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The parasitoid complex of *Scythia aetnensis* Russo & Longo (Hemiptera, Coccidae) in Italy

Abstract - The natural enemies of *Scythia aetnensis* Russo & Longo (Hemiptera, Coccidae), on *Festuca circummediterranea* from Mount Etna (Italy), were surveyed in 1994-5. The commonest species were the primary parasitoids *Baeocharis pascuorum* Mayr. and *Discodes* (= *Phaenodiscus*) *aeneus* (Dalman) (Hymenoptera: Encyrtidae), and the secondary parasitoids *Cerapterocerus mirabilis* Westwood (Hymenoptera: Encyrtidae) and *Marietta picta* André (Hymenoptera: Aphelinidae). A few specimens of unidentified predators belonging to Coleoptera: Coccinellidae and Acari: Phytoseidae were also found. A first attempt to use different kinds of chromotropic traps as a parasitoid monitoring method is described.

Key words: Mount Etna, *Festuca circummediterranea*, parasitoids, predators.

INTRODUCTION

Scythia aetnensis Russo & Longo (Hemiptera: Coccidae) was described in 1990 on *Festuca circummediterranea* collected from Mount Etna (Italy) (Russo & Longo, 1990). Its phenology is closely related to the host-plant cycle. The scale insect goes through one generation per year: a month after the vegetative renewal of the host-plant (in the second half of May) the eggs hatch. The crawlers are gregarious; they settle along the leaves and each secretes a wax covering. The adult females appear after 4-6 weeks and the males two weeks later. After mating, the females start to lay about 150 eggs (between the third decade of July and the end of August). When egg laying is complete, the female detaches herself from the ovisac. The egg stage overwinters within the thick ovisac (Longo *et al.*, 1995).

MATERIALS AND METHODS

A survey was performed on Mount Etna (fig. 1a) from July to November 1994 and from February to October 1995, to investigate the composition of the natural enemy

complex of *S. aetnensis*. Two hundred scale insect specimens were collected weekly (fig. 1b). One half of each sample was observed to evaluate the parasitization rate, while the rest of the scale specimens were isolated in vials in order to identify emerging predators and parasitoids. In addition, an attempt was made to monitor natural enemy activity in the field, using various coloured sticky traps. A circular white trap was placed on the ground around the plants to capture apterous species, while a yellow trap was placed vertically close to the plant, to capture the flying species (fig. 1c).

RESULTS

Parasitoid complex

The commonest species were the primary parasitoids *Baeocharis pascuorum* Mayr and *Discodes aeneus* (Dalman) (Encyrtidae), and the secondary parasitoids *Cerapterocerus mirabilis* Westwood (Encyrtidae) and *Marietta picta* André (Aphelinidae).

Baeocharis pascuorum Mayr

This Palaearctic species is a primary parasitoid of scale insects living on herbaceous plants; particularly, it has been reported parasitising members of the scale genera *Eriopeltis* and *Luzulaspis* (Hemiptera: Coccidae) (Herting, 1972; Kosztarab & Kozár, 1988; Trjapitzin, 1989). The species has not been reported attacking *Scythia* before. It is easily recognised by its rudimentary white wings (fig. 2a).

Discodes aeneus (Dalman)

This encyrtid has an Holarctic distribution. It is very common on cultivated fruit trees, where it attacks mainly members of the genus *Eulecanium* (Hemiptera: Coccidae) (Sugonjaev, 1970; Noyes & Hayat, 1994). The female is characterised by infusate fore-wings with hyaline borders and banded, coloured antennae (fig. 2b, c).

Cerapterocerus mirabilis Westwood

The species is a cosmopolitan hyperparasitoid of numerous parasitoid wasps. It shows a strong sexual dimorphism. The female has a flattened antenna with strongly transverse, flagellar segments and a very large scape; in the male, the antenna is elongate, with subcylindrical segments bearing long setae. The female fore-wing has infusate rays and bands extending to the margins of the wing, whereas the male has

