New taxa and records of *Gnorimoschema* Busck and *Gobipalpa* Povolný from Palaearctic Asia (Lepidoptera, Gelechiidae)[1]

Dalibor Povolný

Povolný, D. 1994: New taxa and records of *Gnorimoschema* Busck and *Gobipalpa* Povolný from Palaearctic Asia (Lepidoptera, Gelechiidae). — Entomol. Fennica 5:57–64.

New taxa: *Gnorimoschema jalavai* sp. n. from the Altai Mountains, *G. mikkolai* sp. n. from the Upper Kolyma River, and *G. epithymellum kirgisicum* ssp. n. from Kirgisia. The previously unknown female of *Gobipalpa inexpectata* Povolný, 1973 is described. New distributional records: *Gobipalpa inexpectata* and *Gnorimoschema epithymellum* (Staudinger, 1857) from Kirgisia, *Gnorimoschema antiquum montanum* Povolný, 1966, from Kazakhstan, *Gnorimoschema nordlandicolellum* (Strand, 1902), from Kirgisia and Irkutsk, and *Gnorimoschema herbichi kamchaticum* Povolný, 1977 from the Anadyr valley in the Chukchi area in Northeastern Siberia (northernmost record of Gnorimoschemini).

Dalibor Povolný, Institute of Applied Entomology, University of Agriculture, Zemědělská 1, Brno, 613 00, Czech Republic

Received 16 February 1993, accepted 10 September 1993

On the occasion of the VIII Congress of the European Lepidopterological Society (SEL), held in Helsinki 18th–23rd April 1992, I had the opportunity to revise an extensive series of the gelechiid moths collected by the joint Russian-Finnish Entomological Expeditions to Central Asia and Siberia preserved in the Zoological Museum of the Finnish Museum of Natural History, University of Helsinki (MZH). This first paper on the tribe Gnorimoschemini from this museum deals with two genera: *Gnorimoschema* Busck, 1900 comprising 17 palaearctic taxa recently revised by Povolný (1972) and the monotypic *Gobipalpa* Povolný, 1973 the only known species being an endemic of central Asia (Altai and Alai Mountains). New taxa are described and the knowledge of the geographical distribution of the genera is extended.

Gnorimoschema jalavai sp. n.

Figs. 1, 6

Holotype: ♂, USSR, SW Altai, Katun valley, 10 km W Katanda, 1200 m, 28.6.–5.7.1983, Exp. Mikkola, Hippa & Jalava leg. (MZH).

I dedicate this interesting species to Mr. J. Jalava in appreciation of his collecting activity and of his assistance during my work in the Finnish Museum of Natural History in Helsinki, especially when sorting specimens.

Diagnosis: A medium-sized, comparatively broad-winged species, which is dark grey with a

[1]Report no. 18 from the joint Russian-Finnish entomological expeditions to Siberia and Central Asia

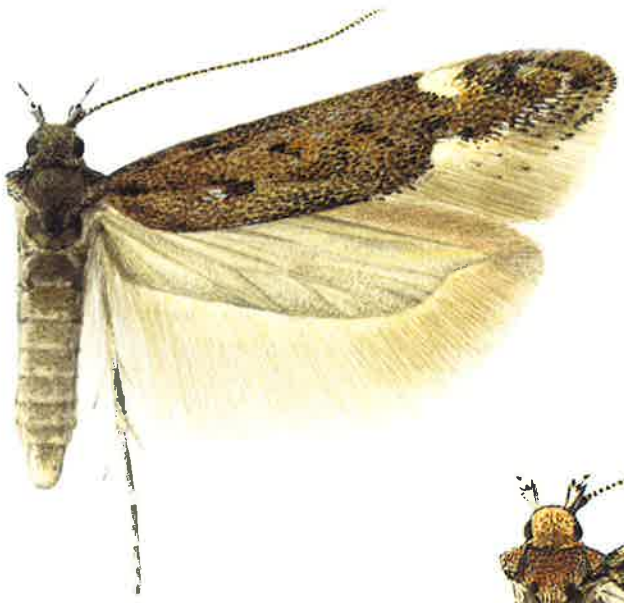

Fig. 1 (left). *Gnorimoschema jalavai* sp. n., holotype male. — Original drawing by F. Gregor.

