

**The eastern Palaearctic leafhopper
Igutettix oculatus (Lindberg, 1929) in Finland:
morphology, phenology and feeding
(Insecta, Hemiptera, Cicadellidae, Typhlocybinae)**

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Abstract: The leafhopper *Igutettix oculatus* (Lindberg, 1929) was introduced to European Russia in the 1990s. It is now actively spreading westwards and has adapted to live on ornamental species of lilac (*Syringa* spp.) in gardens in Finland. The biology of the species in southern Finland is described and its potential for further expansion is discussed.

Zusammenfassung: Die Blattzikadenart *Igutettix oculatus* (Lindberg, 1929) wurde in den 1990er Jahren in den europäischen Teil Russlands eingeschleppt. Derzeit breitet sie sich westwärts aus und lebt in Finnland an kultivierten Flie-derarten (*Syringa* spp.) in Gärten. Hier wird die Biologie der Art in Finnland beschrieben und ihr weiteres Ausbreitungspotential diskutiert.

Key words: neozoa, insect pest, Cicadellidae, *Syringa*

1. Introduction

Under the name *Dicraneura oculata*, Håkan Lindberg (1929) described a new leafhopper species, based on a ♀ specimen (type 7516 ZMUH) taken by the Finnish entomologist Y. Wuorentaus in Ussuri Spasskaja, 23.IX.1917, on his Russian Far East expedition. Vilbaste (1968) described a ♂ of the same species collected 9.VIII.1961 in the Primorsk region, Kedrovaja Padj, on arrow-wood (*Viburnum opulus*) as a separate species, *D. maculosa*. Temporarily it was also classified under the genus *Alebroides* Matsumura, 1931 by Lindberg, until Anufriev (1970) placed it into a new genus *Vilbasteana*. Dworakowska (1993) later declared *Vilbasteana* a younger synonym of *Igutettix* Matsumura, 1932, but found that the *typus generis*, *I. pulverosus* was conspecific with *I. oculatus*. Therefore, the synonymy is as follows: *Dicraneura oculata* Lindberg, 1929 = *Igutettix pulverosus* Matsumura, 1932 = *Dicraneura maculosa* Vilbaste, 1968, and *Igutettix* Matsumura, 1932 = *Vilbasteana* Anufriev, 1970.

According to Anufriev & Emelyanov (1988) the species lives in deciduous and mixed valley forests in the Russian Far East on Amurian lilac (*Syringa reticulata* = *amurensis*), but not on *Viburnum*. In 1984 it was found new to Europe in an ornamental garden in Moscow, where it became very common a few years later, mainly feeding on the small-sized Persian lilac (*S. persica*) and occasionally on common lilac (*S. vulgaris*) (Tishechkin, in litt.).

In 2002 the author surprisingly found the species on the outside of his lit working room window in northern Helsinki, Finland. More than 30 specimens, both ♂♂ and ♀♀, were collected between August 8th and October 3rd. Further analysis of light trap catches from the same year revealed the species also from the town Kouvola in southeastern Finland and from the Karelian Isthmus in adjacent Russia. The specimens from Kouvola

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Fig. 1: *Igutettix oculatus* (Ldb.), adult ♂, dorsal view

were captured between June 29th and July 5th, indicating two generations in Finland. In 2003 nymphs were found on ornamental lilacs in Helsinki, in the Central Park of Kotka in southeastern Finland and in the town of Järvenpää 20 km north of Helsinki (see Albrecht *et al.* 2003). In 2004 it was also recorded in the town of Espoo west of Helsinki.

2. Morphology

Adults of *Igutettix oculatus* cannot be confused with any other European species of Dikraneurini. It is the largest species found in Europe, 4.7-5.1 mm in length, and it has a specific bright color pattern. The adult description given by Vilbaste (1968) is rather vague as his specimen was preserved in alcohol. In both sexes the head is bright yellow with two conspicuous black dots on the vertex, the pronotum is yellowish and the wings are coloured in green, orange and black with a large wax area with bluish shine when fresh (Fig. 1 and 2). The male aedeagus is quite simple in its structure (see Vilbaste 1968, Anufriev & Emeljanov 1988). The hitherto undescribed nymph is pale yellow with translucent wingpads and with short white hairs on frons and on abdominal segments 5-8. In this respect it resembles of the related genera *Micanulina* and *Dikraneura* (see Vilbaste 1982).