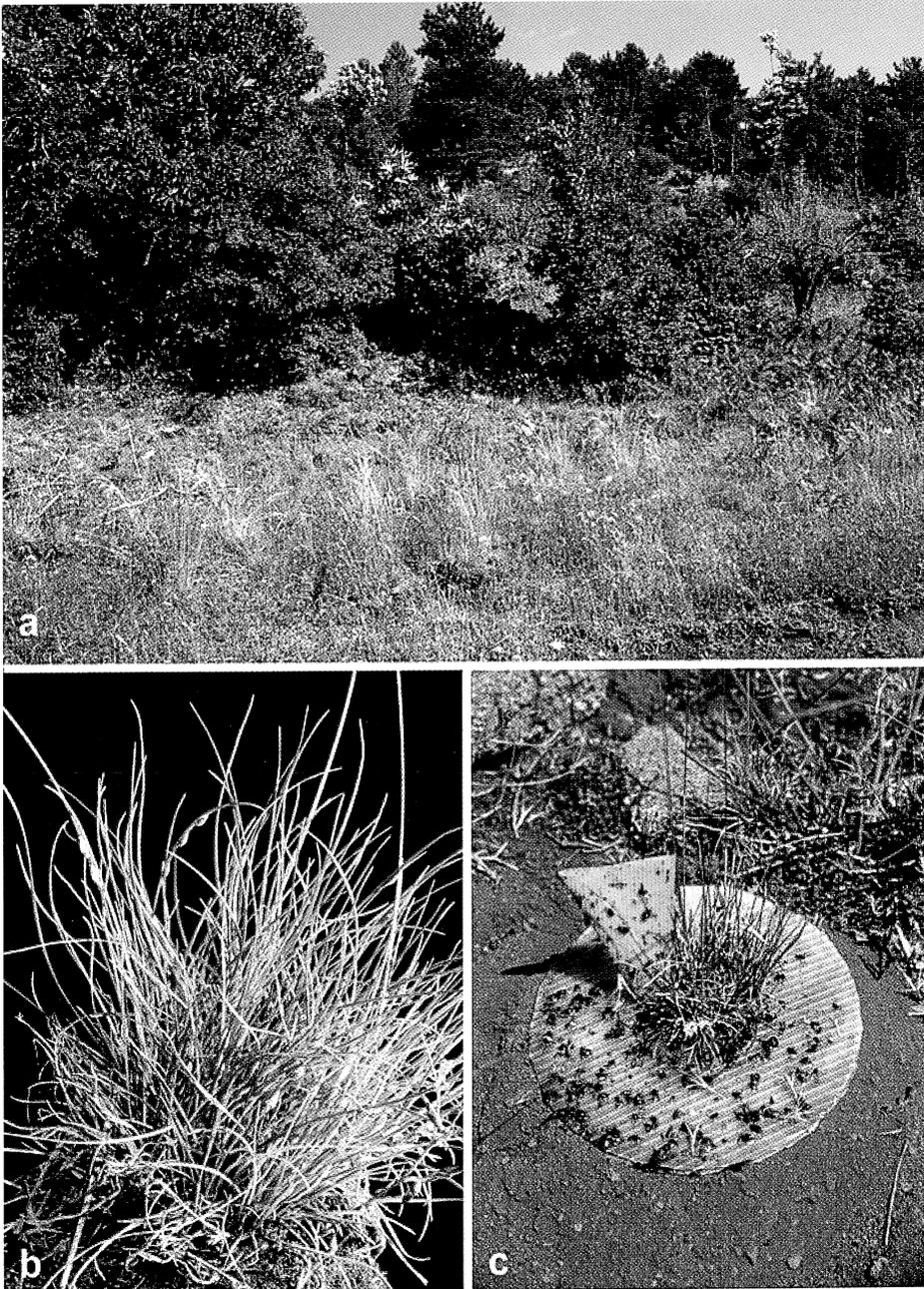


Fig. 1 - a: the investigated area (Mount Etna); b: infested *Festuca* plant; c: coloured sticky traps.

