Segment 3 white with black apex and black ring near base. Forewing dark yellow or yellowish white mottled with dark scales along veins and near base; five-six indistinct tufts of brown raised scales along central axis of wing. Hindwing including cilia grey.

Male genitalia (Fig. 101). Uncus trapezoid, apex with small emargination, densely covered with long, hair-like setae. Gnathos long, strongly curved about half length, weakly undulating distally. Cucullus broad, apically narrowed, far exceeding the apical setae of the uncus. Sacculus slender, weakly inwards-curved, apex triangular. Transtilla lobes and saccus broad, short. Aedeagus basally swollen, distal part extremely short, apically curved.

Female genitalia. Unknown.

Remarks. This species is related to *A. tcharyna* sp. n., but differs in the darker, yellow (not whitish grey) wings, the basally broadened cucullus and narrower and distinctly inwards-curved sacculus. The status of this taxon needs clarification.

Biology. Host-plant unknown.

Distribution. Mongolia: Juzhno-Gobiiskiy Aimak, Central'nyi Aimak.

Athrips peteri sp. n.

Material examined. Holotype ♀, **Kazakhstan:** "SW Kazakhstan, Uigurskiy r-n, 15 km SW Tchundzhi, k.[ordon] Jasenevaya roshcha, 15. v. 1991, na svet, Ustjuzhanin P. Ya.", [on other side:] "polupustyniya, bereg kanala" [in cyrillic] ["SE Kazakhstan, Uigursk distr., 15 km SW Tchundzha, k.[ordon] Jasenevaja roshcha, 15. v. 1991, light, Ustjuzhanin P. Ya.", "semidesert, the bank of channel"] (gen. prep. No. 101, O. Bidzilya, 2001) (ZMKU).

Adult (Fig. 32). Wingspan 15 mm. Head light grey. Labial palpus recurved. Segment 2 2.5 width of segment 3, inner surface yellowish white with isolated brown scales near apex, outer surface light brown, ventrally cream, covered from below with moderate brush of long scales. Segment 3 white, with dark ring near apex (Fig. 67). Antennal segments with alternated grey and white rings. Tegulae and thorax grey. Forewing elongate, covered with light grey, brown-tipped scales; indistinct dark spots at one-third and two-thirds near posterior margin. Cilia light grey with brown tips. Hindwing grey, cilia light grey with darker tips.

Male genitalia. Unknown.

Female genitalia (Fig. 142). Papilla analis broad, sparsely covered with short setae. Apophyses posteriores twice length of apophyses anteriores. Sternite VIII slightly wrinkled in medial part, posterior margin with deep incision, lateral patches of honeycomb pattern indistinct. Ostium bursae narrow, sclerotized laterally. Sclerotized part of the ductus bursae shorter than apophyses anteriores, broadened posteriorly. Ductus bursae moderately short, thin. Corpus bursae rounded. Signum plate triangular.

Remarks. *A. peteri* differs easily from other *Athrips* species in the uniformly light grey forewing and colour of the labial palpus. The female genitalia resemble those of *A. falkovitshi* but differ in the larger signum and in the rounded corpus bursae.

Biology. Host-plant unknown. The only specimen (holotype) was collected in semidesert.

Distribution. SE Kazakhstan.

tsaidamica-group

Forewing long, lanceolate, light grey with small indistinct spots of raised scales; inner margin of sacculus weakly serrated; transtilla lobes relatively long; distal part of aedeagus long and straight.

Athrips tsaidamica I. Emelyanov & Piskunov, 1982

Athrips tsaidamica I. Emelyanov & Piskunov, 1982, Nasekomye Mongolii, 8: 373, fig. 4 [forewing], figs 16–18 [male genitalia]. Holotype ♂, China: kh.[yrma] Barun-Tzasaka, met.[eorologicheskaja] st.[ancija], V[ostochnyi] Tsaidam, konets v. [1]901, Kozlov, kamennaja rossyp [in cyrillic] [kh.[yrma] Barun-Tzasaka, met.[eorological] st.[ation], E[ast] Tsaidam, end v. [1]901, Kozlov, stone placer], (gen. prep. No. 14831 = No. 43, O. Bidzilya, 2001) (ZIN), [examined].

Material examined. **China:** holotype of *tsaidamica* as above; ♂ [abdomen missing], same data as holotype, but konetz vii. [19]00, Kozlov (all ZIN).

Adult (Figs 35, 36). Wingspan 19 mm. Labial palpus recurved, yellowish grey, segment 3 with a group of brown scales near apex. Segment 2 2.5 width and three times length of segment 3, covered beneath with moderate brush of long scales (Fig. 65). Antenna grey with light ring at base of each segment. Head, thorax and tegulae yellowish grey. Forewing long, slender, lanceolate, covered with dark yellow, brown-tipped scales. Two dark brown spots about one-third, one of which slightly elongated and positioned about centre of the wing, whereas second spot lies some below and closer to the base of the wing. Three very small indistinct dark brown spots each under other at three-quarters. Cilia same colour as wing. Hindwing and cilia grey, slightly lighter than forewing.

Male genitalia (Fig. 102). Uncus broad, rectangular, covered with strong setae. Gnathos long, sickle-shaped, curved about one-third, undulating distally. Cucullus straight, apex rounded, extending to apical setae of uncus. Sacculus narrow, straight, weakly serrated. Transtilla lobes slightly exceeding sacculus, apically pointed. Saccus broad, short. Aedeagus basally swollen, distal part twice slender, about length as basal part, slightly tapered.

Female genitalia. Unknown.

Remarks. *A. tsaidamica* easily differs externally from the most of *Athrips* species in the very long, lanceolate wings, slightly resembles *A. peteri* sp. n., *A. tcharyna* sp. n. and *A. septempunctata* but may clearly be distinguished by wing pattern. In the male genitalia it is good recognizable by the broad rectangular uncus, distally undulating gnathos as well as by the direct and relatively slender transtilla lobes.

Biology. Host-plant unknown. Adults fly in May and July.

Distribution. China: Quinghai.

Athrips sp. 2

Athrips tsaidamica I. Emelyanov & Piskunov, 1982. – Li & Zheng, 1998: 298, figs 11, 12 [male genitalia].

Material examined. **China:** 1 ♂, Liancheng, Yongdong, Gansu Prov., 85..5..8, (gen. slide No. L95326 (IZ ShNU).

Adult (Fig. 37). Wingspan 15.5 mm. Labial palpus recurved, covered with light grey and cream scales. Segment 3 about length as segment 2. Antenna brown. Head and thorax light grey. Forewing light cream, indistinct dark spot at one-third of posterior margin, second spot at one-quarter in middle and third at two-thirds. Cilia grey with darker tips. Hindwing and cilia grey, with some sheen.

Male genitalia (Fig. 103). Uncus extremely long, trapezoid, densely covered with strong setae. Gnathos hook-shaped, curved about one-third length. Cucullus of evenly width, slightly exceeding the apical setae of the uncus. Sacculus short, serrated on inner surface, outer margin


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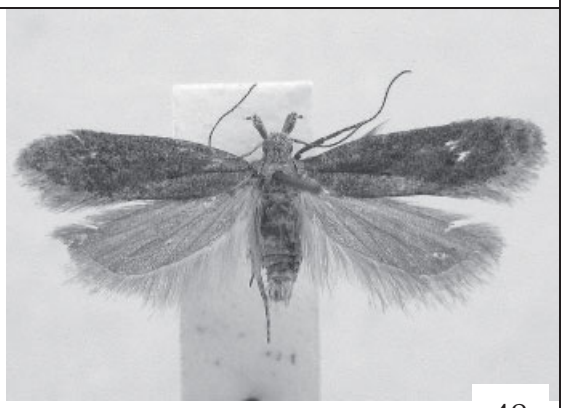
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gently curved. Transtilla lobes narrow, about length as sacculus. Saccus broad, short. Aedeagus long, swollen basally, distal part long, slightly tapered towards the apex.

Female genitalia. Unknown.

Remarks. *A.* sp. 2 is very similar to *A. tsaidamica* externally but differs in the smaller size and longer segment 3 of the labial palpus. In the male genitalia it differs from *A. tsaidamica* in the longer uncus and differently shaped gnathos. The status of this taxon needs clarification.

Biology. Host-plant unknown.

Distribution. China: Yongdong (Gansu Province), Qaidam (Quinghai Province) (Li & Zheng 1998: 298)

pruinosella-group

Distal part of the ductus bursae with additional lateral sclerites; transtilla well developed, broad, medial lobes digitate; distal part of aedeagus of normal length; female sternite VIII with well developed patches of honeycomb pattern and wrinkles; ostium bursae with dorsomedial sclerite; signum flat funnel-shaped; ductus bursae broad, corpus bursae round; forewing of most species relatively broad, greyish black with indistinct black spots; host-plants of most species Rosaceae.

Athrips polymaculella Park, 1991

Athrips polymaculella Park, 1991, Korean J. Appl. Entomol., 30 (3): 197–198, fig. 1 [imago], fig. 2 [wing venation], figs 3–4 [male genitalia], fig. 5 [female genitalia]. Holotype ♂, Korea: Chuncheon, Kangweon Prov., 1. v. 1989, K. T. Park, (gen slide no. 1797) (KNU), [not examined].

Material examined. **Russia:** 1 ♀, gub. Jenissej, Minussinsk, Tagarskij ostrov, 18. vi. 1927, S. Tzygankov leg.; 1 ♂, Zabaikalie, Chitinskaja oblast', Nizhniy Tsasutchey, 5. vi. 1989, I. Kostjuk (gen. prep. No. 51/02, O. Bidzilya, 2001) (all ZMKU). **S. Korea:** 2 ♂♂, 1 ♀, Mt. Cheonggye-san, Seoni Korea, 15. v. 1997, Y. M. Park & J. S. Lee (gen. prep. No. 70, ♀, gen. prep. No. 71, ♂, O. Bidzilya, 2001) (KNU).

Adult (Fig. 38). Wingspan 13–16 mm. Labial palpus slender, recurved. Inner surface of segment 2 cream mottled with some darker scales, outer surface brown with isolated cream scales. Segment 3 just only slender than segment 2, cream with two dark rings. Antennal segments with alternated white and brown rings. Head light, covered with white, brown-tipped scales. Forewing light grey mottled with numerous black scales, which form small indistinct black spots at base and three paired spots in middle of wing. Two yellowish white touches at two-thirds, one of which lies between paired spots and second one near costal margin. At three-quarters indistinct white fascia slightly curved towards apex. Termen with black spots. Cilia white with black tips. Hindwing grey, with some sheen, cilia lighter.

Variation. The number, expression and distribution of black spots may vary.

Male genitalia (Fig. 104). Uncus sub-rectangular, covered apically with strong long setae. Gnathos sickle-shaped, apex pointed. Cucullus of evenly width, apex rounded, far exceeding the apical setae of the uncus. Sacculus short, slightly constricted basally, rounded distally, apex small, pointed. Transtilla lobes extremely broad, rounded with small medial processes. Saccus broad, short. Aedeagus basally swollen, distal part narrowed in apical half, apex pointed.

Female genitalia (Fig. 143). Papilla analis semioval, sparsely covered with short setae. Apophyses posteriors twice length of apophyses anteriores. Sternite VIII with small triangular incision at posterior margin and with broad lateral and rounded medial patches of honeycomb pattern. Ostium with dorsomedial sclerite. Sclerotized part of the ductus bursae with additional medial sclerites, about length as apophyses anteriores. Ductus bursae relatively broad, coiled before corpus bursae. Corpus bursae rounded. Signum plate triangular with rounded, weakly sclerotized base.

Remarks. *A. polymaculella* resembles *A. mongolorum* externally in the number of black spots, but differs in the larger size and in the absence of raised yellowish black scales. In the male genitalia it is recognizable reliably by the shape of sacculus as well as by the rounded transtilla lobes with small medial processes. The female genitalia slightly resemble those of *A. pruinosella, A. spir-*

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Figs 43–50. Adult of *Athrips* species. **43** – *A. adumbratella*, ♂ (lectotype), Russia: Amurskaja obl. (RMNH), GU-3403, wingspan 16 mm; **44** – *A. adumbratella*, ♂, Russia: Pokrovka (ZIN), gen prep. No. 17423 = 41, wingspan 16 mm; **45** – *A. pruinosella*, ♂, Germany (ZMHU), wingspan 15.5 mm; **46** – *A. pruinosella*, ♂, Russia: Cheljabinskaja obl. (coll. J. Junnilainen), wingspan 14 mm; **47** – *A. pruinosella*, ♂, Russia: Altai (ZIN), gen prep. No. 5046, wingspan 18 mm; **48** – *A. pruinosella*, ♂, Russia: Amurskaja obl. (ZIN), wingspan 16 mm; **49** – *A. spiraeae*, ♂ (lectotype), Russia: Sarepta (ZMHU), gen. prep. No. 619a (K. Sattler), wingspan 14 mm; **50** – *A. kostjuki* sp. n., ♀ (holotype), Russia: Tuva (ZMKU), gen. prep. No. 104, wingspan 16 mm.


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aeae, A. sibirica sp. n., *A. medjella* and *A. mouffetella* but differ in the sternite VIII, which has not wrinkles and in the rounded (not triangular) medial patches of honeycomb pattern.

Biology. Host-plant unknown. Adults fly in May (Korea) – end of May–June (Russia: Cheliabinskaja oblast').

Distribution. Russia: Cheliabinskaja oblast' (Junnilainen, in prep), S. of Krasnojarskiy kray (Minussinsk), Chitinskaja oblast'; S. Korea.

Athrips nigrogrisea (Kolmakova, 1958)

Gelechia nigrogrisea Kolmakova, 1958, Sbornik rabot Instituta prikladnoi zoologii i phytopatologii, 5: 98. [The proceedings of the Institute of applied zoology and phytopatology]. Lectotype ♂, Russia: Buryatija, Ulan-Ude, 17. v. 1955 (gen. prep. No. 44 = 17422, ♂, O. Bidzilya, 2001) (ZIN), designated by Lvovsky & Piskunov (1993: 138), [examined].
Athrips nigrogrisea (Kolmakova, 1958) Lvovsky & Piskunov 1993: 138.

Material examined. **Russia:** lectotype of *nigrogrisea* as above; 1 ♂, 4 ♀♀ (paralectotypes of *G. nigrogrisea*), same data as lectotype, but e.l. *Malus*, V. K. (gen. prep. No. 17422 = No. 103 ♀, O. Bidzilya, 2001) (ZIN).

Adult (Fig. 39). Wingspan 10–11 mm. Head, thorax and tegulae covered with light grey, brown-tipped scales. Front lighter, off-white. Labial palpus recurved. Segment 2 grey mottled with white scales mainly on inner surface. Segment 3 grey, apex lighter. Antenna grey, each segment with light rings at base. Forewing greyish black. Black scales forming oblique patch at base of wing and three indistinct dark spots in centre and at about three-quarters near posterior margin. Subapical area light grey. Cilia grey with isolated black-tipped scales. Hindwing and cilia light grey.

Male genitalia (Fig. 105). Uncus long, slender, apex rounded, covered with long setae. Gnathos hook-shaped. Cucullus tapered, slightly exceeding apical setae of uncus. Sacculus short, apex small, inwards-curved. Transtilla lobes slightly longer than sacculus, broad, apically rounded. Saccus broad, short. Aedeagus short, basally swollen, distal part weakly S-shaped, apex small, pointed.

Female genitalia (Fig. 144). Papilla analis sub-oval, sparsely covered with short setae. Apophyses posteriores twice length of apophyses anteriores. Sternite VIII with deep triangular incision at posterior margin, with broad, curved and narrowed anteriomedially patches of honeycomb pattern. Ostium indistinct. Sclerotized part of the ductus bursae about length as apophyses anteriores. Ductus bursae coiled before corpus bursae. Corpus bursae weakly elongate. Signum plate rhomboid.

Remarks. *A. nigrogrisea* can be separated externally by small size and relatively narrow blackish grey forewing. The male genitalia share with those of *A. rancidella* distinctly tapered cucullus and narrow uncus but differ in the different shape of aedeagus, sacculus and transtilla lobes. It differs reliably from other *Athrips* species in the shape of aedeagus, uncus and sacculus. The female genitalia slightly resemble those of *A. patockai* but differ clearly in the rhomboid signum and distinctly narrowed anteriomedially patches of honeycomb pattern of sternite VIII.

Biology. Larva feeds on the leaves of *Malus* sp. (Rosaceae) from August to the end of September. Young larvae live between two leaves, connected by silk. Adult larvae feed on the leaves under silken cover. Young larvae green, pale, then became more brown; dorsal side blackish brown with light longitudinal line. Head, thorax, thoracic and anal shields brown, ventral part grey. Pupation takes place between dry leaves in leaf litter in September. Pupa overwinters. Adults emerge in early June and occur to middle July. Moths inhabit the gardens with *Malus domestica* as well as natural brakes of *Malus baccata* along the Selenga river valley (Kolmakova 1958: 98).

Distribution. Russia: Buryatija (Ulan-Ude, Selenginsk). A record from Chitinskaja oblast' (Budashkin & Kostjuk 1994: 20) refers to *A. sibirica* sp. n.

Athrips rancidella (Herrich-Schäffer, 1854)

[no genus] *rancidella* Herrich-Schäffer, 1854, Syst. Bearb. Schmett. Eur., 5: 162 [key], 176; 1853, ibidem, 5, pl. 71, fig. 534.

