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Amphorophora ampullata Buckton: a new record for the Italian fauna (Aphididae Aphidinae Macrosiphini)

Abstract - *Amphorophora ampullata* Buckton is recorded for the first time from Italy. It was collected from the fern *Matteuccia struthiopteris* (L.) Tod. in "Val Grande Natural Park" from southern Lepontine Alps (Central Alps). Information on ecology, biology and geographic distribution of this aphid and data on morphology of the apterous and alate viviparous female are reported. It seems that the present record is the most southern of this aphid species from Europe.

Riassunto - Amphorophora ampullata *Buckton: prima segnalazione per la fauna italiana (Aphididae Aphidinae Macrosiphini).*

Viene segnalato per la prima volta in Italia il reperimento di *Amphorophora ampullata* Buckton, afide macrosifino legato alle felci, raccolto su *Matteuccia struthiopteris* (L.) Tod. nel Parco Naturale della "Val Grande" (Alpi Lepontine meridionali). Vengono fornite notizie sull' ecologia, biologia e distribuzione geografica di questa specie afidica nonché i dati morfologici essenziali sia dell'attera che dell'alata virginopara. Una breve discussione conclude il lavoro.

Key words: *Amphorophora ampullata* Buckton, new record, Italy.

INTRODUCTION

Insects are important component of the forest ecosystems due to their impressive number of species and to the tendency of some of them to cause outbreaks which sometimes influence directly the health of wood by damaging or killing trees; in such cases they can modify the structure of temperate forests. For this reason entomofaunistic studies come more and more in advantage for a better understanding also of the local biodiversity within the frame of the habitat conservation.

The present work belongs to a research project on the insect fauna living on soil and bushes of "Portaiola" Valley which is a small part of the "Val Grande Natural Park" in the Province of Verbania (I). The park belongs to the southern Lepontine Alps extending with 13,200 hectares north of Maggiore Lake among "Ossola", "Vigezzo" and "Cannobina" Valleys, being the catchment basin of S. Bernardino stream. In the

past, that area was exploited intensively by man till the end of the fifties for its wide beech woods and pastures but now it has been left completely remaining only the traces of the ancient human activities.

In a locality named "Alpe In La Piana", at 955 m a.s.l., (Fig. 1) on shrubs of the fern *Matteuccia struthiopteris* (L.) Tod. (Fig. 2) we have found, on June 2nd, 1998, dense colonies of a large, green aphid which was identified by the second A. as *Amphorophora ampullata* Buckton.