3. Phenology and feeding

The phenology and feeding habits of *I. oculatus* were studied in the northern part of Helsinki in the years 2003-2005. The female oviposits into dormant leaf buds in late summer, and the species hibernates in the egg stage. The nymphs of the first generation develop in early June giving rise to a less abundant summer generation with adults between 23rd June and 15th July. The females of this generation oviposit in the central leaf vein of the lilacs, and nymphs of the second generation hatch at the beginning of August. The adults of the second generation occur from the beginning of September until early October. The second generation is partial, as many individuals still are in the last nymphal instar at the onset of leaf fall caused by night frosts. If reared at room temperature, the development of the nymphs is enhanced, and adults can be produced from 1st instar nymphs in 16 days.



Fig. 2: *Igutettix oculatus* (Ldb.), adult ♂, lateral view

Nymphs and adults feed on the underside of the lilac leaves. The young nymphs produce typical, pale yellowish, typhlocybid stippling visible on the leaf upperside, whereas the 4th and 5th instar nymphs prefer to suck along the leaf margins which may turn yellow (Fig. 3). Discoloration of leaves can be substantial in late summer if the species is abundant. Despite this, there seems to be no harm to the growth of the lilacs, possibly because most of the leaf upperside still remains green and assimilating. In Finland the species distinctly prefers lilacs with hairy leaf undersides. In the Helsinki area nymphs have been recorded on lilacs belonging to the *Syringa villosa* group, viz. *Syringa josikaea*, *S. x henryi*, *S. reticulata* and *S. reflexa*, but not on *S. vulgaris* having glabrous undersides of leaves. Of the mentioned host plants, the Hungarian lilac (*S. josikaea*) and its more commonly cultivated



Fig. 3: Leaf damages on lilac caused by sucking nymphs of *Igutettix oculatus* (Ldb.)

hybrid, *S. x henryi* (= *S. josikaea x villosa*) are preferred. Adults spend much of their time on the underside of the leaves, but single stray specimens have been recorded from a number of other ornamental brushwood (e.g. *Rubus*, *Juniperus*, *Acer*).

4. Range expansion

The species is autochthonous in the eastern Palaearctic and has probably been introduced with lilac plants to Moscow and the St. Petersburg region. Its expansion into Finland is likely to be natural as no commercial plant exchange between Russia and Finland takes place. The currently known Finnish records are all from southeastern parts of the country, and the leafhopper has so far not been found to the west of the metropolitan area despite some search efforts. Its future expansion is not hampered by the host plants, as they are grown in gardens and parks north to the Arctic circle in Finland, and are widespread ornamental bushes in large parts of Europe. The onset of night frosts in late autumn is, however, decisive. The spread of the species has clearly been favoured by the warm late autumns in the beginning of the 21st century. As the more abundant second generation is only partial, the first generation is smaller. If a year with strong early night frosts occur before the second generation can reach the adult stage and mating take place, the local populations can easily be wiped out. Thus expansion to the north is limited by the onset of night-frosts, and future occurrences in the central lake district of Finland do not seem very probable. Expansion further west- and southward in Europe is quite possible in the years to come.

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References

- Albrecht A., Söderman G., Rinne V., Mattila K., Mannerkoski I., Karjalainen S., Ahlroth P. 2003. New and interesting finds of Hemiptera in Finland. – *Sahlbergia* 8(2): 64-78.
- Anufriev G.A. 1970. New genera of Palaearctic Dicraneurini (Homoptera, Cicadellidae, Typhlocybinae) – *Bull. Acad. pol. Sci., Sér. biol.* 18: 261-263.
- Anufriev G.A., Emelyanov A.F. 1988. Suborder Cicadina (Auchenorrhyncha). Cicads. – In Ler P.A. (ed.): *Keys to the identification of insects of the Soviet Far East, Vol. 2: Homoptera and Heteroptera*, pp. 12-495. Nauka. Leningrad. [In Russian]
- Dworakowska I. 1993. *Fusiplata* Ahmed and some other Dikraneurini (Insecta, Auchenorrhyncha, Cicadellidae: Typhlocybinae). – *Entomologische Abhandlungen* 55(2): 97-139.
- Lindberg H. 1929. Zur Kenntnis der ostasiatische Homopteren. Weitere Ergebnisse einer von Y. Wuorentaus im Jahre 1917 unternommenen Forschungsreise. – *Comm. Biol.* 3(6): 1-14.
- Tishechkin D.Yu. 1989. A pest of lilac. – *Zashchita rasteniy* 2: 45-46. [In Russian]
- Vilbaste J. 1968. K faune tsikadovykh Primorskogo kraia – Valgus, Tallinn. 179 pp.
- Vilbaste J. 1982. Preliminary key for the identification of the nymphs of North European Homoptera Cicadinea. II. Cicadelloidea. – *Annales zoologici Fennici* 19: 1-20.