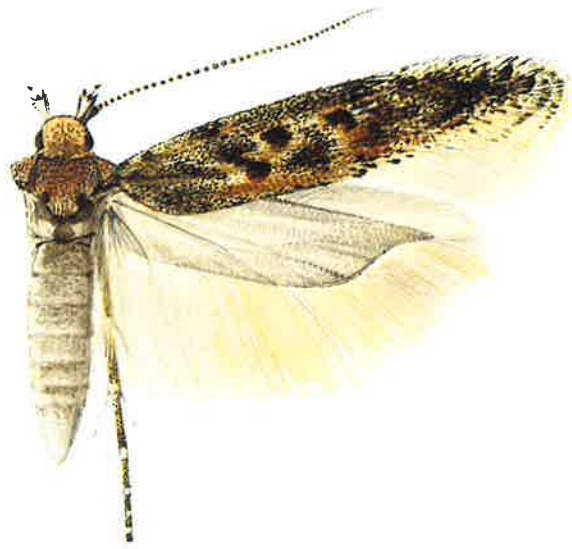

Fig. 2 (right). *Gnorimoschema mikkolai* sp. n., holotype male. — Original drawing by F. Gregor.

trace of blackish stigmata in forewing centre and with a pale, whitish transverse subterminal band. Both the external appearence of the adult and the male genitalia show very distinctive specific characters. The dark ground colouration of forewing with a conspicuous subterminal transverse band is a characteristic of this species. Male genitalia are distinct from other species of this genus by broad obtuse convexity of uncus and by a unique form of parabasal process, which is broadly foliate and unparalleled within this genus. The form, size and mutual relations between paired processes are also specific.

Description (Fig. 1): Head, thorax and tegula blackish with plumbic lustre especially apparent on frons. Labial palpus prominent, slender and acute, dorsal edge of second segment pale grey, third segment dark grey with a whitish ring centrally. Legs dorsally blackish dusted, ventrally cinereous whitish, especially tarsi with cinereous whitish rings. Forewing: ground colour blackish with poor indication of rich black stigmata centrally surrounded by obscure traces of brownish scales; tip with scattered whitish scales with dark tips, separated from the black part of the wing by a whitish transverse band interrupted in the middle. Cilia dark grey. Hindwing lustrous blackish with dark grey cilia. Forewing length 6.9 mm. — Male genitalia (Fig. 6). Generally rather subtle but well sclerotized. Uncus medially broadly convex, exceeding tip of valva; gnathos broadly parallel-sided as usual in *Gnorimoschema*, but with rounded tip irregularly serrate; paired processes of unequal length, first (arising from sacculus wall) obtuse and shortly rounded, second (parabasal) somewhat longer, distinctly more

