

# New species of Plutellidae from Iran (Lepidoptera: Yponomeutoidea)

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## Abstract

Three new species of Plutellidae are described from Iran: *Baerenschenkia lamasi* Mey, sp. n., *Deryaxenistis nekrutenkoi* Mey, sp. n., and *Paraxenistis ammolofofon* Mey, sp. n. Adults and male and female genitalia are illustrated. The male genitalia of two lectotype specimens, deposited in the Natural History Museum, London were examined and illustrated: *Paraxenistis sphenospila* Meyrick, 1919 and *P. pentaula* (Meyrick, 1913). They are provisionally retained in *Paraxenistis* Meyrick, 1919.

KEY WORDS: Lepidoptera, Yponomeutoidea, Plutellidae, new species, Iran.

## Nuevas especies de Plutellidae de Irán (Lepidoptera: Yponomeutoidea)

## Resumen

Tres nuevas especies de Plutellidae se describen de Irán: *Baerenschenkia lamasi* Mey, sp. n., *Deryaxenistis nekrutenkoi* Mey, sp. n., y *Paraxenistis ammolofofon* Mey, sp. n. Se ilustran los adultos, la genitalia del macho y de la hembra. La genitalia macho de dos lectotipos depositados en el Museo de Historia Natural de Londres, fueron examinados e ilustrados: *Paraxenistis sphenospila* Meyrick, 1919 y *P. pentaula* (Meyrick, 1913). Son provisionalmente retenidos en *Paraxenistis* Meyrick, 1919.

PALABRAS CLAVE: Lepidoptera, Yponomeutoidea, Plutellidae, nuevas especies, Irán.

## Introduction

The genus *Paraxenistis* Meyrick, 1919 originally comprised three species: *P. macrostoma* Meyrick, 1919, *P. sphenospila* Meyrick, 1919, and *P. pentaula* (Meyrick, 1913). The latter was transferred from *Plutella* Schranck, 1802. The unifying features, which probably motivated Meyrick to combine the species into one genus, are the long frontal scaling of the head and the porrect and drooping labial palpi with long hair-like scales concealing the terminal segment. The species are small and exhibit an indistinct wing pattern. They were collected on the Indian subcontinent and in Sri Lanka. Later on, species with a similar, external appearance of the head and palpi were found to occur in southern Africa too (MEY, 2007). They were found to represent three different species and were preliminarily assigned to *Paraxenistis*. During a subsequent visit to the Natural History Museum in London, the type material of the genus from the E. Meyrick collection was found to be in a good state. The examination of the specimens revealed the surprising fact that the originally included species were not closely related to each other. Each of the them stands for a different evolutionary line and merits placement in a separate genus. The type species of *Paraxenistis* is *P. macrostema*. The genitalia of the male holotype were illustrated in MEY (2011: 186). The genitalia of the African species are clearly

different from *Paraxenistis* and also from the male genitalia of the remaining two species. In consequence, the genera *Baerenschenkia* Mey, 2011 and *Deryaxenistis* Mey, 2011 were established to accommodate the African species. At the time of introducing these new generic names the author was aware of a much wider range for these genera, which extends beyond Africa. In the distribution map of both genera given by MEY (2007) for *Paraxenistis*, two localities respectively in the Arabian Peninsula and in Iran were indicated. The material from the Iran was collected by participants of the “Österreichische Entomologische Expeditionen nach Persien und Afghanistan”, nearly fifty years ago and was deposited since then in the Naturhistorisches Museum, Wien (NHMW). Examination of the material disclosed the presence of species of *Baerenschenkia* and *Deryaxenistis* in West Asia. They are described in the present article, making the names available for future studies and highlighting the biogeographic connections of these taxa between the dry biomes of Africa and West Asia. I take the opportunity to provide illustrations of the male genitalia of the unrevised species of *Paraxenistis*, which should facilitate the future placement of the species in appropriate genera.

### Materials and methods

Adults examined included type specimens as well as non-type specimens from museums listed at the end of the chapter. All specimens from Iran are from the same dune area east of Bandar Abbas, Hormozgan Province, N 27°11'53" E 54°22'8" (see map of Fig. 1).