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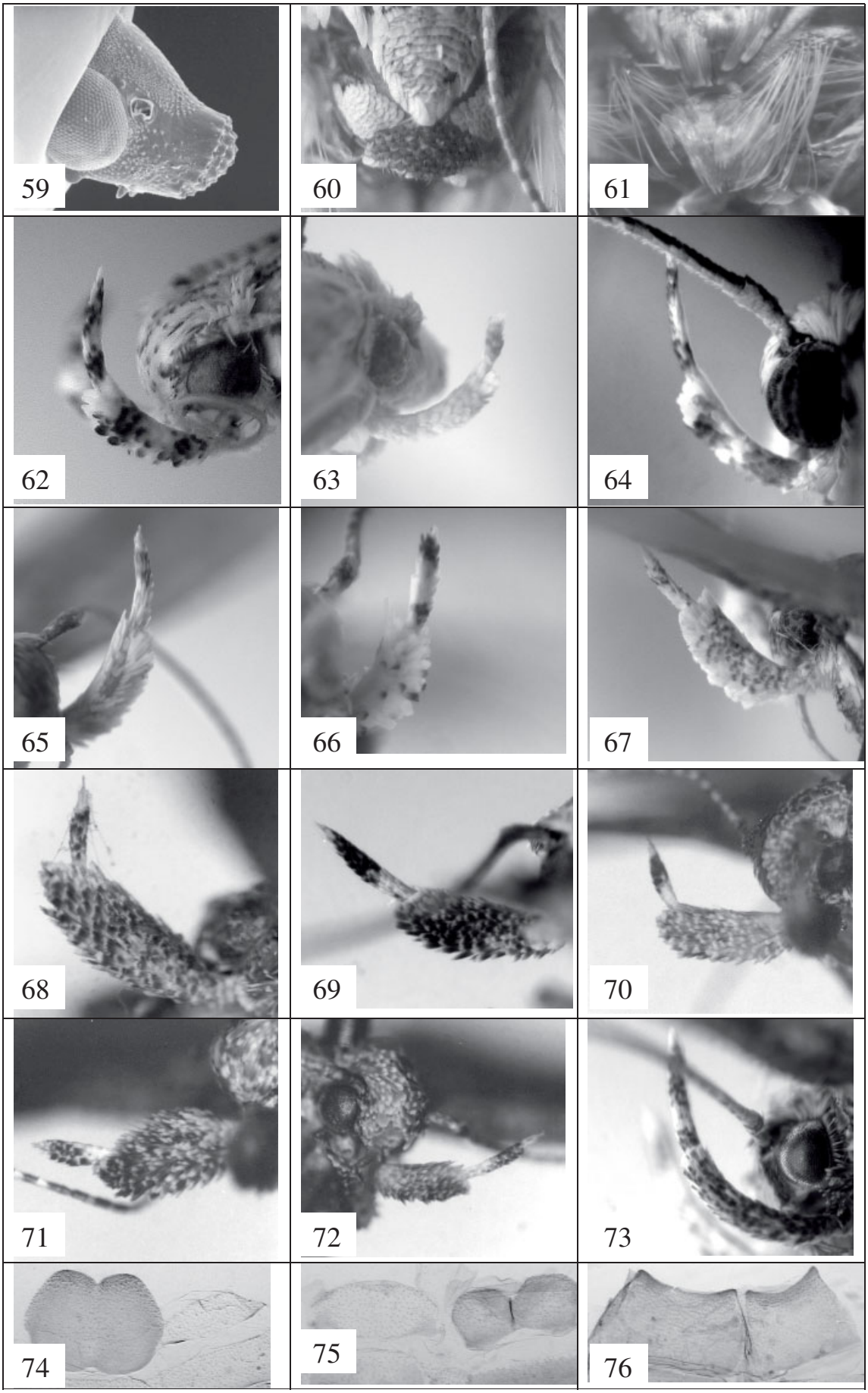
Figs 51–58. Adult of *Athrips* species. **51** – *A. sibirica*, ♂ (holotype), Russia: Chitinskaja obl. (ZMKU), wingspan 16 mm; **52** – *A. sibirica*, ♂, Russia: Tuva (ZMKU), gen. prep. No. 49, wingspan 15 mm; **53** – *A. patockai*, ♂, Slovakia (coll. Z. Tokar), gen. prep. No. 298 = 33, wingspan 16 mm; **54** – *A. patockai*, ♀, Romania (ZSM), wingspan 17 mm; **55** – *A. patockai*, ♀, Russia: Chitinskaja obl. (ZMKU), gen. prep. No. 91, wingspan 14 mm; **56** – A. sp. n. (Junnilainen, in litt.), ♂, Kazakhstan (ZIN), gen. prep. No. 34/02, wingspan 15 mm; **57** – *A. eugenii* sp. n., ♂ (paratype), Kyrgyzstan (ZMKU), wingspan 16 mm; **58** – *A. mouffetella,* ♀, Russia: Belgorodskaja obl. (ZMKU), wingspan 17 mm.



Gelechia rancidella Herrich-Schäffer, 1854: 162 [key], 176. Syntypes unspecified, Austria: Vienna distr.; Germany: Regensburg [see Remarks].

Gelechia triatomaea Mühlig, 1864, Stett. ent. Ztg, 25: 101. Syntypes unspecified, Germany: Frankfurt/Main, ex ?*Crataegus oxyacanthae*, em. early viii. (Müchlig) [not traced]. [Synonymized by Sattler 1978: 60].

Gelechia vepretella Zeller, 1870, Stett. ent. Ztg, 32: 64. Lectotype ♂, Poland, Stettin (BMNH), designated by Sattler (1968: 115), [not examined]. [Synonymized by Sattler, 1968: 115].

Gelechia superfetella Peyerimhoff, 1877, Petites Nouv. ent., 2: 102. Syntypes unspecified, France: Alsace; Moulins, ex *Prunus* spp., *Crataegus*, vii. (Peyerimhoff) (MNHN), [not examined]. [Synonymized by Sattler 1968: 115].

Cremona cotoneastri Busck, 1934, Proc. ent. soc. Was., 36: 83, pl. 14, figs 1–3 [wings venation], fig. 4 [female genitalia], fig. 5 [male genitalia]. Syntypes unspecified, U.S.A.: Oregon, Portland, ex *Cotoneaster horizontalis*, em. vi, vii. (Roaf) (United States National Museum, Washington), [not examined]. [Synonymized by Sattler 1968: 115].

Epithectis cerasivorella Kuznetzov, 1960, Fauna i ekologija nasekomykh Turkmenskoi SSR (Trudy Zool. Instituta AN Leningrad, 27), 34–36, fig. 4 [male genitalia], fig. 5 [female genitalia]. Holotype ♂, Turkmenistan: Kara-Kala, Shihin-Dere, 27. v. 1952, e. l. *Cerasus microcarpa*, V. Kuznetzov (ZIN), [examined]. [Synonymized by Sattler 1968: 115].

Athrips rancidella (Herrich-Schäffer, 1854) Sattler 1978: 58.

Material examined. **Slovakia:** 1 ♀, Kasvar, 29. vi. 1996, Z. Tokar (coll. Z. Tokar). **Bulgaria:** 3 ♀♀, Bulgaria merid., Pirin mont., Bez. Sandansk, Liljanovo, 16.–30. vi. 1984, F. Eichler (ZSM). **Ukraine:** 1 ♂, 1 ♀, okr. Kieva, Kruglik, svet, 12, 20. vii. 1997, I. Kostjuk (gen. prep. No. 56, O. Bidzilya, 2001); 1 ♂, Kiev, 17. vii. 2000, M. Golovushkin; 8 ♂♂, 5 ♀♀, zap-k Kamennye Mogily, 29. vi–3. vii. 1999, A. Bidzilya (gen. prep. No. 67 ♂, No. 82 ♀, O. Bidzilya, 2001); 2 ♂♂, Crimea, Aj-Petri, 19. vii. 2003, Yu. Budashkin (all ZMKU). **Turkey:** 1 ♂, Syria sept., Taurus, Marash, a.l. 1200 m, 30. v. [19]28, L. Osthelder (Gen. Unt. 461a, Sattler) (ZSM); 1 ♂, Amasia, ex. coll. Staudinger (ZMHU). **Syria:** 1 ♂, Syria, Karjeten NO v. Damaskus, 21. v. 1961, Kasy & Vartian (ZSM). **Iran:** 1 ♂, Iran, Golestan, NP Golestan, Tange Gol, 790 m, 25. v. 2001, 37°22.275′ N, 55°56.480′ E, leg. P. Huemer (gen. prep. No. 21/02, O. Bidzilya); ♀, Iran, Khorasan, NP Golestan, 5 km SW Dasht, 1100 m, 21. v. 2001, 37°17.8′ N 55°56.8′ E, leg. P. Huemer (TLMF). **Turkmenistan:** ♂, holotype of *cerasivorella* as above; 1 ♂ (paratype of *cerasivorella*), Kara-Kala, Shihin-Dere, 30. v. 1952, e.l. *Cerasus microcarpa*, V. Kuznetzov; 1 ♀, Kara-Kala, Iol-Dere, 2. vi. 1952, e. l. *Cerasus microcarpa*, V. Kuznetzov (all ZIN).

Adult (Fig. 40, 41). Wingspan 10–14 mm. Head greyish black, with some cream scales mainly on face. Antenna black with light grey rings at base of each segment. Labial palpus slender, recurved. Segment 2 blackish grey, inner surface with a cream ring near apex. Segment 3 blackish grey with slightly lighter, cream scales in central part and near apex. Tegulae, thorax and forewing covered with black, grey-tipped scales. Indistinct dark spot at one-third of the wing. Cilia grey. Hindwing and cilia light grey.

Variation. Occasional specimens with cream subapical fascia or with two cream spots at costal and posterior margins. There is also some variation in the number of cream scales at frontal part of the head.

Male genitalia (Fig. 106). Uncus long and narrow, apex rounded, covered with long setae. Gnathos hook-shaped, weakly undulating distally. Cucullus distinctly tapered, far exceeding the apical setae of the uncus, weakly broadened in central part, apex distinctly pointed. Sacculus relatively long, weakly broadened before short triangular apex, at angle of about 90 degrees to the cucullus. Transtilla lobes short, apex triangular, pointed. Saccus broad, short. Aedeagus basally swollen, distal part long, basally distinctly curved, tapered.

Variation. There is some variation in the width of uncus and cucullus.

Female genitalia (Fig. 145). Papilla analis sub-oval, sparsely covered with short setae. Apophyses posteriores twice length of apophyses anteriores. Posterior margin of sternite VIII strongly sclerotized, with small triangular medial incision and with two medial triangular projections. Ostium distinct, with small dorsomedial sclerite. Antrum laterally sclerotized. Posterior part of the ductus bursae strongly sclerotized with additional medial sclerites, shorter or about length as apophyses anteriores. Ductus bursae long, coiled before corpus bursae. Corpus bursae nearly round. Signum plate triangular.

Remarks. In BMNH there are two possible syntypes, a male and female, originating from Herrich-Schäffer (via Hofmann coll.). Both bear identical labels "*rancidella* Lichtenstein, Aug[ust]" (Sattler 1978: 59).

A. rancidella can be recognized externally by small size and usually uniformly black, relatively broad forewing. In the male genitalia it differs from other *Athrips* species in the long, narrow uncus and the sacculus, which is perpendicular to

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Figs 59–76. **59** – *A. gussakovskii* (Mongolia), head; **60** – *A. gussakovskii* (Uzbekistan), metascutum; **61** – *A. patockai* (Ukraine), metascutum; **62** – *A. mongolorum* (Uzbekistan), labial palp; **63** – *A. gussakovskii* (Mongolia), labial palp; **64** – *A. autumnella* (paratype), (Uzbekistan), labial palp; **65** – *A. tsaidamica* (China), labial palp; **66** – *A. tcharyna* sp. n. (holotype), (Kazakhstan), labial palp; **67** – *A. peteri* sp. n., (holotype), (Kazakhstan), labial palp; **68** – *A. adumbratella* (Russia: Amurskaja obl.), labial palp; **69** – *A. pruinosella* (Russia: Primorskiy kray), labial palp; **70** – *A. spiraeae* (paralectotype), (Sarepta), labial palp; **71** – *A. kostjuki* sp. n. (holotype), (Russia: Tuva), labial palp; **72** – *A. sibirica* sp. n. (paratype), (Russia: Chitinskaja obl.), labial palp; **73** – *A. patockai* (Ukraine), labial palp; **74** – *A. gussakovskii* (Mongolia), ♂, abdominal segment VIII; **75** – *A. tigrina* (Uzbekistan), ♂, abdominal segment VIII; **76** – *A. mouffetella* (Ukraine), ♀, abdominal segment VII.

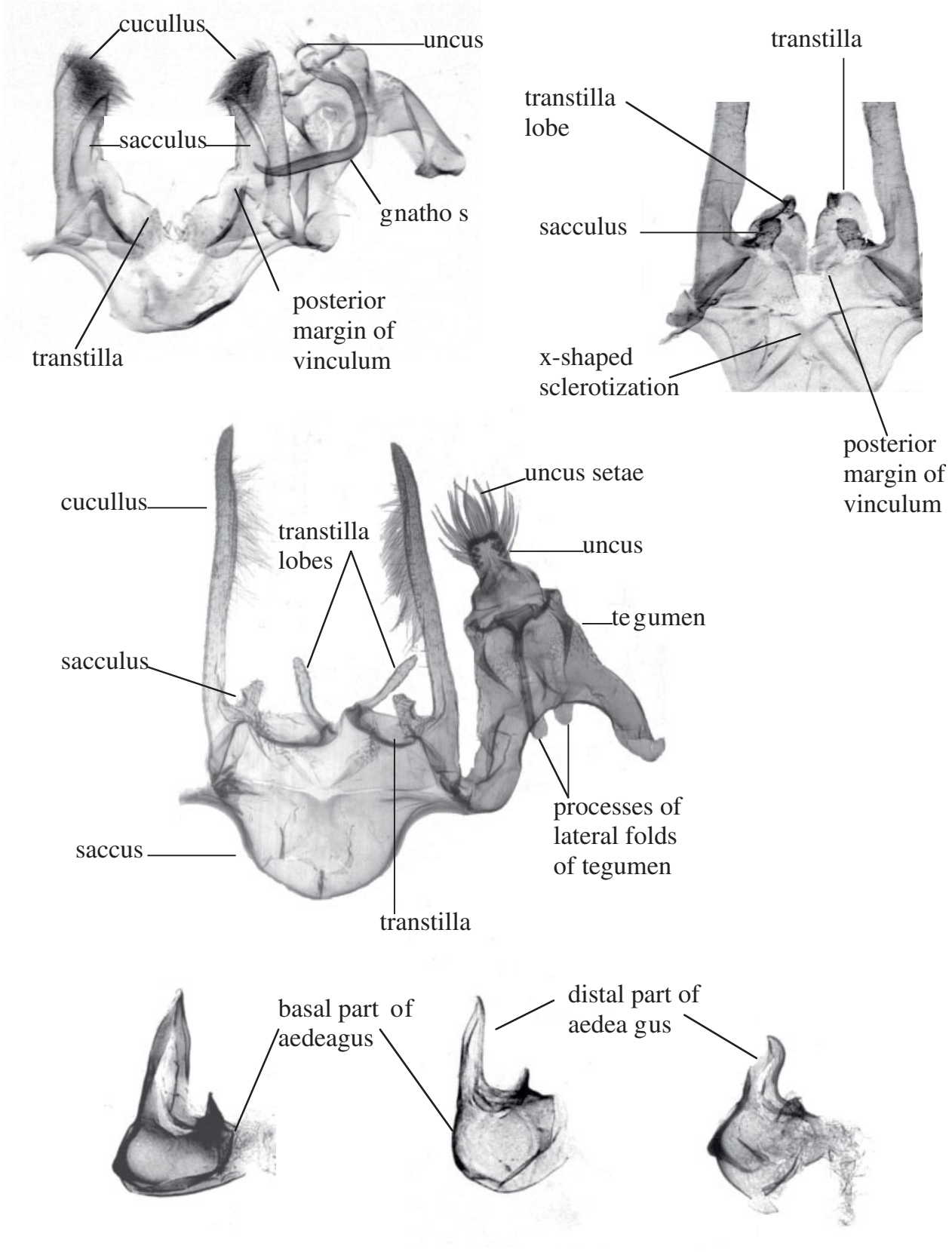


Fig. 77. Male genitalia of *Athrips*.

valva. In the female genitalia it is clearly recognizable by sternite VIII, which is strongly sclerotized posteriorly and has two triangular projections.

Biology. Various Rosaceae are used as a host-plants: *Prunus spinosa*, *Crataegus monogyna*, *Cotoneaster* spp., *Cerasus microcarpa*, *Prunus divaricata* (Kuznetzov 1960: 36; Piskunov 1981:

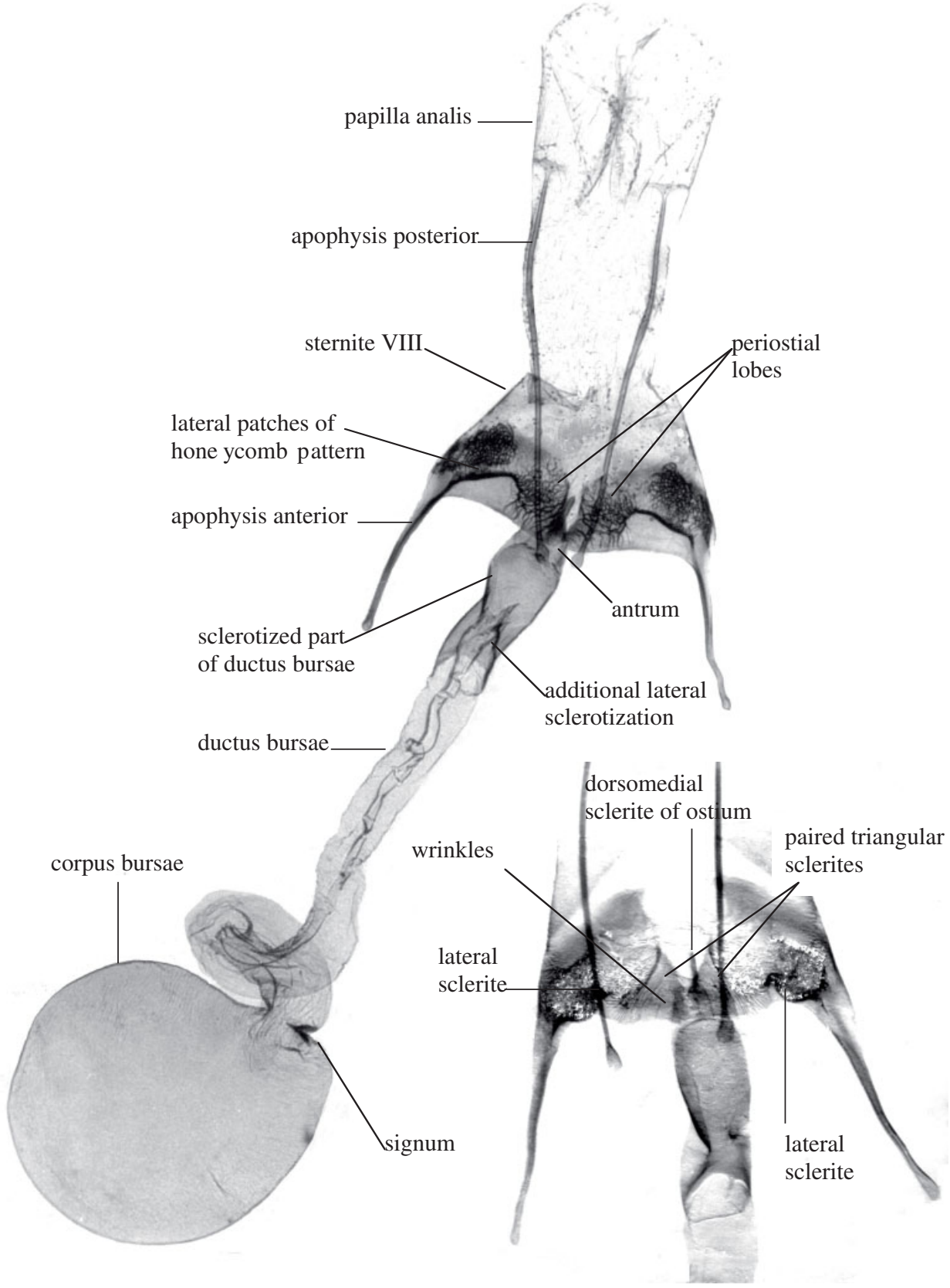


Fig. 78. Female genitalia of *Athrips*.