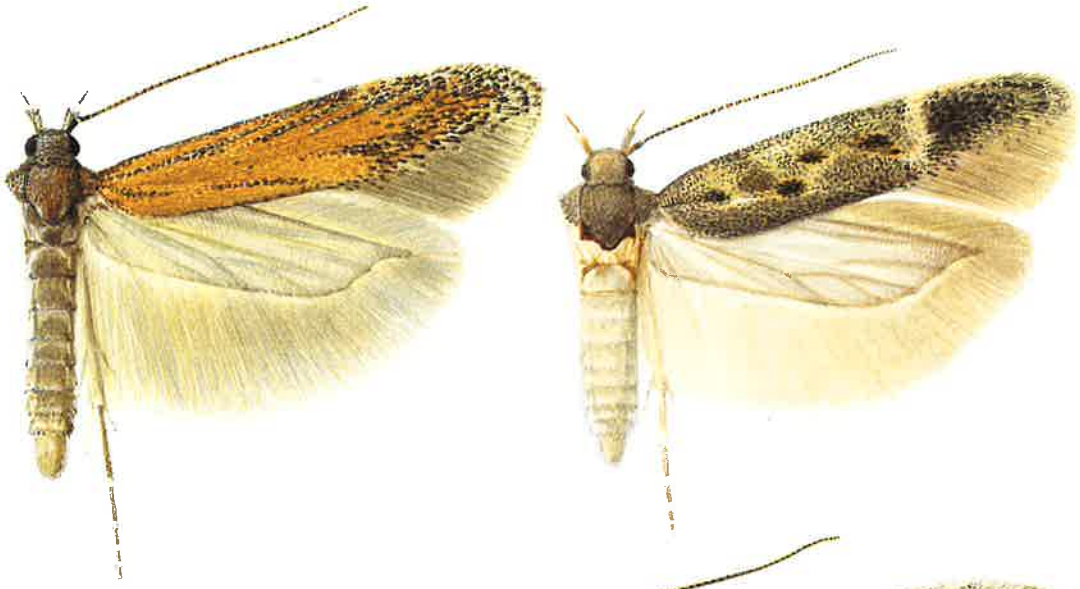

Fig. 3 (top left). *Gnorimoschema epithymellum kirgisicum* ssp. n., paratype male. — Original drawing by F. Gregor.

Fig. 4 (top right). *Gobipalpa inexpectata* Povolný, a dark male from south-western Gobi Altai, Chavtgijn Nuru, Mongolia (both darker and paler specimens occur, and in worn moths the transverse band is poorly visible). — Original drawing by F. Gregor.

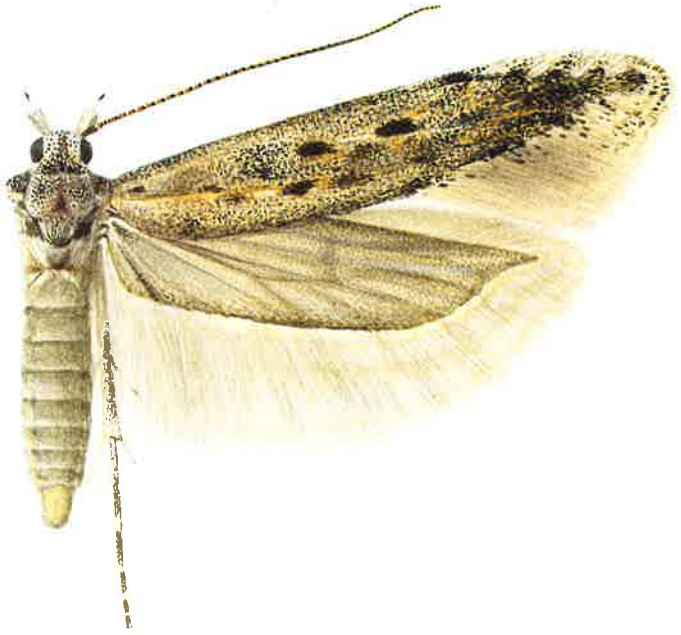

Fig. 5 (right). *Gnorimoschema nordlandicolellum* (Strand), a stout male from Siberian tundra near Irkutsk. — Original drawing by F. Gregor.

robust and broadly foliate with short terminal tip on interior edge; saccus subtriangulate with tip truncate and shorter than very stout and long vinculum corner; valva simple, clavate with dilated and rather rounded tip; aedeagus somewhat longer than genitalia length, simple, corpus aedeagi rather slender and parallel-sided, basal third distinctly subovate (Fig. 6).

The only male was recognized from among a series of moths of *Gobipalpa inexpectata* Povolný, 1973 having a similar forewing pattern and general colouration. The moths of *G. inexpectata* have a paler ground colour with somewhat distinctive blackish stigmata (poorly visible in dark specimens) and with a pale (not expressively whitish) external transverse band. For comparison see Fig. 1. In worn specimens of the two taxa genitalia dissection appears to be necessary for determination. In *G. jalavai* the external (subterminal) transverse band appears to be distinctly whitish and interrupted. *G. jalavai* is not closely related to the other Palaearctic species of *Gnori-*

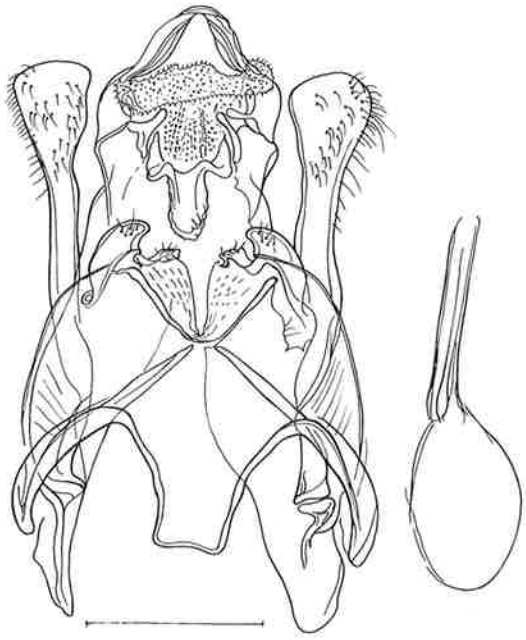

Fig. 6. *Gnorimoschema jalavai* sp. n. Genitalia of male holotype. — Scale bar 0.25 mm.

