Russian Entomol. J. 34(1): 82–92

Taxonomy, biology and immature stages of the little-known weevil *Pseudorchestes* (*Labiorchestes* subgen.n.) *stobieckii* (Smreczyński, 1957) comb.n. (Coleoptera: Curculionidae: Rhamphini)

Таксономия, биология и преимагинальные стадии малоизвестного жука-долгоносика *Pseudorchestes* (*Labiorchestes* subgen.n.) *stobieckii* (Smreczyński, 1957) comb.n. (Coleoptera: Curculionidae: Rhamphini)

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KEY WORDS: larvae, pupae, immature stages, Rhamphini, *Pseudorchestes*, *Orchestes*, *Nepeta nuda*, Lamiaceae.
КЛЮЧЕВЫЕ СЛОВА: личинки, куколки, преимагинальные стадии, Rhamphini, *Pseudorchestes*, *Orchestes*, *Nepeta nuda*, Lamiaceae.

ABSTRACT. For the weevil currently known as *Orchestes stobieckii* (Smreczyński, 1957), the host plant *Nepeta nuda* L. (Lamiaceae) is identified for the first time, the biology and immature stages are described, the morphological characters of the adults are illustrated in detail, including the first images of the genitals and terminalia of the male and female. It is proposed to transfer this species from the genus *Orchestes* to the genus *Pseudorchestes*, where it will be placed to a separate monotypic subgenus *Labiorchestes* **subgen.n.** since it is clearly distinguished from other *Pseudorchestes* by the absence of an uncus on pro- and mesotibiae, the presence of two long spines on mesofemora, an elongated the antennal scapus, a noticeably more distal position of the antennae on the rostrum, but at the same time has a similar structure of the male and female genitals, hind legs, similar dorsal pubescence of the body, as well as the structure of the immature stages and biology. In addition, this species is first recorded for the Lipetsk Region.

РЕЗЮМЕ. Для жука-долгоносика, известного под названием *Orchestes stobieckii* (Smreczyński, 1957), впервые установлено кормовое растение — *Nepeta nuda* L. (Lamiaceae), описана биология, преимагинальные стадии, детально проиллистрированы особенности морфологии имаго, в том числе впервые приводится изображения гениталий и терминалий самца и самки. Данный вид предлагается перенести из рода *Orchestes* в род *Pseudorchestes*, где выделить в отдельный монотипичный подрод *Labiorchestes* **subgen.n.** поскольку он хорошо отличается от прочих *Pseudorchestes* отсутствием ункуса на передних и средних голенях, наличием двух длинных толстых щетинок на средних бёдрах, удлинённой рукоятью усиков, заметно более дистальным положением усиков на головотрубке, но в тоже время имеет аналогичное строение гениталий самцов и самок, задних ног, сходное опушение верхней стороны тела, а также строение преимагинальных стадий и биологию. Кроме того этот вид впервые указан для Липецкой обл.

Introduction

Tribe Rhamphini Rafinesque, 1815 is a very large, worldwide distributed group of weevils of the subfamily Curculioninae, one of the distinctive characters of which is the thickened metafemora, which enable them to jump. The most representatives of this tribe on larval stage are leaf miners, i.e. they develop inside the leaf blade, where they feed on the parenchyma without affecting the upper and lower epidermis. They pupate either inside the mine or in the soil.

In the Western Palearctic the tribe is represented by 6 genera: *Isochnus* C.G. Thomson, 1859, *Orchestes* Illiger, 1798, *Pseudorchestes* Bedel, 1894, *Rhamphus* Clairville, 1798, *Rhynchaenus* Clairville, 1798 and *Tachyerges* Schoenherr, 1825. The overwhelming ma-

How to cite this article: Zabaluev I.A. 2025. Taxonomy, biology and immature stages of the little-known weevil *Pseudorchestes* (*Labiorchestes* subgen.n.) *stobieckii* (Smreczyński, 1957) comb.n. (Coleoptera: Curculionidae: Rhamphini) // Russian Entomol. J. Vol.34. No.1. P.82–92. doi: 10.15298/rusentj.34.1.08

jority are associated with woody and shrubby plants: *Isochnus* and *Tachyerges* develop on Salicaceae, *Rhamphus* on Rosaceae, Salicaceae, and Betulaceae, *Rhynchaenus* on Caprifoliaceae (*Lonicera*). Species of the largest and most diverse genus *Orchestes* also mine the leaves of trees and shrubs, in Europe they are associated with Fagaceae (*Quercus*, *Fagus*), Ulmaceae (*Ulmus*), Betulaceae (*Betula*, *Alnus*) and Myricaceae (*Myrica*). On the contrary, species of the genus *Pseudorchestes* develop on herbaceous plants from the families Asteraceae (mainly *Artemisia* and *Centaurea*) and Chenopodiaceae (*P. astracanicus* (Tournier, 1873) on *Ceratocarpus arenarius* L.).

During field entomological research in the Lipetsk region of Russia, a population of a rare and little-known representative of the tribe Rhamphini, currently known as *Orchestes stobieckii* (Smreczyński, 1957) was discovered. This species was described from two specimens from Western Ukraine (type locality — Zalishchyky, Ternopil Region) in the genus *Rhynchaenus* [Smreczyński, 1957], which at that time was understood very broadly. Already in the original description, S. Smreczyński noted the similarity of his species with the subgenus *Pseudorchestes* (is now considered a separate genus), but nevertheless placed it in the nominative subgenus. In the Catalogue of Palaearctic Coleoptera [Caldara, 2013; Alonso-Zarazaga *et al*., 2023] it is assigned to the nominative subgenus of the genus *Orchestes*.

Biology and host plant of *O. stobieckii* was previously unknown. It unexpectedly turned out that this species mines the leaves of *Nepeta nuda* L. (syn. *N. pannonica* L.) from Lamiaceae. Plants from this family have not previously been recorded as host for Rhamphini as for the all Palaearctic Curculioninae in general. This circumstance prompted a more detailed study of its morphology, biology and immatures stages. The results of this study presented in this article led us to the need to transfer this species from the genus *Orchestes* to the genus *Pseudorchestes*, where, in order to emphasize its significant uniqueness, a separate monotypic subgenus *Labiorchestes* **subgen.n.** is described for it.

