

## On the taxonomy of the tribe Sphingonotini (Orthoptera, Acrididae)

### К систематике трибы Sphingonotini (Orthoptera, Acrididae)

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КЛЮЧЕВЫЕ СЛОВА: Orthoptera, Acrididae, Sphingonotini, новый род, новая комбинация, синонимия.

**ABSTRACT:** The genus *Pseudosphingonotus* Shumakov, 1963 is made a synonym of the genus *Sphingonotus* Fieber, 1852, because of the similar type of stridulatory apparatus, considered as most important taxonomic character. *Neosphingonotus* gen.n. is described. The new genus includes 6 species and 2 subspecies. The species *Sphingonotus airensis* Chopard, 1950 is transferred from the genus *Sphingonotus* to *Neosphingonotus*.

**РЕЗЮМЕ:** Род *Pseudosphingonotus* Shumakov, 1963 сведен в синоним к роду *Sphingonotus* Fieber, 1852, поскольку типовые виды обоих родов обладают сходным типом акустического аппарата — основного таксономического признака. Описан род *Neosphingonotus* gen.n., включающий 6 видов и 2 подвида. Вид *Sphingonotus airensis* Chopard, 1950 перемещен из рода *Sphingonotus* в новый род *Neosphingonotus*.

### Introduction

The morphology of the locusts stridulatory apparatus provides important taxonomic characters. The genera *Bryodemella* Yin, 1982, *Mistshenkoa* Bey-Bienko, 1950 and *Helioscirtus* Saussure, 1884 were already reviewed with particular attention to these morphological structures. Both sexes or only males in certain genus have a specialized stridulatory apparatus which is absent in other genera. With regards to this, the genus *Pseudosphingonotus* Shumakov, 1963 looks artificial, because the type species *P. savignyi* (Saussure, 1883) lacks the character which is peculiar to other species of this genus.

The material used for this study is deposited in the collections of both Zoological Museum of Moscow State University, Moscow (ZMUM), and Zoological Institute of the Russian Academy of Sciences, St.-Petersburg (ZISP); the latter includes the type series of the taxa described by L. Mistshenko and G. Bey-Bienko.

The history of taxonomy of the genus *Pseudosphingonotus* appears to be rather complicated.

Uvarov [1924] distinguished the genus *Vosseleriana* with the type species *Helioscirtus fonti* I. Bolivar, 1902. Nevertheless, later *Vosseleriana* was considered by Mistshenko [1936] as a synonym of *Sphingonotus* Fieber, 1852. He grouped *Sphingonotus fonti* with the following species: *S. arabicus* Mistshenko, 1936, *S. savignyi* Saussure, 1883, *S. canariensis* Saussure, 1884, *S. hierichonicus* Uvarov, 1924, *S. finotianus* Saussure, 1885 (Fig. 1), and *S. pictus* Werner, 1905.

Bey-Bienko [1948] described *Sphingonotus paradoxus* which is similar to *S. savignyi* in general appearance, but differs by the structure of stridulatory apparatus. The species *S. savignyi* has intercalary vein with the pars stridens in the discoidal area of tegmen (Fig. 2b), as type species of the genus *Sphingonotus* — *S. coeruleans* (Linnaeus, 1767). *S. paradoxus* does not have, however, the pars stridens, and their function is carried out by prominent transverse veins between medial and radial veins (Fig. 2a), which are not expressed in *S. savignyi*. The species *S. canariensis*, *S. finotianus*, *S. pictus* and *S. dentatus* Predtetschensky, 1936 also have specialized stridulatory apparatus similar to apparatus of *S. paradoxus*. In the connection with this Bey-Bienko [1948] supposed that all these species could be included to the genus *Vosseleriana* if *S. fonti* bears specialized stridulatory apparatus. But *S. fonti* was not known to him. Two years later he restored *Vosseleriana*, and gave its new diagnosis [Bey-Bienko, 1950].

However, Uvarov [1954] stated that *Vosseleriana fonti* does not have a specialized stridulatory apparatus and combined the species *V. paradoxa*, *V. canariensis*, *V. finotiana*, *V. picta* and *V. dentata* in the genus *Sphingonotus*.