Pinned specimens and their associated slide-mounted genitalia, and other features were examined with dissecting and compound microscopes. Dissection of the genitalia was performed according to the procedure described by ROBINSON (1976). The genitalia were embedded in Euparal. Chlorazol Black was used for staining female genitalia. The cleared abdomens of some non-type specimens are on the corresponding pins in polyethylene vials with glycerin. Prior to embedding the cleared genitalia on microscope slides or into glycerin vials, they were drawn using a camera lucida attached to a Leica MZ12 compound microscope.

The terminology used in the descriptions of species largely follows MEY (2004). The treatment and sequence of the genera and species are arranged alphabetically. Abbreviation of depositories of type material

NMNH - Museum of Natural History, London, Great Britain (formerly British Museum of Natural History (BMNH))  
 MfN - Museum für Naturkunde, Berlin, Germany  
 NHMW - Naturhistorisches Museum, Wien, Austria

### Taxonomic account

*Baerenschenkia* Mey, 2011

*Baerenschenkia* Mey, 2011. *Esperiana Mem.*, **6**: 181-183, type species: *B. umtrunkula* Mey, 2011, by monotypy.

Type locality: NAMIBIA.

Remarks: The name of the genus was chosen in memory of the “Bärenschenke”, the traditional pub for entomologists of the MfN, where they came together on Thursdays after work for informal exchange and entomological discussions. The tradition was coined by Gerardo Lamas, Yuri Nekrutenko and the author in summer 1987. The photo of Fig. 2 was taken 13 years later, when the trio met in the Bärenschenke again.

#### *Baerenschenkia lamasi* Mey, sp. n. (Figs 3-4, 9-11)

Material examined: Holotype ♂, IRAN, South Iran, Dünen [= dunes], 17 m east of Bandar-Abbas, 26-IV-1974, Exped. Mus. Vind., genitalia slide Mey 18/05 (NHMW).

Paratypes: 1 ♀, South Iran, 30 km east of Bandar Abbas, 8-V-1974, Exped. Mus. Vind.; 2 ♂♂, 1 ♀, South Iran, 25 km south of Minab, 4-V-1974, Exped. Mus. Vind.

Diagnosis: The new species differs from African congeners by the form of the valva and by the arrangement and structure of the dorsal socii and the ventral, gnathos arms.

Description, male (Figs 3-4): Length of forewings 5.0-5.2 mm, wingspan 10.8-11.1 mm (n=5); head pale grey, with semi-erected, lamellar scales, protruding frontal between antennae; labial palpi including scale brush porrect, as long as 0.3 of forewings, basal segments each with small, black spot laterally, 2-3 similar spots on dorsal and ventral eye margin; ocelli black; proboscis long, pale brown; antennae 0.8 of forewing length, scale with pecten of linear scales, flagellar segments with two annuli of pale grey scales, ventral side with short cilia. Thorax and forewings pale grey, numerous small, slightly darker spots dispersed over the wing area, one fringe line present, hindwings pale grey, tips evenly rounded, legs white-grey, tarsal segments darker, epiphysis present, spurs 0.2.4.

Male genitalia (Figs 9-11): Pleura of segment VIII large, fused on dorsal side forming a pair of appendages (= retraction rods), distal margins rounded, sternum VIII membranous; segment IX ring-like, with sclerotised band from vinculum to dorsal apex of tegumen; tuba analis surrounded dorsally by medially fused socii with round tips and ventrally by a corresponding plate-like structure (? gnathos); vinculum broad, triangular, proximally extending into narrow process with rounded tip; valva compact, plate-like, distal margin excised causing dorsal and ventral corners; juxta a small, vertical band; phallus tubular, elongate, two times the length of valva, base enlarged, coecum penis present, apex acute, cornuti absent.

Distribution: South Iran, Hormozgan.

Etymology: It is a pleasure for me to name the new species in honour of my respected colleague and dear friend Dr. Gerardo Lamas, butterfly specialist from Peru and frequent visitor to the Lepidoptera collections of the MfN in the past.

*Deryaxenistis* Mey, 2011

*Deryaxenistis* Mey, 2011. *Esperiana Mem.*, 6: 183-184, type species: *D. serrata* Mey, 2004, by original designation.

Type locality: NAMIBIA.

