

## Diagnostics<sup>1</sup> Diagnostic

# *Lepidosaphes ussuriensis*

### Specific scope

This standard describes a diagnostic protocol for *Lepidosaphes ussuriensis*.

### Specific approval and amendment

Approved in 2005-09.

### Introduction

*Lepidosaphes ussuriensis*, an eastern Palearctic species, is a polyphagous pest damaging many woody plants in Russia, Northern China, Japan, South Korea and Pakistan (Ben-Dov & Hodgson, 1997). In its area of origin, the pest is under control due to parasitoid activity. The absence of these parasitoids could make this pest dangerous in EPPO region for trees of ecological and economical importance (OEPP/EPPO, 2005a).

### Identity

**Name:** *Lepidosaphes ussuriensis* (Borchsenius, 1962).

**Synonyms:** *Paralepidosaphes ussuriensis* Borchsenius (1962).

**Taxonomic position:** *Insecta: Hemiptera: Sternorrhyncha: Coccinea: Coccoidea: Diaspididae.*

**EPPO code:** LEPSUS.

**Phytosanitary categorization:** EPPO A2 action list no. 319.

### Detection

*L. ussuriensis* can be found on woody plants. The scales are located on the bark, and small populations are difficult to detect. Bark can be visually inspected for female scales, eggs, feeding marks and sap-sucking (female scale brownish black, protuberant, about 2.5 mm long, eggs violet). Severe attacks by *L. ussuriensis* result in dieback and premature leaf fall.

### Identification

The taxonomy of the *Coccoidea* is based almost entirely on the adult female and a good slide preparation of a female is required for identification to the species level by light microscopy. For details of technical procedures, see Appendix I of OEPP/EPPO (2005b). No keys exist for identification of nymphal stages or males. A key of the families of *Coccoidea* is given by Kosztarab & Kozár (1988) and is available at [http://www.sel.barc.usda.gov/scalekeys/all\\_families.htm](http://www.sel.barc.usda.gov/scalekeys/all_families.htm).

See Appendix 2 of OEPP/EPPO (2005b) for a short glossary of terminology on the morphology of scales.

### Diaspididae

Abdominal spiracles absent, tubular ducts present. Abdomen terminating in fused segments forming a pygidium; anal opening simple; legs absent or reduced to remnants; antennae unsegmented; on host body covered with a secreted thin shield-like scale forming around first and second moulted skin.

Genus *Lepidosaphes* Shimer, 1868, may be identified by the following combination of characters. Each character has to be present (after Williams & Watson, 1988):

- adult female elongate, fusiform, usually membranous except for pygidium, but a few species sclerotized on thorax
- lateral lobes of free abdominal segments well developed
- median and second lobes well developed, the second lobe bilobed; third and fourth absent, or represented by serrations
- if present, ventral paraphyses to lobes slender and usually vertical
- gland spines present, always a pair between median lobes; replaced by tubercles when present anterior to segment 2
- tubular ducts 2-barred

<sup>1</sup>The figures in this Standard marked 'Web Fig.' are published on the EPPO website [www.eppo.org](http://www.eppo.org).

**Table 1** Key for the identification of *Lepidosaphes ussuriensis* and related species in the East Palaearctic Region

1	Dorsal ducts small, a few times narrower than marginal ones, numerous. Lobes without paraphyses. Dorsal ducts large, not numerous. Lobes with paraphyses.	2 4
2	Cephalic end of body with conical cuticular processes. Tubercles with one or two spines present along sides of metathorax. Cephalic end of body without conical cuticular processes.	<i>Lepidosaphes ussuriensis</i> 3
3	Rows of dorsal ducts begin from second notch of pygidium. Rows of dorsal ducts begin from third notch of pygidium.	<i>Lepidosaphes salicina</i> <i>Lepidosaphes ulmi</i>
4	Two large spines present along sides of cephalic end of body. Spines absent along sides of cephalic end of body. Seen on deciduous trees. Marginal tubercles developed each with a large spine.	5 <i>Lepidosaphes yanagicola</i>
5	Gland spines between central lobes pointed. Meso- and metathorax separated by a deep constriction. Gland spines between central lobes notched. Constriction between meso- and metathorax faintly seen.	<i>Lepidosaphes pseudotsugae</i> <i>Lepidosaphes pinifolii</i>

- marginal macroducts usually 6 in number on each side, enlarged, each with orifice surrounded by a thick sclerotized rim, at right angles to pygidial margin
- dorsal ducts smaller than marginal ducts, or represented as microducts
- lateral tubercles or spurs often present between some abdominal segments
- dorsal submarginal bosses present or absent
- anus situated near base of pygidium
- perivulvar pores present in 5 groups.

