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A new subspecies of *Pelatea klugiana* (Freyer, 1836) from the Middle Volga Region of Russia with notes on its morphology and life history (Tortricidae)

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Abstract. *Pelatea klugiana verucha* ssp. n. is described from the Middle Volga Region of Russia within the limits of the southern Uljanovsk Province. Data on its life history and morphology of the preimaginal stages are given. The species is noted from Russia for the first time.

Zusammenfassung. Eine neue Unterart, *Pelatea klugiana verucha* ssp. n., wird aus dem südlichem Teil des Uljanowsk-Gebietes in Russland beschrieben. Bemerkungen zur Lebensweise sowie zur Raupen- und Puppenmorphologie werden gegeben. Die Art wird erstmals für Russland gemeldet.

Резюме. Новый подвид листовертки пионовой, *Pelatea klugiana verucha* ssp. n., описывается из южных районов Ульяновской области России. Приведены данные по его биологии и морфологии гусеничной и куколочной стадий. Вид впервые отмечается с территории России. Голотип нового таксона хранится в коллекции Зоологического института Российской Академии Наук (г. Санкт-Петербург).

Key words. Lepidoptera, Tortricidae, *Pelatea,* Russia, new subspecies, biology, larval and pupal morphology.

Introduction

A large sample of a tortricid moth has been reared from *Paeonia tenuifolia* during expeditionary trips 1996–2003 through the right bank of the middle Volga Region (south of the Uljanovsk Province). Firstly, the species has been identified as *Pelatea klugiana* (Freyer, 1836) known within the limits of the former USSR only from the Carpathians (Kuznetsov 1978; Razowski 2001, 2003). Hence, subsequent comparison with material from the Alps has allowed to consider this population of the Russian plane in a rank of a separate subspecies. Its description is given below.

Abbreviations

EMEM	Entomological Museum of Dr. Ulf Eitschberger, Marktleuthen, Germany
SamGU	Zoological Museum of the Samara State University, Samara, Russia
SarGU	Zoological Museum of the Saratov State University, Saratov, Russia
UlGPU	Zoological Museum of the Uljanovsk State Pedagogical University, Uljanovsk, Russia
ZISP	Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia
ZMHUB	Zoological Museum of the Humboldt University, Berlin, Germany

Pelatea klugiana verucha ssp. n.

Material. Holotype ♂, **Russia**, Middle Volga Region, 140 km S Uljanovsk, vill. Srednikovo outsc., Mt. Atmala, mixed forest on chalk hills, 27.vi.1996 (e. l., from *Paeonia tenuifolia*), Zolotuhin leg. (ZISP). – Paratypes: 15♂, 9♀ same data as holotype, but 26.–29.vi.1996 (e. l.) Zolotuhin leg. (UlGPU), 6 specimens, same data (ZISP, SamGU, SarGU); 1♂, 2♀ same data, but 17.–18.vi.2003 (e. l.), Nedoshivina leg. (UlGPU); 47♂, 19♀, Saratov prov., Khvalynsk distr., 5 km NW Novaja Jablonovka, Armejskye Mts., SW slope of hill forest-setppe, 29.–31.v.2004 (e. l., collected 19.v.2004), Anikin leg. (SarGU). Also as paratypes the following material is designated: 8 last instar larvae and 7 pupae preserved in 1:1 mixture of 80% ethanol and glycerine (ZISP, UlGPU).

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Figs. 1–2. Adults of *Pelatea klugiana*. **1.** *P. klugiana verucha* ssp. n., paratypes. **2.** *P. klugiana klugiana*, from South Tyrol. **a.** male. **b.** female.

Description (Fig. 1). Male. Forewing length 9.0–9.3 mm. Costal fold absent. Forewing light, brownish-olive with reddish-brown to pinkish outer half, crossing by vague silver net. Discal spot dark brown, often broaded to transversal band. Cilia light reddish-brown. Hind wings light, brownish olive with darker, narrow outer field. Cilia of the groundcolour. Body dark brown; tegulae with a tuft of reddish-yellow scales, metathorax with two reddish tufts; top of the abdomen with reddish-yellow hairs. Individual variation is observed in intensity of wing coloration from light brownish olive with pinkish spots to dark olive brown with dark pink spots but specimens with those extreme developed characters could be found rarely within large samples.