727), in the U.S.A. it was reared from *Cotoneaster horizontalis* (Busck 1934: 83). A record from *Frangula alnus* (Piskunov 1981: 727) (Rosaceae) needs verification. The larva lives in a spun tube on small twigs, feeding on the underside of the leaves from May to June. Pupation takes place

in a dense white cocoon (Huemer & Karsholt 1999: 176). Adults occur from June to August in Europe and from end May to end June in Central Asia (Kuznetzov 1960: 36).

Distribution. Europe; Transcaucasus; Middle East; Iran; Syria; Turkmenistan. Also known from U.S.A. (Busck 1934: 83). Record from Tadzhikistan (Ivinskis & Piskunovas 1994: 41) has to be referred to *A. r. tadzhika* ssp. n. (see below).

Athrips rancidella tadzhika ssp. n.

Material examined. Holotype ♂, **Tadzhikistan:** "Tadzh. SSR v 18 km ot Muminabada, s jabl.[oni]. s. 157, 5. vii. [19]57, V. Baeva" [in cyrillic] [Tadzhik. SSR, 18 km from Muminabad, 5. vii. 1957, from *Malus*, V. Baeva leg.]. Paratypes: 1 ♂, Gissarsky khrebet, Kondara, 1100 m, L. 21.v., P. 2.vi., I. 21. vi. 1972, *Amygdalus bucharica*, Sherniyazova (gen. prep. No. 58, O. Bidzilya, 2001); 1 ♀, Tadzhikistan, Nurekskoe vodokhranilishche, 26. vii. 1976, V. Kuznetzov; 1 ♂, 30 km N Dushanbe, Kondara, 28. vi. 1986, light, R. Puplesis (gen. prep. No. 32, O. Bidzilya, 2001); 1 ♀, Tokob, Tadzh.[ikistan], 10. vii. 1962, na listiah Irgi, Maljavin (gen. prep. No. 95, O. Bidzilya, 2001); 1 ♀, Gissarskiy khrebet, Kondara, 1200–1400 m, L. 7. v., P. 10. v., I. 21. vi. 1971, *Crataegus turkestensis*, Sherniyazova leg.; 1 ♂, same data, but L. 10. v., P. 19. v., I. 10. vi. 1972, *Malus domestica*, Shernijazova leg.; 1 ♀, same data, but L. 28. v., P. 11. vi, I. 27. vi. 1972, *Malus domestica*, Sherniyazova leg.; 1 ♀, same data, but 1400 m, L. 21. v, P. 2. vi, I. 21. vi. 1971, *Amygdalus bucharica,* Shernijazova leg.; 1 ♀, same data, but 1400 m, L. 1. vi, P. 14. vi, I. 27. vi. 1972, *Prunus communis*, Shernijazova; 1 ♀, same data, but 1300 m, L. 17. v., P. 11. vi., I. 24. vi, *Cotoneaster hissarica*, Shernijazova; 1 ♀, Tadzhik. SSR, 18 km ot Muminabada, 26. vi. 1957, s *Crataegus*, V. Baeva; 1 ♂, same data, but kolhoz Bairaki Lenina, 24. vi. 1957, s *Malus*, V. Baeva (all ZIN).

Adult (Fig. 42). Wingspan 9–13 mm. Head greyish black with a number of cream scales at face. Antenna black with white ring at base of each segment. Labial palpus slender, recurved. Segment 2 blackish grey with white ring near apex, inner surface cream with some dark scales at ventral side. Segment 3 cream with black ring in centre and some black scales near apex. Tegulae, thorax and forewing black mottled with cream scales. Forewing with distinct white fascia at three-quarters, usually weakly curved towards the base of the wing. Cilia grey. Hindwing including cilia light grey.

Variation. There is some variation in the number of cream scales on the thorax, tegulae and frontal part of the head as well as in the width of the subapical fascia.

Male genitalia (Fig. 107). Uncus long and narrow, apex rounded, covered with long setae. Gnathos hook-shaped, slender, weakly undulating distally. Cucullus tapered, far exceeding the apical setae of the uncus. Sacculus relatively long, apex elongate, pointed, at angle of about 90 degrees to the cucullus. Transtilla lobes short, apex triangular. Saccus broad, short. Aedeagus basally swollen, distal part long, straight, apex weakly tapered.

Female genitalia (Fig. 146). Papilla analis sub-oval, sparsely covered with short setae. Apophyses posteriores about 2–2.5 times length of apophyses anteriores. Posterior margin of sternite VIII with medial sub-oval incision and with two medial weakly sclerotized rounded projections. Ostium indistinct. Antrum weakly sclerotized. Posterior part of the ductus bursae strongly sclerotized, narrowed anteriorly, shorter than apophyses anteriores. Corpus bursae nearly round. Signum plate triangular.

Remarks. *A. r. tadzhika* ssp. n. differs from the nominate subspecies in the lighter, cream face and labial palpus as well as in the distinct cream subapical fascia. In the male genitalia it differs easily in the elongate pointed apex of sacculus and in the straight distal part of the aedeagus. Female genitalia differ from those of nominate subspecies in the weakly sclerotized posterior margins of sternite VIII with rounded (not triangular) projections.

All examined specimens of *A. rancidella* from neighbouring territories (N. Iran, Turkmenistan), including type-specimens of *Epithectis cerasivorella* Kuzn., correspond well to the nominate subspecies, differ from those from Tadzhikistan in all above-mentioned characters.

Biology. Larvae feed on *Cotoneaster hissarica*, *Malus domestica*, *Crataegus turkestanica*, *Pyrus communis*, *Amygdalus bucharica*, *Amelanchier sp.* (Rosaceae) from early May to early June. Adults occur in June.

Distribution. Tadzhikistan.

Athrips pruinosella (Lienig & Zeller, 1846)

Gelechia pruinosella Lienig & Zeller, 1846, Isis, Leipzig, 1846: 288. Lectotype ♀, Latvia (Livland) (BMNH), designated by Sattler (1968: 114), [not examined].
Rhynchopacha pruinosella (Lienig & Zeller, 1846) Sattler 1968: 114.
Athrips pruinosella (Lienig & Zeller, 1846) Sattler 1978: 58.

Material examined. **Germany:** 2 ♂♂, 1 ♀, München (ex coll. Staudinger) (gen. prep. No. 10, No. 78/02 ♂, No. 28 ♀, O. Bidzilya, 2001); 1 ♀, Silesia, ex coll. Staudinger (gen. prep. No. 9, O. Bidzilya, 2001); 1 ♀, Germania, 1893, No. 2852, A. Hoffmann (all ZMHU). **Czech Republic:** 1 ♂, 1 ♀, Bohemia mer., Doban b. Kopellen, 900 m, M. 7. 1943, 29. vii. 1943, J. Klimesch (ZSM). **Ukraine:** 2 ♂♂, 2 ♀♀, Zaporozhskaja oblast', Volnjanskij r-n., Bal'chanskaja balka, 25. vi. 1997, A. Zhakov (gen. prep. No. 24, No. 46 ♂♂; No. 75 ♀, O. Bidzi-

lya, 2001) (ZMKU). **Russia:** 1 ♂, Kabardino-Balkaria, Zapovednik, H = 1700 m, 15. vii. 1989, Zaguljaev (gen. prep. No. 27, O. Bidzilya, 2001) (ZIN); 1 ♀, South Ural, Orenburg Region, Kuvandyk Distr., 15. vi. 1998, P. Gorbunov leg. (gen. prep. No. 2589, H. Hendriksen) (ZMUC); 1 ♂, S-Ural, Cheliabinsk distr. near Markovo vill., 10. vii. 1997, J.-P. Kaitila leg.; 2 ♂♂, S-Ural, Cheliabinsk distr. near Moskovo, 10. vii. 1997, K. Nupponen, J. Junnilainen leg.; 2 ♂♂, S-Ural, Orenburg distr., Kuvandyk 30 km SE 13, 16. vi. 1998, T. & K. Nupponen leg.; 2 ♂♂, S-Ural, Cheliabinsk distr., Arkaim reserve near Amurskii village 14–19. vi. 1996, K. Nupponen, J.-P. Kaitila, J. Junnilainen & M. Ahola leg.; 1 ♂, S-Ural, Orenburg distr., Donskoe vill., 6 km W Mount. Verbljushka 30. v.–02. vi. 1998, J. Junnilainen leg.; 1 ♂, S-Ural, Cheliabinsk distr., Miass, Ilmen State Res., 13. vi. 1996, K. Nupponen, J.-P. Kaitila, J. Junnilainen & M. Ahola leg.; 3 ♂♂, ♀ S-Ural, Cheliabinsk. oblast, Kizilskoe 15 km S near Ural river, 03. ix. 2000, K. Nupponen; 2 ♂♂, S-Ural, Cheliabinsk distr., Miass, Ilmen State Res., 27, 28. vi. 1996, K. Nupponen, J. Junnilainen leg.; ♂, S-Ural, Cheliabinsk distr., Arkaim reserve near Amurskii village 9. vii. 1997, K. Nupponen, J. Junnilainen leg. (all ZMKU, from coll. J. Junnilainen); 7 ♂♂, Altai, Ukok plateau, 2200 m, 14, 16, 18, 20, 23. vii. 2001, A. Bidzilya (gen. prep. No. 61, No. 117, O. Bidzilya, 2001) (ZMKU); 2 ♂♂, Russia, SW Altai, 10 km Z Katanda, 27. vi. 1993, V. V. Dubatolov (gen. prep. No. 5046, O. Karsholt); 1 ♂, Russia, SW Altai, 10 km V Ust'-Koksa, r. Terekhta, 29. vi. 1993, V. V. Dubatolov (all ZIN); 1 ♂, Altai, Kuraiskiy khrebet vozle Aktasha, verhnee techenie r. Jarly-Jary, 2600 m, gornaja tundra, 13. vii. 1974, Yu. Kostjuk (gen. prep. No. 23, O. Bidzilya, 2001); 1 ♂, Zapadnyi Tannu-Ola, Tuva, verhnee techenie r. Ulug-Khondergei, pereval Khundurgun, 1900 m, gornaja tundra, 9. vii. [1]969, Yu. Kostjuk (gen. prep. No. 115, O. Bidzilya, 2001) (all ZMKU); 1 ♂, Irkutskaja oblast', 20 km S Ust'-Ordynskiy, 2. viii. [1]984, svet, Sinev; 1 ♀, Zabaikalie, Ulan-Ude, u podnozhija sopki, 13. vii. [19]56, V. Kolmakova (all ZIN); 1 ♂, Zabaikalie, Sokhondinskiy zapovednik, r. Agutsakan, 1100 m, 13. vii. 1997, svet, A. Bidzilya, I. Kostjuk, O. Kostjuk (gen. prep. No. 21, O. Bidzilya, 2001); 1 ♂, SE Zabaikalie, Nertchenskiy Khrebet, Shara (190 km SZ Priargunska), 23. vii. 1993, I. Kostjuk, O. Kostjuk, M. Golovushkin, S. Salata (gen. prep. No. 28, O. Bidzilya, 2001); 1 ♂, Zabaikalie, 40 km NW Chity, Arakhleyskie Ozera, 24. vi. 1991, I. Kostjuk (all ZMKU); 1 ♀, mezhdurech'e M. Pera and B. Ergel', Amurskaja oblast', Vyv. No. 1162, larva na *Spiraea sericea*, Lar. 4. vi, Pupa 17. vi, Im. 1. vii. [19]58, Sukhareva, Kuznetzov; ♀, same data, but Vyv. No. 1202, larva na *S. salicifolia*, Lar. 8. vi, Pupa 12. vii, Im. 20. vii. [19]58, Sukhareva, Kuznetzov; 1 ♀, same data, but larva na *Vaccinium uliginosum*, Lar. 18. vi, Im. 19. vii. [19]58, Sukhareva, Kuznetzov; 3 ♂♂, 3 ♀♀, same data, but 10. vii, Kuznetzov (gen. prep. No. 20 ♂, No. 108, No. 109 ♀♀, O. Bidzilya, 2001) (all ZIN); 1 ♀, Russia, Far East, Primorskiy kraj, Shkotovo distr., Anisimovka, 06. viii. 1994, N. Savenkov (genit. prep. No. 69929, M. G. Ponomarenko, 11. vi. 1999; *Athrips* ? *pruinosella* Zell., det. M. G. Ponomorenko, 11.vi.1999 (ZMUC).

Adult (Figs 45–48). Wingspan 12–16 mm. Head, thorax and tegulae covered with grey, white-tipped scales. Antenna dark grey, each segment with white ring at base. Segment 2 of the labial palpus three times width and about 1.5–2 times length of segment 3, covered with uniformly black, cream-tipped scales (Fig. 69); off-white scales concentrated on inner surface or mainly near apex, forming narrow ring; segment 3 slender, straight or weakly curved, off-white with dark central ring. Forewing covered with greyish brown, cream-tipped scales. Two indistinct dark spots near base, two more obvious spots at about one-half and one or two small spots about two-thirds. Cilia grey. Hindwing including cilia grey.

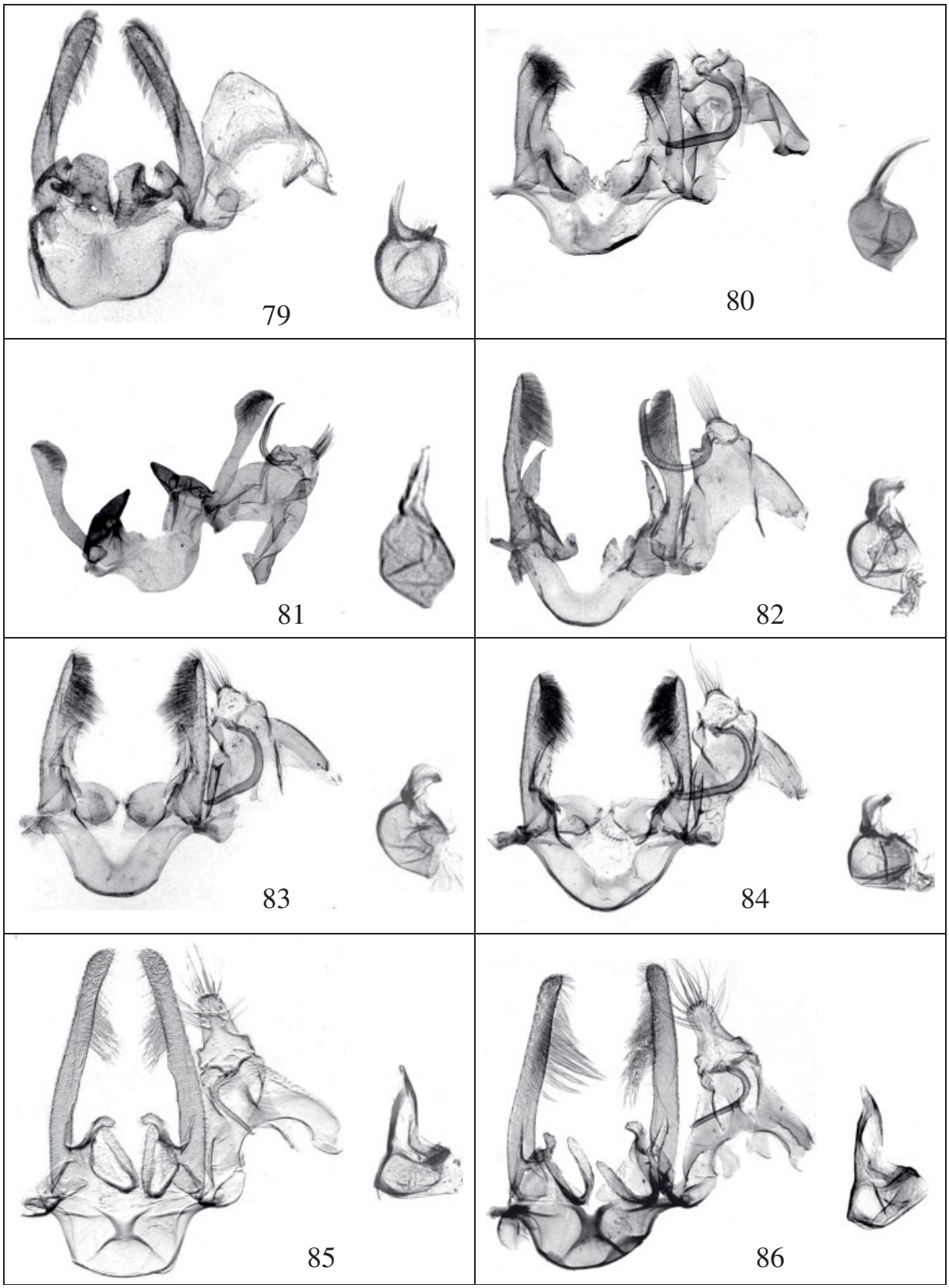
Variation. Two colour forms are recognized in Europe: reddish brown and blackish grey. In Northern Europe reddish brown forms are mainly associated with the lowland whereas dark specimens are found in mountainous areas (Huemer & Karsholt 1999: 177). The specimens from the Siberian mountains belong mainly to the blackish grey form. The number of dark spots may vary from seven to three; the forewings of some specimens are uniformly grey with indistinct dark spots or with an obscure light grey subapical fascia.

Male genitalia (Figs 109–114). Uncus broad, apically rounded, covered with long setae. Gnathos strongly curved, weakly broadened distally. Cucullus long, slender far exceeding the apical setae of the uncus. Sacculus short, slender, weakly curved medially, apex small, pointed. Transtilla lobes broad, apically rounded. Saccus broad, rounded. Aedeagus basally swollen, distal part straight, constricted near apex.

