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**On the presence in France and North Italy
of *Siphonatrophia cupressi* (Homoptera, Aphididae), a new aphid
of North American origin living on Cupressaceae**

Abstract - A new aphid has been collected on *Cupressus arizonica* in the South of France in 1999 and caught in a 12.2 m suction trap at Pozzuolo del Friuli (Udine province), Northern Italy, since the same year. Some identification characters of the species are illustrated, and elements concerning its biology and natural enemies are discussed.

Résumé - Sur la présence en France et en Italie de *Siphonatrophia cupressi*, aphide d'origine N-Américaine vivant sur Cupressacées.

Un nouveau puceron du cyprès, *Siphonatrophia cupressi* (Swain), est signalé en Europe occidentale (France méridionale et Nord-Est de l'Italie). Cette espèce, qui n'était connue auparavant que dans la région Néarctique (USA) et dans une partie de la région Néotropicale (Mexique, Honduras) est inféodée à diverses espèces de cyprès (surtout *Cupressus arizonica*, *C. macrocarpa* entre autres), à certains genévriers (*Juniperus scopulorum* en Amérique du Nord) et occasionnellement à d'autres genres de Cupressacées (*Widdringtonia*). Quelques éléments concernant son identification, sa morphologie, ainsi que sa bio-écologie et ses ennemis naturels dans l'aire nouvellement envahie sont présentés.

Riassunto - Sulla presenza in Francia e in Italia di *Siphonatrophia cupressi*, afide di origine N-Americana vivente su Cupressacee.

Viene segnalata la presenza in Europa occidentale (Francia meridionale e Nord-Est dell'Italia) dell'afide del cipresso *Siphonatrophia cupressi* (Swain). La specie, che era conosciuta precedentemente per la sola regione Neartica (USA) e in parte di quella Neotropicale (Messico, Honduras), risulta infeudata a varie specie di cipresso (soprattutto *Cupressus arizonica*, *C. macrocarpa* ed altri), ad alcuni ginepri (come *Juniperus scopulorum* in N-America) e occasionalmente altri generi di Cupressacee (*Widdringtonia*). La presente segnalazione è corredata da brevi notizie morfologiche e bio-ecologiche, nonché sui limitatori naturali riscontrati a carico dell'afide nei territori di recente invasione.

Key words: *Siphonatrophia cupressi*, *Lysiphlebus testaceipes*, *Cupressus*, aphid new record, France, Italy.

INTRODUCTION

Aphids are among most important pests of Cupressaceae (Rabasse, 1979). The genus *Siphonatrophia* belongs to the tribe Aphidini and originates in North and Central America. Remaudière & Muños Viveros (1991) stated the existence of a single species, *Siphonatrophia cupressi* (Swain, 1918), specific of Cupressaceae (*Cupressus*, namely *C. guadelupensis*, *C. macrocarpa* and *Juniperus virginiana*) in the USA (California, New Mexico, Utah, Colorado, Idaho) and Central America (Mexico, Honduras).

RESULTS

Siphonatrophia cupressi (Swain) has been found for the first time in Europe at Mougins (Alpes-Maritimes) on May 11th 1999 on *Cupressus arizonica* and its populations "observed" in the same place on the same row of trees. The colonies contained yet mummies, *i.e.* parasitized aphids; they have been observed again on June 23rd and September 6th. On June 23rd and September 27th, large populations were present composed of larvae, nymphs, apterous and alate virginoparae and mummies; they decreased in October and, on November 3rd, oviparae were observed in very low populations. On December 7th, apterous and alate virginoparae were observed, but no longer oviparae. Finally, on January 2nd 2000, after numerous frosts, populations formed by larvae, nymphs and apterous virginoparae were present on the same trees.

On September 21st and October 24th 2000, colonies containing nymphs, apterous and alate virginoparae were found. On October 10th, 15th, 24th and November 15th, oviparous females were present. That year, mummies were collected on June 15th, September 27th and October 24th. At this last date, mummies of oviparous females have been observed.

In 2005 a few alates were caught by a Moericke trap (yellow water tray) from early May to late June in the same biotope; later, in the same year a few colonies have been directly observed on cypress trees nearby the same trap.

In addition, several specimens of alate viviparous females have been caught at Pozzuolo del Friuli (Udine province), North-Eastern Italy, by means of a 12.2 m suction trap (Rothamsted type), starting from June 1999. Subsequently other catches followed on July 2000, October 2001 and August 2002. During years 2003 and 2004 no specimens have been apparently trapped (nevertheless, the comprehensive aphid material trapped is still under species identification). Attempts to find the aphid species on its host plants around the same trap site have failed till now.

IDENTIFICATION

This species is, in fact, very easy to distinguish from the other aphids living on *Cupressus* and belonging to the genera *Cinara*, *Stomaphis* and *Illinoia*.