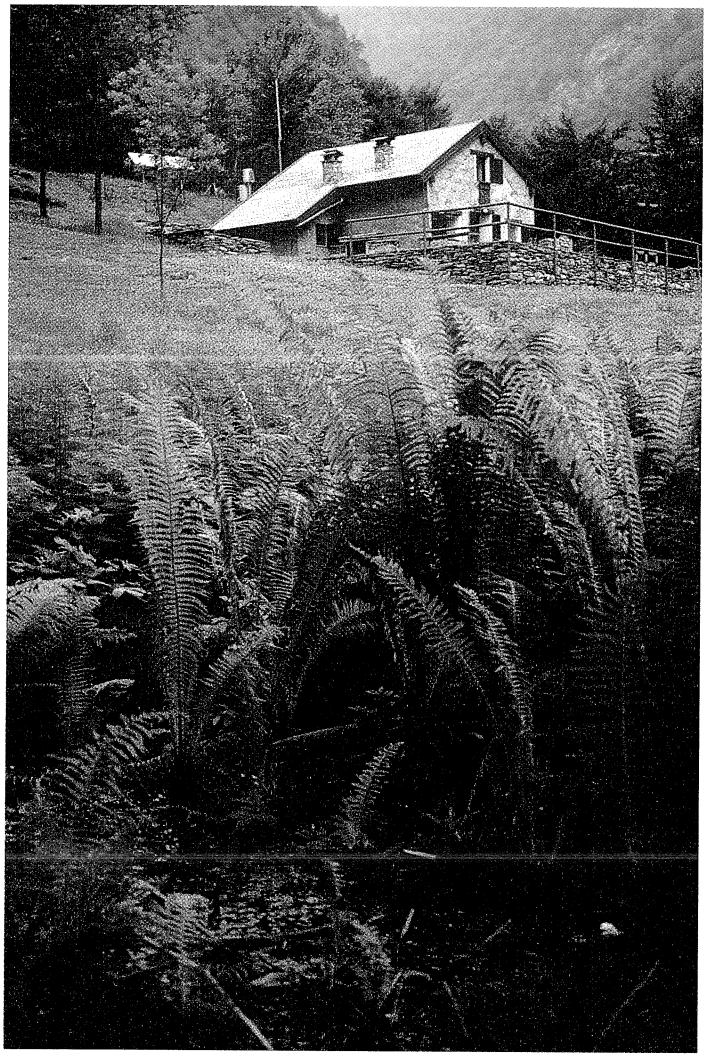

Fig. 1 - Landscape of Alpe In La Piana with shrubs of *Matteuccia struthiopteris* (L.) Tod.

Fig. 2 - Shrubs of *Matteuccia struthiopteris* (L.) Tod..

ECOLOGY, BIOLOGY AND DISTRIBUTION

A. ampullata is here recorded for the first time from Italy. Its host fern, *M. struthiopteris*, belongs to the family Athyriaceae and is called "ostrich feather fern" for the structure of its fertile fronds. It grows everywhere on Alps on humificated soils of wet habitats close to woods (Pignatti, 1982). The finding place of this aphid species is a wide fern shrub shadowed by a dense beech wood close to it.

Amphorophora Buckton is a genus of about thirty species in the world (31 are

listed in the aphid catalogue by Remaudière & Remaudière, 1997). Most of the species are Nearctic and only a few of them are eastern and western Palaearctic. *Amphorophora* includes medium-sized to rather large pale greenish aphids with long appendages bearing short hairs and with more or less swollen siphunculi on their distal half. Many of them feed on Rosaceae (i.e., *Rubus* or *Geum*) while *A. ampullata* lives on ferns (Pteridophyta). All the species are holocyclic and monoecious and not attended by ants (Blackman & Eastop, 1984; Heie, 1995. Three species of *Amphorophora* were recorded so far from Italy, *A. gei* (Börner), *A. idaei* (Börner) and *A. rubi* (Kaltenbach), the first two present in the North, the last one common all over the country, including Sicily and Sardinia (Barbagallo *et al.*, 1995).

A. ampullata, here recorded from Central Alps, has an Holarctic distribution, i.e., Europe, western Siberia, Central Asia (East Himalayas), Japan, North America.

MORPHOLOGY

Amphorophora ampullata Buckton, 1876

Apterous viviparous female - Green when alive. Body large, 4.0-4.6 mm long. Head with very large lateral frontal tubercles with diverging and nearly smooth inner sides. Antennae yellow-brownish with apices of segments III-V and all the VI dark. Legs pale-yellowish with apices of femora, tibiae and the entire tarsi darker. Siphunculi clearly swollen in their brownish distal half, with dark apices without reticulation and with well developed flange. Cauda pale, tongue-shaped. Abdomen without sclerotization.

From five Italian apterous specimens the following data are available (Tab. 1): antennae 5.5-6.0 mm long, 1.17-1.37 x body; processus terminalis of VI antennal segment 4.6-4.9 x VI basal part (VIa) and 1.0-1.3 x III antennal segment (IIIa.s.). VIa about twice the 2nd segment of hind tarsus (2sht) (1.9-2.1); antennal segment III with 6-10 secondary rhinaria on the basal half; apical rostral segment 0.165-0.187 mm long of about the same length of the 2sht and bearing 6-8 accessory hairs; siphunculi about 0.9 mm long, 0.19-0.24 x body and 2.1-2.7 x cauda which is 0.35-0.45 mm long; hairs on antennae, dorsum and basal half of tibiae rather short and with swollen apices; hairs on III antennal segment, on 5th abdominal tergite and on hind tibia (h.t.) 0.021-0.033, 0.019-0.033 and 0.062-0.072 mm long respectively, their ratio with the diameter of IIIa.s. and h.t. 0.38-0.57 and 0.8-1.1