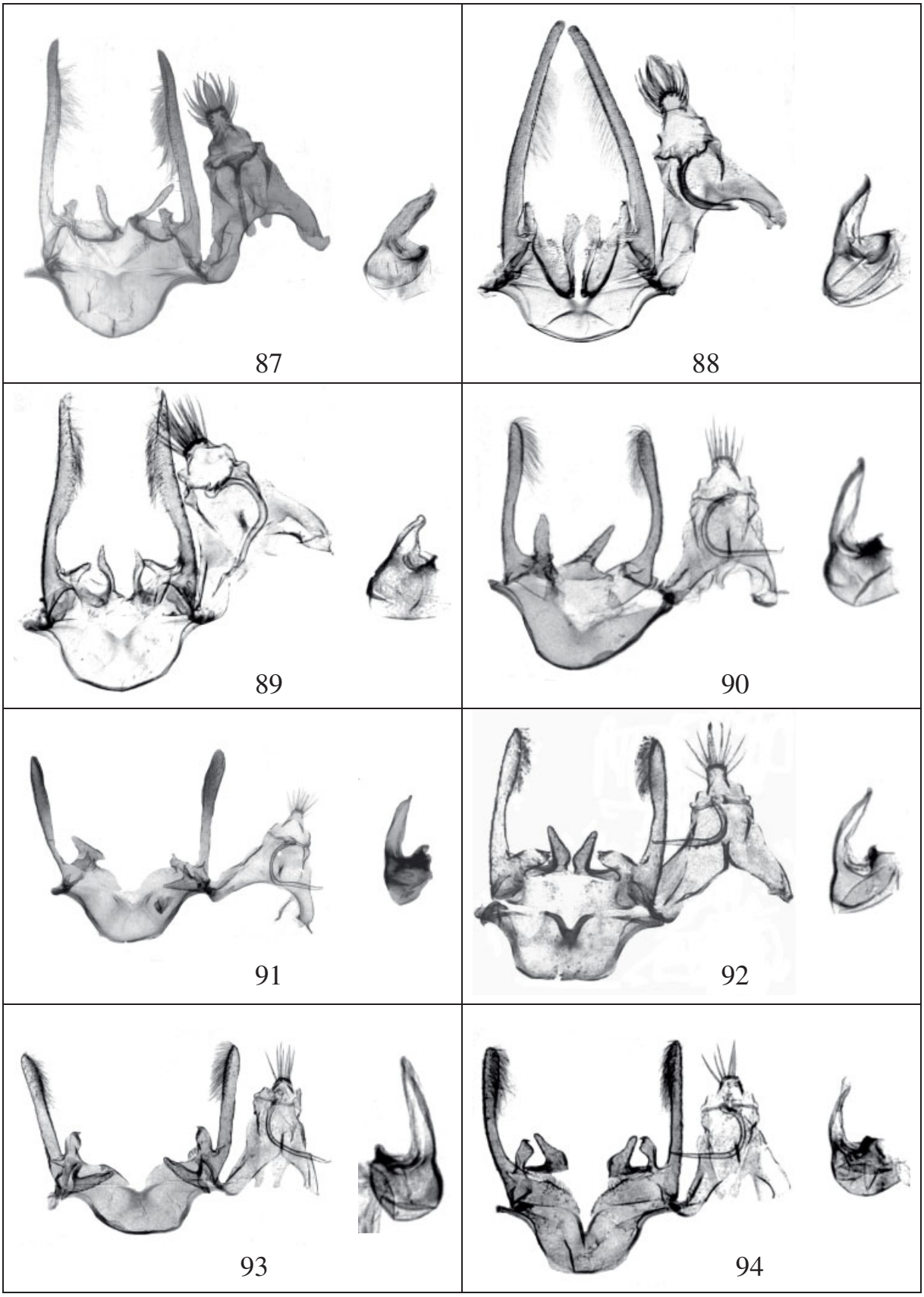
Variation. A. pruinosella shows extensive variation in the shape of the uncus, which varies from relatively broad, apically rounded, to more elongate, sub-rectangular and weakly tapered towards the apex; the width of the sacculus, shape of the gnathos and the subapical part of the aedeagus also vary.

Female genitalia (Fig. 147). Apophyses posteriores twice length of apophyses anteriores. Sternite VIII with a triangular incision at posterior margin, wrinkled near ostium bursae; lateral patches of honeycomb pattern with narrow, medially elongate sclerites. Ostium with a dorsomedial sclerite. Sclerotized part of the ductus bursae broad, with additional lateral sclerites, slightly longer or about length as apophyses anteriores. Corpus bursae rounded. Signum flat funnel-shaped.

Remarks. Blackish grey forms of *A. pruinosella* are externally similar to other plain black *Athrips* species such as *A. sibirica* sp. n., *A. patockai, A.* sp. n. (Junnilainen, in litt.) and *A. eugenii* sp. n.; however, they can be separated reliably by the labial palpus which has an extremely broad segment 2 and a short and straight segment 3. In the shape of the labial palpus *A. pruinosella* resembles *A. adumbratella*, *A. spiraeae* and *A. kostjuki* sp. n. but differs from the last two in the absence of ochre scales on the forewing. It differs from the externally similar *A. adumbratella*



Figs 79–86. Genitalia of *Athrips* ♂. **79** – *A. tigrina*, Turkmenistan (ZMHU), gen. prep. No. 29; **80** – *A. nitrariella*, Algeria (ZMKU), gen. prep. No. 71/02; **81** – *A. bidilatata*, (holotype), China (IZShNU), gen. prep. No. L95361; **82** – *A. mongolorum*, Mongolia (ZIN), gen. prep. No. 36; **83** – *A. mongolorum* (*crassivalva*, paratype) (IZShNU), gen. prep. No. 68; **84** – *A. mongolorum*, Uzbekistan (ZIN), gen. prep. No. 37; **85** – *A. gussakovskii*, Uzbekistan (ZSM), gen. prep. No. 30/02; **86** – *A. gussakovskii*, Mongolia (ZIN), gen. prep. No. 31/02.



Figs 87–94. Genitalia of *Athrips* ♂. **87** – *A. autumnella* (paratype), Uzbekistan (ZIN), gen. prep. No. 11; **88** – *A. autumnella*, Uzbekistan (ZMKU), gen. prep. No. 58/02; **89** – *A. thymifoliella,* Spain (ZMUC), gen. prep. No. 112; **90** – *A. nigricostella,* N. Kazakhstan (ZMKU), gen. prep. No. 10; **91** – *A. tetrapunctella*, Russia: Primorskiy kray (ZIN), gen. prep. No. 12; **92** – *A. amoenella,* Ukraine (ZMKU), gen. prep. No. 57; **93** – *A. kerzhneri,* Russia: Tuva (ZSMN), gen. prep. No. 9; **94** – *A. stepposa* (paratype), Russia: Tuva (ZMUC), gen. prep. No. 73.

in segment 2 of the labial palpus, which is about 2.5 to three times the length and width of segment 3, whilst in *A. adumbratella* it is about four times that. The forewing of *A. pruinosella* differs from the uniformly black one of *A. adumbratella* in having clearly visible black dots. The male genitalia resemble those of *A. spiraeae* but differ slightly in the aedeagus, which is tapered only in its distal quarter whilst in *A. spiraeae* it is evenly tapered from the base; they also differ in narrower aedeagus. *A. pruinosella* differs from *A. sibirica* sp. n. in the shape of the sacculus and the aedeagus as well as in the distally more pointed cucullus of *A. sibirica* sp. n. The female genitalia of *A. pruinosella* resemble those of *A. sibirica* sp. n., *A. spiraeae*, *A. medjella, A. kostjuki* sp. n. and *A. mouffetella* but may be separated by the shape of medially elongated lateral sclerites of sternite VIII and the length of sclerotized part of ductus bursae.

A. pruinosella has a wide distribution in the Palaearctic region and also occurs in the Nearctic region in a wide range of habitats – from dry steppes to bogs and mountainous tundras. Moreover, it is the only *Athrips* species with larvae that utilize three different, unrelated, plant families.

Biology. In Europe larva feeds on *Vaccinium myrtillus*, *Andromeda* spp. (Ericaceae), *Salix repens* (Salicaceae) and *Spiraea* spp. (Huemer & Karsholt 1999: 177; Elsner et al. 1999: 39) (Rosaceae) in September and after hibernation in May–June between spun leaves or buds. Adults occur from mid-June to early August. In Russian Far East larva was recorded on *Vaccinium uliginosum*, *Spiraea sericea* and *S. salicifolia* in June, adults fly from June to early September. This species quite common of beat bogs and sub-alpine tundra of Europe and Siberia Mountains up to 2600 m; also inhabits dry steppes where the larvae probably feed on *Spiraea* sp.

Distribution. Europe (North and Central); Ukraine; Russia: Caucasus, Cheliabinskaja oblast', Orenburgskaja oblast', Altai, Tuva, Irkutskaja oblast', Buryatija, Chitinskaja oblast', Amurskaja oblast', Primorskiy kray. Also recorded from Canada and U.S.A. (Huemer & Karsholt 1999: 177).

Athrips adumbratella (Snellen, 1884)

Brachmia adumbratella Snellen, 1884, Tijdschr. Ent., 27: 170, t. 9, f. 5 [wings, colour], 5a [labial palp]. Lectotype ♂, Russia, Amur [Amurskaya oblast'] (RMNH), designated by Sattler (1968: 112), [examined].
Rhynchopacha adumbratella (Snellen, 1884) Sattler 1968: 12, Taf. 1, fig. 1 [male genitalia], Taf. 1, fig. 2 [labial palpus].
Athrips adumbratella (Snellen, 1884) Sattler 1978: 57.

Material examined. **Russia:** Lectotype of *adumbratella* as above; 1 ♂, Pokrow.[ka] Amur. 29.5, 326, *Gel. adumbratella* Snell., Type, coll. Vel. Kniazja Nikolaja Mikhailovitcha, *Athrips adumbratella* Snell., Lvovsky det., (gen. prep. No. 17423 = No. 41, O. Bidzilya, 2001) (ZIN).

Adult (Figs 43, 44). Wingspan 16 mm. Head, thorax and tegulae covered with brown scales with light greyish tips, the moth seems to be powdered with grey ash. Antenna brown with grey rings. Segment 2 of the labial palpus same colour as head, straight, broad, more than four width and four times length of segment 3; segment 3 straight, at angle of about 120 degrees to the segment 2, brown with cream base and apex (Fig. 68). Forewing uniformly brown mottled with grey scales. Subapical areas lighter and separated by indistinct, light grey, apically curved fascia, termen with dark spots. Cilia light grey. Hindwing including cilia light grey, with slight sheen.

Male genitalia (Fig. 108). Uncus elongate, relatively narrow, apically and laterally covered with long setae. Gnathos hook-shaped, weakly broadened in the centre, apex narrow, pointed. Cucullus long, far exceeding the apical setae of the uncus. Sacculus short and narrow, sub-rectangular, apex very small pointed. Transtilla lobes slender, a little longer than sacculus, evenly narrowing apically. Saccus broad, short. Aedeagus basally swollen, distal part relatively broad, apex distinctly pointed and weakly curved.

Variation. There is some variation between the lectotype and the specimen from Pokrovka: the sacculus of the latter is sub-rectangular whereas that of the lectotype is slightly tapered distally. Moreover, the apex of the aedeagus in the specimen from Pokrovka is weakly curved in contrast to the straight apex of the lectotype.

Female genitalia. Unknown.

Remarks. *A. adumbratella* resembles externally the greyish black form of *A. pruinosella* but dif-

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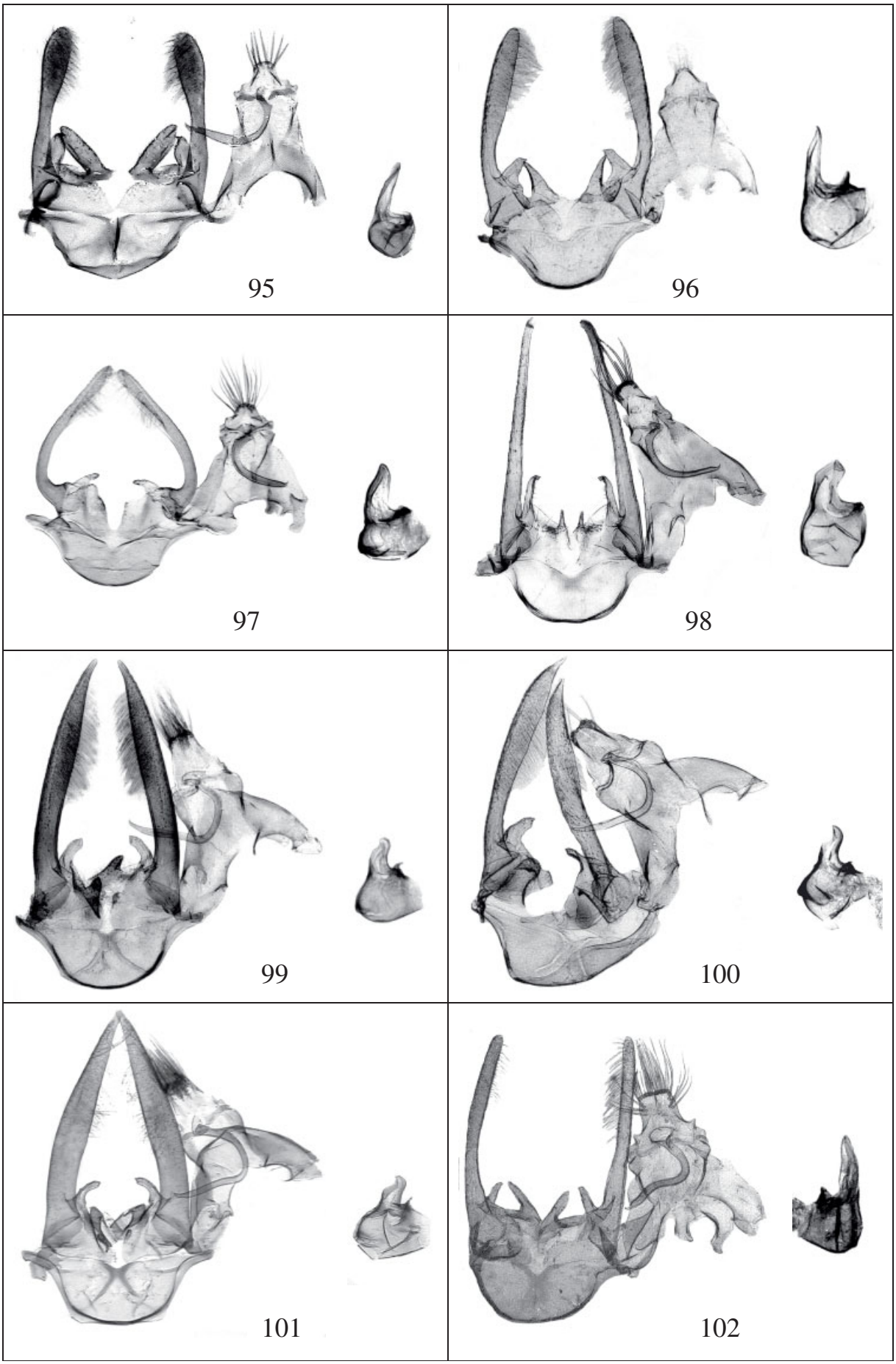
Figs 95–102. Genitalia of *Athrips* ♂. **95** – *A. rutjani* sp. n. (holotype), Kyrgyzstan (ZMKU), gen. prep. No. 5/03; **96** – *A. falkovitshi*, Turkmenistan (ZMKU), gen. prep. No. 106; **97** – *A. fagoniae,* Canary Island (ZSM), gen. prep. No. 73/02; **98** – *A. gerasimovi*, Mongolia (ZIN), gen. prep. No. 30; **99** – *A. septempunctata* (paratype), China (IZShNU), gen. prep. No. 69; **100** – *A. tcharyna* sp. n. (holotype), Kazakhstan (ZMKU), gen. prep. No. 42; **101** – *A.* sp. 1, Mongolia (ZIN), gen. prep. No. 42/02; **102** – *A. tsaidamica* (holotype), China (ZIN), gen. prep. No. 14831 = 43.



fers in the uniformly greyish brown forewing and the labial palpus with a very broad segment 2 and very short and straight segment 3 (for detail see above). In the male genitalia it differs from *A. pruinosella, A. spiraeae* and *A. kostjuki* sp. n. in the longer uncus, distinctly pointed apex of the aedeagus and sub-rectangular sacculus. It differs from *A. sibirica* sp. n. in the smaller, more slender sacculus.

Biology. Host-plant unknown. Adults were collected in the end of May.

Distribution. Russia: Pokrovka (the border of the Chitinskaja and Amurskaja oblast'), Amurskaja oblast': Blagoveshchensk, Khabarovskiy kray: Kozakevitchevo (Caradja 1920: 109). Records of *A. adumbratella* from Chitinskaja oblast' (Budashkin & Kostjuk 1994: 20, Kostjuk et al. 1994: 10) refer to *A. pruinosella* and *A. sibirica* sp. n. A record from South Korea (Park 1991: 198, figs 6–8) is dubious and must probably be referred to *A. pruinosella*.

Athrips spiraeae (Staudinger, 1871)

Gelechia spiraeae Staudinger, 1871, Berl. ent. Z., 14: 302. Lectotype ♂, Russia: Sarepta [Volgograd] (ZMHU), designated by Sattler (1968: 115), [examined].
Rhynchopacha spiraeae (Staudinger, 1871) Sattler 1968: 115.
Athrips spiraeae (Staudinger, 1871) Sattler 1978: 58.

Material examined. **Russia:** lectotype of *spiraeae* as above; 1 ♀, 2 ♂♂, (paralectotypes), Sarepta Chr., (gen. prep. No. 25/01, 26/01, O. Bidzilya) (all ZMHU); 1 ♀, Sarepta, 949, coll. Erschoff; 1 ♀, Sarepta 68, Stgr., coll. Wocke; 1 ♀, Sarepta, 68, Stgr., Coll. Wocke, (gen. prep. No. 17425 = No. 26, O. Bidzilya, 2001); 1 ♂, Guberli, coll. Vel. Knjazja Nikolaja Mikhailovitcha (all ZIN); 1 ♂, 1 ♀, Altai, Kosh-Agatchskiy r-n., r. Tjurgun' vozle Tchuiskogo trackta, 1500 m, 7. vii. 2001, svet, A. Bidzilya (gen. prep. No. 110 ♂, O. Bidzilya) (ZMKU). **Kazakhstan:** 4 ♂♂, 1 ♀, sopki Kokshetau vozle reki Tersakkan, 10. vi. 1958, M. Falkovitsh (gen. prep. No. 47 ♂, No. 29 ♀, O. Bidzilya); 1 ♂, Koksengir Mt., 40 km S Zhana-Arka, Karagandinskaja oblast', 14. vi. [1]958, Zagulaev (all ZIN).