Material and methods

Immature stage preparations were prepared on slides in Faure–Berlese liquid using the method described and applied earlier [Zabaluev, 2021; 2023]. The general terminology and chaetotaxy of the mature larva and pupa follow Scherf [1964], May [1994] and Marvaldi [1997, 1999].

Photographs of the biotope and plants were taken with a camera Canon EOS 650D, the habitus of adults abd larvae — Canon EOS 5D Mark IV with a Canon MP-E 65 mm objective lens, the rest were taken with a digital USB-camera AmScope MU1000-HS mounted on a microscope Micromed-3. Drawings were made from photographs or preparations on slides in the free vector editor Inkscape. All measurements were performed with an ocular micrometer. Body length of adults was measured from the base of the rostrum to the apex of the elytra in lateral projection.

The materials are deposited in the following collections: IZCS — private collection of the author; ZMUM — Zoological Museum of the Moscow State University.

Results

Genus ***Pseudorchestes*** Bedel, 1894

Type species *Salius pratensis* Germar, 1821.

Subgenus ***Labiorchestes*** **subgen.n.**

Type species *Rhynchaenus stobieckii* Smreczyński, 1957.

Pseudorchestes stobieckii **(Smreczyński, 1957), comb.n.**

Figs 1–14, 22– 25.

Rhynchaenus (s.str.) *stobieckii*: Smreczyński, 1957: 130; Smreczyński, 1976: 71.

Rhynchaenus? *stobieckyi* [sic!]: Korotyaev, 1999: 174.

Rhynchaenus? *stobieckii*: Korotyaev *et al*., 2007: 321.

Orchestes (s.str.) *stobieckii*: Benedikt *et al*., 2010: 201; Caldara, 2013: 147; Alonso-Zarazaga *et al*., 2023: 212.

MATERIAL (adults). Russia: Kursk Prov., Tsentralno-Chernozemny Nature Reserve, Dedov forest, 9.VI.1964, K. Arnol'di — 1♀ (ZMUM); ibid, Tolstyi log, northern slope, 19.VI.1964, K. Arnol'di — 1♀ (ZMUM); ibid, Streletskaya steppe, 3.VII.1966, K. Arnol'di — 1♀ (ZMUM); Petropavlovka vill., mixed-grass steppe, 2.VI.1987, D. Dovlar leg. — 1♀ (ZMUM); Lipetsk Prov., Zadonsk Region, 2.5 km NE Lipovka vill., specially protected natural area "Lipovskaya Mountain", 52.559037°N 38.890770°E, h=144 m, 25.VI.2022, Ya. Urbanus leg. — 1♂ (IZCS); ibid, net-sweeping, 10–11.V.2024, I. Zabaluev leg. — 1♂, 1♀ (IZCS); ibid, 21–24.VI.2024, I. Zabaluev leg., grown from mines on *Nepeta nuda* — 6♂♂, 1♀ ex. (IZCS).

TAXONOMY. Since *P. stobieckii* (Fig. 1) is similar to species of the genus *Pseudorchestes* (especially to *P. angelovi* (Dieckmann, 1970)) in uniform pubescence of the body by grayish narrow parallel-sided scales, shallowly excised apically, the shape of the male aedeagus, the armature of the internal sac, the shape of spermatheca of female, the structure of hind legs, as well as the structure of the larvae and pupae, and like other *Pseudorchestes* is associated with open biotopes and develops on a herbaceous plant, we transfer this species and thus *Pseudorchestes stobieckii* (Smreczyński, 1957) **comb.n.** However, the significant uniqueness of this species forces us to single it out into a separate subgenus. The differences in the main characters between the subgenera can be shown as follows:

1. Rostrum rather short, in male 2.43–2.55x as long as wide (Fig. 2), in female 2.76–2.78x as long as wide (Fig. 3). Antennae in both sexes inserted to the basal third of the rostrum. Scapus 1.3x as long as 1st segment of funicle (Fig. 11). At the base of pronotum and elytra there are 3 long erect setae on each side. Profemora with one short thick spine (Fig. 12), mesofemora with two long spines (Fig. 13), metafemora with strong tooth-like projection and row of 9–10 spines of different sizes (Fig. 14). Pro- and mesotibiae without uncus (Fig. 12–13). Claws dentate. Body length 1.8–2.2 mm. On Lamiaceae (*Nepeta nuda*) .... ***Labiorchestes*** **subgen.n.**

– Rostrum much longer, 3.5–7.0x as long as wide. Antennae inserted close to the base, at a distance that does not exceed the width of rostrum between them (expect for *P. angelovi*, see discussion). Scapus no longer than 1st segment of funicle (Fig. 15) (expect for *P. angelovi*). Sides of pronotum and elytra usually without long erect setae, rarely with them. Pro- and mesofemora without spines (Figs 16–17) or with only one short spine. Pro- and mesotibiae with