The only one available alate viviparous female differs from apterae in having uniformly dark brown antennae save a pale short basal part of IIIa.s. as well as a more extended dark brown part on the distal half of femora and tibiae; also the swollen part of siphunculi seems to be darker; IIIa.s. bearing 44-49 secondary rhinaria distributed almost along the whole segment (Fig. 3).

A. ampullata can be easily separated from the other congeneric species living in Italy (i.e., *gei*, *idaei* and *rubi*) in having spinules on the tips of tibiae between the hairs and in showing the basal part of antennal segment VI (VIa) much longer than the

Table 1 - Morphometric characters of Amphorophora ampullata (length in mm).

Number of specimens	apt. n. 1	apt. n. 2	apt. n. 3	apt. n. 4	apt. n. 5	alata n. 6
body length	4.538	4.161	4.714	4.252	4.023	4.634
length of siphunculi	0.908	0.926	0.887	0.965	0.985	0.946
length of cauda	0.354	0.433	0.356	0.360	0.394	0.453
ratio siphunculi/body	0.200	0.223	0.188	0.227	0.245	0.204
ratio siphunculi/cauda	2.565	2.139	2.492	2.681	2.500	2.088
length of III antennal segment	1.464	1.488	1.41	1.371	1.406	1.533
length of IV antennal segment	1.299	1.258	1.231	1.143	1.151	1.322
length of V antennal segment	1.031	0.992	1.023	1.033	1.034	1.117
length of VI antennal segment base (a)	0.33	0.335	0.316	0.355	0.336	0.355
length VI ant. segm. p. t.	1.58	1.52	1.56	1.757	1.57	1.718
total length of antenna	5.704	5.593	5.54	5.659	5.497	6.045
ratio antenna length/body length	1.257	1.344	1.175	1.331	1.366	1.304
number of sec rhinaria III antennal segment	10	9	10	6	10	47
ratio VI p.t./VI a	4.788	4.537	4.937	4.949	4.673	4.839
ratio VI p.t./III ant. segm.	1.079	1.022	1.106	1.282	1.117	1.121
length of apex of rostrum	0.173	0.165	0.187	0.174	0.172	0.177
n. of accessory hairs	8	8	8	8	8	6
2° segment of hind tarsus length	0.173	0.178			0.164	0.17
ratio last rostral joint 2nd sht.	1	0.927			1.049	1.041
ratio VI a/ 2sht	1.908	1.882			2.049	2.088
length of longest hair on 5th abdominal tergite	0.027		0.026		0.019	0.033
length of longest hair on III antennal segm.	0.021	0.025	0.029	0.029	0.025	0.033
diameter III ant.at the insertion point	0.055	0.053	0.051	0.052	0.049	0.062
ratio hair/diameter III ant.	0.382	0.472	0.569	0.558	0.510	0.532
length of longest hair on hind tibia	0.072	0.062	0.073	0.062	0.068	0.068
diameter of tibia at the insertion point	0.066	0.062	0.072	0.073	0.062	0.06
ratio hair/diameter of tibia	1.091	1	1.014	0.849	1.097	1.133

second hind tarsus including the claws (Heie, 1995). It differs also in feeding only on ferns.

DISCUSSION

In Europe *A. ampullata* had been recorded so far from Fennoscandia, Denmark, Britain, Germany (Heie, 1995). The Italian record of *A. ampullata* from Central Alps is the more southern finding of it in Europe. *A. ampullata* is a not host-alternating species which feeds on various genera of ferns, e.g., *Dryopteris*, *Athyrium*, *Polystichum*, *Asplenium*, *Cystopteris* (Heie, 1995).