Adult (Fig. 49). Wingspan 13–16 mm. Head thorax and tegulae covered with brown, cream-tipped scales. Antenna brown with white rings. Segment 2 of the labial palpus broad, straight, at least three width of segment 3, covered with grey scales with cream tips; segment 3 short, slender and straight, at angle of about 120 degrees to the segment 2, cream, with broad grey central ring (Fig. 70). Forewing dark grey with ochreous brown patches and spots: the longest patch extending from base to two-thirds or one-half, mixed with dark spots; second patch small, indistinct, at about one-third near costa; weakly elongate ochreous spot at one-half with small dark spot inside; another ochreous spot at about three-quarters. Cilia grey, some scales with brown tips. Hindwing and cilia grey.

Variation. Ochreous brown patches sometimes poorly marked or reduced to small spots. Subapical area may be separated by thin, cream, apically angulated fascia.

Male genitalia (Fig. 115). Uncus elongate, covered with strong long setae. Gnathos long, hook-shaped, broadened after one-half, apex pointed, weakly curved. Cucullus long, relatively broad, apex rounded, exceeding the apical setae of the uncus. Sacculus short, apex small, pointed, weakly curved. Transtilla lobes broad, evenly narrowed apically. Saccus broad, short. Aedeagus basally swollen, distal part long and straight, evenly tapered towards the apex.

Variation. There is some variation in the shape of the gnathos and width of the uncus.

Female genitalia (Fig. 148). Papilla analis broad, sparsely covered with short setae. Apophyses posteriores twice length of apophyses anteriores. Sternite VIII with triangular incision at posterior margin, weakly wrinkled near ostium; lateral patches of honeycomb pattern with narrow, medially elongate sclerites. Ostium with narrow dorsomedial sclerite. Sclerotized part of the ductus bursae with additional lateral sclerites, about length or slightly longer than apophyses anteriores. Corpus bursae round. Signum flat funnel-shaped.

Remarks. *A. spiraeae* is more similar externally to *A. kostjuki* sp. n., but the ochreous brown scales of the latter are randomly spread over the wing and not arranged in prominent patches and spots as in *A. spiraeae*; all others *Athrips* species with a broad segment 2 of the labial palpus (*A. pruinosella*, *A. adumbratella*) lack ochreous scales on the forewing. The male genitalia differ slightly from those of *A. pruinosella* in the shorter sacculus, from *A. patockai* in the wider transtilla lobes and in the slimmer sacculus. The female genitalia are similar to those of *A. pruinosella*,

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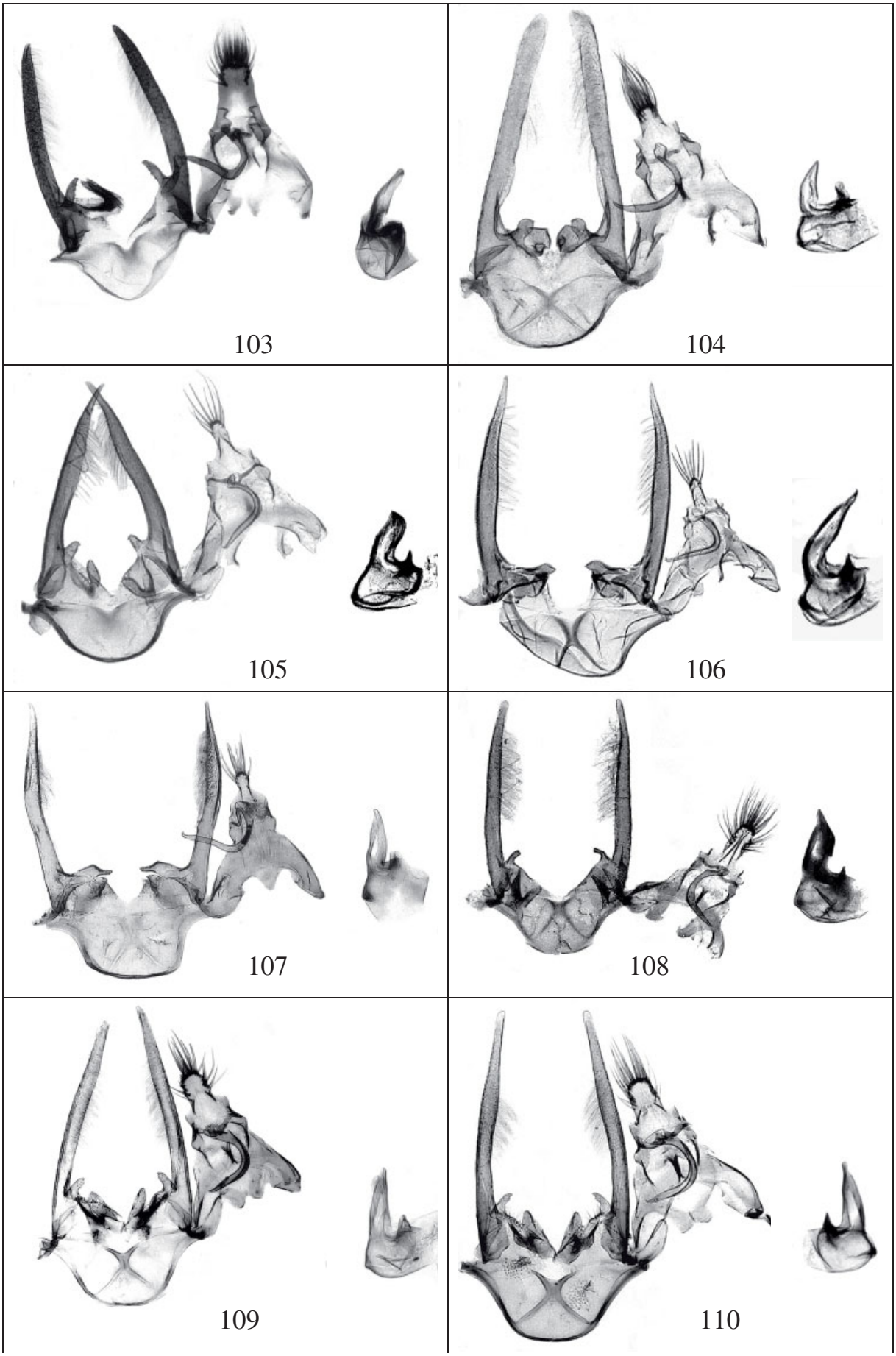
Figs 103–110. Genitalia of *Athrips* ♂. **103** – A. sp. 2, China (IZShNU), gen. slide No. L 95326; **104** – *A. polymaculella*, Korea (KNU), gen. prep. No. 71; **105** – *A. nigrogrisea* (paralectotype), Russia: Buryatija (ZIN), gen. prep. No. 44; **106** – *A. rancidella*, Iran (TLMF), gen. prep. No. 21/02; **107** – *A. rancidella tadzhika* ssp. n. (paratype), Tadzhikistan (ZIN), gen. prep. No. 32; **108** – *A. adumbratella,* Russia: Pokrovka (ZIN), gen. prep. No. 17423 = 41; **109** – *A. pruinosella*, Russia: Caucasus (ZIN), gen. prep. No. 27; **110** – *A. pruinosella*, Ukraine (ZMKU), gen. prep. No. 46.



A. medjella, *A. kostjuki* sp. n. and *A. sibirica* sp. n. but differs slightly in the extremely narrow, medially elongate lateral sclerite and the length of sclerotized part of ductus bursae.

Biology. Host-plant unknown, probably *Spiraea* (Rosaceae) (Huemer & Karsholt 1999: 179). Moths occur in dry steppes. Adults fly from the end of May to July.

Distribution. Russia: Volgogradskaja oblast', Cheliabinskaja oblast', Orenburgskaja oblast', Altai; Northen and Central Kazakhstan. A record from Ukraine (Bidzilya 1998: 9) refers to *A. pruinosella*.

Athrips kostjuki sp. n.

Material examined. Holotype ♀, **Russia:** "Tuva, Erzinskiy r-n, peski Altan-Els, 6. vi. 1968, Yu. A. Kostjuk", (gen. prep No. 104, O. Bidzilya, 2001) [in cyrillic] ["Tuva, Erzin distr., Altan-Els sands, 6. vi. 1968, Yu. A. Kostjuk"]. Paratypes: 2 ♂♂, same label data as holotype (gen. prep. No. 25, No. 113, O. Bidzilya, 2001) (all ZMKU).

Adult (Fig. 50). Wingspan 15–16 mm. Head, thorax and tegulae covered with brown grey, white-tipped scales. Antenna dark grey with white rings at base of each segment. Segment 2 of the labial palpus four width of segment 3, covered with uniformly brownish grey, white-tipped scales. Segment 3 straight, very short, slender, brown grey with cream scales at base and near apex (Fig. 71). Forewing greyish brown mottled with numerous ochreous scales, which concentrated mainly near base of the wing. Paired indistinct dark spot near base and about one-half, small spot at two-thirds. Cilia grey with brown tips. Hindwing and cilia grey.

Variation. Forewings of one paratype are uniformly greyish brown.

Male genitalia (Fig. 116). Uncus long and narrow, apex covered with long setae. Gnathos hook-shaped, apex pointed. Cucullus far exceeding the apical setae of the uncus, apically rounded. Sacculus very short. Transtilla lobes broad, apically rounded, a little longer than sacculus. Saccus broad. Aedeagus basally swollen, distal part weakly curved, apex long and narrow, pointed.

Variation. Gnathos of one paratype weakly broadened distally.

Female genitalia (Fig. 149). Papilla analis broad, sparsely covered with short setae. Apophyses posteriores about twice length of apophyses anteriores. Sternite VIII with triangular incision at posterior margin, wrinkled near ostium; lateral patches of honeycomb pattern with narrow, posteriorly elongate sclerites. Ostium with a dorsomedial sclerite. Sclerotized part of the ductus bursae with additional lateral sclerites, distinctly shorter than apophyses anteriores. Corpus bursae rounded. Signum flat funnel-shaped.

Remarks. *A. kostjuki* is similar to *A. spiraeae* but the ochreous brown scales of the new species are indistinct, randomly spread over the wing and not arranged in prominent patches and spots like those of *A. spiraeae.* The male genitalia differ slightly from those of *A. pruinosella* and *A. spiraeae* in the longer and narrower uncus, shorter and wider sacculus, longer cucullus and distinctly pointed apex of the aedeagus. The female genitalia differ slightly from those of its closest allies in posteriorly (not medially) elongate lateral sclerites; from *A. spiraeae* they also differ in the shorter sclerotized part of the ductus bursae which does not exceed the length of the apophyses anteriores.

Biology. Host-plant unknown. Adults were collected in semideserts.

Distribution. Russia: Tuva.

Athrips sibirica sp. n.

Material examined. Holotype ♂, **Russia:** "Zabaikalie, Sohondinskiy zapovednik, r.[eka] Agutsakan, 1100 m, svet, 13. vii. 1997, A. Bidzilya, I. Kostjuk, O. Kostjuk" [in cyrillic] ["Transbaikalia, Sohondinskiy Nature Reserve, Agutsakan river, 1100 m, light, 13. vii. 1997, A. Bidzilya, I. Kostjuk, O. Kostjuk"]. Paratypes: Russia: 1 ♂, "Altai, Kosh-Agatchskiy r-n, ploskogorie Ukok, 2200 m, 20. vii. 2001, A. Bidzilya", (gen. prep. No. 116, O. Bidzilya, 2001) [in cyrillic] ["Altai, Kosh-Agatch distr., Ukok plateau, 2200 m, 20. vii. 2001, A. Bidzilya"]; 2 ♂♂, Altai, Kosh-Agatchskiy r-n, okr.[estnosti] s.[ela] Dzhazator, 1500 m, 28. vii. 2001, svet, A. Bidzilya, (gen. prep. No. 60, O. Bidzilya, 2001) [in cyrillic] [Altai, Kosh-Agatch distr., Dzhazator vicinity, 1500 m, 28. vii. 2001, light, A. Bidzilya]; 5 ♂♂, 1 ♀, same data as holotype, but 1100–1200 m, 12, 13, 24. vii. 1997 (gen. prep. No. 100 ♀, No. 8 ♂, No. 21 ♂, No. 114 ♂, O. Bidzilya, 2001); 1 ♂, Vost.[ochnoe] Zabaikalie, Tupik (75 km N Mogochi), 8. vii. 1993, I. Kostjuk, O. Kostjuk, M. Golovushkin, S. Salata, (gen. prep. No. 6, O. Bidzilya, 2001) [in cyrillic] [East Transbaikalia, Tupik (75 km N Mogotcha), 8. vii. 1993 I. Kostjuk, O. Kostjuk, M. Golovushkin,

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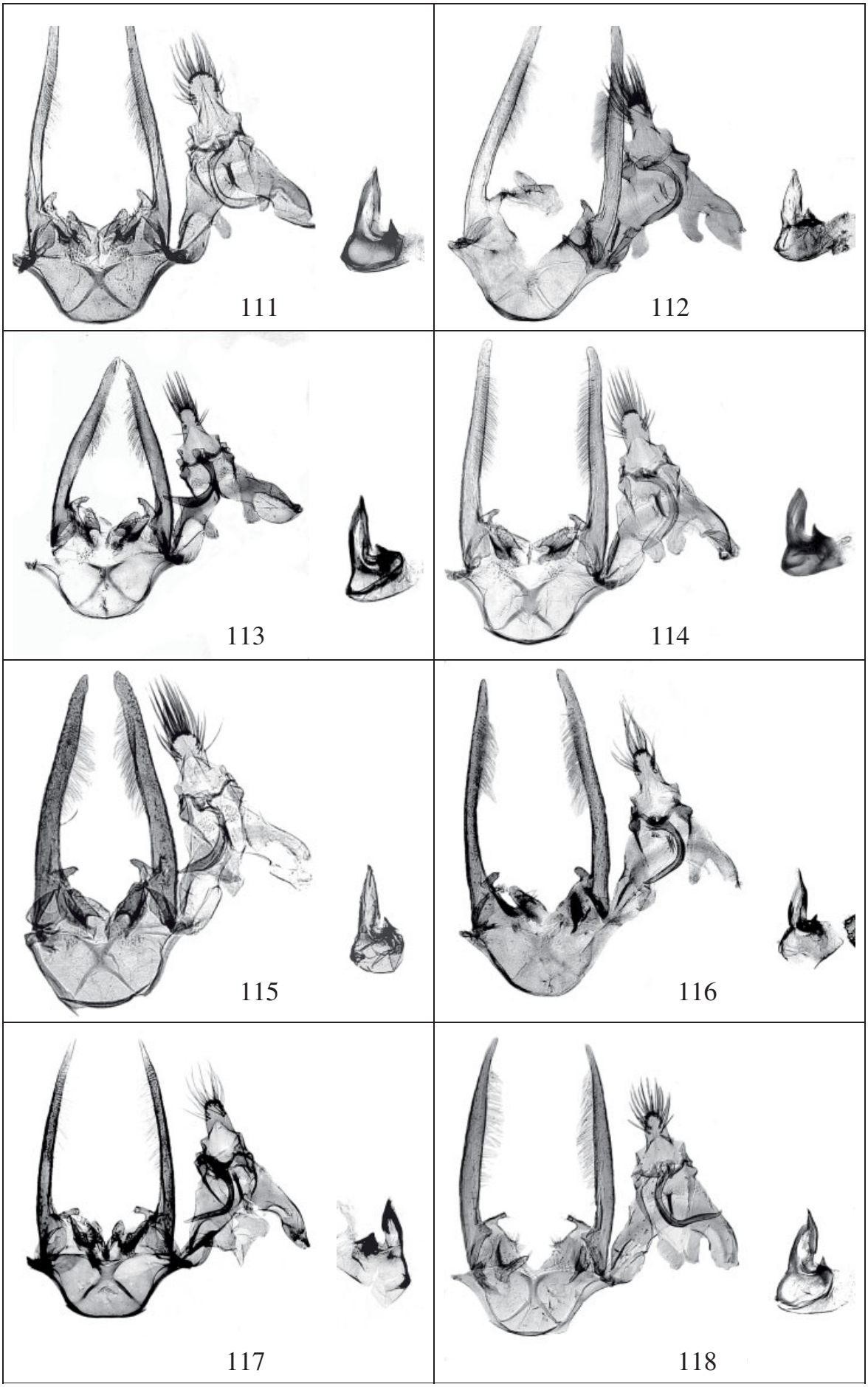
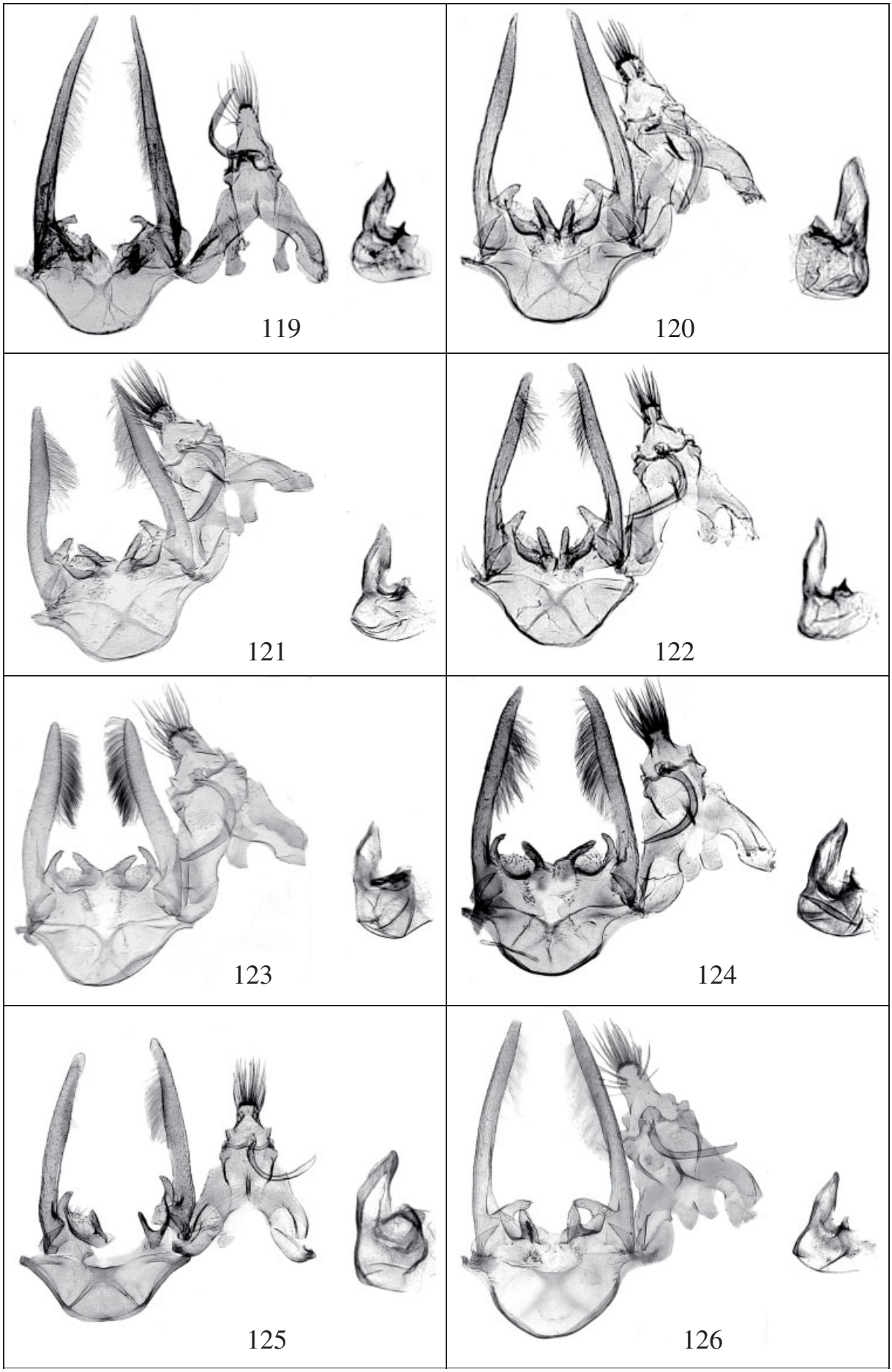
Figs 111–118. Genitalia of *Athrips* ♂. **111** – *A. pruinosella*, Russia: Altai (ZMKU), gen. prep. No. 61; **112** – *A. pruinosella*, Russia: Altai (ZIN), gen. prep. No. 5046; **113** – *A. pruinosella,* Russia: Chitinskaja obl. (ZMKU), gen. prep. No. 28; **114** – *A. pruinosella*, Russia: Amurskaja obl. (ZIN), gen. prep. No. 20; **115** – *A. spiraeae,* Russia: Sarepta (ZIN), gen. prep. No. 26; **116** – *A. kostjuki* sp. n. (paratype), Russia: Tuva (ZMKU), gen. prep. No. 113; **117** – *A. sibirica* sp. n. (paratype), Russia: Chitinskaja obl. (ZMKU), gen. prep. No. 8; 118 – *A. sibirica* sp. n. (paratype), Mongolia (HNHM), gen. prep. No. 41/02.