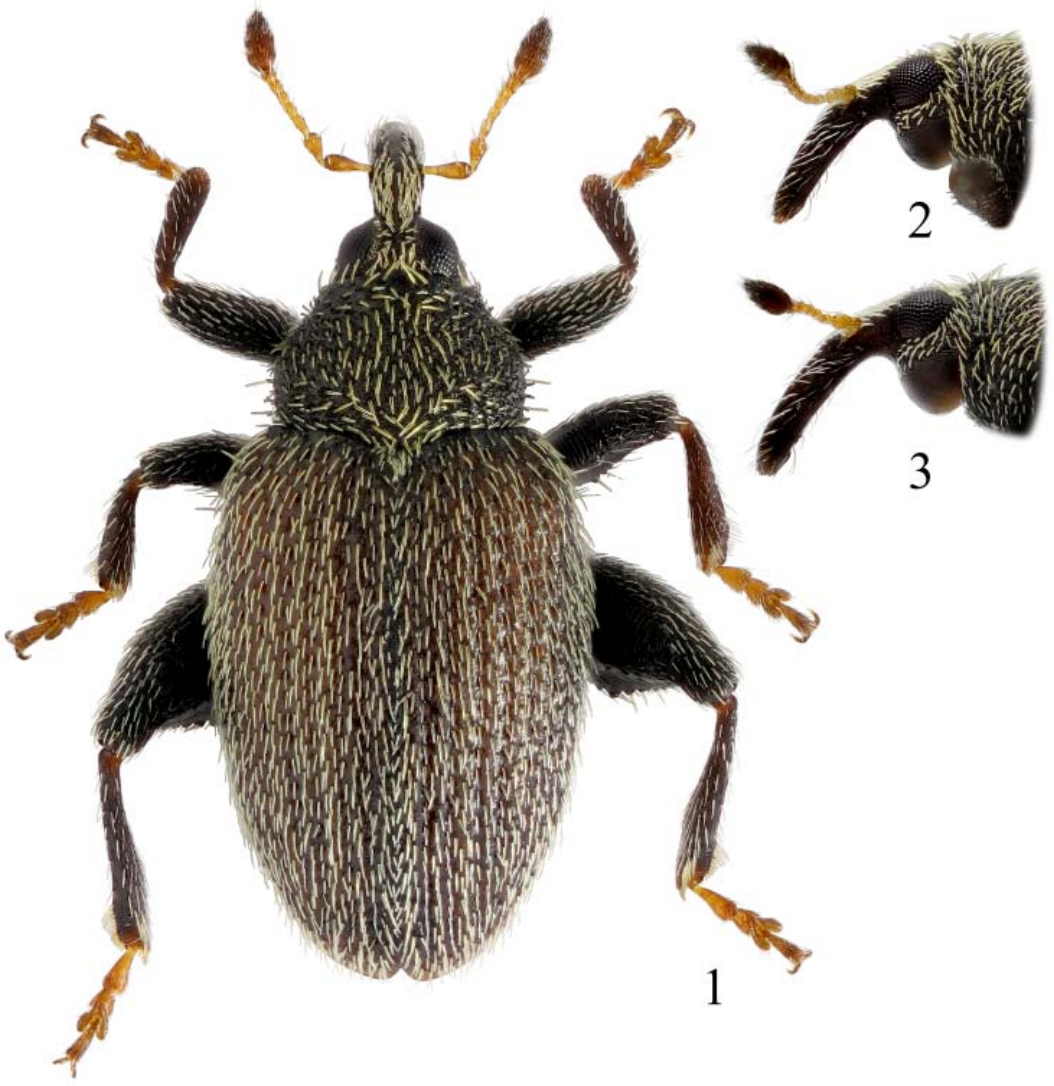
large hook-shaped uncus (Figs 16–17). Claws dentate (in *P. astracanicus* teeth minute, almost inconspicuous). On Asteraceae and Chenopodiaceae .... ***Pseudorchestes* (s.str.)**

The morphological characters of *P. stobieckii* and its taxonomic position are considered in more detail in the discussion part.

ETYMOLOGY. The subgenus name is a combination of the classical name of family Lamiaceae — "Labiatae" and *Orchestes*.

DISTRIBUTION. Russia: Lipetsk Prov. (first record), Kursk Prov., Tambov Prov., Bashkortostan [Korotyaev, 1999], Ingushetia [Korotyaev *et al*., 2007]. Ukraine (Ternopil Prov. [Smreczyński, 1957], Lugansk Prov. [Korotyaev, 1999]), Bulgaria [Smreczyński, 1976], Slovakia [Benedikt *et al*., 2010], Hungary, Turkey (Ispir Prov.) [Korotyaev, 1999].

BIOLOGY**.** In general, the life cycle is similar to other *Pseudorchestes*. It can be found in open mixed-grass biotopes, edges of oak forests (Fig. 22), steppe gullies and steppe slopes from the beginning of May to the beginning of July. Monophagous on *Nepeta nuda* (Lamiaceae) (Fig. 23). Eggs are laid in the midrib, the larva makes a corridor, filled with frass, towards the apex of the leaf, which then expands into a large bubble-shaped mine, which in the end occupies most of the leaf blade. All mines were found in the upper half of the plant, often on small upper leaves. The larva pupates in a cocoon inside the mine, which at this point becomes noticeably darker and begins to dry out (Figs 24–25). The pupal phase is very short and, according to our observations, takes no more than a week. A new generation appears in the second half of June, and the greatest number of finds were made in this time.



Figs 1–3. *Pseudorchestes stobieckii*, habitus of adult and lateral view of rostrum. 1 — habitus (Lipetsk Region); 2 — rostrum of male; 3 — rostrum of female.

Рис. 1–3. *Pseudorchestes stobieckii*, общий вид имаго и головотрубка, вид сбоку. 1 — общий вид (Липецкая обл.); 2 — головотрубка самца; 3 — головотрубка самки.

Figs 4–10. *Pseudorchestes stobieckii*, details of structure. 4 — aedeagus, dorsal view; 5 — ibid, lateral view; 6 — spiculum gastrale; 7 — spermatheca; 8 — spiculum ventrale; 9 — 7th tergite of male; 10 — metendostenite.
Рис. 4–10. *Pseudorchestes stobieckii*, детали строения. 4 — эдеагус, вид сверху; 5 — тоже, вид сбоку; 6 — spiculum gastrale; 7 — сперматека; 8 — spiculum ventrale; 9 — 7-й тергит самца; 10 — эндостернит заднегруди.

The larvae and pupae are parasitized by *Pnigalio cristatus* (Ratzeburg, 1848), *P. incompletus* (Bouček, 1971) and *Neochrysocharis formosus* (Westwood, 1833) (Hymenoptera: Eulophidae) (determined by O.V. Kosheleva). In addition, some of the larvae were found dead apparently from fungal diseases.

It is interesting to note that mines of the leaf beetle *Dibolia carpathica* Weise, 1893 (Chrysomelidae: Galerucinae: Alticini) were found on the same plants as the mines of *P. stobieckii.* They are similar to weevil mines, but are located mainly not on the upper leaves, but on the large lower leaves, in the form of an opaque flat spot that occupies 1/4–1/3 of the apical part of the leaf blade. The larva *Dibolia* leaves the mine to pupate and pupates in the soil, adults emerge after about 10 days.

Description of mature larva
Figs 26–35.