Female (Fig. 1b). With the same characters of pattern and coloration but somewhat larger (forewing length 9.2–9.5 mm) and more robust; silver net on the fore wings more vague; hind wings dark grey, without basal lightening, with light, brownish olive cilia.

Male genitalia (Fig. 3). As in the nominate subspecies. They are very remarkable at a whole and therefore outline clearly this genus from related genera. The new subspecies is characterized by slender cucullus and more compact groups of setae on its inner surface, more concave outer margin of lateral processes of tegumen, bilobed uncus and especially by the shape of the phallus having opening of vesica lateral. No cornuti are present.

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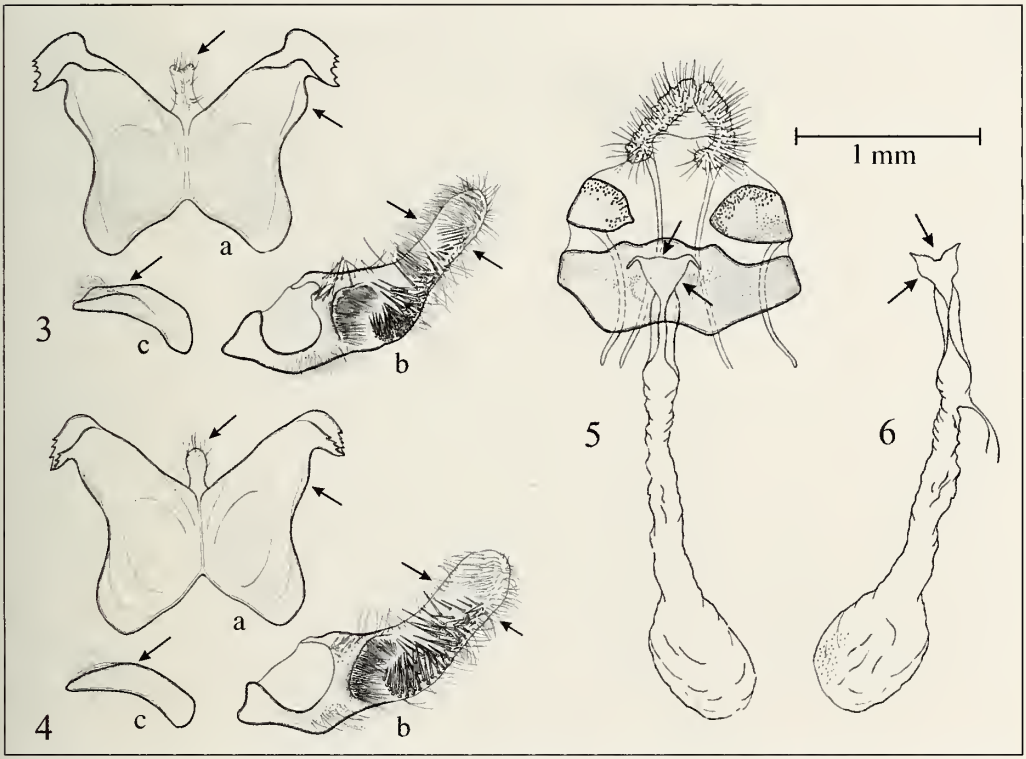

Figs 3–6. Genitalia of *Pelatea klugiana*. **3.** *P. klugiana verucha* ssp. n., holotype ♂. **4.** *P. klugiana klugiana*, ♂; a – tegumen, b – valva, c – phallus. **5.** *P. klugiana verucha* ssp. n., paratype ♀. **6.** *P. klugiana klugiana*, ♀, internal parts.

Female genitalia (Fig. 5). As in the nominate subspecies and characterized by conical antrum as well as prominent margin of ostium. No distinct signa are visible but very vague sclerotization could be found on caudal part of bursa copulatrix.

Last instar larva (Figs. 7–9). 10 mm with maximal width 2.5 mm. Head and prothoracal shields black, well sclerotized, shining. Cuticula of the body weak and can be easily damaged just with tender pressure. Body pattern absent; coloration of subhypodermal type then the caterpillar is colored by haemolymph in dark green or malachite-green. Setae long, elastic, greyish.