O. Salata]; 1 ♂, Yu.[go]-V.[ostochnoe] Zabaikalie, Nizhniy Tsasutchei, 25. vi. 1992, sv.[et], I. Kostjuk [in cyrillic] [SE Transbaikalia, Nizhniy Tsasutchei, 25. vi. 1992, light, I. Kostjuk] (all ZMKU). **Mongolia:** 1 ♂, Mongolia, Central Aimak, SO von Somon Bajanzogt, 1600 m, Exp. D. Kaszab, 1966, Nr. 751, 27. viii. 1966; 1 ♂, Mongolia, Bulgan Aimak, 9 km O von Somon Abzaga, 1300 m. Exp. D. Kaszab, 1966, Nr. 722, 22. vii. 1966 (gen. prep. No. 41/02, O. Bidzilya) (all HNHM). Other material. 1 ♂, Zapadn.[yi] Tannu-Ola, Tuva, verhoviya reki Ulug-Khondergei, pereval Khundurgun, 1990 m, gornaya tundra, 9. vii. 1969, Kostjuk, (gen. prep. No. 49, O. Bidzilya, 2001) [in cyrillic] [West Tannu-Ola, Ulug-Khondergei river upper stream, pass Khundurgun, 1900 m, mountainous tundra, 9. vii. 1969, Kostjuk].

Adult (Figs 51–52). Wingspan 14–16 mm. Head, thorax and tegulae covered with dark grey, white-tipped scales. Scape dark grey, others antennal segment dark grey with cream ring at base. Segment 2 of the labial palpus twice width and 2.5 times length of segment 3, black mottled with white scales, with narrow white ring near apex; inner surface cream in basal half, outer surface cream in basal one-third; segment 3 black, inner surface covered with white scales in basal two-thirds, with some white scales near apex (Fig. 72). Forewing covered with dark grey, white-tipped scales; indistinct spot at one-third, two dark spots about one-half and two very small spots at three-quarters. Cilia grey, some scales with black tips. Hindwing and cilia grey.

Variation. One paratype with light grey subapical fascia and with a number of dark spots on the termen. There is some variation in the distribution of white scales over the labial palpus.

Male genitalia (Figs 117–119). Uncus elongate, weakly tapered towards the apex, covered with long setae. Gnathos curved at base and about half length. Cucullus long, slender, distally tapered, far exceeding the apical setae of the uncus. Sacculus short, sub-rectangular, at angle of about 80 degrees to the cucullus, apex very small, pointed. Transtilla lobes broad, apically rounded, a little longer than sacculus. Aedeagus basally swollen, distal part slightly exceeding the length of the basal part, apex distinctly pointed.

Female (Fig. 150). Apophyses posteriores 2.5 times length of apophyses anteriores. Sternite VIII with triangular incision at posterior margin, wrinkled near ostium, lateral patches of honeycomb pattern with narrow, medially elongate sclerites. Ostium simple with narrow dorsomedial sclerite. Sclerotized part of the ductus bursae with additional lateral sclerites, slightly shorter than apophyses anteriores. Corpus bursae round. Signum flat funnel-shaped.

Remarks. *A. sibirica* sp. n. can superficially be confused with other greyish black *Athrips* such as *A. pruinosella, A. adumbratella, A. patockai, A.* sp. n. (Junnilainen, in litt.) and *A. eugenii* sp. n. but is distinguished reliably from the first two by the recurved labial palpus with narrow segment 2; moreover segment 2 of *A. pruinosella* covered with uniformly black scales with white tips without prominence patch of white scales on inner surface. *A. sibirica* is extremely similar to *A. patockai* and *A.* sp. n. (Junnilainen, in litt.) but differs in the segment 2 of the labial palpus which usually 2.5 times length and distinctly broader than segment 3, whereas segment 2 of above species three times length and about same width of segment 3. The male genitalia share with those of *A. adumbratella* the apically expanded, sub-rectangular sacculus, but differ clearly in the shorter uncus. The female genitalia are extremely similar to those of *A. pruinosella, A. kostjuki* sp. n., *A. medjella* and *A. spiraeae* but can be separated by the broader medially elongate sclerite of lateral patches of honeycomb pattern.

A poorly preserved male from the Tuva Mountains is provisionally associated with *A. sibirica* sp. n., although it differs in the sacculus, which is constricted basally and extremely broadened apically, as well as in the S-shaped distal part of the aedeagus (Fig. 119).

Biology. Host-plant unknown. Adults were collected in June–July in steppes and forest-steppes habitats, in mountains up to 2200 m; readily attracted to the light.

Distribution. Russia: Altai, (?) Tuva, Chitinskaja oblast'; Mongolia: Central Aimak, Bulgan Aimak.

Athrips medjella (Chrétien, 1900)

Brachmia medjella Chrétien, 1900, Bull. Soc. ent. Fr., 1900: 191. Lectotype ♀, South France: Hautes-Alpes: Puy-Vacher Tal, *Cotoneaster*, La Grave, H. A., 11.VII., (MNHN), designated by Sattler (1968: 113), [not examined].
Rhynchopacha medjella (Chrétien, 1900) Sattler 1968: 113.
Athrips medjella (Chrétien, 1900) Sattler 1978: 58.

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Figs 119–126. Genitalia of *Athrips* ♂. **119** – *A. sibirica*, Russia: Tuva (ZMKU), gen. prep. No. 49; **120** – *A. patockai*, Slovakia (coll. Z. Tokar), gen. prep. No. 33; **121** – *A. patockai,* Romania (ZSM), gen. prep. No. 69/02; **122** – *A. patockai*, Russia: Chitinskaja obl. (ZMKU), gen. prep. No. 50; **123** – *A.* sp. n. (Junnilainen, in litt.), Kazakhstan (ZIN), gen. prep. No. 34/02; **124** – *A. eugenii* sp. n. (holotype), Kyrgyzstan (ZMKU), gen. prep. No. 19; **125** – A. sp. 3, Russia: Chitinskaja obl. (ZMKU), gen. prep. No. 52; **126** – *A. mouffetella*, Belarus' (ZMKU), gen. prep. No. 31.

Material examined. The lectotype was unavailable to me. The description follows Huemer & Karsholt (1999: 178).

Adult. Wingspan 13 mm. Segment 2 of the labial palpus grey brown mottled with cream; segment 3 with broad black ring. Head and thorax covered with grey, lighter-tipped scales; tegulae as forewing. Antenna black, with white ringes. Forewing covered with grey brown, lighter-tipped scales; small black spot in fold and one oblique above in cell; large spot in middle of wing at two-thirds; some black scales on termen; fringes grey beyond indistinct black fringe line. Hindwing grey.

Male genitalia. Unknown.

Female genitalia. Sternite VIII with triangular incision at posterior margin, wrinkled near ostium, lateral patches of honeycomb pattern with narrow, medially elongate sclerites. Ostium with dorsomedial sclerite. Sclerotized part of the ductus bursae with additional medial sclerites, about length as apophyses anteriores. Ductus bursae broad. Corpus bursae rounded. Signum plate small, with medial ridge.

Remarks. *A. medjella* is known from a single female (lectotype). It differs externally from other greyish black *Athrips* in small size and forewing with the only black spot at two-thirds; it differs from *A. pruinosella* in the second segment of the labial palpus, which is not broadened. The female genitalia are similar to those of *A. spiraeae.*

Biology. Larva feeds in June between spun leaves of *Cotoneaster integerrimus* (Rosaceae). Adults occur in July (Huemer & Karsholt 1999: 178).

Distribution. Known only from France (Hautes-Alpes) (Sattler 1968: 113).

Athrips patockai (Povolný, 1979)

Rhynchopacha patockai Povolný, 1979, Casopis Moravskeho Muzea (Acta Musei Moraviae), LXIV, 1979: 116, pl. 2, fig. 7 [male genitalia], fig. 10 [male genitalia, cuculus-transtilla complex]; pl. 3, fig. 12 [female genitalia], fig. 18 [left forewing]. Holotype ♂, Slovakia, Slovensky raj, 16. v–15. vi. 1977, *Spiraea media*, leg. Patočka (Coll. Povolný, Moravske museum, Brno), [not examined].

Athrips patockai (Povolný, 1979) Povolný 1979: 126; Elsner 1998: 37.

Athrips spiraeae (Staudinger, 1871) Pastoralis & Reiprich 1995: 12.

Material examined. **Slovakia:** 1 ♀, Bohemia, Slov. Banska Stlavnica, Slov. raj, vi. [19]76, J. Patočka; 1 ♂, Slovakia, [19]87, e. l. *Spiraea media*, Dr J. Patočka (all ZSM); 1 ♂, Slovakia, Slovensky raj, 16. vi. 1990, Z. Tokar, (gen. prep. No. 298 = No. 33, O. Bidzilya, 2001) (in coll. Z. Tokar); 1 ♀, CSSR, vi. [19]77, Hrabusice, e.l. *Spiraea media*, J. Patočka lgt. (gen. prep. No. 92, O. Bidzilya, 2001) (ZMUC). **Romania:** 2 ♂♂, 2 ♀♀, Süd Karpathen, Cibinsgebirge, c. Dannehl, [19]18; 11. v.; coll. Osthelder (gen. prep. No. 69/02 ♂, No. 70/02 ♀, O. Bidzilya) (ZSM). **Ukraine:** 2 ♂♂, 1 ♀, Carpaty, Iv.[ano]-Frankovskaja obl., verkhovia r. Tch.[ernyi] Tcheremosh, uroch.[ishche] Dobryn., 1000 m, 23, 26. vi. 2003, A. Bidzilya (ZMKU). **Russia:** 1 ♂, Zabaikalie, Chitinskaja obl., Nizhniy Tsasutchey, 5. vii. 1989, I. Kostjuk (gen. prep. No. 54/02, O. Bidzilya); 1 ♂, 1 ♀, Zabaikalie, Chita, 27. vii. 1997, light, A. Bidzilya, I. Kostjuk, O. Kostjuk (gen. prep. No 50, No. 91, O. Bidzilya, 2001); 1 ♂, Chitinskaja obl., 23 km N Kyra, 23. vii. 1994, P. Ya. Ustjuzhanin (all ZMKU).

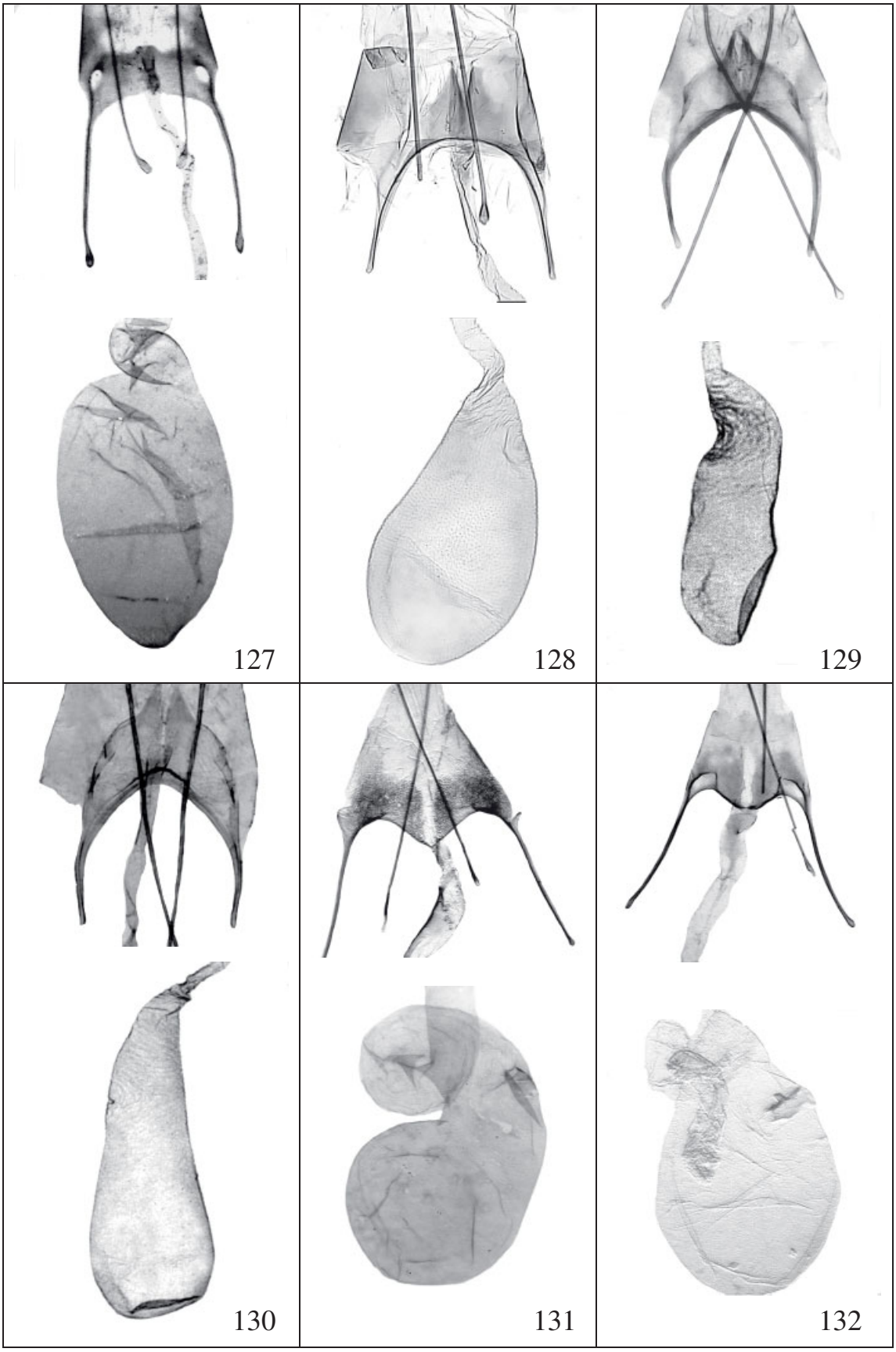
Adult (Figs 53–55). Wingspan 15–17 mm. Head, thorax and tegulae covered with blackish grey, light-tipped scales. Labial palpus recurved, segment 2 slender, grey mottled with white scales at upper side; segment 3 only some slender than segment 2, blackish grey with white scales at base and near apex (Fig. 75). Antenna grey, each segment with off-white ring at base. Forewing covered with black, grey-tipped scales; two dark spots about one-third and two smaller spots about two-thirds; subapical area lighter, termen with dark spots. Cilia grey, some scales with black tips. Hindwing and cilia light grey.

Variation. Subapical area can be separated by yellowish white, apically curved fascia.

Male genitalia (Figs 120–122). Uncus subrectangular with strong long setae at apex and at lateral margins. Gnathos long, sickle-shaped. Cucullus weakly broadened in middle, slightly exceeding the apical setae of the uncus, tapered towards apex. Sacculus broad, straight, slightly apically narrowed, apex small, pointed. Transtilla lobes relatively slender, about length as sacculus. Saccus broad, rounded. Aedeagus basally swollen, distal part narrowed in apical half, apex small, pointed.

Variation. The cucullus may extend to, or slightly exceed the apical setae of the uncus; the specimen from Romania has a shorter and broader gnathos.