MATERIAL. Lipetsk Prov., Zadonsk Region, 2.5 km NE Lipovka vill., specially protected natural area “Lipovskaya Mountain”, 52.559037°N 38.890770°E, h=144 m, 21–23. VI.2024, I.A. Zabaluev leg. — 5 specimens extracted from leaf mines on *Nepeta nuda*.

MEASUREMENTS (in mm). Body length: 3.02–3.34 (mean 3.15). Prothorax width: 0.56–0.60 (mean 0.58). Mesothorax width: 0.76–0.78 (mean 0.76). Metathorax width: 0.76–0.80 (mean 0.78). Abdominal segments I width: 0.82–0.96 (mean 0.89). Head width: 0.34–0.38 (mean 0.36). Head length: 0.27–0.29 (mean 0.28).

GENERAL HABITUS. Body (Fig. 26) almost straight, elongated, greenish-white. Head (Fig. 27) brown, endocarina and posterior margin of epicranium dark brown. Prothorax dorsally with two sclerotized brown shields separated above by a narrow stripe, ventrally with three separate sclerotized shields. Thoracic segments conically narrowed forward, prothorax small, narrowed, pedal lobes not protruding. Abdominal segments I–VII on the dorsal side along the middle with transverse protruding cuticular callus-like fold. Segments VIII–IX without such fold and gradually conically narrowed towards the apex. Epipleural lobe on abdominal segments I–VIII strongly convex and protrude noticeably laterally. Spiracles bicameral, not colored, placed on prothorax and on abdominal segments I–VIII. Anus located terminally.

CHAETOTAXY OF BODY. Setae yellowish, very fine, hair-like, and of varying length. Pronotum (Fig. 28) with nine *prns* unequal length: $prns_1$ medium, $prns_2$ very short, $prns_{3–4}$ and $prns_9$ short, $prns_{5–8}$ long. Meso- and metanotum with very short pds_1, long $pds_{2–3}$, and very short *as*. Pleural parts of prothorax with two very long *ps*; pleural parts of meso- and metathorax with very short *ss*, very long *eps* and *ps* approximately equal length. Pedal lobe with three *pda* medium length. Ventral parts with one long and one medium *eus*. Abdominal segments I–VIII (Fig. 28) with short *prs*, two long and one short *pds*, minute and long *ss*, short and very long *eps*, very short and long *ps* and two medium *eus*. Abdominal segment IX (Fig. 29) with one very short and two long *ds*, short and long *ps* and two long *sts*. Abdominal segment X with three very short and robust *ts*. In addition, along the anterior margin of meso- and metathorax there are four greatly reduced minute setae (one each next to pds_1, *ss*, *pda*, and *eus*), which are visible at 400x magnification; abdominal segments I–VIII bear three similar

setae (next to *prs*, *ss*, and *eus*); abdominal segment IX with one setae (on ventral part).

HEAD CAPSULE. Head (Fig. 30) 1.3–1.4x as wide as long, almost one-third retracted into prothorax, the posterior margin deeply and broadly emarginated, and strongly thickened. Frontal sutures distinct. Endocarinal line very thick, heavily sclerotized, protrudes beyond the posterior edge of epicranium. Hypopharyngeal bracon absent. Frontal area with minute fs_2, short fs_4, long fs_5, and with two sensory pores — between fs_2 and fs_4, and proximal to fs_2. Dorsal area with minute $des_{1–3}$ and long des_5, and with two sensory pores — between des_2 and des_5, and next to des_1. Posterior epicranial area with five minute *pes*. Lateral area with very short les_1 and long les_2. Ventral area (Fig. 31) with two minute *vcs*.

CLYPEUS AND MOUTHPARTS. Clypeus (Fig. 32) transverse, approximately 2x as wide as long, emarginate at the anterior margin, about the middle with two very short *cls* and with one *clss* between them. Labrum (Fig. 32) trapeziform, approximately 1.9x as wide as long, with short *lrs*. Epipharynx (Fig. 33) with three *als*, equal in length, three shorter and thinner *ams* and two elongated finger-like *mes*; also with large sensory pore located anteromedially. Labral rods (*lr*) short-oval, approximately 1.3x as long as wide, not converging posteriorly. Mandibles (Fig. 34) rather robust, triangular, with two apical teeth and several small denticles, with two very short *mds* equal in length and one sensory pore. Maxilla (Fig. 35) with long *stps*, long pfs_1, short pfs_2, very short *mbs* and two sensory pores (one near the base of pfs_1, other distal to *stps*). Mala on dorsal side with six finger-like *dms*, and on ventral side with four very short thin *vms*. Maxillary palpi consist of two palpomeres, basal palpomere with one short *mxps*. Prelabium with one *prms* and two small sensory pores. Ligula with three minute *ligs*. Labial palpi consist one palpomere. Postlabium elongated, with three *pms*: pms_2 very long, pms_1 short, approximately 0.5x as long as pms_2, pms_2 even shorter, approximately 0.3x as long as pms_2.

VARIABILITY. Despite the relatively small number of larvae studied, they all differed quite significantly in the position of some setae and sensory pores, especially on the head capsule. For example, *pes* can be arranged in single row or in two clusters, moreover des_1 being able to shift and become part of *pes* cluster. The position of the setae can vary even in one larva on different sides of the head capsule. However, no differences in the length of the setae or their total number have been identified.

COMPARATIVE NOTES. In general habitus, the described larva is very similar to the larvae of *Pseudorchestes*. It differs from the larva of *P. circumvistulanus* (Białooki, 1997) in its yellowish-brown head and uncolored spiracles, from the larvae of *P. pratensis* (Germar, 1821) and *P. abdurakhmanovi* (Korotyaev, 1991) in it's the ventral sclerotized shield on the prothorax divided into three separate parts, and from the first species, in addition, in its brown head. Chaetotaxy and the structure of the mouth parts are described in detail only for *P. abdurakhmanovi* [Zabaluev, 2023], the larva of *P. stobieckii* differs in its short-oval labral rods, longer *pms* and *prms*, five *pes*, equal-length *cls* and other very small differences. The larvae of the other species of *Pseudorchestes* are not known, but it can be expected that they will also be extremely similar to each other.