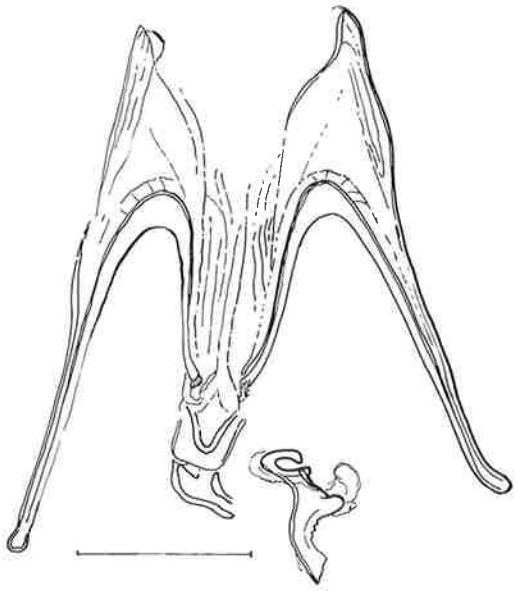

Fig. 7. *Gnorimoschema mikkolai* sp. n. Genitalia of female holotype. — Scale bar 0.25 mm.

moschema, mainly because of its male genitalia characters which show similarity to the nearctic *Gnorimoschema batanella* (Busck, 1903) group. It is, however, difficult to decide, whether a true phylogenetic relationship is involved. As the male genitalia of *G. jalavai* sp.n. show some obvious apomorphic characters (uncus, paired processes), it is very possible that the species might well be endemic in the mountain elevations of the Altai Mountains, corresponding to some other isolated endemic taxa of this and of the adjacent mountain ranges (e.g. *Gnorimoschema radkevichi* Piskunov, 1980, in northwestern Mongolia, see Povolný 1992).

Gnorimoschema mikkolai sp. n.

Figs. 2, 7

Holotype: ♀, USSR, Magadan obl(ast), Upper Kolyma r(iver), 400 m, steppe slopes nr. Vetrennyj, left shore of Kolyma, 20.7.1987, K. Mikkola leg. (MZH).

I dedicate this new species to Dr. Kauri Mikkola, Helsinki, for his fine record of organizing expeditions to the mountain and tundra habitats of Asia.

Diagnosis: *Gnorimoschema mikkolai* sp. n. is a medium-sized, rather uniformly deep brownish species with obscure blackish forewing stigmata. The subgenital plate is heavily sclerotized and protruding proximally forming a striking funnel-shaped prolongation.

Description (Fig. 2): Head and thorax covered by mixture of deeply grey scales with brownish hue; tegula distinctly brownish; frons paler to whitish. Labial palpus prominent, exterior scale distinctly deep grey, middle of second and third segment covered by white scales, palpus interior paler. Forewing: Ground colouration deeply grey with brownish hue, wing pattern consisting of blackish rounded stigmata enclosed by brownish scales; first stigma is situated at 1/4 from base in dorsal wing fold, second and third axial at 1/3 and 3/5 from base; two less apparent stigmata costally near wing base; wing apex with scattered cinereous scales and with poor indication of cinereous subterminal transverse band. Hindwing lustrous whitish with grey hue and with darker veins, all cilia grey. Forewing length 6.7 mm (left forewing broken in holotype). — Female genitalia (Fig. 7): Subgenital plate in-

cluding apophyses well sclerotized, plate subquadrate, medial zone broadly membranous, apophyses somewhat longer than subgenital plate; proximal edges of subgenital plate with striking postostial prolongation forming distinctive funnel, about half of length of apophyses. Ledges enforcing funnel laterally roundly and deeply excised and heavily sclerotized. Signum of corpus bursae short and heavily sclerotized, hooklet- or spine-like with obtuse tip (Fig. 7).