***Deryaxenistis nekrutenkoi* Mey, sp. n.** (Figs 5-6, 12-14)

Material examined: Holotype ♂, IRAN, South Iran, Dünen [= dunes], 17 m east of Bandar-Abbas, 24-IV-1974, Exped. Mus. Vind., genitalia slide Mey 19/05 (NHMW).

Paratypes: 1 ♀, same locality, 26-IV-1974, Exped. Mus. Vind., genitalia slide Mey 36/21 (MfN); 1 ♂, 1 ♀, South Iran, 22 km north of Bandar Abbas, 25-IV-1974 (♂), 10-V-1974 (♀), Exped. Mus. Vind.; 1 ♂, South Iran, 30 km east of Bandar Abbas, 3-IV-1970, Exped. Mus. Vind.

Diagnosis: Species of *Deryaxenistis* can be distinguished by the lateral shape of valvae and gnathos. The new species resembles *D. serrata* in the presence of a serrate valva dorsal margin, but this serration occurs only over a much smaller distance. Vinculum of both species is of different size. It is short and round in *D. serrata*, and elongate and oval in *D. nekrutenkoi* sp. n.

Description, male (Figs 5-6): Length of forewings 3.5-4.1 mm, wingspan 8-9.4 mm (n=5); head pale grey, with semi-erected, lamellar scales, protruding frontally between antennae; labial palpi including scale brush porrect, as long as 0.1 of forewings; maxillary palpi not perceivable; ocelli grey-white; proboscis long, pale brown; antennae 0.6 of forewing length, scale with pecten of linear scales, flagellar segments with one ring of pale grey scales; tegulae with long, ventral scales; forewings pale grey, with some brown striae on costa, a triangular spot on arculus and one oblique, transversal line beyond cell, some darker scales dispersed over the wing area, two fringe lines present, underside of costal base with bundle of bristles; hindwings white-grey, tips acute; legs white-grey, tarsal segments darker, epiphysis present, spurs 0.2.4.

Male genitalia (Figs 12-13): Segment VIII with large pleura, distally rounded, fused on ventral side in one point, and separated on dorsal side by small membranous piece of tergum VIII; segment X membranous; tegumen of segment IX a narrow, somewhat undulating ribbon, terminating into a straight projection (? gnathos), with a small, single tooth on subapical dorsal margin just before blunt apex; vinculum large, oval in ventral view; short transtilla present; valva rod-shaped, directed dorsal, somewhat bent ventrally, valval apodeme short, dorsal margin serrated subapically; phallus shorter than valva, stout, base broad, apical part of triangular form in ventral view.

Female genitalia (Fig. 14): segment VII weakly sclerotised, ostium bursae in intersegmental membrane, at base of shallow antrum; round lamella postvaginalis on ventral side of segment VIII with four rows of denticles; oviscapt very long, apophyses anteriores less than half the length of apophyses posteriores, papillae analis small, indistinct.

Distribution: South Iran, Hormozgan

Etymology: The new species is named in memory of Y. P. Nekrutenko (1936-2010), specialist of butterflies from Kiev and frequent visitor to the MfN, where he reorganised parts of the butterfly collection and published a type catalogue. Obituaries were published by NUSS (2010) and VIVES MORENO (2011).

*Paraxenistis* Meyrick, 1919

*Paraxenistis* Meyrick, 1919. *Exot. Micr.*, 2: 225, type species: *P. macrostoma* Meyrick, 1919, by original designation.

Type locality: INDIA.

*Paraxenistis*: Mey, 2007: 17-20; Mey, 2011: 183, 186.

Remarks: The species *Paraxenistis sphenospila* Meyrick, 1919 has some resemblance to the type species of the genus, but is clearly distinct in the male genitalia, especially concerning the architecture of segment IX and the curved phallus. *Paraxenistis pentaula* (Meyrick, 1913) is neither related to *P. macrostoma* nor to *P. sphenospila*. This Oriental species, described from Sri Lanka [Ceylon], has two peculiarities that are not present in *Paraxenistis*, *Deryaxenistis* and *Baerenschenkia*: anellus in form of a membranous cone and gnathos/arms of socii elongated and armed with a long pectinifer on dorsal margin. Illustrations of the male genitalia of these species are provided in this article for the first time. They may serve for future recognition. The two species are unrelated and must be excluded from *Paraxenistis* and transferred to other genera. This cannot be done in this article. Problematic are the many unrevised genera which were described and included in Plutellidae from the Oriental Region and Australasia (see MEYRICK, 1914). The establishment of new genera for the two species, therefore, runs the risk of introducing new names which become synonyms in future investigations of the family. For the time being, it seems to be pragmatic to retain the species in *Paraxenistis* and to wait until new taxonomic knowledge becomes available that allows a new approach to the problem.