Apterous viviparous females (Figs 1-3) are small blue-green aphids (1.00-1.75 mm, in length), with nearly a hemisphaerical body shape, being it flat ventrally and strongly bent dorsally as an adaptive feature to the host plant twigs and leaves. Head with a sinuate frontal profile. Antennae usually 5-jointed (occasionally 6-jointed), 0.38-0.56 of body length; bearing a few very short hairs (maximum length about 0.25-0.30 of basal articular diameter of III joint); processus terminalis more or less equal (0.91-1.10) to the basal part of last joint in length. Rostrum reaching the metasternum; its apical joint rather obtuse apically, shorter (0.73-0.86) than II hind tarsomer and bearing

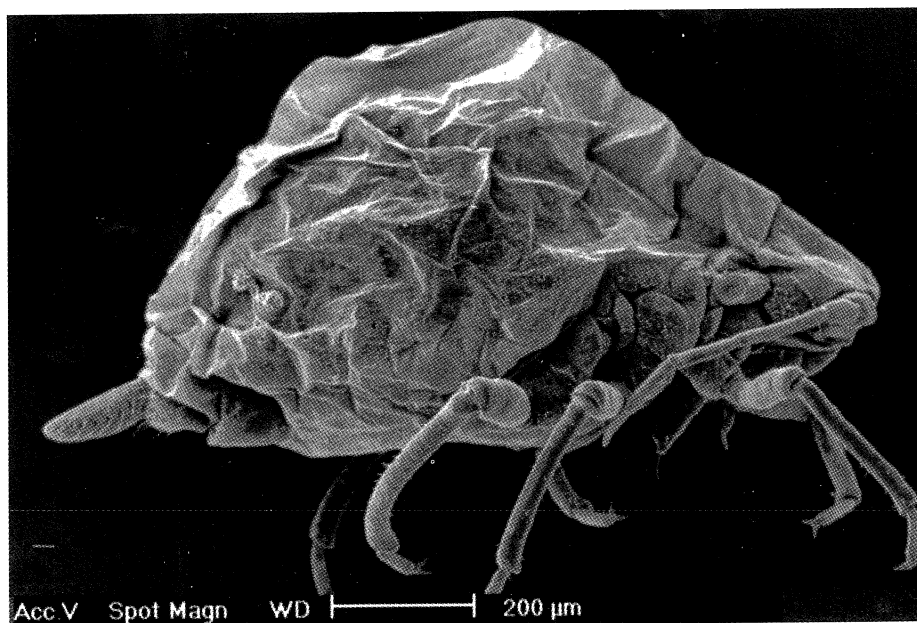


Fig. 1 - *Siphonatrophia cupressi* (Swain). Lateral view of an apterous viviparous female (body shrinkled is an artefact due to SM technical preparation).

2 supplementary hairs (in addition to the six apical ones). Tibiae rather short (hind tibiae 0.74-0.80 of antennal length) and bearing moderately pointed, short hairs (mainly about 0.3-0.4 of tibial diameter). Abdomen without dorsal sclerifications. Siphunculi as very low cones, appearing nearly pore-like, without hairs, and having a maximum basal diameter of 0.040-0.060 mm, or about 0.25-0.33 of caudal length. Cauda triangular in shape, not or very slightly constricted on basal third, about twice as long as wide at base, and bearing 11-14 marginal and rather short hairs.

Alate viviparous females (Fig. 3), 1.00-1.76 mm, have 5- or 6-jointed antennae as well as apterae, but comparatively slender; III joint 0.86-1.12 of last joint and bearing 3-8 (most frequent 4-6) rather small rhinaria, aligned along the ventral side; processus