Figs 11–21. Rhamphini, antennae and legs: 11–14 — *Pseudorchestes stobieckii*; 15–18 — *P. smreczynskii*; 19–21 — *Rhynchaenus xylostei*; 11, 15 — antennae; 12, 16, 19 — fore legs; 13, 17, 20 — middle legs; 14, 18, 21 — hind legs. On photos 12, 16, and 20 coxa and trochanter removed. Black arrows mark the position of uncus.

Figs 11–21. Rhamphini, усики и ноги: 11–14 — *Pseudorchestes stobieckii*; 15–18 — *P. smreczynskii*; 19–21 — *Rhynchaenus xylostei*; 11, 15 — усики; 12, 16, 19 — передние ноги; 13, 17, 20 — средние ноги; 14, 18, 21 — задние ноги. На фото 12, 16 и 20 тазик и вертлуг удалены. Чёрные стрелки указывают на положение ункуса.

Figs 22–25. Habitats and biology of *Pseudorchestes stobieckii*: 22 — specially protected natural area "Lipovskaya Mountain" (Lipetsk Prov.); 23 — *Nepeta nuda*, host plant; 24–25 — dried mines on the leaves of *N. nuda*.
Рис. 22–25. Местообитание и биология *Pseudorchestes stobieckii*: 22 — особо охраняемая природная территория «Липовская гора» (Липецкая обл.); 23 — *Nepeta nuda*, кормовое растение; 24–25 — усохшие мины на листьях *N. nuda.*

Description of pupa
Figs 36–37.

MATERIAL (pupae). 6 specimens collected together with larvae.

MEASUREMENTS (in mm). Body length: 1.96–2.20 (mean 2.16). Body width: 0.78–0.87 (mean 0.80). Head width: 0.35–0.37 (mean 0.36).

GENERAL HABITUS. Body elongated, greenish-white or yellowish-white, setae light brown, eyes reddish brown. Some specimens have small light spots on the sides of abdominal tergites. Rostrum quite short, 2.17–2.82x as long as wide, reaching mesocoxae. Antennae attached directly at the base of rostrum. Pronotum trapeziform, 1.45–1.63x wider than long. Spiracles placed dorso-laterally on abdominal segments I–VI. Urogomphi short, paired, converging, weakly sclerotized, bear stout acute spine at the apex. Surface of cuticle especially on pronotum, abdominal tergites, legs, sides of rostrum, etc. covered with distinct rough scabrous microsculpture consisting of small denticulate asperites.

CHAETOTAXY. Setae thin, light-brown, from very long to minute, located at the apices of small rounded tubercles, the size of which is proportional to the size of setae. Head with one relatively short *os* and two very long and rather robust *vs*, almost equal in length. Rostrum without any setae. Pronotum with 8 setae on each side: one *as*, two *ds*, one *sls*, two *ls*, and two *pls*. *As* the longest setae on the body, located at the very anterior margine of pronotum, followed by very long ds_1 and *sls*; in the posterior part of pronotum there is row of three setae ds_2, pls_1 and pls_2, of which pls_1 long, and ds_2 and pls_2 slightly shorter. Lateral sides of pronotum with pair of relatively thinner and shorter *ls*. Mesonotum with two short *d*, both placed on one convex tubercule. Metanotum with two *d* such as those on mesonotum, but placed on separate convex tubercles. Dorsal parts of each abdominal segments I–VIII with one *d*, the length of which gradually increases to segment VIII. Pleural parts of each abdominal segments I–VIII with two *ps*: ps_2 long, ps_1 minute (visible at 800x magnification); *ps* on segment VIII strongly displaced to the ventral side. Ventral part of abdominal segment IX with two short and stout *v*. Urogomphi without setae. Apex of femora with two *fes*: fes_1 short, fes_2 very long.

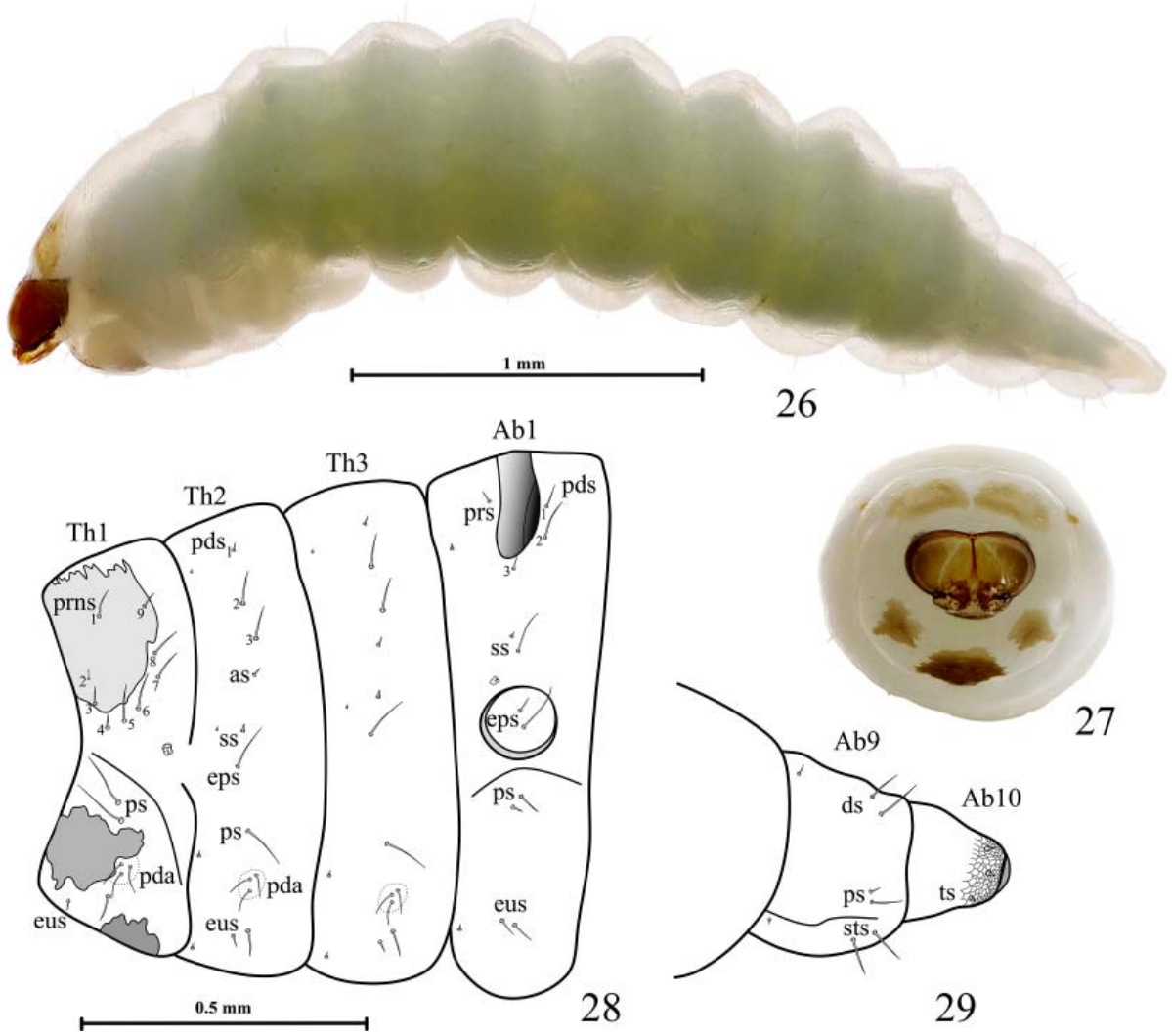
COMPARATIVE NOTES. Described pupa is very similar to the pupae of *Pseudorchestes abdurakhmanovi*, *P. circumvistulanus* and *P. pratensis*, especially in chaetotaxy of meso- and metathorax, abdomen and legs, as well as in the shape of urogomphs, but differs in shorter and thicker rostrum without *rs* and *pas*, wider pronotum with two *ls* instead of one, and an additional pair of *ds* at the posterior part.