A slide-mounted adult female is presented in Web Fig. 1 and Web Fig. 2.

### Key for identification of *Lepidosaphes ussuriensis* (after Danzig, 1986)

A key for the identification of *Lepidosaphes ussuriensis* is presented in Table 1.

Description of the adult female of *Lepidosaphes ussuriensis*: cephalic end of body with small conical cuticular processes. Marginal tubercles with one spine present on abdominal segments II–IV, with one or two spines on metathorax. Conical cuticular processes form a band on abdominal segment I and a small group each on segment II and III. Female test almost black, significantly darker than that of other species of the genus.

### Reference material

*Paralepidosaphes ussuriensis* Borchsenius (1962): 864. Type data: Russia, Primorsky Krai, Vladivostok, on *Malus* sp., *Populus* sp., 1934-05-16, by V. Khukryanskaya; on *Syringa amurensis*, *Betula* sp., *Ulmus* sp., 1950-08-24 and 1950-06-08, by B. Chumakova. Lectotype female, by subsequent designation Danzig, 1993: 248. Type depository: Sankt-Peterburg: Zoological Institute, Russian Academy of Sciences, Russia. Described: female. Illust.

### Reporting and documentation

Guidelines on reporting and documentation are given in EPPO Standard PM7/– (in preparation)

### Further information

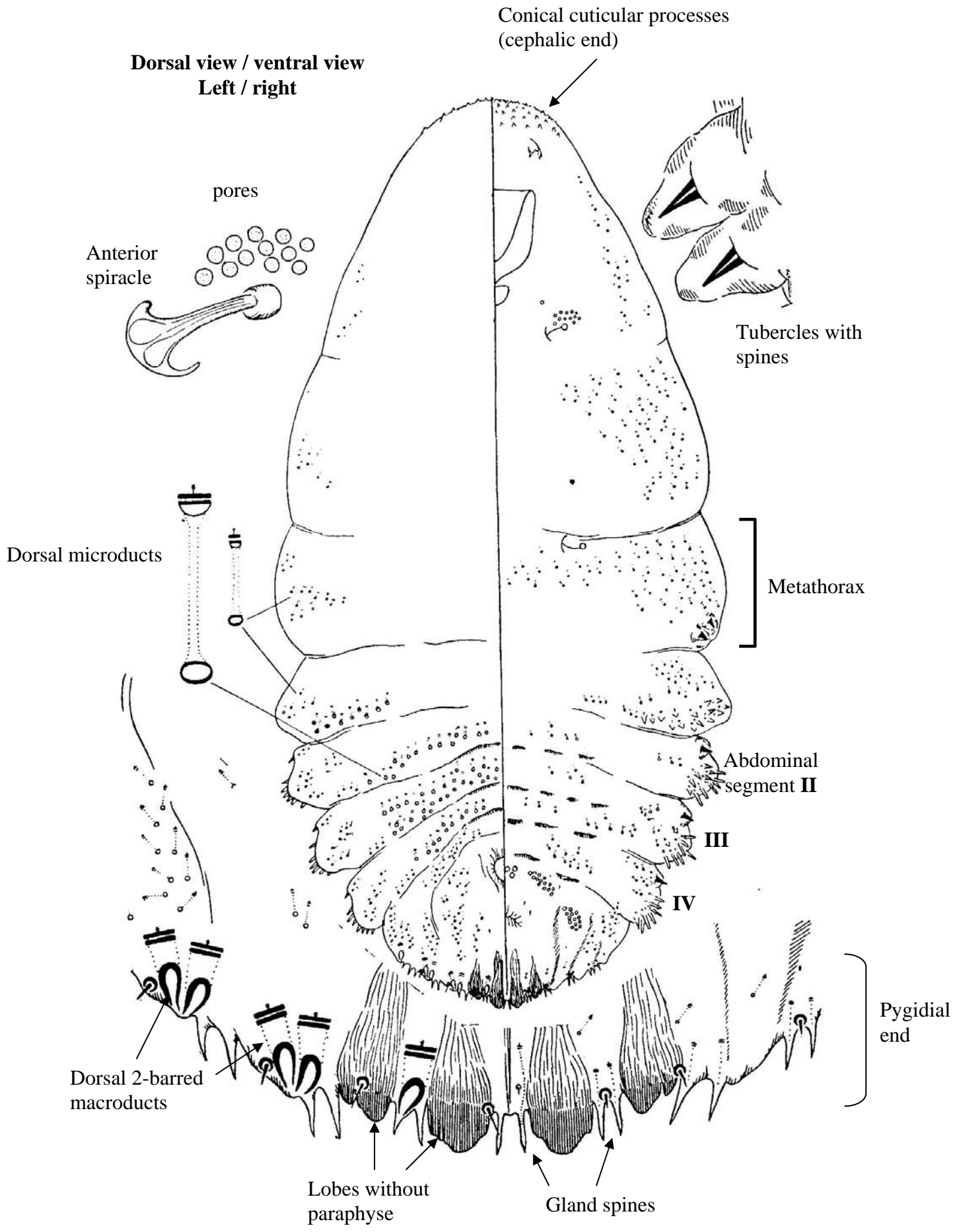
Further information on this organism can be obtained from: J.-F. Germain, LNPV-Unité d'Entomologie, 2 place Viala, 34060 Montpellier Cedex 01 (FR). E-mail: germain@ensam.inra.fr  
M.G.M. Jansen, Plant Protection Service, Section of Entomology, PO Box 9102, 6700 HC Wageningen (NL). E-mail: m.g.m.jansen@minInv.nl