***Paraxenistis ammolofon* Mey, sp. n. (Figs 7-8, 15-20)**

Material examined: Holotype ♂, IRAN, South Iran, Dünen [= dunes], 17 m east of Bandar-Abbas, 26-IV-1974, Exped. Mus. Vind., genitalia slide Mey 20/05 (NHMW).

Paratypes: 2 ♀♀, same data as holotype; 2 ♀♀, South Iran, 8 km east of Bandar Abbas, 8-IV-1972 and 23-IV-1974, genitalia slide Mey 37/21 (MfN); Exped. Mus. Vind.

Diagnosis: Concerning the male genitalia *P. ammolofon* sp. n. seems to be related to *P. sphenospila*. Both species share the compact form of the valva with sharp edges on apical corners, the dagger-like phallus and the thin, ribbon-like segment IX. The dorsal apex of segment IX is without a sclerotised process, a character, which is also present in other species of *Paraxenistis*.

Description, male (Figs 7-8): Length of forewings 3.2-4.2 mm, wingspan 7.5-10.1 mm (n=5); vertex with more or less developed wedge-shaped projecting tuft, length of labial palpi two times diameter of eye, straight, porrect, thickened with dense loosely appressed scales, attenuated anteriorly, terminal segment concealed in long scales of second; ocelli grey-white; proboscis long, pale brown;

maxillary palpi not perceivable; antennae 0.7 of forewing length, scale with pecten of linear scales, flagellar segments with one ring of pale grey scales; some dark-brown flagellomeres in basal and terminal half; tegulae with long, ventral scales; forewings pale grey, with indistinct patches of bark brown, yellow and white dispersed on the wing; two dark fringe lines present, underside of costal base with bundle of bristles; hindwings brown, tips acute; legs brown, tarsal segments darker, white-ringed on tips, epiphysis present, spurs 0.2.4. Sternum of abdominal segment II with venulae and connecting line (Fig. 20).

Male genitalia (Figs 15-17): Segment VIII with moderately broad pleura, fused on dorsal side in one point, and with pair of short, diverging processes; segment VIII ring-like, terminating apically in a knob-like process, situated below anal tube; vinculum large, triangular in ventral view; valva trapezoid, dorsal corner pointed and bent mediad; phallus stout, dagger-like, bulbous ejaculatorius large, coecum penis and cornuti absent.

Female genitalia (Figs 18-19): Tergum VII weakly sclerotised, with long, hair-like scales on distal margin, sternum VIII sclerotised, divided into elongate and rounded lobes, encompassing ostium bursae in intersegmental membrane; bursa with small signum in opposite position to base of ductus bursae; lamella postvaginalis absent on venter of segment VIII; oviscapt very long, apophyses anteriores less than half the length of apophyses posteriores, papillae analis small, indistinct.

Distribution: South Iran, Hormozgan.

Etymology: The specific name is the genitive plural of “*αμμόφορς*”, Greek, dune, referring to the dune environment of the type locality in southern Iran.

*Paraxenistis sphenospila* Meyrick, 1919 (Figs 21-22)

*Paraxenistis sphenospila* Meyrick, 1919. *Exot. Micr.*, 2: 225-226.

Type locality: SOUTH INDIA, Coimbatore, July (Fletcher), two specimens.

Material examined: Lectotype ♂, “Coimbatore/S. India/TBE. 31.7.[19]12” [handwritten with black ink on white card], “*Paraxenistis/sphenospila*/Meyrick, 3/3/E. Meyrick det./in Meyrick Coll.”, cleared abdomen in glycerine vial, fab. W. Mey (BMNH).

Remarks: The lectotype designation has remained unpublished to date. The genitalia of the male lectotype are illustrated in Fig 21-22.

*Paraxenistis pentaula* (Meyrick, 1913) (Figs 23-24)

*Plutella pentaula* Meyrick, 1913. *Exot. Micr.*, 1: 152.