Discussion

The taxonomy of the tribe Rhamphini is currently based only on morphological studies [Morimoto, 1984; Anderson, 1989; Kojima, Morimoto, 1996], so we also base the discussion of the taxonomic position of *P. stobieckii* on morphology.

The genus *Pseudorchestes* was (first under the name *Hemirrhamphus* Bedel, 1884, later this name was replaced due to homonymy) established by Bedel [1884] as a subgenus of *Rhynchaenus* and was characterized very briefly — the procoxae are separated, the body is black, and the pubescence is ash-gray. Much later, L. Dieckmann [1963] revised this subgenus, described a significant number of new species and significantly supplemented the diagnosis. Finally, B.A. Korotyaev [1992] raised the status of subgenus to the level of genus.

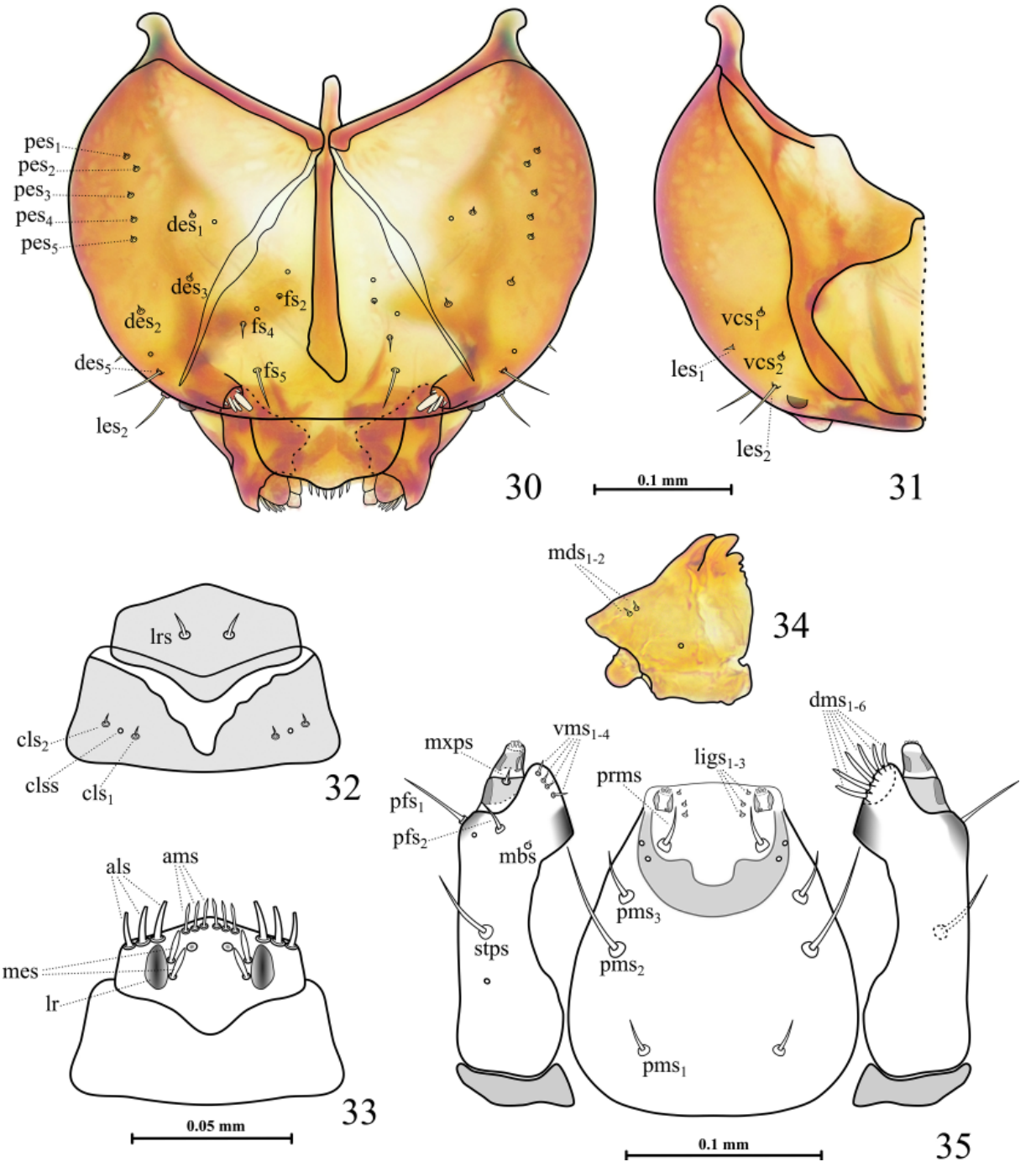
The genus *Pseudorchestes* is closely related to *Orchestes* and to a lesser extent to *Rhynchaenus* [Kojima, Morimoto, 1996]. The main distinguishing characters are considered [Dieckmann, 1963; Smreczyński, 1976] to be the short antennal scapus, which is no longer than the first segment of funicle, and the position of the attachment site of the antennae very close to the base of the rostrum, at a distance not exceeding the width of the rostrum (Fig. 15). It should be noted that these characters clearly correlate with each other: the shorter the antennal scapus, the shorter the antennal scrobe and the