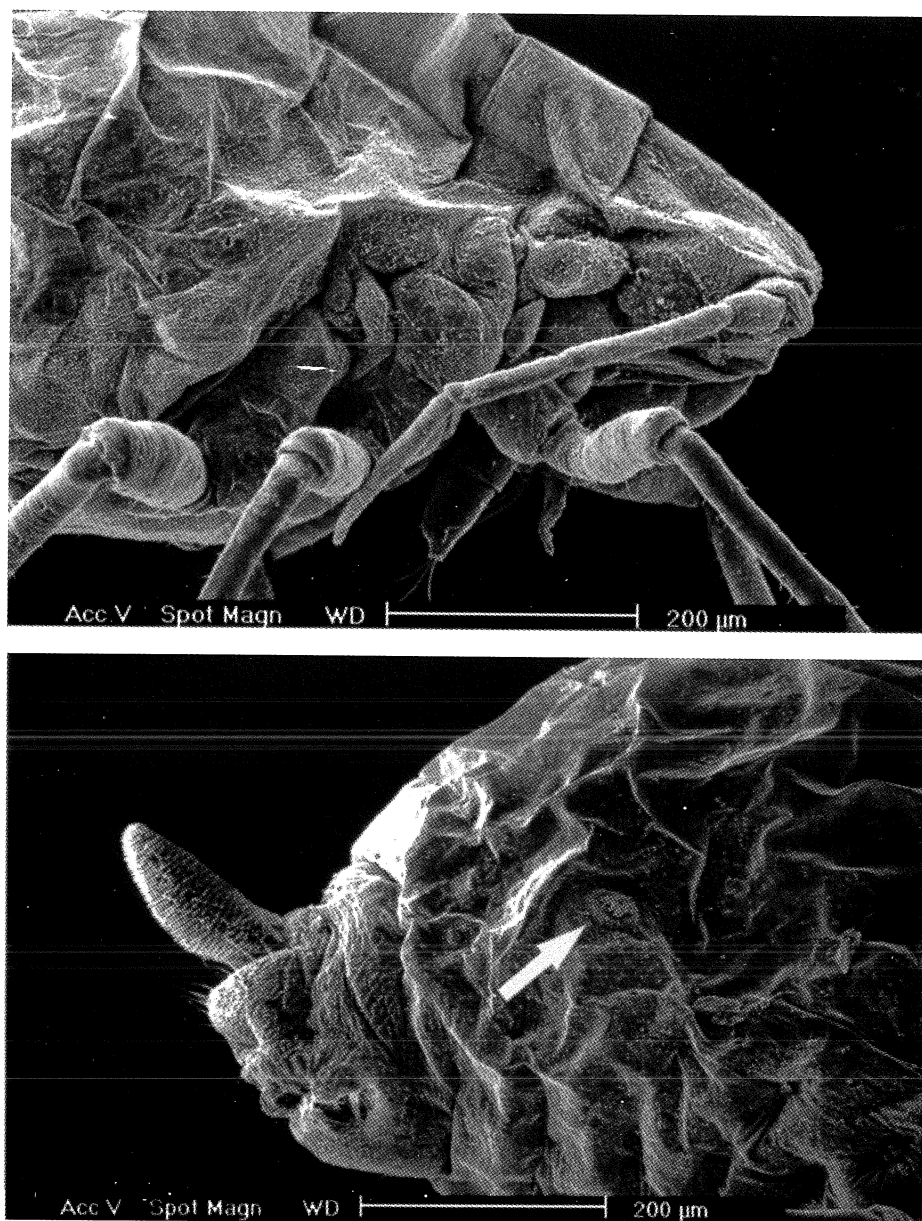


Fig. 2 - *Siphonatrophia cupressi* (Swain). Lateral view of anterior (above) and posterior (below) part of body (the arrow points at the siphunculus).