Type locality: CEYLON [Sri Lanka], Puttalam, Hambantota, November, April (Pole, Fletcher) two specimens.

Material examined: Lectotype ♂, “Puttalam./Ceylon./Pole. 11.04” [printed on white card], cleared abdomen in glycerine vial, fab. W. Mey (BMNH).

Remarks: The lectotype designation has remained unpublished to date. The genitalia of the male lectotype are illustrated in Figs 22-23. Besides the type specimens two further females are present in the Meyrick collection, which were identified by E. Meyrick as probably belonging to *P. pentaula*. The specimens were collected in India, Punjab, Pirawala, 13-V-[19]19. The examination of one female revealed it to be congeneric with *Deryaxenistis*. It is an undescribed species demonstrating an unexpected, wider distribution of the genus in the Oriental Region.

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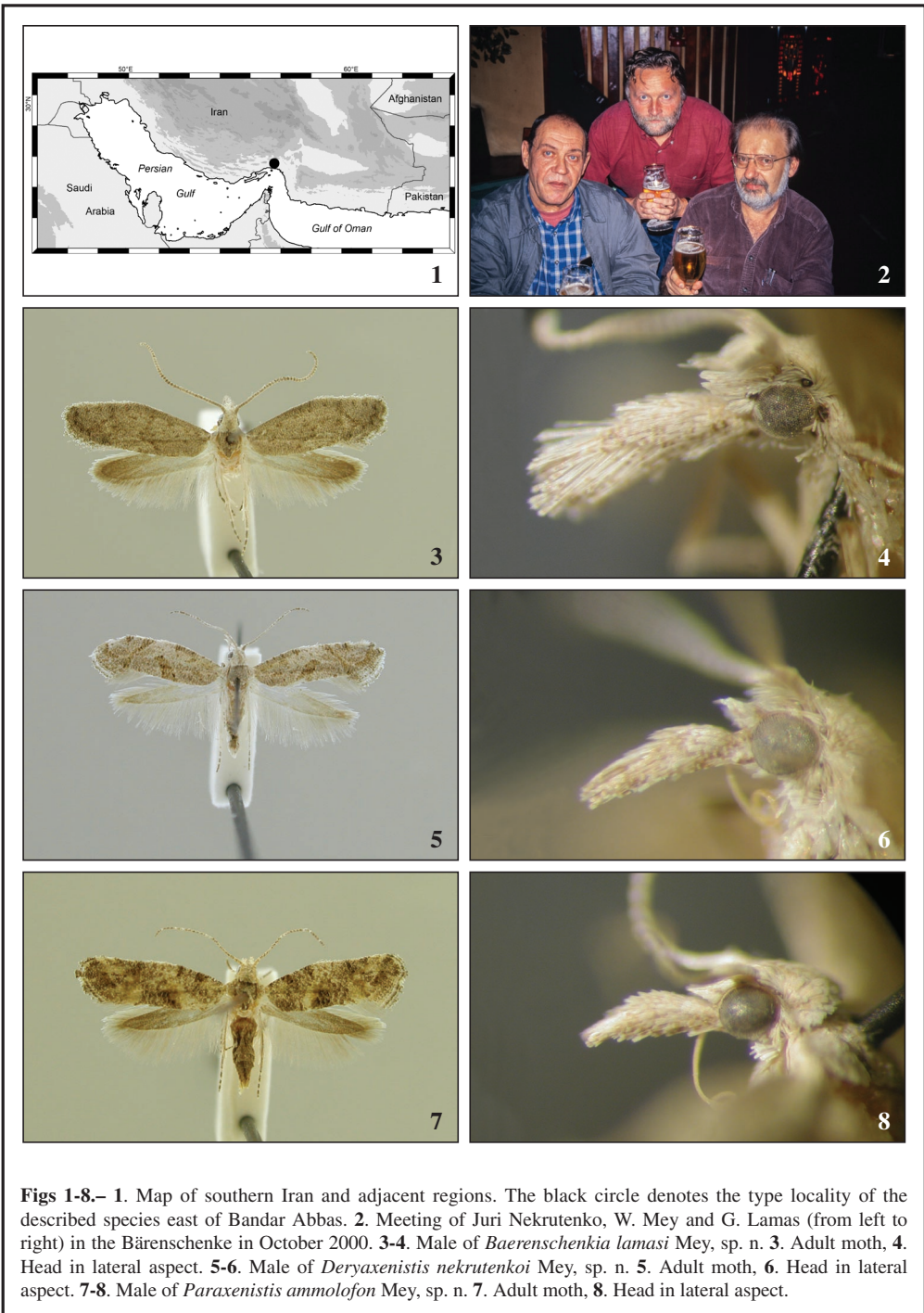
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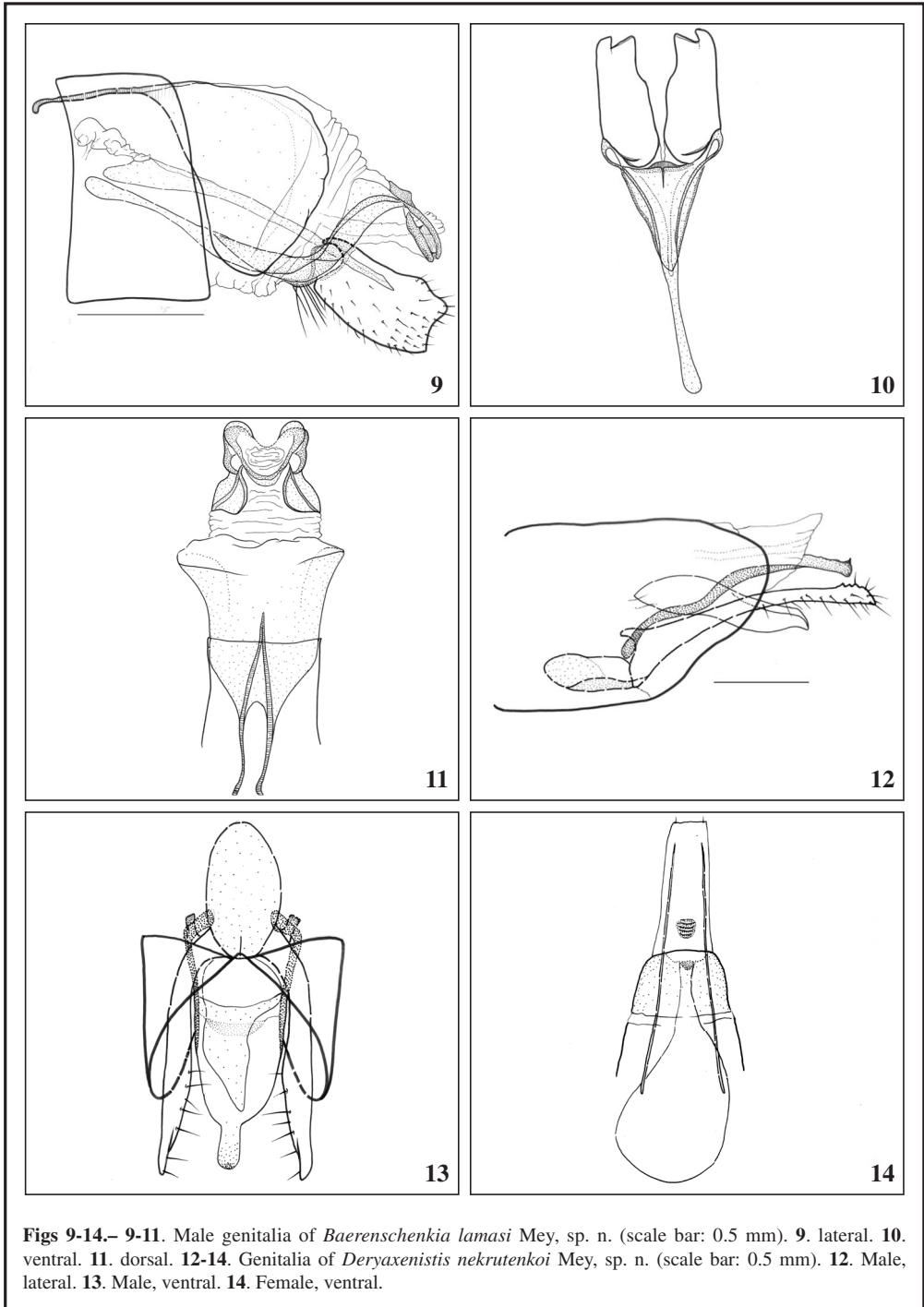
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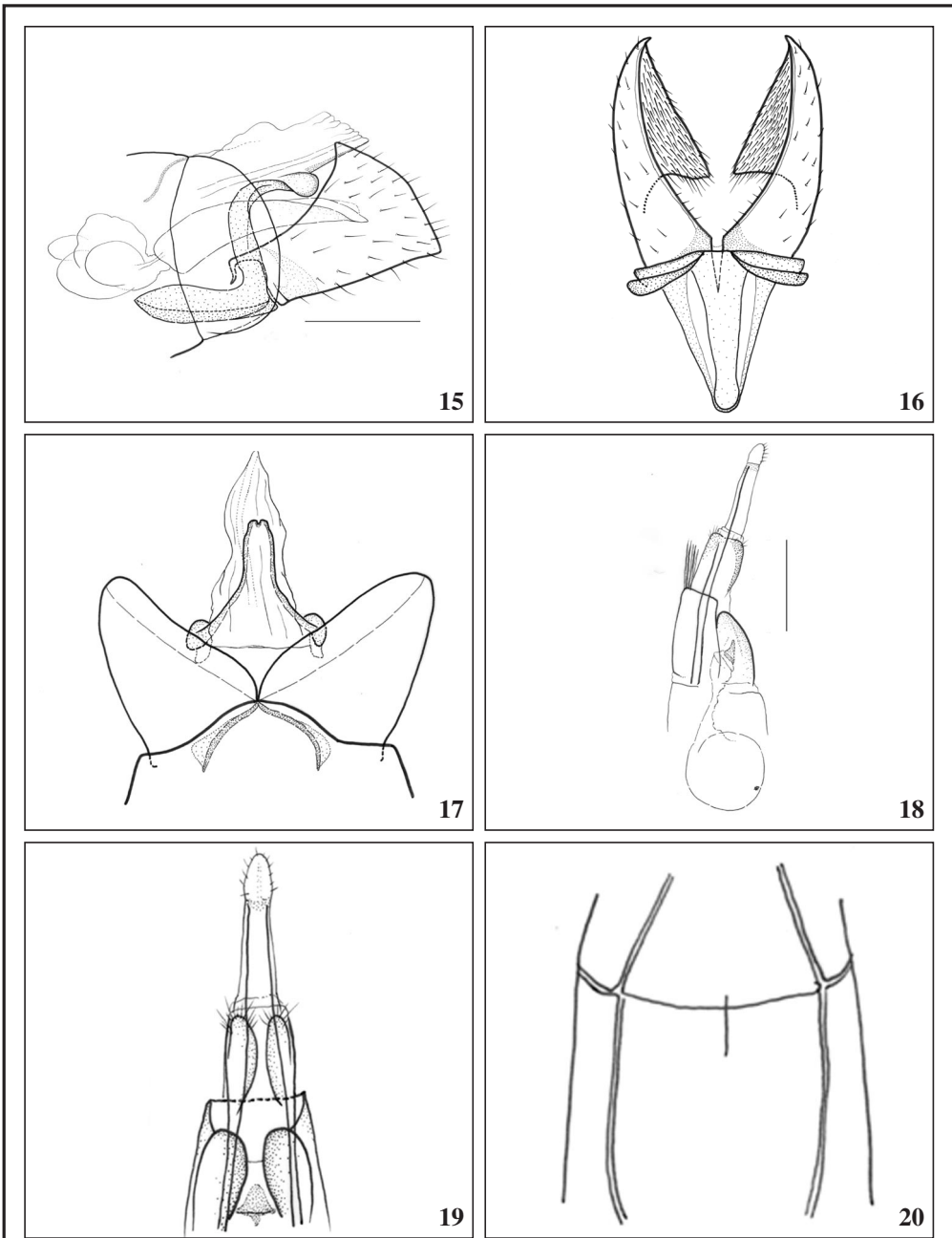