Chaetotaxy (Fig. 7). Two D setae present on each segment. On T1 both are on the shield, on T2-T3 they are on the common pinacula, but on A1-A9 setae of D group are arranged each to separate pinacula. D1 is above D2 on T1-T2 and on A1-A8 but under of and anterior to D2 on T3. On A9, D2 is above D1, and situated on the separate pinacula closed to anal shield, as well as D1 is arranged to its own. SD1 and SD2 arranged to the shield on T1. On T2-T3 both are on the same pinacula, SD2 is above SD1. On other segments (except A9-A10), SD2 is minute and located anteriodorsal to the spiracle on A1-A7, but on A8 SD2 is anterior and SD1 is anteriodorsal to the spiracle. SD2 is absent on A9. SV group on T1 as well as on A1-A8, is bisetose. On other segments (except A10) it is unisetose. Three L setae on T1 are on common pinaculum. On T2, L1

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and L2 share a pinaculum, and L3 is on its own. On T1, L1 is between L2 and L3, on T2-T3 L3 posteriodorsal to the others, L1 above L2. But on A1-A9, L3 posterioventral to others and L2 above L1; on A9, they all situated on a common pinacula. On all abdominal segments L group is also trisetose. V1 seta is presented on all segments. Proprioreceptor MD1 have relatively constant position anterioventral to D1 on all segments, except T1 and A10 where it is absent. MSD1 and MSD2 present only on T2-T3, where they arranged anterior to SD pinacula, MSD1 above MSD2. Chaetotaxy of the larval head as figured (Fig. 8).

Pupa (Figs. 10–12). Body length 7.0–10.5 mm. Coloration dark, yellowish brown. Frons flat and smooth. Proboscis extended to about one third of forewing length. Antenna extended more than two thirds of forewing length, and fore leg extended to about half of forewing length and mid leg somewhat longer. Forewing extended to posterior margin of 4th abdominal segment or ended slightly before. Veins distinct. Spiracles small, rounded oval. A2-A8 with two rows of dorsal spines. A1 and A9 with one cephalic row. Cremaster ventrally wrinkled, with lateral teeth. Cauda with 4 pairs of yellowish brown hooked setae. Anal rise with a pair of hooked setae on each side.

Diagnosis. Similar to the nominate subspecies but differs by smaller size (10.0–10.7 mm in the nominate subspecies), much lighter coloration and narrower wings. Silver net of forewing scales in the new subspecies much more vague. Diagnostic characters could be found also in genitalia. In the nominate subspecies the cucullus is broader, with less compact groups of setae on its inner surface, less concave outer margin of lateral processes of tegumen, unilobed uncus and dorsal opening of vesica as well as antrum is cup-shaped and margin of ostium is cut. Comparison with another species of the genus, *Pelatea assidua* Meyrick, 1914 from Taiwan, has not been possible because of absence of the material in European museums.

Distribution. Known only from the type locality – outskirts of Srednikovo vill. of the Uljanovsk Province (Fig. 18–19). Besides that, very characteristic damage of peonies by the caterpillars are known from Vjazovyj Gaj vill. (about 32 km to the south from the type locality). Without doubts, *Pelatea klugiana verucha* ssp. n. is connected closely in its distribution with the range of the food plant although is known not from all its populations (fig. 20). As a matter of fact, *Paeonia tenuifolia* grows in the Uljanovsk District exclusively on carbonat soils, mainly on chalk, in sparse forest-steppe associations and on stepped slopes (Maslennikov 1995). The range of the new subspecies is isolated geographically from the range of the nominated subspecies native to the mountain ranges of Central and Southern Europe.

Life history. Caterpillars of the species feed on different species of peonies. Foodplant in Central Europe – *Paeonia rosea* (Kuznetsov 1978; Razowski 2001, 2003) and small sample of moths reared from *P. officinalis* at our disposal from EMEM. In the Uljanovsk District caterpillars were collected from *P. tenuifolia*. Related species *P. biebersteiniana* with stronger and denser leaves is settled by the species not willingly. Larvae live in small colony from 2 to 5 specimens. They weave densely the growing buds of young sprout with silk thread forming some kind of silk nest. These dense nests are visible well on *Paeonia* bushes from afar (Fig. 13). Inside that, the caterpillars move on silk tunnels, feeding inside not coming on outer surface. Pupation within silk nest.