Female genitalia (Figs 151, 152). Papilla analis elongate, sparsely covered with short setae. Apophyses posteriores twice length of apophyses anteriores. Sternite VIII with deep incision at posterior margin; honeycomb pattern arranged in two broad, transversal, curved medial patches which almost completely cover sternite VIII. Ostium with dorsomedial sclerite. Sclerotized part of the ductus bursae a little shorter than apophyses anteriores, with additional lateral sclerites. Ductus bursae broad, coiled before corpus bursae. Corpus bursae rounded. Signum flat funnel-shaped.



Figs 127–132. Genitalia of *Athrips* ♀. **127** – *A. tigrina*, Uzbekistan (ZMKU), gen. prep. No. 65; **128** – *A. nitrariella*, Algeria (BMNH), genit. slide No. 12713; **129** – *A. mongolorum*, Turkmenistan (ZIN), gen. prep. No. 78; **130** – *A. mongolorum* (*crassivalva*, paratype), China (IZShNU), gen. prep. No. 83; **131** – *A. gussakovskii*, Mongolia (ZIN), gen. prep. No. 80/02; **132** – *A. autumnella* (paratype), Uzbekistan (ZIN), gen. prep. No. 85.

Variation. There is some variation in the shape of the posterior margin of the patches of honeycomb pattern.

Remarks. *A. patockai* is very similar externally to *A.* sp. n. (Junnilainen, in litt.) but differs slightly in the broader forewing. It resembles also other greyish black *Athrips*: *A. pruinosella, A. adumbratella, A. sibirica* sp. n. and *A. eugenii* sp. n. but is distinguished reliably from the first two by the recurved labial palpus and narrow segment 2; it differs slightly from *A. sibirica* sp. n. in the shape of segment 3 of the labial palpus (see above) and from *A. eugenii* sp. n. in the presence of two dark spots at two-thirds. It differs reliably from all the above species in the longer cucullus and the broader and straight sacculus in the male genitalia. The female genitalia are similar to those of *A. nigrogrisea* but differ in the triangular rather than rhomboid signum, sternite VIII with a narrow (not triangular) incision at its posterior margin as well as in the longer and anteriomedially not narrowed patches of honeycomb pattern; for differences from *A.* sp. n. (Junnilainen, in litt.) see below.

Specimens from Transbaikalia correspond well to specimens from Europe externally and in the female genitalia but differ in their smaller size (14 mm), narrower uncus and slimmer, distinctly pointed apex of the aedeagus.

Biology. Larva feeds between spun leaves of *Spiraea media* (Rosaceae) from August and continue feeding in the following spring. Adults fly in May–July. In Europe adults were found on sunny and rocky slopes with *Spiraea* up to 1000 m.

Distribution. Romania; Slovakia; Ukraine; Russia: Chitinskaja oblast'. According to Huemer & Karsholt (1999: 179) also known from Slovenia.

Athrips sp. n. (Junnilainen, in litt.)

Material examined. 1 ♂, Dzhungarskiy Alatau, Tchatyrdag, 4 km NE Topolevki, Sarkandskiy r-n, larva na *Spiraea* s 28. vi, imago 3. vii. 1957, V. I. Kuznetzov (gen. prep. No. 34/02, O. Bidzilya); 1 ♀, same data, but imago 29. vii. 1957 (gen. prep. No. 37/02, O. Bidzilya) (all ZIN).

Adult (Fig. 56). Wingspan 15 mm. Head, thorax and tegulae blackish grey. Scape black, others antennal segment black with grey ring at base. Labial palpus slender, recurved, covered with black, grey-tipped scales. Segment 2 only some broader and about three times length of segment 2; segment 3 with some white scales near apex and at base. Forewing uniformly blackish grey with two indistinct dark spots at base and two small black spots at two-thirds. Cilia grey with lighter-tipped scales. Hindwing and cilia light grey.

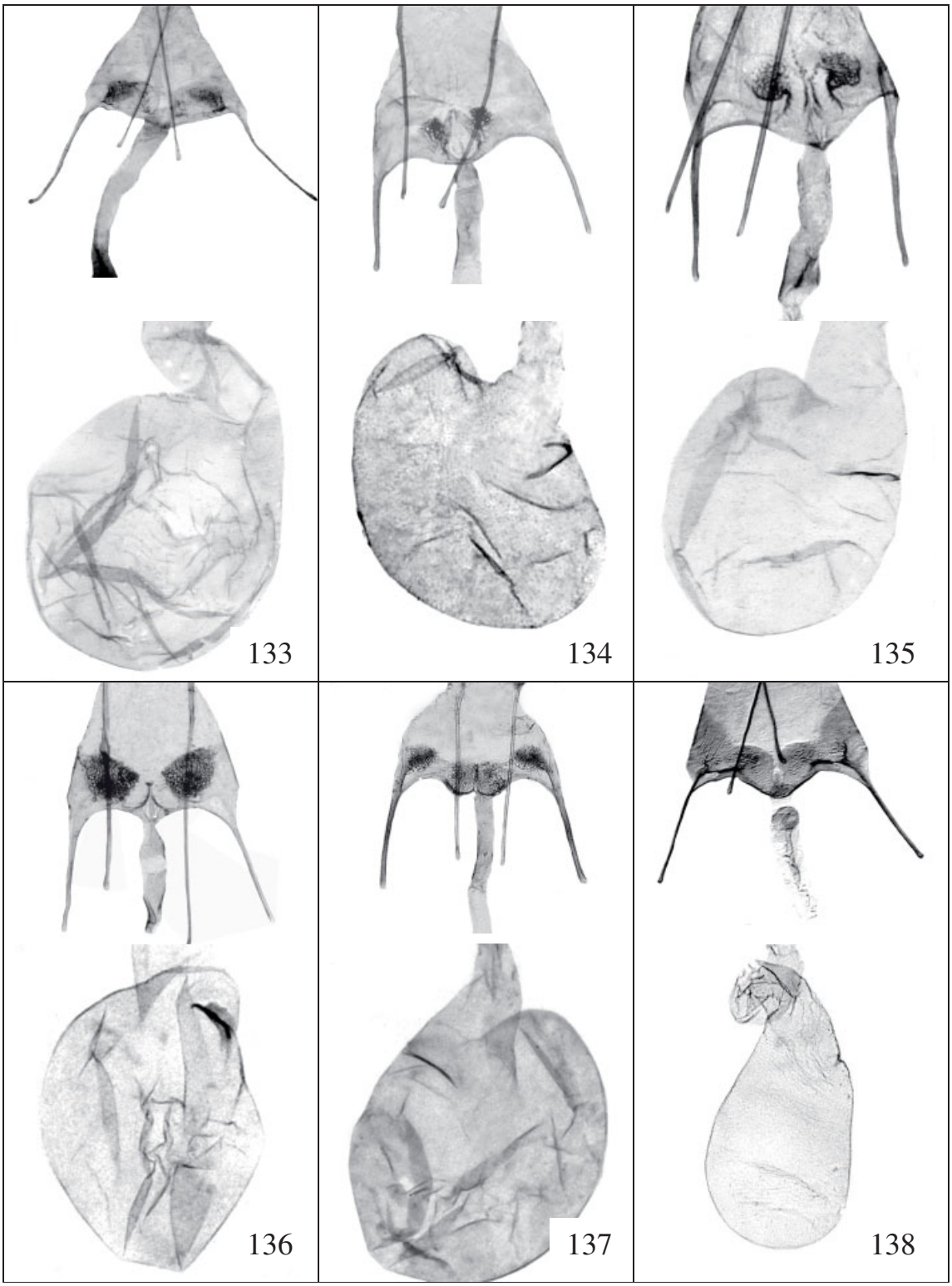
Variation. The specimen from S. Urals has indistinct light subapical fascia. The male from SE Kazakhstan is uniformly greyish black without dark spots.

Male genitalia (Fig. 123). Uncus broad, subrectangular, covered with long setae. Gnathos long, sickle-shaped. Cucullus broad, weakly curved, shorter than apical setae of uncus, evenly tapered towards apex, densely covered with long setae in distal half. Sacculus short, narrow, weakly inwards-curved, apix pointed. Transtilla lobes relatively broad, about same length as sacculus. Posterior margin of vinculum with small medial processes. Saccus broad, rounded. Aedeagus basally swollen, its distal part narrowed in apical half.

Variation. There is little variation in width of uncus between specimens from S. Urals and SE Kazakhstan.

Female genitalia (Fig. 153). Papilla analis elongate, sparsely covered with short setae. Apophyses posteriores twice length of apophyses anteriores. Sternite VIII with deep incision at posterior margin, slightly wrinkled near ostium, lateral patches of honeycomb pattern indistinct. Ostium distinct, with dorsomedial sclerite. Sclerotized part of the ductus bursae with additional lateral sclerites, about length as apophyses anteriores. Ductus bursae coiled before corpus bursae. Corpus bursae nearly round. Signum plate triangular.

Remarks. This species was discovered by J. Junnilainen, who will formally named it. *Athrips* sp. n. is externally almost indistinguishable from *A. patockai*, but also resembles other plain *Athrips*: *A. pruinosella, A. adumbratella, A. sibirica* sp. n. and *A. eugenii* sp. n.; it differs reliably from the first two in the recurved labial palpus, segment 2 of which is not broadened; it differs from *A. eugenii* sp. n. in the presence on the forewing of two black spots at two-thirds, and from *A. sibirica* sp. n. in the different shape of segment 3 of the labial palpus (see above). In the male genitalia it is easily distinguished from *A. eugenii* sp. n. in the weakly inwards-curved sacculus and the shorter and broader cucullus; it differs from *A. patockai* in the distinctly shorter and broader cucullus as well as in the different shape of the aedeagus. The female genitalia are



Figs 133–138. Genitalia of *Athrips* ♀. **133** – *A. thymifoliella*, Spain (ZMUC), gen. prep. No. 64/02; **134** – *A. nigricostella*, Ukraine (ZMKU), gen. prep. No. 80; **135** – *A. tetrapunctella*, Sweden (ZMHU), gen. prep. No. 27; **136** – *A. amoenella*, Corse (ZMUC), gen. prep. No. 93; **137** – *A. stepposa* sp. n. (paratype), Ukraine (ZMKU), gen. prep. No. 99; **138** – *A. falkovitshi*, Uzbekistan (ZMKU), gen. prep. No. 60/02.

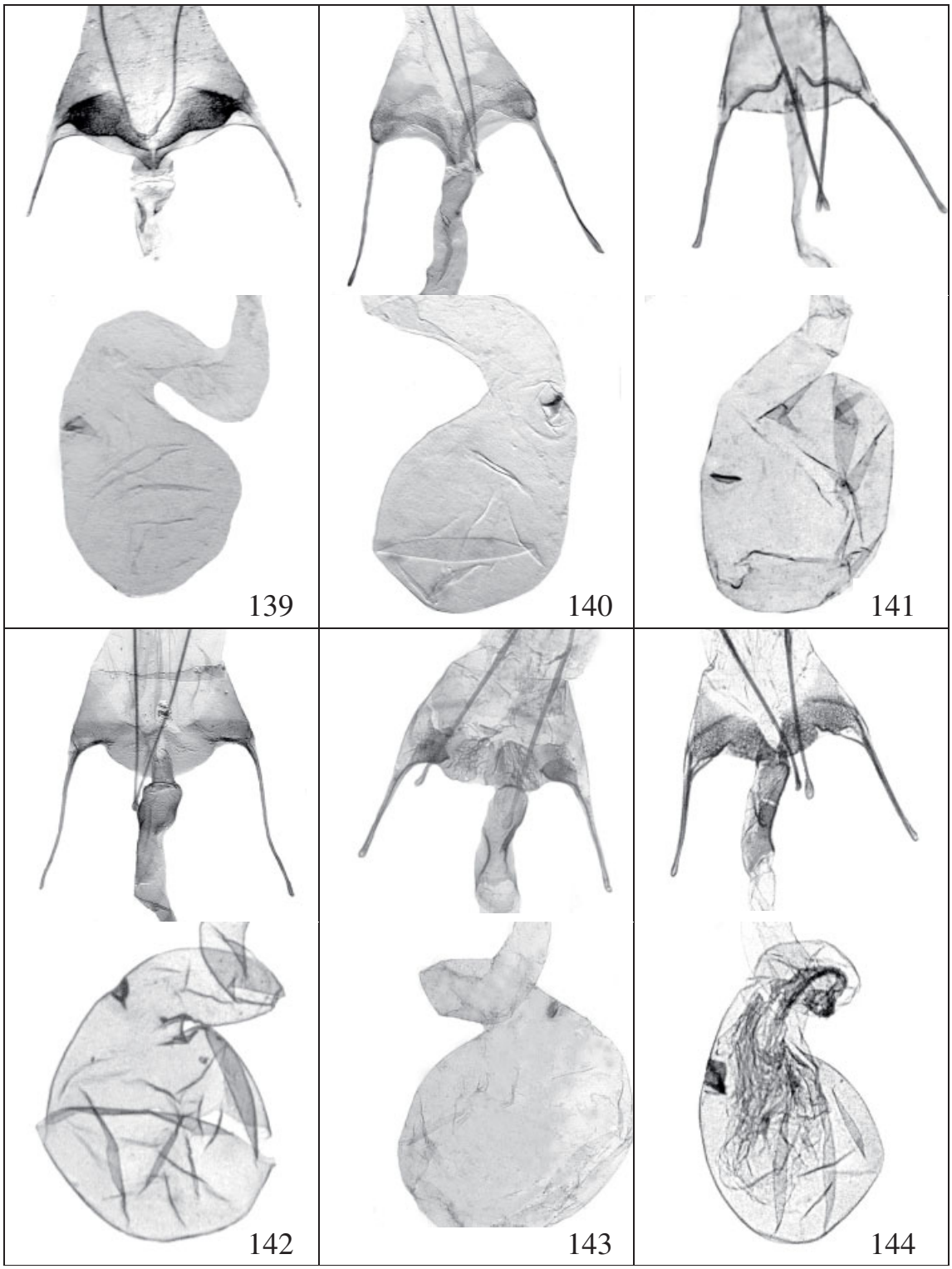
similar to those of *A. patockai* but differ in the indistinct patches of honeycomb pattern on sternite VIII.

Biology. Larva feeds from the end April on *Spiraea* sp. (Rosaceae). Adults fly in June–July.

Distribution. SE Kazakhstan: Dzhungarskiy Alatau. Also recorded from south-eastern European Russia: Cheliabinskaja oblast', Orenburgskaja oblast' (Junnilainen, in prep).

Athrips eugenii sp. n.

Material examined. Holotype ♂, **Kyrgyzstan:** "Kyrgyzstan, Tian-Shan, Mts. Suusamyr-Too, Loc. Tshytshkan, alt. 1650 m, 3. vii. 1999, lum., E. Rutjan leg." (gen. prep. No. 19, O. Bidzilya, 2001). Paratypes: 12 ♂♂, 6 ♀♀, same data as holotype, but 3.–4. vii. 1999 (gen. prep. No. 55, ♀, O. Bidzilya, 2001); 4 ♂♂, 1 ♀, Tian-Shan, Mts. Suusamyr-Too, prope pag Kyzyl-Oj, alt. 1800 m, 10. vii. 2000, lum., E. Rutjan; 2 ♂♂, 2 ♀♀, Tian-Shan, Mts. Kyrgyzskij, fluv. Kara-Balta, alt. 1550–1600 m, 7. viii. 1999, E. Rutjan (gen. prep. No. 81, No. 111, ♀♀, O. Bidzilya, 2001); 1 ♂, Tian-Shan, prov. Naryn, fl. Tshu, prope vodochr. Orto-Tokoj, alt. 1650 m, 7. vii. 2000,



Figs 139–144. Genitalia of *Athrips* ♀. **139** – *A. fagoniae*, Canary Isl. (ZSM), gen. prep. No. 61/02; **140** – *A. gerasimovi*, Mongolia (ZIN), gen. prep. No. 62/02; **141** – *A. septempunctata*, China (IZShNU), gen. prep. No. 98; **142** – *A. peteri* sp. n. (holotype), Kazakhstan (ZMKU), gen. prep. No. 101; **143** – *A. polymaculella*, S. Korea (KNU), gen. prep. No. 70; **144** – *A. nigrogrisea* (paralectotype), Russia: Buryatija (ZIN), gen. prep. No. 103.

lum., E. Rytjan; ♂, Tian-Shan, distr. Dzhalal-Abad, pag. Toskool ad fluv. Alash-Saj, alt. 1100 m, 22. vii. 1999, lum., E. Rutjan (all ZMKU). Others material. **Uzbekistan:** ♂, Namangan, 84 H?bn. (gen. prep. No. 4/01, O. Bidzilya, 2001) (ZMHU).

Adult (Fig. 57). Wingspan 14–17 mm. Head, thorax, tegulae and labial palpus covered with grey, white-tipped scales. Labial palpus recurved, segment 2 twice width of segment 3, inner surface lighter as outer; segment 3 with white apex and white medial ring. Antenna grey, each segments with light ring at base. Forewing uniformly grey with two indistinct dark spots about one-third. Hindwing and cilia light grey.

Variation. The usual two black spots at one-third are often absent. Some specimens exhibit a cream subapical fascia.

Male genitalia (Fig. 124). Uncus short, quadrangular densely covered with long setae. Gnathos sickle-shaped. Cucullus elongate, apex weakly pointed, slightly exceeding the apical setae of the uncus. Sacculus short, slender, gently inwards-curved, apex pointed. Transtilla lobes about length as sacculus, apically rounded. Posterior margin of vinculum with pair of small medial processes. Saccus short, rounded. Aedeagus basally swollen, distal part tapered towards the apex.

Variation. Some specimens have an aedeagus, which not tapered towards the apex.

Female genitalia (Fig. 154). Papilla analis sub-oval, sparsely covered with short setae. Apophyses posteriores two to 2.3 times length of apophyses anteriores. Sternite VIII with deep sub-rhomboid incision at posterior margin, strongly wrinkled and narrowed anteriomedially, lateral patches of honeycomb pattern broad. Ostium with long dorsomedial sclerite. Antrum sclerotized laterally. Sclerotized part of the ductus bursae with additional lateral sclerites, about length as apophyses anteriores. Ductus bursae broad, coiled before corpus bursae. Corpus bursae round. Signum plate sub-triangular with rounded base.