### Acknowledgements

This protocol was originally drafted by J.-F. Germain, LNPV, Montpellier (FR).

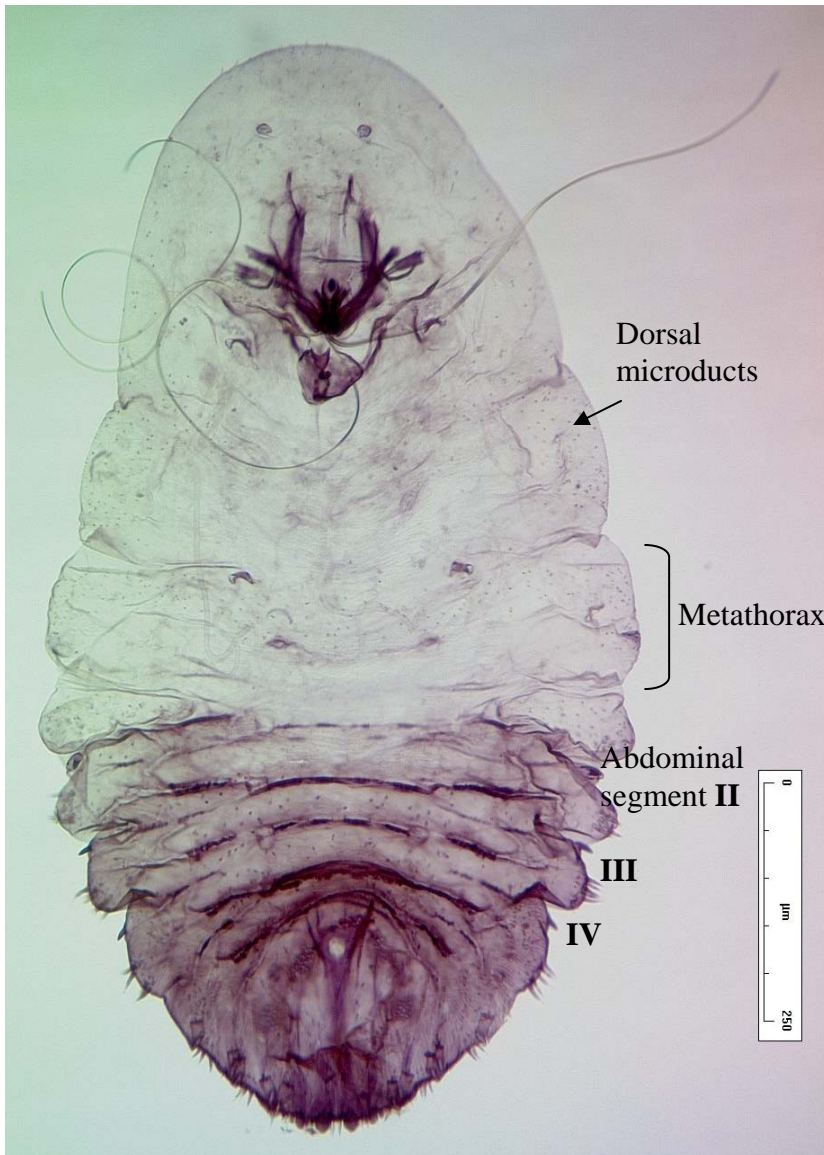
### References

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- OEPP/EPPO (2005b) EPPO Standards PM 7/51 Diagnostic protocol for *Aonidiella citrina*. *Bulletin OEPP/EPPO Bulletin* **35**, 327–330.
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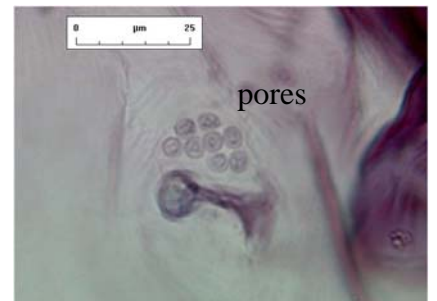