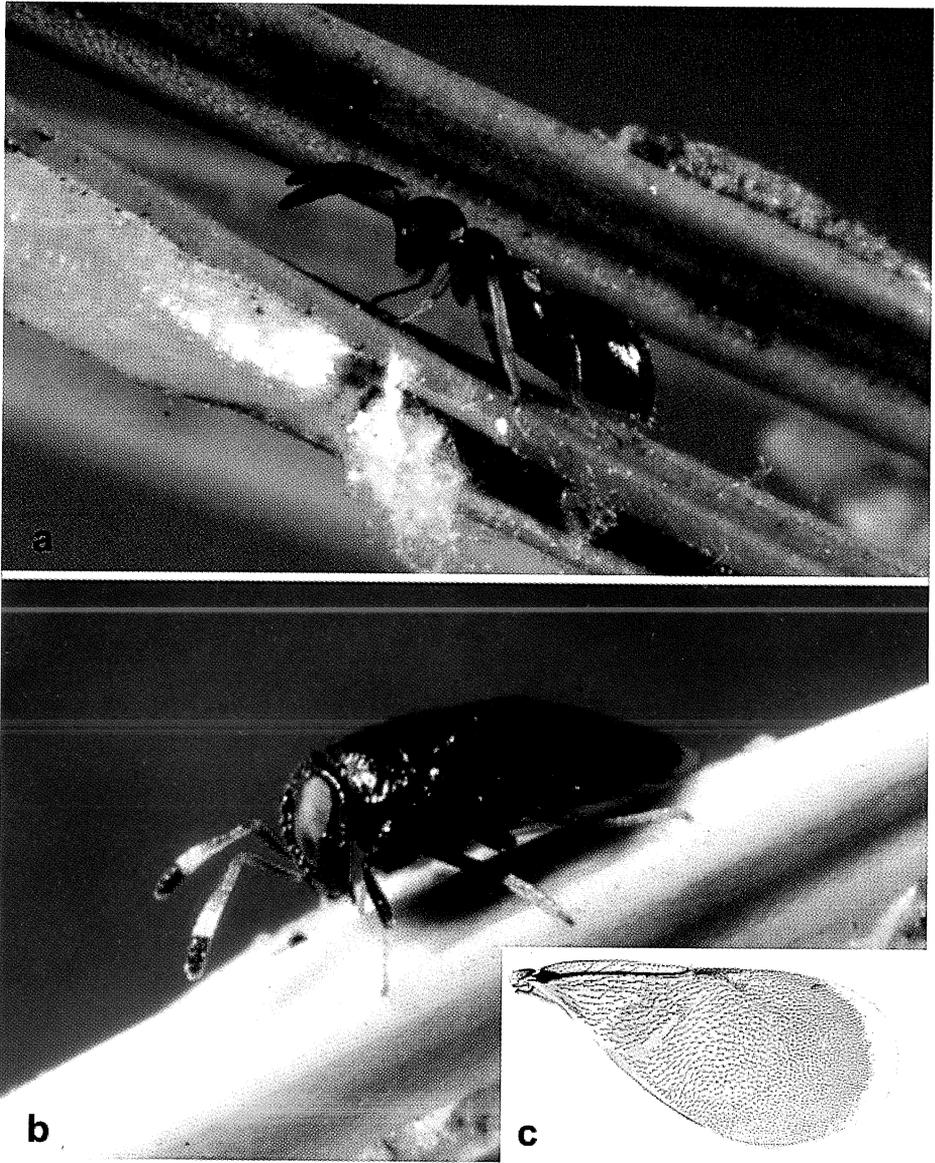


Fig. 2 - a: *Baeocharis pascuorum* Mayr, female; b: *Discodes aeneus* (Dalman) female and its forewing (c).

hyaline wings.

Several specimens belonging to the genera *Encyrtus* (Hymenoptera: Encyrtidae), *Scutellista* and *Pachyneuron* (Hymenoptera: Pteromalidae) and *Chartocerus* (Hymenoptera: Signiphoridae) have been collected but their host relationships have not been verified. In addition, a few specimens of some unidentified predators belonging to Coleoptera: Coccinellidae and Acari: Phytoseidae were found.

Parasitoid activity

The relative incidence of the various species of primary and secondary parasitoids was considered (fig. 3). Among the primary parasitoids, *D. aeneus* reached the highest

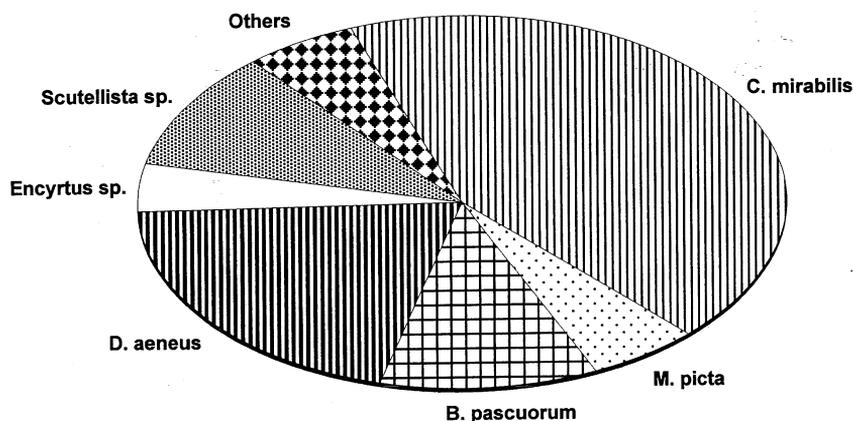


Fig. 3 - Incidence of the parasitoids recovered.

parasitization rate (21%), followed by *B. pascuorum* (11%). The hyperparasitoids were mainly represented by *C. mirabilis* (44%), while *M. picta* showed a lower parasitization rate (5%). The highest parasitization levels were recorded in August during both years of the study (fig. 4), at the time when the scale population mainly consisted of mature females (fig. 5).