**Figs 1-8.**— **1.** Map of southern Iran and adjacent regions. The black circle denotes the type locality of the described species east of Bandar Abbas. **2.** Meeting of Juri Nekrutenko, W. Mey and G. Lamas (from left to right) in the Bärenschénke in October 2000. **3-4.** Male of *Baerenschenkia lamasi* Mey, sp. n. **3.** Adult moth, **4.** Head in lateral aspect. **5-6.** Male of *Deryaxenistis nekrutenkoi* Mey, sp. n. **5.** Adult moth, **6.** Head in lateral aspect. **7-8.** Male of *Paraxenistis ammolofo* Mey, sp. n. **7.** Adult moth, **8.** Head in lateral aspect.

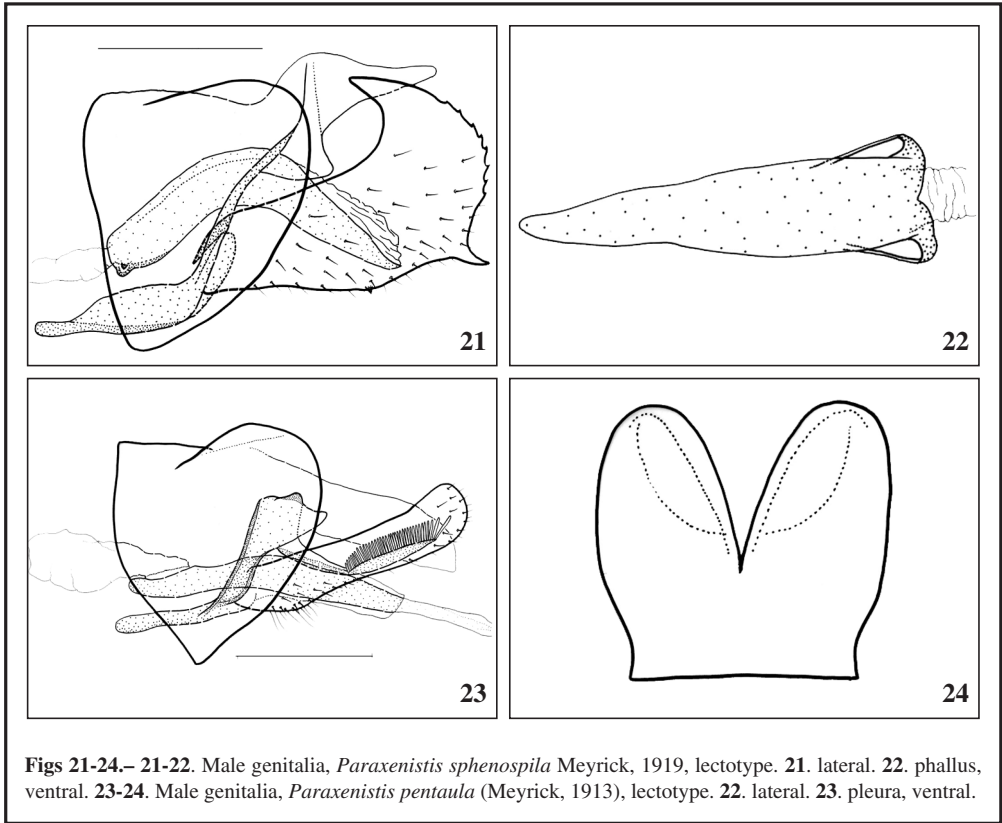


**Figs 9-14.**– 9-11. Male genitalia of *Baerenschenkia lamasi* Mey, sp. n. (scale bar: 0.5 mm). 9. lateral. 10. ventral. 11. dorsal. 12-14. Genitalia of *Deryaxenistis nekrutenkoi* Mey, sp. n. (scale bar: 0.5 mm). 12. Male, lateral. 13. Male, ventral. 14. Female, ventral.





**Figs 15-20.**– 15-19. Genitalia of *Paraxenistis ammolofof* Mey, sp. n. (scale bar: 0.5 mm). 15. Male, lateral. 16. Male, ventral. 17. Male, dorsal. 18. Female, lateral. 19. Female, ventral. 20. Stenum II of *Paraxenistis ammolofof* Mey, sp. n., female.



**Figs 21-24.**– 21-22. Male genitalia, *Paraxenistis sphenospila* Meyrick, 1919, lectotype. 21. lateral. 22. phallus, ventral. 23-24. Male genitalia, *Paraxenistis pentaula* (Meyrick, 1913), lectotype. 22. lateral. 23. pleura, ventral.