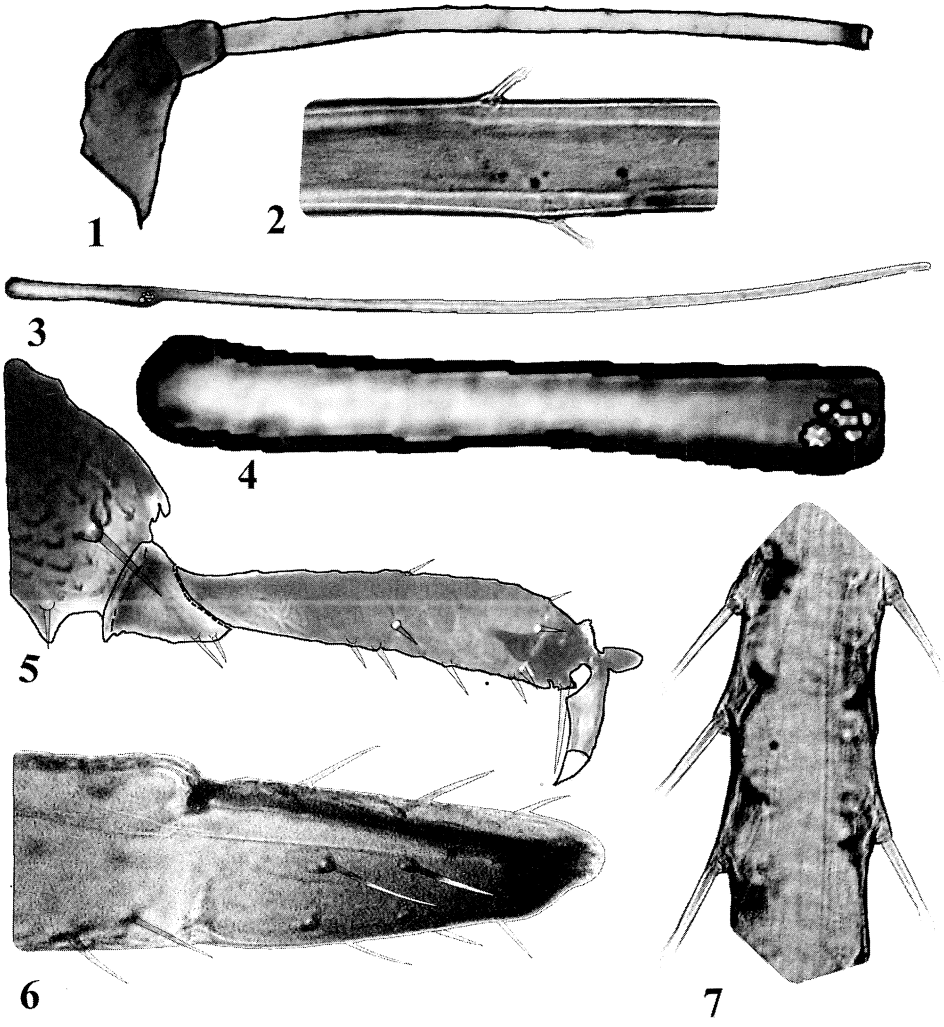

Fig. 3 - *Amphorophora ampullata*, aptera vivipara. 1) antennal segments I-III (x 50); 2) enlargement of the middle part of antennal segment III; 3) VI antennal segment (x 54); 4) basal part of VI antennal segment (VIa) (x 260); 5) apex of hind tibia with tarsus (x 297); 6) apex of rostrum (x 275); 7) enlarged middle part of hind tibia.

Our finding of *A. ampullata* on *M. struthiopteris* adds a new host fern to the list of the so far known hosts of this aphid. Colonies were observed on the lower surface of the leaves and mainly on the young shoots where also isolated individuals were seen.

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