Figs 26–29. *Pseudorchestes stobieckii*, larva habitus and chaetotaxy: 26 — lateral view; 27 — head and prothorax, front view; 28 — chaetotaxy of thorax (Th1 — prothorax, Th2 — mesothorax, Th3 — metathorax) and 1st abdominal segment (Ab1); 29 — chaetotaxy of the 9th (Ab9) and 10th (Ab10) abdominal segments.

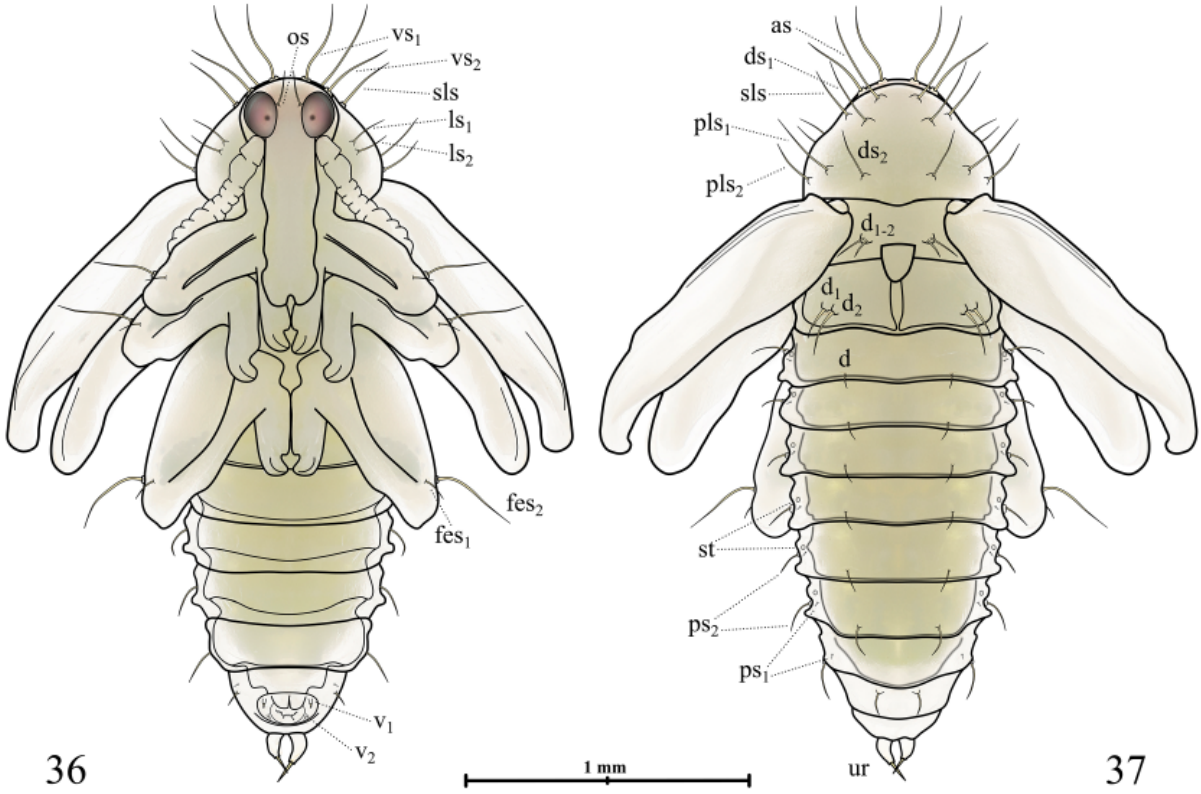
Рис. 26–29. *Pseudorchestes stobieckii*, общий вид личинки и хетотаксия: 26 — вид сбоку; 27 — голова и переднегрудь, вид спереди; 28 — хетотаксия груди (Th1 — переднегрудь, Th2 — среднегрудь, Th3 — заднегрудь) и 1-го сегмента брюшка (Ab1); 29 — хетотаксия 9-го (Ab9) и 10-го (Ab10) сегментов брюшка.

place of antennal insertion closer to the base of the rostrum. However, in *P. angelovi* (Dieckmann, 1970) the antennal scapus is clearly longer than the first segment of funicle and the antennae are inserted clearly more distally than in other species [Dieckmann, 1970], thus these main characters of the genus are not actually ob-



Figs 30–35. *Pseudorchestes stobieckii*, details of the larvae structure: 30 — head capsule, dorsal view; 31 — left half of the head capsule, ventral view; 32 — clypeus and labrum; 33 — epipharynx; 34 — mandible; 35 — maxillolabial complex (left maxilla in ventral aspect, right maxilla in dorsal aspect).

Рис. 30–35. *Pseudorchestes stobieckii*, детали строения личинки: 30 — головная капсула с дорсальной стороны; 31 — левая половина головной капсулы с вентральной стороны; 32 — наличник и верхняя губа; 33 — эпифаринкс; 34 — мандибула; 35 — максиллолабиальный комплекс (левая максилла показана с вентральной, а правая — с дорсальной стороны).