The species shows a very distinctive and rather unique form of subgenital plate within the palaearctic species of *Gnorimoschema* (see Povolný, 1992). A similar elongate funnel-shaped prolongation of the periostial part of the subgenital plate is known in the nearctic *Gnorimoschema subterraneum* Busck, 1911 group of species. This group of possible sibling taxa has not yet been revised and it is still poorly known. The subgenital plate of *G. subterraneum* figured by Povolný (1967) shows a visibly complex sculpture of the funnel-shaped prolongation and the entire periostial part. The moths are habitually rather different. *Gnorimoschema mikkolai* sp.n. is Northeastern Siberian taxon and was discovered in a remote and little explored territory. Its distribution is most likely limited, possibly representing another endemic taxon of this genus, as is the case in several other morphologically isolated palaearctic species of *Gnorimoschema*.

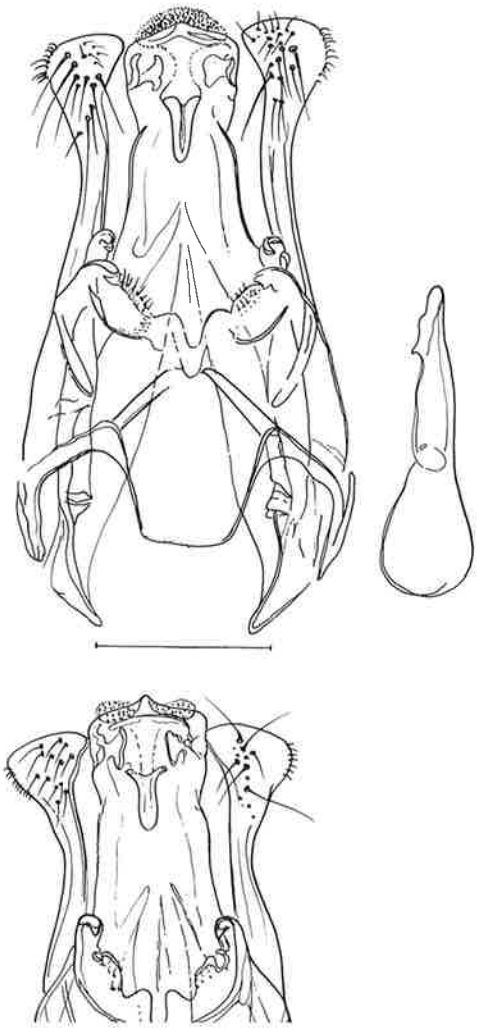

Fig. 8. *Gnorimoschema epithymellum kirgisicum* ssp. n. Genitalia of male holotype, and detail of genitalia of male paratype, to demonstrate some morphological variation. — Scale bar 0.25 mm.

***Gnorimoschema epithymellum kirgisicum* ssp. n.**
Figs. 3, 8

Holotype: ♂, USSR, Kirgisia: 41°21′N, 76°20′E, 30 km E Naryn, 2500 m, agric.land/steppe, 27.7.–9.8.1990, ad luc., L. Kaila & K. Mikkola leg. Paratypes 13 ♂♂, dtto; 2 ♀♀, dtto, 2900 m, Picea, 9.8.1990, ad luc., L. Kaila & K. Mikkola leg. (MZH).

Diagnosis: The moth is patternless, uniformly chocolate-brown to pale brown with groups of blackish scales on forewing tornus (Fig. 3). Genitalia are essentially similar to those of the nominate subspecies and to the other European taxa of this complex, but rather subtle (Fig. 8).

Description: Head, thorax and tegula essentially grey with slight brownish hue, frons bright, labial palpus grey, third segment with whitish base and tip. Forewing rather uniformly chocolate-brown or pale brown, without stigmata characteristic of the tribe but with indication of radiate veins on costal and dorsal wing margin and with groups of blackish scales on wing tornus and tip. Forewing length about 7 mm (Fig. 3).