Remarks. *A. eugenii* can superficially be confused with other greyish black *Athrips*: *A. pruinosella, A. adumbratella, A. patockai, A.* sp. n. (Junnilainen, in litt.) and *A. sibirica* sp. n. but is distinguished reliably from the first two in the recurved labial palpus in which segment 2 is not broadened; it differs from the last three species in the absence of a second pair of dark spots at two-thirds of the wing. From *A.* sp. n. (Junnilainen, in litt.) it also differs in the presence of cream scales on the head and in segment 3 of the labial palpus having a white ring near the apex, whereas segment 3 of *A.* sp. n. (Junnilainen, in litt.) is uniformly grey with some white scales near apex and base. In the male genitalia *A. eugenii* differs clearly from all other externally similar species in the gently inwards-curved sacculus; from *A.* sp. n. (Junnilainen, in litt.) it differs in the longer and slimmer cucullus, narrower uncus and more distinctly inwards-curved sacculus. The female genitalia differ from those of *A.* sp. n. (Junnilainen, in litt.) and *A. patockai* in the narrower and longer patches of honeycomb pattern of sternite VIII and from *A. patockai* also in sternite VIII which bears only lateral patches of honeycomb pattern.

Biology. Host-plant unknown. Adults occur in July, in forest-steppe habitats up to 1650 m.

Distribution. Kyrgyzstan; Uzbekistan.

Athrips sp. 3

Material examined. **Russia:** 1 ♂, Zabaikalie, okr. Nizhniy Tsasutchey, Sosnovyi Bor, svet, 1. vii. 1997, A. Bidzilya, I. Kostjuk, O. Kostjuk (gen. prep. No. 52, O. Bidzilya, 2001); 1 ♀, Zabaikalie, Chita, 27. vii. 1997, svet, A. Bidzilya, I. Kostjuk, O. Kostjuk (gen. prep. No. 88, O. Bidzilya, 2001).

Adult. Both specimens are in very poor condition: labial palpus and head lack scales. Forewing greyish black with indistinct dark spot near base. Cilia grey.

Male genitalia (Fig. 125). Uncus short, subquadrangular, covered with long setae. Gnathos sickle-shaped, broadened distally. Cucullus elongate, far exceeding the apical setae of the uncus. Sacculus short, weakly inwards-curved, apex pointed. Transtilla lobes slender, about length as sacculus. Posterior margin of vinculum with pair of small medial processes. Saccus broad, short. Aedeagus basally swollen, distal part narrowed in apical half.

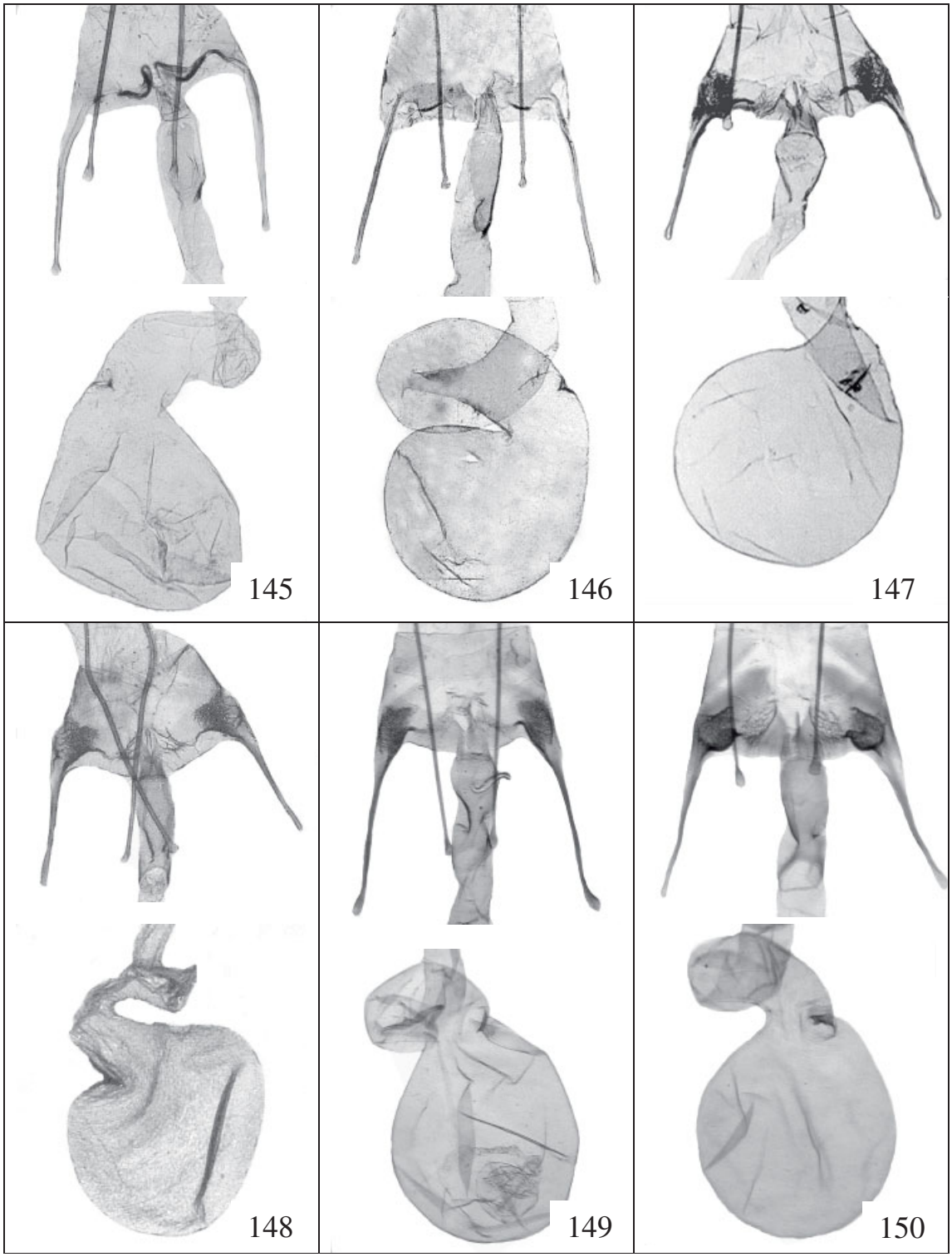
Female genitalia (Fig. 155). Papilla analis elongate, sparsely covered with short setae. Apophyses posteriores twice length of apophyses anteriores. Sternite VIII with deep incision at posterior margin, wrinkled and narrowed anteriomedially, bears lateral patches of honeycomb pattern. Ostium with distinct dorsomedial sclerite. Sclerotized part of the ductus bursae broad, about same length as apophyses anteriores. Ductus bursae broad, coiled before corpus bursa. Corpus bursae round. Signum plate triangular with medial ridge.

Remarks. *A.* sp. 3 is closely related to *A. eugenii* sp. n. but differs in the longer cucullus, dis-

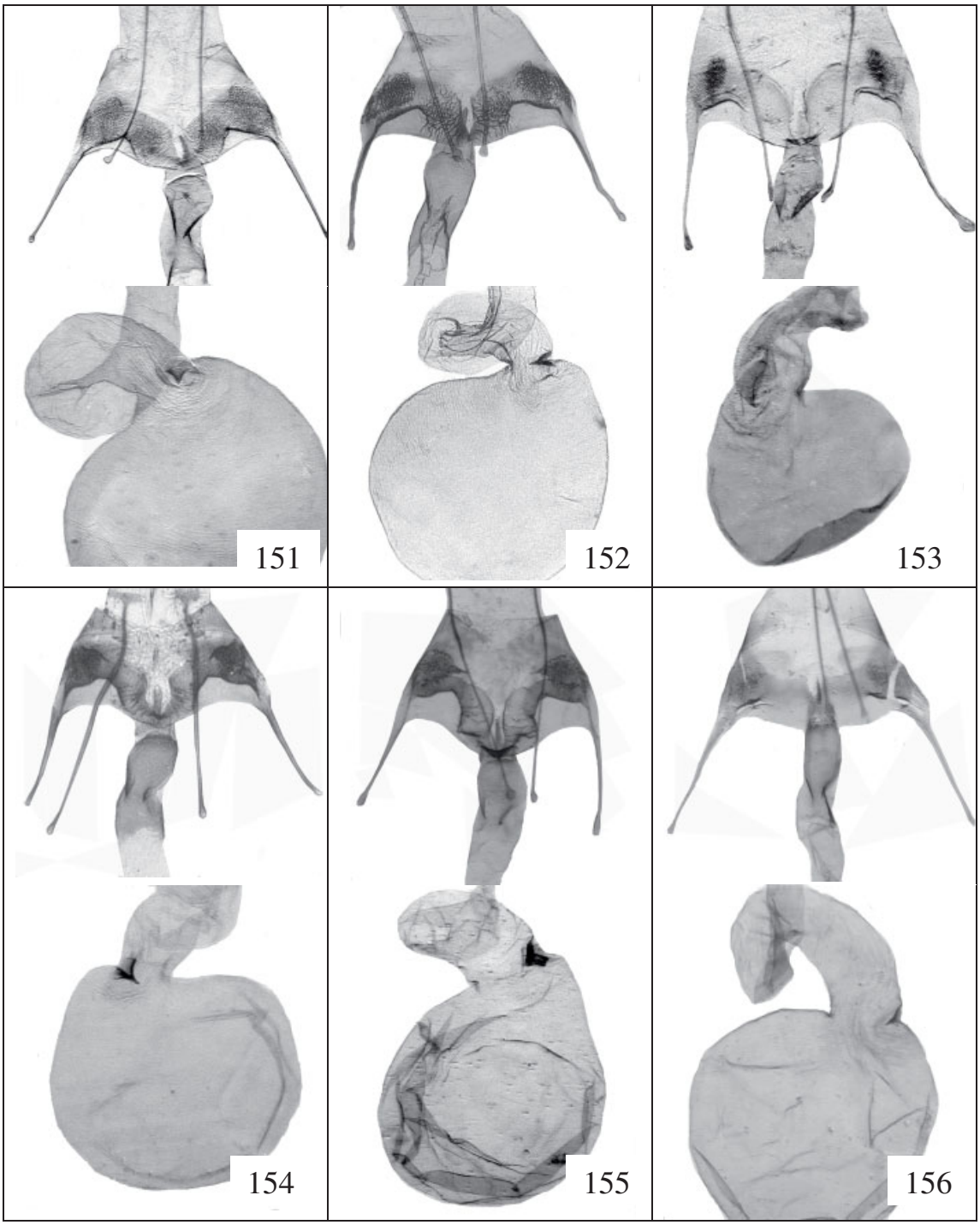
tally expanded gnathos as well as in the different shape of the distal part of the aedeagus. In the female genitalia it differs slightly from *A. eugenii* sp. n. in the shape of the wrinkled part of sternite VIII. The status of this taxon needs clarification.

Biology. Host-plant unknown. The specimens were collected on light in forest-steppe biotopes.

Distribution. Russia: Chitinskaja oblast'.



Figs 145–150. Genitalia of *Athrips* ♀. **145** – *A. rancidella*, Ukraine (ZMKU), gen. prep. No. 82; **146** – *A. rancidella tadzhika* ssp. n. (paratype), Tadzhikistan (ZIN), gen. prep. No. 95; **147** – *A. pruinosella*, Russia: Primorskiy kray (ZMUC), gen. prep. No. 69929; **148** – *A. spiraeae* (paralectotype), Russia: Sarepta (ZMHU), gen. prep. No. 26/01; **149** – *A. kostjuki* sp. n. (holotype), Russia: Tuva (ZMKU), gen. prep. No. 104; **150** – *A. sibirica* sp. n. (paratype), Russia: Chitinskaja obl. (ZMKU), gen. prep. No. 100.



Figs 151–156. Genitalia of *Athrips* ♀. **151** – *A. patockai*, Romania (ZSM), gen. prep. No. 70/02; **152** – *A. patockai*, Russia: Chitinskaja obl. (ZMKU), gen. prep. No. 91; **153** – A. sp. n. (Junnilainen, in litt.), Kazakhsatn (ZIN), gen. prep. No. 37/02; **154** – *A. eugenii* sp. n. (paratype), Kyrgyzstan (ZMKU), gen. prep. No. 111; **155** – *A.* sp. 3, Russia: Chitinskaja obl. (ZMKU), gen. prep. No. 88; **156** – *A. mouffetella*, Ukraine (ZMKU), gen. prep. No. 77/02.

Athrips mouffetella (Linnaeus, 1758)

Phalaena (Tinea) mouffetella Linnaeus, 1758, Syst. Nat. (edn 10) 1: 540. Syntypes unspecified, Sweden [not traced] (Robinson & Nielsen 1983: 221).

Tinea pedisequella [Denis & Schiffermüller], 1775: 140. Syntypes unspecified, Austria: Vienna district (Denis & Schiffermüller) [lost].

Recurvaria punctifera Haworth, 1828, Lep. Brit.: 551. Syntypes unspecified, British Isles: England [not traced]. (Possibly in Allis [Authors] collection, Yorkshire Museum, York, UK).

Rhynchopacha mouffetella (Linnaeus, 1758) Sattler 1968: 114.

Athrips mouffetella (Linnaeus, 1758) Sattler 1978: 58.

Material examined. **Poland:** 1 ♂, Stettin Butt [Büttner], 28/l. 79, ex coll. Staudinger (ZMHU). **Belarus':** 1 ♂, 1 ♀, Vitebsk, Belorusija, 6. vii. 1978, 3. vii. 1970, V. I. Piskunov (gen. prep. No. 31 ♂, O. Bidzilya, 2001) (ZIN). **Ukraine:** 1 ♀, Podolia, Nemertshi, 24. vi. 1930, lum., Coll. V. Chranevitsh (gen. prep. No. 77/02, O. Bidzilya); 1 ♀, Zaporozhskaja obl., Zapo-

rozhskiy r-n, r.[eka] Konka, ur. Pristen, 13. vii. 1998, A. Zhakov (gen. prep. No. 66, O. Bidzilya, 2001) (ZMKU); 1 ♂, 5 km SO Vorohta, Vost. Karpaty, 24. vi. 1964, Falkovitsh (ZIN). **Russia:** 1 ♂, Sankt-Petersburg, 17. vi. 19[21], V. V. Borovsky; 1 ♂, 1 ♀, Borisovka, Belgorodskaja obl., Zapovednik "Les na Vorskle", 27. vi. 1985, V. Krivokhatskiy; 1 ♀, Ural Centr., Sverdlovsk, 1931. vii. 4, S. Tshetverikov; 1 ♂, Khabarovsk, Primorskaja oblast', 20. vi. [1]916, Pavlenko (gen. prep. No. 48, O. Bidzilya, 2001); 1 ♀, Sutchan, Ussur. kray, r. Sitza, 24. vii. [19]28 A. I. Kurenzov; 1 ♀, Gorno-Taiozhnaya stantsia, okr. Ussuriiska, 19. vii. 1982, svet, S. Sinev; 1 ♀, okr. Ussuriiska, Gorno-Taiozhnaya stantsia, Vyv.[odka] No. 90, e.l. pochki *Diervilla*, Gus. 10. v., Kuk. 5. vi, Im. 21. vi. 1966, V. Kuznetzov, T. Zabello; 9 ♀♀, Primorie, Zapovednik Kedrovaya Pad', 23, 29, 30. vii, 4. viii. 1988, S. Sinev (all ZIN).

Adult (Fig. 58). Wingspan 14–17 mm. Head, thorax and tegulae covered with light brown, lighter-tipped scales. Antenna grey with white rings. Labial palpus slender, recurved, segment 2 1.5 width of segment 3, bears cream narrow ring near apex, the outer surface covered with blackish grey, white-tipped scales, the inner surface lighter, yellowish white; segment 3 white with black central ring. Forewing light grey with some black scales mainly in subapical areas; two paired of prominent black spots of raised scales at one-third and two-thirds of wing; smaller black spots near base and on the termen. Cilia grey. Hindwing and cilia light grey.

Variation. The number of black spots and their distribution can extensively vary; sometimes spots merge to form short dashes.

Male genitalia (Fig. 126). Uncus broad and long, covered with long setae. Gnathos long, curved at one-quarter of length. Cucullus slender, extends to, or slightly exceeds the apical setae of the uncus. Sacculus relatively long, weakly curved, at angle of about 90 degrees to the cucullus, apex triangular. Transtilla lobes broad, about length as sacculus, evenly tapered towards the apex. Saccus broad, rounded. Aedeagus basally swollen, distal part evenly narrowing in apical half.

Female genitalia (Fig. 156). Papilla analis elongate, sparsely covered with short setae. Apophyses posteriores about 2.5 times length of apophyses anteriores. Sternite VIII with triangular incision at posterior margin, not wrinkled near ostium; lateral patches of honeycomb pattern with narrow, medially elongate sclerites. Ostium bursae with distinct narrow dorsomedial sclerite. Sclerotized part of the ductus bursae with additional lateral sclerites, slightly shorter than apophyses anteriores. Ductus bursae long, coiled before bursa. Corpus bursae oval. Signum flat funnel-shaped.

Remarks. *A. mouffetella* is easily recognizable externally by the distinct black spots on the forewing. In the male genitalia it differs from similar species (*A. pruinosella, A. spiraeae, A. kostjuki* sp. n., *A. sibirica* sp. n., *A. patockai*) in the relatively long, weakly curved sacculus (at angle of about 90 degrees to the cucullus). In the female genitalia it is similar to *A. medjella*, *A. spiraeae*, *A. pruinosella*, *A. kostjuki* sp. n. and *A. sibirica* sp. n. but differs in the sternite VIII that is not wrinkled medially.

Biology. Host-plants are *Lonicera xylosteum*, *L. periclimenum*, *L. caprifolium*, *Symphoricarpos rivularis,* (Caprifoliaceae), (?) *Berberis* (Huemer & Karsholt 1999: 180), reared from *Diervilla* sp. (Caprifoliaceae) in Russian Far East. The larva lives from May to June in a wide web spun along a twigs and leaves. Adults occur from June to August.

Distribution. Poland; Belarus'; Ukraine; Russia: European part, Khabarovskiy kray, Primorskiy kray. According to Huemer & Karsholt (1999: 180) in Central and Northern Europe to the Ural Mountains, North Amerika.

Taxa incertae sedis

Athrips asarinella (Chrétien, 1930)

Epithectis asarinella Chrétien, 1930, In Lhomme, L. Amateur Papillons 5: 120. Syntypes unspecified, France [not traced] (Huemer & Karsholt 1999: 184).
Athrips asarinella (Chrétien, 1930) Sattler 1978: 57.

The species was described from an uncpecified number of specimens reared by from *Anthirrhinum asarina* L. (Scrophullariacea) in April–May (Huemer & Karsholt 1999: 184).

The real identity of this species remains unclear due to luck of authentic material and absence of any references accompanied by figures of adult or its genitalia. According to the original description this species may probably be related to *A. mouffetella* L. (Huemer & Karsholt 1999: 184).

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