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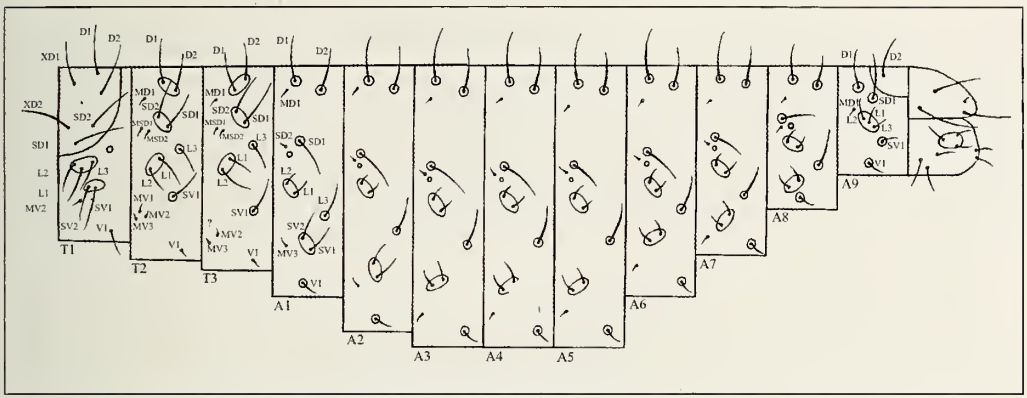


Fig. 7. Body chaetotaxy of the larva of *Pelatea klugiana verucha* ssp. n.

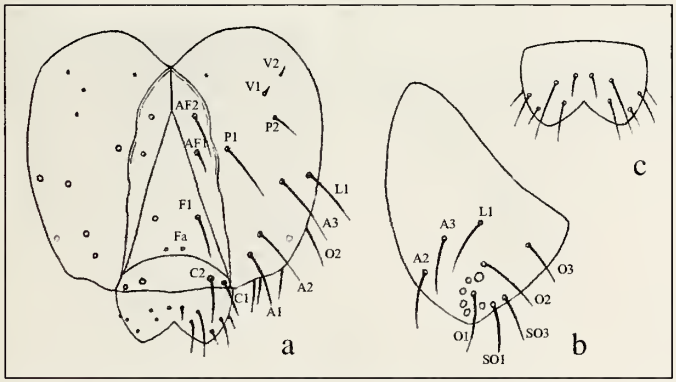
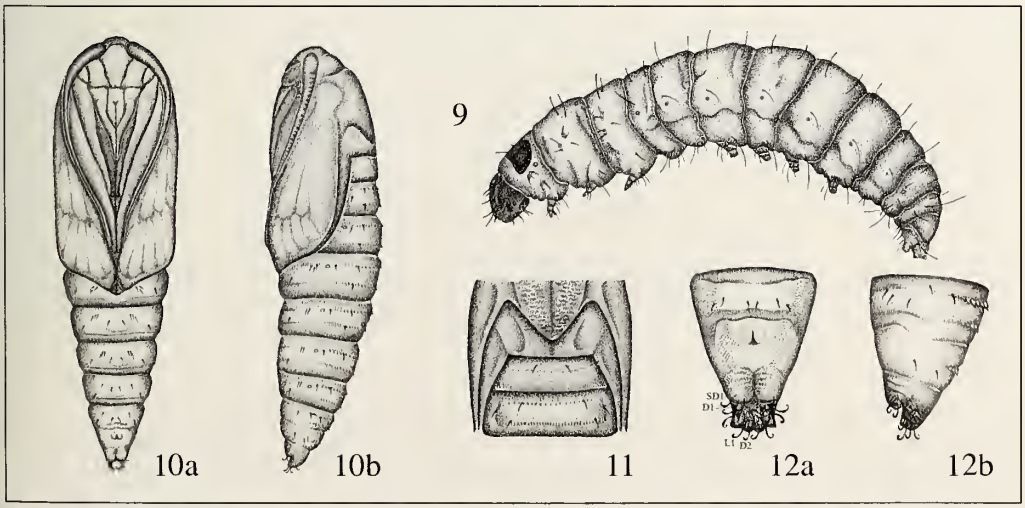


Fig. 8. Head chaetotaxy of the larva of *Pelatea klugiana verucha* ssp. n., **a.** frontal. **b.** lateral. c. labrum.