Gnorimoschema epithymellum (Staudinger, 1859) was originally described from Chiclana, Spain. It has later been discovered in extremely restricted and scattered habitats in North Africa (Algeria), Sardinia, in the limestone Alps of Austria and Italy, and in Scandinavia (Finland,

Sweden) showing clear subspeciation. The species is rather rare and it is poorly represented in collections. Its discovery in Asia shows that it is not, as supposed, a western palaearctic taxon, a situation thus resembling the relations within the *Gnorimoschema streliciella* (Herrich-Schäffer, 1853) complex, *G. herbichi* (Nowicki, 1864) complex, and/or *G. antiquum* (Povolný, 1966) complex, all of them originally described from scattered habitats in Europe and discovered later in palaearctic Asia (Povolný, 1992). It shows, moreover, that the species inhabits high mountain elevations in Central Asian mountain ranges and may be locally common.

Since the distribution of these taxa in Asia is either continuous or less scattered than in Europe, it seems that the European distribution of such taxa is rather marginal. Only one true endemic species of *Gnorimoschema* is known from Europe (*G. bodillum* Karsholt & Nielsen, 1974 from sandy beach habitats of Denmark and Germany), but several obviously endemic species of *Gnorimoschema* exist in (palaearctic) Asia. This shows that this holarctic genus, which is phylogenetically centred in the semidesert habitats of the Nearctic region, has a transpalaearctic distribution in Eurasia, most of its taxa being distributed in Asia.

Gnorimoschema herbichi kamchaticum Povolný, 1977

Material studied: 3 ♂♂, 2 ♀♀, USSR, Chukchi auton. okrug, Middle Anadyr R., 65°10′N, 171°E, 20 m, meadow, 26.–29.7.1989 K. Mikkola leg.

This species has a wide distribution in isolated habitats throughout Europe (absent from British Isles) and the Near East but it is associated with steppe habitats in Central (Mongolia) and East Asia, including the tundra habitats of the Far East (Kamchatka). The dark coloured ssp. *kamchaticum* was described from a small series of specimes from Kamchatka without precise details as to its habitat. The specimens collected in the River Anadyr valley in Northeastern Siberia corroborate not only the wide distributional pattern, but also the subspeciation of this transpalaearctic taxon.

Gnorimoschema antiquum montanum Povolný, 1966

Material studied: 3 ♂♂, USSR, Kazakhstan, 43°24′N, 75°2′E, Dzhambulskaya obl.(ast), 70 km NNE Frunze, 950 m, rocky slope, 15.8.1990, K. Mikkola & L. Kaila leg.

This conspicuous subspecies occurs in the Elburz Mountains of northern Iran and in the Hindu-Kush Mountains of central and northern Afghanistan (Povolný, 1992). The limited series collected near Frunze (Kazakhstan) indicates that this taxon is possibly present in some adjacent xeromontane habitats of Central Asia. Habitually the moths are rather similar to ssp. *kirgisicum* of *G. epithymellum*, showing a similar, nearly unicolourous and patternless chocolate brown forewing, but in *G. antiquum montanum* the groups of blackish scales are more distinct and the moths of *G. epithymellum kirgisicum* are slightly larger. This external similarity makes genitalia dissection necessary to distinguish these two taxa.

Gnorimoschema nordlandicolellum (Strand, 1902)

Figs. 5, 9, 10

Material studied: 2 ♂♂, 1 ♀, USSR, Irkutskaja obl., Sljudjanka, 50 km E, river Hara-Murin, Betula bush, ad luc., 8–11.7.1984, Mikkola & Viitasaari leg.; 1 ♂, USSR, Kirgisia, 41°21′N, 76°29′E, 40 km E Naryn, 2900 m, grazed steppe, 2.–11.8.1990, ad luc., L. Kaila & K. Mikkola leg.; 5 ♂♂, dtto, 2500–2750 m, 27.7.–11.8.1990 ad luc., L. Kaila & K. Mikkola leg.; 2 ♂♂, USSR, Kirgisia, 40 km W L. Issyk Kul, steppe-creek, 3.8.1990, ad.luc., L. Kaila & K. Mikkola leg.