Figs 36–37. *Pseudorchestes stobieckii*, pupa habitus and chaetotaxy: 36 — ventral view; 37 — dorsal view.
Рис. 36–37. *Pseudorchestes stobieckii*, общий вид куколки и хетотаксия: 36 — вид снизу; 37 — вид сверху.

served in all species. In *P. stobieckii* the antennal scapus is even longer and the antennal insertion is even more distal (Fig. 11), than in *P. angelovi*. It is interesting to note that within the genus *Orchestes*, the length of the antennal scapus and, accordingly, the position of the antennae on the rostrum varies greatly and, for example, in *O. jota* (Fabricius, 1787), scapus barely exceeds the length of the first segment of funicle (almost like *P. angelovi*), whereas in *O. fagi* (Linnaeus, 1758), it is almost equal to the length of the entire funicle. It is obvious that these characters cannot be a sufficient basis for separating *Orchestes* and *Pseudorchestes*.

As additional characters it is noted [Dieckmann, 1963] that *Pseudorchestes* usually have a long rostrum, 5.5–7 as long as wide. However, this character varies significantly within the genus, so in *P. michalki* (Dieckmann, 1963) the rostrum is quite short, almost like in *P. stobieckii*. The most *Pseudorchestes* have pro- and mesofemora without spines (Figs 16–17), whereas in *Orchestes* there is usually one (rarely more) spine, but *P. kostali* (Dieckmann, 1985) and *P. sericeus* (Tournier, 1873) have one thin spine on pro- and mesofemora, *P. stobieckii* has one short spine on profemora (Fig. 12) and two long spines on mesofemora (Fig. 13). At the same time, the structure of metafemora and metatibiae in *P. stobieckii* (Fig. 14) is extremely similar to *P. pratensis* — the type species of the genus. In *Rhynchaenus* all femora are without any spines (Figs 19–21). Finally, in *Pseudorchestes*, the sides of the pronotum and the base of elytra are without erect setae, except for P. *persimilis* (Reitter, 1911), *P. horioni* (Dieckmann, 1958), the already mentioned *P. angelovi*, and now *P. stobieckii* is added to this series of exceptions.

The most interesting character of *P. stobieckii* is the complete reduction of the uncus at the apex of pro- and mesotibiae (Figs 12–13), which was previously noted by B.A. Korotyaev [1999]. In the tribe Rhamphini, such a reduction is found in a number of genera: *Indodinorrhopalus* Pajni et Sood, 1981, *Imachra* Pascoe, 1874, *Sphaerorchestes* Morimoto et Miyakawa, 1996, *Synorchestes* Voss, 1958 and *Philippinoramhus* Legalov, 2024 [Kojima, Morimoto, 1996; Legalov, 2024]. All of these listed genera are East and Southeast Asian and have significant morphological differences from *P. stobieckii* consisting of the presence of a pair of scrapers for stridulatory organ at anterior margin of the 7th abdominal tergite, usually elongate and loosely segmented antennal club, 7-segmented funicle in *Synorchestes* and

Imachra, a pattern of spots or bands on the elytra, and other characters. The rest of *Pseudorchestes* (Figs 16–17), like all *Orchestes*, have a large hook-shaped uncus at the apex of pro- and mesotibiae. The Trans-Palaearctic genus *Rhynchaenus* also has an uncus, but it is very small and noticeably shifted towards the inner edge of tibia (Figs 19–20). Apparently, the reduction of the uncus occurred repeatedly and independently in different groups of Rhamphini.

Thus, many diagnostic morphological characters of the genus *Pseudorchestes* are actually violated in a number of its representatives, but this genus, including *P. stobieckii*, is well outlined by a strong habitual similarity, characterized by small body sizes (1.3–2.8 mm), grayish or yellowish pubescence, consisting of narrow to oval scales, often excised or splited apically, the absence of any spots, bands or other patterns (Fig. 1). *Pseudorchestes* are characterized by a uniform structure of the male aedeagus — oblong, with a strongly pointed and usually curved apex, often elongated into a spike (Figs 4–5), only in *P. ermischi* (Dieckmann, 1958) aedeagus is quite strongly rounded apically. The internal sac has numerous small tooth-shaped sclerites, which often tend to increase in size from its base to the apex; only in *P. ermischi* is the armature very sparse and concentrated only in the central part of the sac. The structure of the female spermatheca (Fig. 7), the shape of the 7th abdominal tergite (Fig. 9) and metendosternite (Fig. 10) in *P. stobieckii* are very similar to those depicted for *P. ermischi* [Kojima, Morimoto, 1996]. Finally, all *Pseudorchestes* have similar biology, are associated with open habitats and develop only on herbaceous plants. The complete reduction of uncus, which is unusual for this group, the presence of a pair of spines on mesofemora and a number of other characters, as well as the host plant from the Lamiaceae, make it necessary to single out *P. stobieckii* into a separate subgenus.

For most Rhamphini, the immature stages have not yet been described. For *Pseudorchestes*, a detailed description of the preimaginal stages was published only for *P. abdurakhmanovi* [Zabaluev, 2023], and we have also studied those of *P. circumvistulanus* and *P. pratensis*. The larvae of all the species listed are generally very similar to each other in general appearance, and the differences are mainly related to the coloration of the head and spiracles, and some details of chaetotaxy. We expect that the larvae of the other *Pseudorchestes* will be poorly distinguishable from each other. The pupae of the studied species are similar to each other in the chaetotaxy of meso- and metathorax, abdomen and legs as well as in the shape of the urogomphi, but the pupa of *P. stobieckii* differs from the others in the rostrum without *rs* and *pas*, pronotum with two *ls* instead of one, and an additional pair of *ds*. Considering the poor study of the immature stages of Rhamphini, one can preliminarily conclude that *P. stobieckii*, in terms of the structure of its larvae and pupae, corresponds well to the genus *Pseudorchestes*.

It is possible that molecular-genetic studies will allow a better understanding of the taxonomic and phylogenetic relationships within the tribe in the future.

Funding. The study was conducted under the state assignment of Lomonosov Moscow State University.

Acknowledgements. I am sincerely grateful to V.Yu. Savitsky (Zoological Museum of Moscow Lomonosov State University, Moscow), Ya.A. Urbanus (Center for Environmental Projects, Lipetsk), A.V. Kovalev (All-Russian Institute of Plant Protection, St. Petersburg), O.V. Kosheleva (All-Russian Research Institute of Plant Protection, St.Petersburg), A.O. Bieńkowski (Moscow, Zelenograd) and S.A. Belokobylskij (Zoological Institute RAS, St. Petersburg).

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