Shumakov [1963] established the genus *Pseudosphingonotus* for the species with specialized stridulatory apparatus and designated *Sphingonotus savignyi*

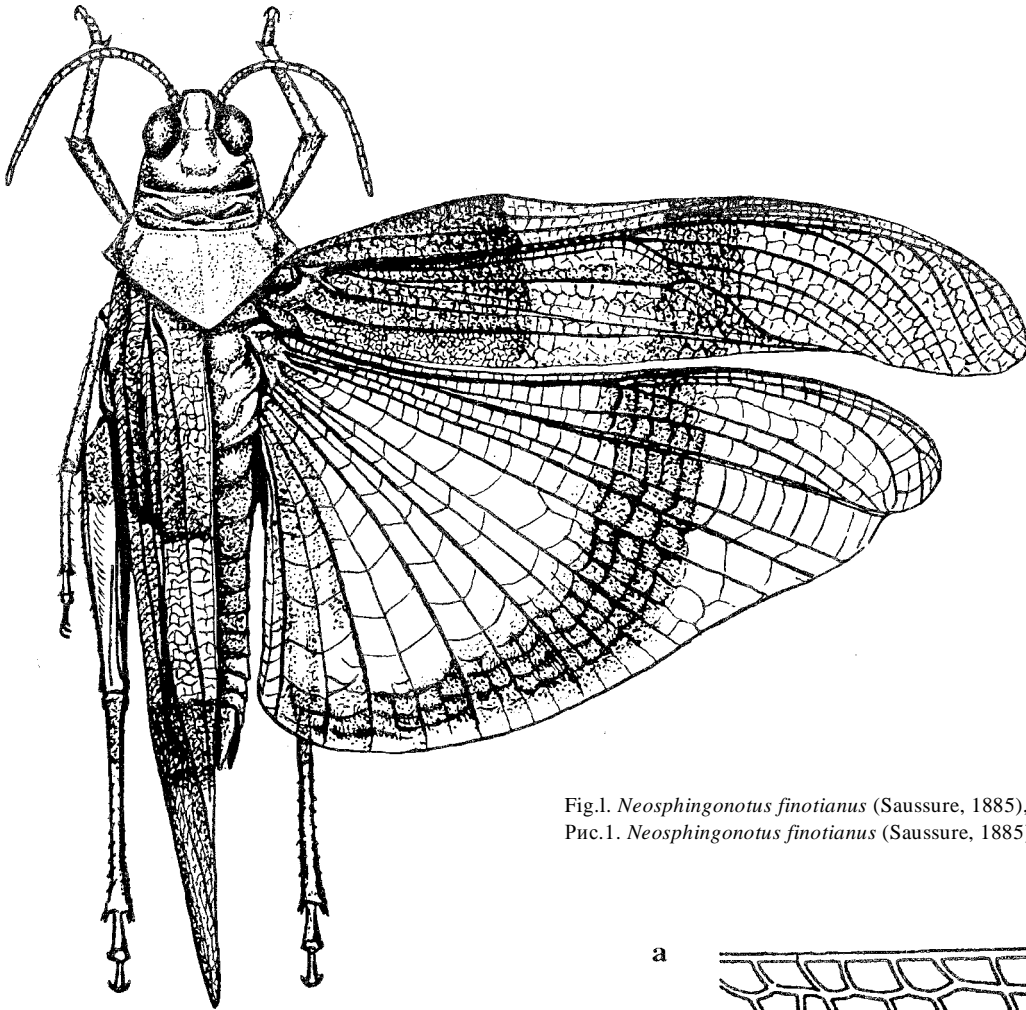


Fig. 1. *Neosphingonotus finotianus* (Saussure, 1885), ♀, general view.  
Рис. 1. *Neosphingonotus finotianus* (Saussure, 1885), ♀, общий вид.

*gnyi* as the type species. However, this species does not possess the aforementioned character. Shumakov's decision was probably due to close similarity in general appearance, that was pointed out by Bey-Bienko [1948, 1963]. As the type species of the genera *Pseudosphingonotus* and *Sphingonotus* have a similar basic character, *Pseudosphingonotus* Shumakov, 1963 is a new synonym of *Sphingonotus* Fieber, 1852.

The problem of the species with a specialized stridulatory apparatus is therefore still open, requiring thus to establish a new genus for this group.

*Neosphingonotus* Benediktov, gen.n.

Figs. 1, 2a.

*Sphingonotus* Mistshenko, 1936: 72 (nec Fieber).  
*Vosseleriana* Bey-Bienko, 1950: 202 (nec Uv.); Bey-Bienko, 1951 in: Bey-Bienko and Mistshenko, 1951: 633 (nec Uvarov, 1924).

*Pseudosphingonotus* Shumakov, 1963: 158-160 (part.).  
Type species: *Sphingonotus paradoxus* Bey-Bienko, 1948.