CONCLUSIONS

The study identified the members of the *Scythia aetnensis* natural enemy complex. The parasitoids collected were different from those reported from other *Scythia* species, while they appear very similar to those associated with *Eriopeltis festucae* (Fonscolombe) (Kosztarab & Kozár, 1988).

Scythia aetnensis antagonists were mostly parasitoid wasps belonging to

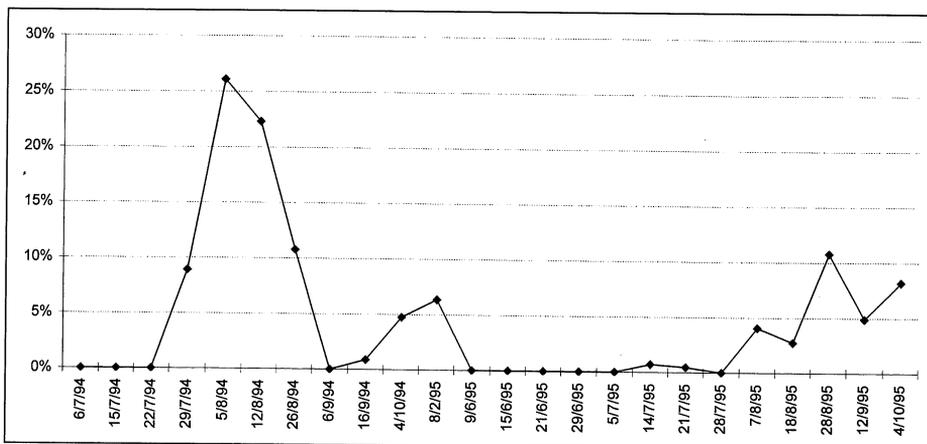


Fig. 4 - Total active parasitization rate during 1994-95.

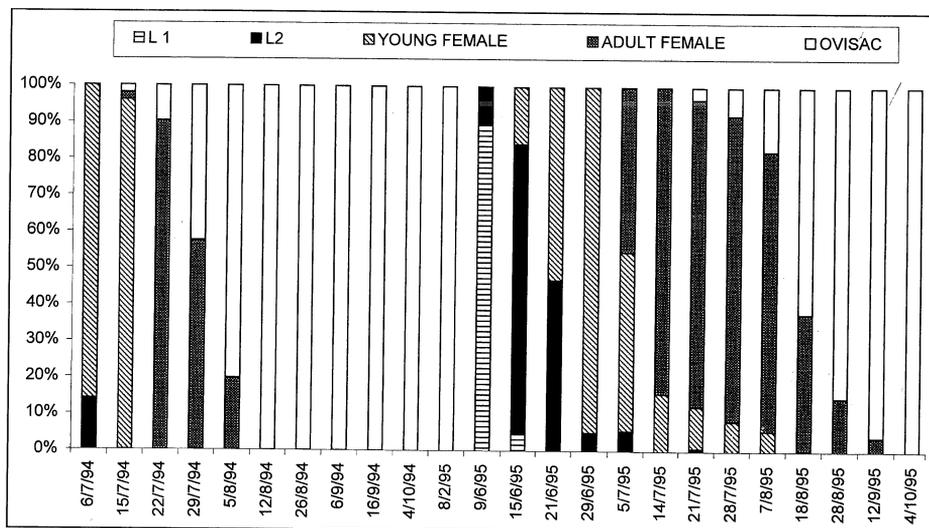


Fig. 5 - Composition of *S. aetnensis* population during 1994-95.

Hymenoptera: Encyrtidae, the most effective species being *Discodes aeneus* and *Baeocharis pascuorum*; the latter is reported for the first time from *Scythia*.

With regard to the parasitoid monitoring using coloured sticky traps, no captures were recorded during the entire observation period. This might have been due to a preferential intraplant activity of these natural enemies and to a lack of attraction to the colours used.

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