This rare species was originally described from Fennoscandia, showing a wide but scattered distribution in dry, sandy meadows in Finland and in northern Russia (Novgorod). It was also collected in the Turkestan Alai Mountains, its only known habitat in Asia, and in the mountains of Texas and Arizona (Povolný, 1992). The Finnish lepidopterists discovered the species in xeromontane steppes in the Kirgisian Tian-Shan Mountains (mainly near the Naryn Valley and Lake Issyk Kul), and in a Siberian steppe slope near Irkutsk, providing evidence for the boreomontane distribution of this species in Asia. This

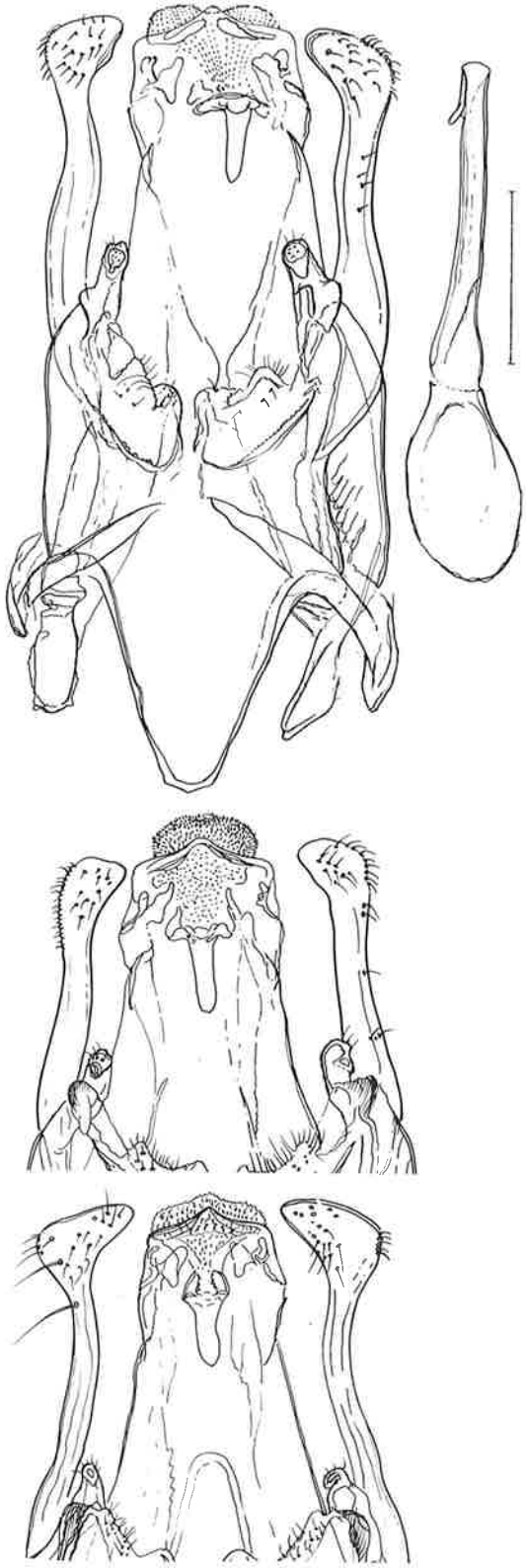

Fig. 9. *Gnorimoschema nordlandicolellum* (Strand). Male genitalia of a specimen collected near Naryn (Kirgisia) at 2750 m., and, to demonstrate range of variation, details of genitalia of a small specimen from the same locality, and of a large specimen collected at 1900 m near Lake Issyk Kul. — Scale bar 0.25 mm.

Fig. 10. *Gnorimoschema nordlandicolellum* (Strand). Female genitalia (proving the identity of the species) of a female collected in Siberia near Irkutsk. — Scale bar 0.25 mm.

material of *G. nordlandicolellum* is most representative of this species so far. The Tian-Shan Mountains specimens from the surroundings of Irkutsk are comparatively stout moths of uniformly grey colouration with three blackish forewing stigmata (Fig. 5) and they differ from the Russian specimens from Novgorod in particular in the absence of the brownish groups of scales and hue (compare Povolný 1992: tab. II, fig. 3). The high mountain specimens show some variation both in size and colouration and genitalia dissection is necessary to identify the species (Figs. 9 and 10).