DESCRIPTION. Body slender. Frons vertical, sometimes more or less sloping. Vertex sloping. Foveolae

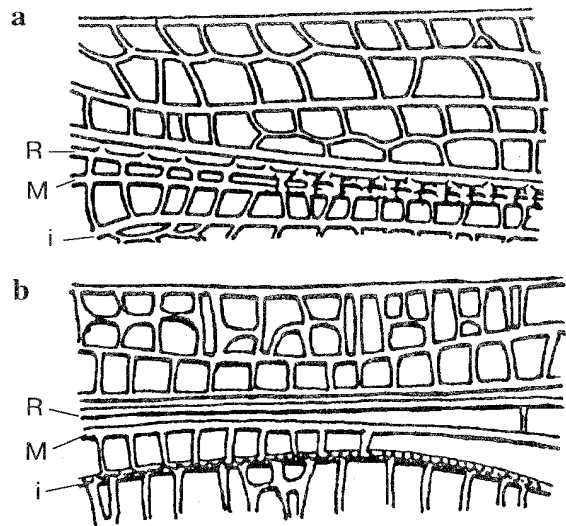


Fig. 2. Specialisation by stridulatory apparatus of tegmen ♂♂:  
a — *Neosphingonotus paradoxus* (Bey-Bienko, 1948), (after: Bey-Bienko, 1948); b — *Sphingonotus savignyi* Saussure, 1883 (orig.); M — medial vein, R — radial vein, i — intercalary vein.

Рис. 2. Специализация стридуляционного аппарата на надкрылье ♂♂: а — *Neosphingonotus paradoxus* (Бей-Биенко, 1948) (по: Бей-Биенко, 1948); б — *Sphingonotus savignyi* Saussure, 1883 (ориг.); М — медиальная жилка, R — радиальная жилка, i — ложная жилка.

elongated, triangular. Antennae filiform, longer than head and pronotum together (sometimes shorter in female). Pronotum with three transverse furrows, medial keel low, thin, often effaced. More than 1/2 of the opening of tympanal organ is covered by the ventral lobe. Tegmen with smooth intercalary vein in discoidal area, pars stridens absent; between medial and radial veins prominent transverse veins, which form specialized stridulatory apparatus. Wings with thin longitudinal veins; 2A1 and 2A2 veins arc going through the middle of the second wing lobe; 1A vein (between first and second wing lobe) thin. Posterior femora fairly slender, posterior tibiae shorter than the femora; spurs of normal length. In male anal plate triangular, pointed; genital plate short, obtuse, recurved. Lower and upper valvae of ovipositor of female with indistinctly denticulated edges.

**DIAGNOSIS.** The new genus is closely related to *Sphingonotus*, but differs in the structure of the stridulatory apparatus.

**SPECIES COMPOSITION AND DISTRIBUTION.** The genus includes 6 species and 2 subspecies: *Neosphingonotus paradoxus* (Bey-Bienko, 1948), **comb.n.** — Pakistan, Afghanistan, Iran; *N. pictus* (Werner, 1905), **comb.n.** — Egypt, Sinai, Arabia; *N. pictus onerosus* (Mistshenko, 1936), **comb.n.** — Pakistan, Iran; *N. dentatus* (Predtetsensky, 1936), **comb.n.** — Iran; *N. canariensis* (Saussure, 1884), **comb.n.** — Cape Verde Islands, Sudan, Ethiopia, Somali, Canary Islands; *N. canariensis orientalis* (Mistshenko, 1936), **comb.n.** — Yemen; *N. finotianus* (Saussure, 1885), **comb.n.** — Algeria, Morocco, Tunis; and *N. airensis* (Chopard, 1950), **comb.n.** from Niger. The latter combination is approved by our investigation of *Sphingonotus airensis* in the collection of ZISP which revealed the presence of the same specialized stridulatory apparatus as in *S. paradoxus*.

**MATERIAL** (all in ZISP with one exception): *N. paradoxus* — 4 ♂♂, 5 ♀♀, including type and paratype; *N. pictus* — 5 ♂♂, 4 ♀♀; *N. pictus onerosus* — 2 ♂♂, 3 ♀♀, including type, allotype and paratypes; *N. dentatus* — 4 ♂♂, 4 ♀♀, including type, allotype and paratypes; *N. canariensis* — 5 ♂♂, 4 ♀♀; *N.*

*canariensis orientalis* — 2 ♂♂, 2 ♀♀, including type, allotype and paratypes; *N. finotianus* — 1 ♂, 2 ♀♀ (ZMUM), 1 ♂, 2 ♀♀, and *N. airensis* — 1 ♂ with labels: "Air Tassesset / Chop. VIII.47" and "Sphingonotus / airensis Chop., 1950 / M.Descamps det. 1966".

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