FIRST RECORD OF CERCOLEIPUS COELONOTUS KINN (ACARI MESOSTIGMATA CERCOMEGISIDIDAE) FROM ITALY

INTRODUCTION

The mite family Cercomegistidae belongs to the suborder Trigynaspida, which includes phoretic species of bark beetles or associated with termites, social spiders or pagurid crabs. They include also free living soil-litter predators species (ANDRÈ, 1973; EVANS, 1958; KINN, 1967; HIRSHMANN & WISNIEWSKY, 1944; LINDQUIST et al., 2009).

Cercomegistid mites are primarily spread in the southern hemisphere (South America, Africa and Australia), and only a few of the species occur in the northern hemisphere, where they are mainly associated with beetles (KINN, 1967, 1970, 1971b; LINDQUIST et al., 2009).

Cercomegistus coelonotus Kinn is one of the small group of cercomegistid species living in the northern hemisphere. It was described by KINN in 1970, from material collected inside galleries of Ips confusus (LeConte) (Coleoptera: Scolytidae) on single leaf pine (Pinus monophylla Torr.) and ponderosa pine (P. ponderosa Laws.) in California (U.S.A.). Later, this mite was also found in Louisiana (U.S.A.) in I. calligraphus (German) galleries on loblolly pine (P. taeda L.) (MOSER and ROTON, 1971). Other records reported C. coelonotus phoretic on I. montanus (Eichh.), and perhaps from Dendroctonus brevicomis LeConte and I. emarginatus (LeConte) (KINN, 1971a). In laboratory tests, the mite had been observed phoretic also on other Ips species, on D. brevicomis and on Scolytus ventralis LeConte (KINN, 1971a). Recently, in Spain, C. coelonotus was found inside galleries of I. sexdentatus Boerner on maritime pine (P. pinaster Ait.) (MORAZA et al., 2008).

C. coelonotus primarily feeds on entomophagous nematodes and also on other mites, which are numerous in bark beetle galleries of decaying pine trees, especially when plants are colonized by bark beetles in advanced decaying stage. Entomopathogenic nematodes (Allantonomatidae) represent the main food source for this Cercomegistid; however, in absence of its preferred food, C. coelonotus was also observed feeding on another mite, Thanasimus formicarius, a predaceous species on bark beetles (KINN, 1970). Thus C. coelonotus limits the reproductive capability of the scolytid antagonists and enhances the mite outspreading (KINN, 1971a; HUNTER & ROSARIO, 1988). Only in laboratory tests, C. coelonotus feeds on bark beetle eggs and their larvae (KINN, 1971a).

COLLECTION SITES IN CENTRAL ITALY

C. coelonotus was collected from bark beetle traps where the mite specimens were found adhering to bodies of I. sexdentatus and, unexpectedly on Monochamus galloprovincialis (Olivier) (Coleoptera: Cerambycidae) and Thanasimus formicarius (L.) (Coleoptera: Cleridae). It was also found moving freely inside the collecting bottle (FRANCARDI et al., 2009). C. coelonotus was also collected from the bark of beetle infested trees or from Berlese funnels.

C. coelonotus specimens were cleared in Hoyer’s solution (without Arabic Gum), mounted on microslides, and identified by means of the original description of KINN (1970).

MITES COLLECTED FROM BARK BEETLE TRAPS

– Monte Albano (Firenze; 43°46’28”N, 11°00’46”E), 12.xi.2004 - 7 specimens, leg. G. Sabbatini Peverieri.

– Monte Lignano (Arezzo; 41°53’25”N, 12°29’33”E), 17.vii.2003 - 7 specimens, leg. V. Francardi.
– Le Vedute (Firenze; 43°46’37”N, 10°41’30”E), 16.vi.2004 - 12 specimens, leg. V. Francardi.
– Le Vedute (Firenze; 43°46’37”N, 10°41’30”E), 17.vi.2003 - 7 specimens, leg. V. Francardi.
– Le Vedute (Firenze; 43°46’37”N, 10°41’30”E), 17.vii.2003 - 7 specimens, leg. V. Francardi.
– Le Vedute (Firenze; 43°46’37”N, 10°41’30”E), 4.viii.2004 - 1 specimen, leg. V. Francardi.
CONCLUSIONS

In North America C. coelonotus is a phoretic mite species mainly on Ips spp. In Europe, that mite was found in association with I. sexdentatus in Spain (Moraza et al., 2008). In Italy, this mite has been found in association with I. sexdentatus and T. destruens. However, the association of this mite with T. destruens seems to be occasional: in many other samplings conducted by the authors from 2006 to 2008, C. coelonotus was never found on T. destruens infested pines.

In Europe, the distribution of this mite seems to be limited to the Southern regions, as no C. coelonotus records are available from faunistic studies carried out in the Central and Northern regions (Moser & Bogenschütz, 1984; Leveux et al., 1989; Moser et al., 1989; Michalski et al., 1992; Kaczmarek, 1992; Moser et al., 2005; Pernek et al., 2008).

Referring to the possible association of the mite with M. galloprovincialis and T. formicarius, we assume that, the mite could have encountered those beetles after it landing on the traps vectored by I. sexdentatus. However, it’s possible that M. galloprovincialis and T. formicarius could transfer C. coelonotus, because the longhorn beetle may attack pines simultaneously with I. sexdentatus, while the clerid is known as predator of those bark beetles. Hence, it is likely that, if the main phoretic hosts were lacking, C. coelonotus may use other available beetles for phoresy. A similar assumption was made also by Kinn (1971a) when he observed the mite association with D. brevicomis during tests conducted in the lab.

Only adults of C. coelonotus show phoretic behaviour, by clinging on the pronotum and elytra of the bark beetles. Mite adults are also present in the parental galleries of beetles during gallery construction, or in the pupal chamber containing callow adults. The mites immature stages are found in gallery systems, whereas eggs and larvae were found only in the parental galleries; while protonymphs and deutonymphs are mainly located in the larval gallery system.

The deutonymphs and adults of C. coelonotus search actively for the newly formed adult beetles and wait close to the pine trees emerging holes.

In Central Italy the cercomegistid mite seems to have 2 generations per year as does its main host, I. sexdentatus (Pennacchio et al., 2005). The first generation of C. coelonotus develops between May and August at the same time of the first generation of I. sexdentatus. The second generation develops between July and October, when the host bark beetle completes the second generation.

C. coelonotus adults overwinter close to adult specimens of the bark beetles.

Morphometric data obtained from C. coelonotus from Italy showed that the specimens are a bit larger than those described by Kinn (1970) from California, as pointed out also by Moraza et al. 2008 for those ones collected in Spain. In Italy C. coelonotus female specimens have a mean dorsal shield size of 929.80 µm long (865.3-1,006.84) and 511.77 µm wide (466.4-616.46), while those of males are 966.68 µm long (909.33-1,048.17) and 509.54 µm wide (451.33-604.26).

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REFERENCES


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