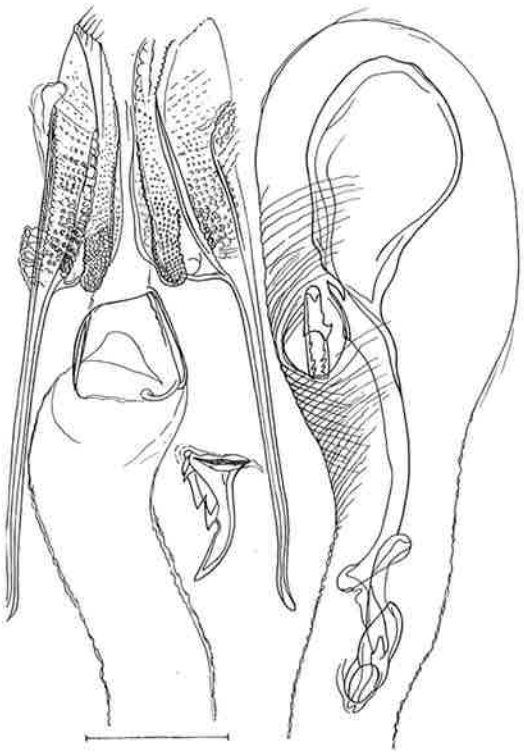

Fig. 11. *Gobipalpa inexpectata* Povolny. Female genitalia:(subgenital plate (left) and bursa copulatrix (right) with signum of corpus bursae in two different situations. — Scale bar 0.25 mm.

Gobipalpa inexpectata Povolný, 1973

Figs. 4, 11

Material studied: 3 ♂♂, 5 ♀♀, USSR, Kirgisia, 41°25′N, 76°20′E, 30 km E. Naryn, 2500 m, agric.land/steppe, 27.–29.7.1990, ad luc., L. Kaila & K. Mikkola leg.

The species was originally described from a worn male (according to its genitalia) collected in Mongolia (Bajanchongor aimak near Somon Bajanleg, 2.7.1967, leg. Kaszab). Emelyanov & Piskunov (1982) and Lvovskij & Piskunov (1989) rediscovered individual males of this rare species in several xeromontane habitats of Transaltai Gobi, but the female remained unknown. The Finnish lepidopterists collected a series of this species, including females, in the Kirgisian Tian-Shan Mountains at 2500 m, providing evidence that Interior Asia endemism is involved. This series makes it possible to describe the previously unknown female.

Description of female: Habitually (Fig. 4) females do not essentially differ from males, but the specimens from near Naryn, Kirgisian Tian-Shan Mountains, have a somewhat paler ground colouration than the males from Mongolia. — Subgenital plate stout (Fig. 11), longer than broad with rich foamy sculpture concentrated especially on paired lobate sclerite on both sides of ostium bursae. Apophyses slender and somewhat longer than subgenital plate, colliculum large and conspicuous, slightly asymmetrical. Bursa copulatrix elongate subovate; signum short but robust spine with serrate interior ledge.

Acknowledgements. The author wishes to express his gratitude to Dr. Kauri Mikkola and to Mr. Jukka Jalava, both from Zoological Museum of the Finnish Museum of Natural History in Helsinki for their readiness is assisting me during my short stay in Helsinki in March 1992. Special thanks are due to Dr. and Dr.h.c. Frantisek Gregor, Brno, for his courtessy in illustrating the newly described taxa for this paper.

References

Emelyanov, I. M. & Piskunov, V. I. (Емельянов, И. М. & Пискунов, В. И.) 1982: New data on the fauna of the gelechiid and anarsiid moths (Lepidoptera, Gelechiidae, Anarsiidae) of Mongolia, the USSR and North China. (In Russian with English summary) — Nasekomye Mongolii 8:366–407.

Lvovskij, A. L. & Piskunov, V. I. (Львовский, А. Л. & Пискунов, В. И.) 1989: [The gelechiid moths (Lepidoptera, Gelechiidae) of the Transaltai Gobi.] (In Russian) — Nasekomye Mongolii 10:521–571.

Povolný, D. 1967: Genitalia of some Nearctic and Neotropic members of the tribe Gnorimoschemini (Lepidoptera, Gelechiidae). — Acta Ent. Mus. Nat. Pragae. 37:51–127.

— 1973: Ergebnisse der zoologischen Forschungen von Dr. Z. Kaszab in der Mongolei (Nr.267) (Tribus Gnorimoschemini, Lepidoptera, Gelechiidae). — Acta Sci. Nat. Acad. Sci. Bohemoslov. (Brno) N.S. 7:1–41.

— 1992: A critical review of the Palaearctic taxa of Gnorimoschema Busck (Lepidoptera, Gelechiidae). — Acta Entomol. Bohemoslov. 89:217–233.

Received 16.II.1993