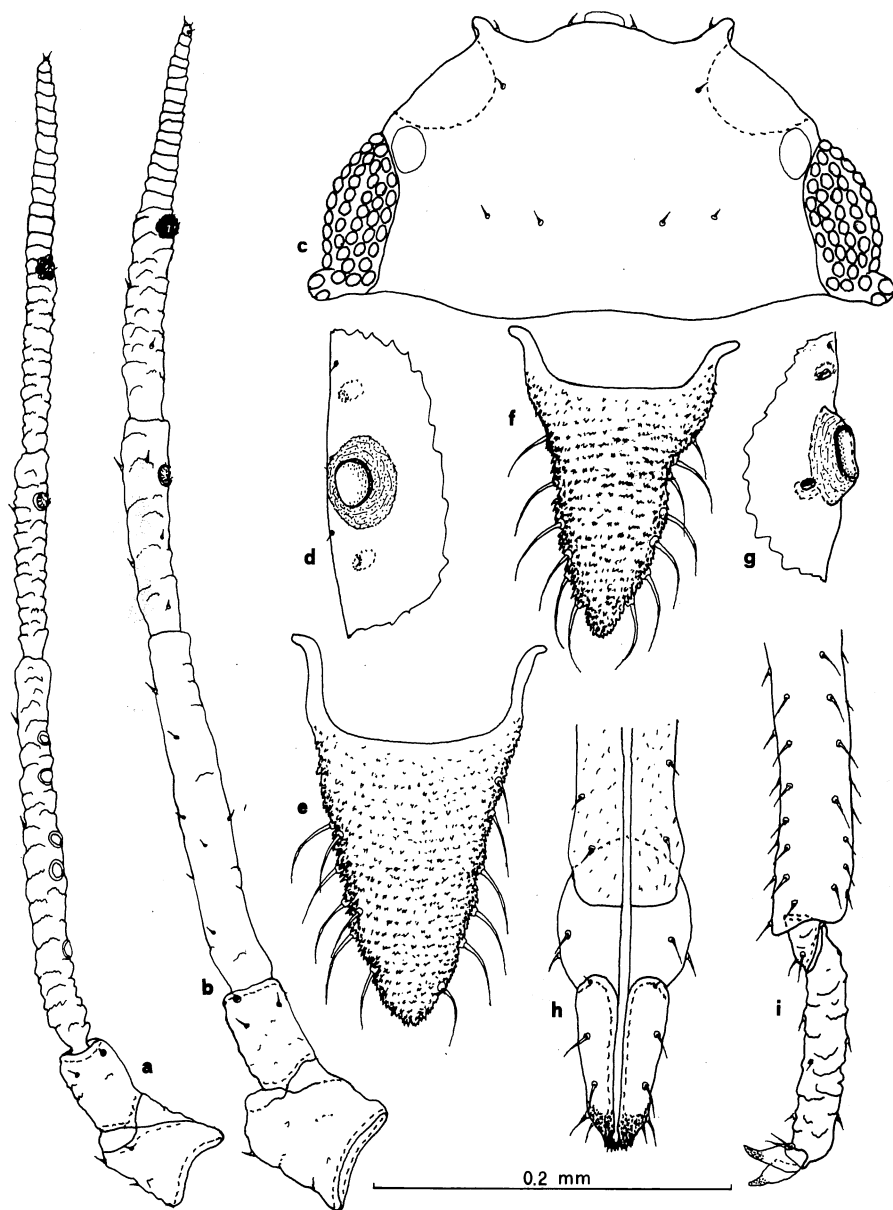


Fig. 3 - *Siphonatrophia cupressi* (Swain). Morphological details of alate (a, c, f, g) and apterous viviparous (b, d, e, h, i) females: a-b, antenna; c, head from a dorsal view; d-g, siphunculus from a dorsal and lateral view, respectively; e-f, cauda; h, distal part of rostrum; i, distal part of tibia and tarsus of hind leg (all drawings at the same magnification: see scale bar).

terminalis 1.00-1.33 of basal part of last joint; ultimate rostral joint 0.072-0.094 mm or 0.64-0.70 of II joint of hind tarsus. Fore wing usually with one-branched (or sometimes 2-forked) median vein. Siphunculi and cauda similar, while proportionally a little smaller, to the correspondent structures of apterous morph.

Details on other morphs, in addition to apterous and alate viviparous females, are given by Palmer (1952). For morphological comparison to other genera of *Aphidinae* see Eastop (1979). *Siphonatrophia grvida* (Knowlton), originally believed to be a separate species (on the base of its six-jointed antennae in summer viviparous morphs and two-branched median vein in alates) is now considered synonymous of *S. cupressi*, as quoted by Remaudière & Muñoz Viveros (1991) and maintained by Remaudière & Remaudière (1997).

BIONOMICS AND NATURAL ENEMIES

S. cupressi seems now well established in the Côte d'Azur as well as in Northern Italy. It is apparently able to overwinter under the anholocyclic form, even when the winter conditions are not particularly mild. However, it formed oviparae on two consecutive years, but we were not able to observe the apterous or alate males reported for this species (Palmer, 1952; Blackman & Eastop, 1994).

Mummies were present when we discovered the aphid in the Côte d'Azur. The only primary parasitoid found is *Lysiphlebus testaceipes* (Cresson). Approximately the same number of males and females emerged from the different samples and only one hyperparasitoid (*Pachyneuron sp.*) emerged from several tens of mummies. Two parasitoids of *S. cupressi* are known in its area of origin, namely in Mexico: *Lysiphlebus testaceipes*, widely polyphagous on aphids, and *Trioxys (Binodoxys) cupressicola* Gahan, which is known only on this host (Stary & Remaudière, 1982). In fact, a strain of *L. testaceipes* of cuban origin has been introduced in the Côte d'Azur and in Corsica in 1973-74 (Stary, 1976). So, the Central American populations of the host *S. cupressi* and of the parasitoid *L. testaceipes* are again in presence of each other after 26 years in the South of France. In addition, Tremblay & Barbagallo (1983) have reported the wide distribution of *L. testaceipes* in Italy since 1977, originating probably in a spontaneous diffusion, or ecdysis, from Southern France.

As it seems more and more likely that we will not be able to contain the global diffusion of the insect pests, this example suggests a new strategy of classical biological control consisting in the preventive introduction of oligophagous beneficials, like Aphidiidae, able to attack only phytophagous insects.

ACKNOWLEDGEMENTS

We thank very much Prof. G. Remaudière (Museum d'Histoire Naturelle, Paris) for the kind confirmation of the species and for useful information, as well as Mrs.

A. Geria (INRA, Antibes) and Mrs. B. Delecolle (INRA, Avignon) for technical assistance including SM.

Reserch activity developed by S. Barbagallo belongs to the project "PREVENTO" supported by MiPAF (Ministero Politiche Agricole e Forestali - Rome).

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Accepted 1 June 2005