Figs. 9–12. Immature stages of *Pelatea klugiana verucha* ssp. n. **9.** Last instar larva. **10.** Pupa. **11.** metathorax and abdominal segments I–II of the pupa (dorsal view). **12.** Cremaster and abdominal segments VIII–X of the pupa. **a.** ventral. **b.** lateral.

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Figs. 13–19. Life history of *Pelatea klugiana verucha* ssp. n. **13.** Silk nests forming by larvae on *Paeonia* bushes. **14.** Imago on the host plant. **15.** Larva. **16.** Larva inside the silk nest. **17.** Pupal exuviae in the silk nest. **18–19.** Type locality.

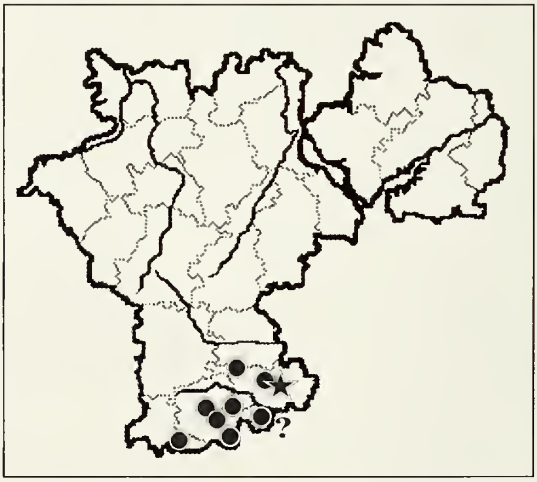

Fig. 20. Distribution of *Pelatea klugiana verucha* ssp. n. in the Uljanovsk Province. ● Locations of *Paeonia*. ★ Type locality of *Pelatea klugiana verucha* ssp. n. ? Unconfirmed occurrence of the moth-species.

Shortly before hatching (for 4–5 minutes), the pupa protrudes from the nest (Fig. 17). Emerging during all a day. Sex ratio males : females as 3:1 in first days and about 7:1 later. Moths are not mobile and only shortly flit being disturbed; they hold near by food plant and can be collected from it with the hand (Fig. 14). The subspecies has been not collected on artificial light. Flight period short (some days), and emerging from pupa is

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synchronous, within 4–7 days. Develops one generation per year. Hibernating stage is unknown (egg, caterpillar within egg shell or young caterpillar?).
Some parasitoids were reared from the nests: *Temelucha* sp. (Ichneumonidae: Cremastinae), *Chelonus annulipes* Wsm. (Braconidae) as well as larvae of a very small unidentified tachinid fly, not developed into imago.

Comparative material examined of *Pelatea klugiana*: 1♂ **France**, Cannes Const.; 1♂ **Spain**, San Ildefonso, 84. m.; 1♂ Sierra de Alfacar, m., 89; 1♂ Granada m.; 1♂ Siera de Huetor, m. 80; 1♂ **Italy**, Carniolia; 2♀ Trentino, Mt. Baldo, Mt. Altissimo, 1450 m, ex Paeonia officinalis, 6. & 8.vi.1958, Jaeckh leg. (all ZMHUB); 2♂, 2♀ Mt. Baldo, late vi.1967 (e. l.), Pfister leg.; 3♂ Mt. Baldo, Corne Piana, 1600 m, late vi.1961 (e. l.), Burmann leg.; 7♂, 1♀ Mt. Baldo, mid vi.1958, Pfister leg. (all EMEM).

Derivatio nominis. The subspecies is named after Mrs Vera Isajeva (Uljanovsk, Russia) who took an active participation in collecting of entomological material and made a contribution to the knowledge of the entomofauna of the Uljanovsk District.
Remarks. The species is here recorded from Russia for the first time.

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