**Web Fig. 1 : *Lepidosaphes ussuriensis***  
Slide-mounted adult female

**Web Fig. 2:** *Lepidosaphes ussuriensis*, slide-mounted adult female (Russia, Southern Primorye, Vladivostok, leg. B. Chumakova, on *Syringa amurensis*)



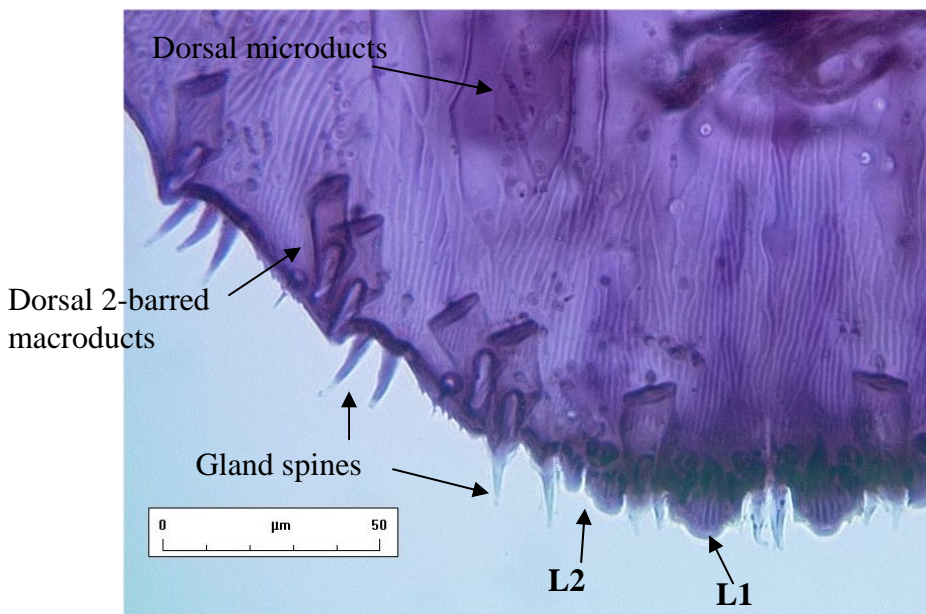
**Conical cuticular processes**



**Anterior spiracle**



**Tubercles with spines**



**Pygidial end**

**Lobes without parapyse**