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COCCIDOXENOIDES PEREGRINA: A NEW PARASITOID OF *PLANOCOCCUS CITRI* IN INDIA

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IN recent years the mealybug *Planococcus citri* (Risso) has become a very serious pest of citrus in India. Insecticides failed to give adequate control of the pest in citrus orchards. During our search for natural enemies of *P. citri* in 1986–87, an encyrtid parasitoid, *Coccidoxenoides peregrina* (Timberlake) was collected from *P. citri* infested citrus orchards around Bangalore. This tiny wasp was found to produce 10–30% parasitism of *P. citri* in the field.

C. peregrina was found to attack other mealybug species, viz. *Maconellicoccus hirsutus* (Green) and *Ferrisia virgata* (Ckll.) besides *P. citri* but the development was successfully completed only on *P. citri*. This uniparental internal parasitoid was found to attack all the nymphal instars of mealybug including crawlers. Both male and female mealybugs were found parasitized by *C. peregrina*. It took 23–27 days to complete its development. Adults survived for 4–9 days at the room temperature of 28 ± 2°C.

Perusal of literature revealed that although several parasitoids and predators have been reported on *P. citri* infesting citrus in India[1,2] the present record of *C. peregrina* appears to be first on *P. citri*. *C. peregrina* has been earlier described by Timberlake as *Pauridia peregrina*[3]. This parasitoid is earlier reported to be native to South China, Japan, Philippines, Hawai, Fiji and Uganda[4–6]. *C. peregrina* was also utilized for the control of *P. citri* in California[7], Italy[6] and Bermuda[8]. Since the parasitoid is readily available in India, the mass rearing of *C. peregrina* on *P. citri* and releases in citrus orchards will be useful to suppress the population of *P. citri*.

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ENCENTRIDOPHORUS SIMILIS (ACARINA: UNIONICOLIDAE) AN ACTIVE PREDATOR OF MOSQUITO LARVAE

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PREDATORY feeding behaviour of certain species of mites has been reported earlier[1–4]. In order to study the biology of autochthonous predatory and parasitic mites of mosquitoes, free-living and parasitic water mites were collected from an uncultivated paddy field and from adult mosquitoes within Trivandrum city limits during February to April. The area of collection is characterized by the presence of highly polluted water rich in organic matter, thick growth of aquatic vegetation and a variety of aquatic organisms like ostracods, copepods, nymphs of dragon and damsel flies, etc.

Among the free-living mites collected, adult females of *Encentridophorus similis* belonging to the family Unionicolidae were found to actively predate on first instar larvae of *Aedes albopictus*. So far no report has appeared on mites belonging to family Unionicolidae feeding on mosquito larvae. During

attempts to observe the feeding behaviour of adult mites a mixture of aquatic organisms consisting of ostracods, copepods and first instar larvae of *Ae. albopictus* were offered as food. To determine the feeding rate of adult female of *E. similis*, 15 vials, each containing 50 first instar larvae of *Ae. albopictus* and one *E. similis* were set up. Control consisted of a vial of the same size as the experimental one containing 50 first instar larvae of *Ae. albopictus* but without mite. Observations were made once every 24 h. After each observation the dead larvae were removed and a fresh set of larvae was released in each container. This was carried out until the death of the mite.

The adults of *E. similis* female showed strict preference for the first instar larvae of *Ae. albopictus.* The prey was seized at the cervical region by the pedipalps (figure 2) and the first and third pairs of legs (figure 1). Within 2–4 min the mosquito larvae became inactive. The mite ingested the internal contents leaving the transparent exoskeleton behind. On an average one mite was found to consume 40 larvae/24 h. In the control vials the average mortality was 5 larvae/24 h. It is possible to differentiate between larvae which died of natural causes and those died as a result of mite attack. Longevity in captivity of adult female mite ranged from 6 to 12 days. Larval consumption was steady for all the days of observation. Mites laid viable eggs in the holding vial. Each cluster of eggs contained about 6–20 eggs. The period from oviposition to hatching was 4–6 days at room temperature. Attempts are now being made to rear the mites in the laboratory.

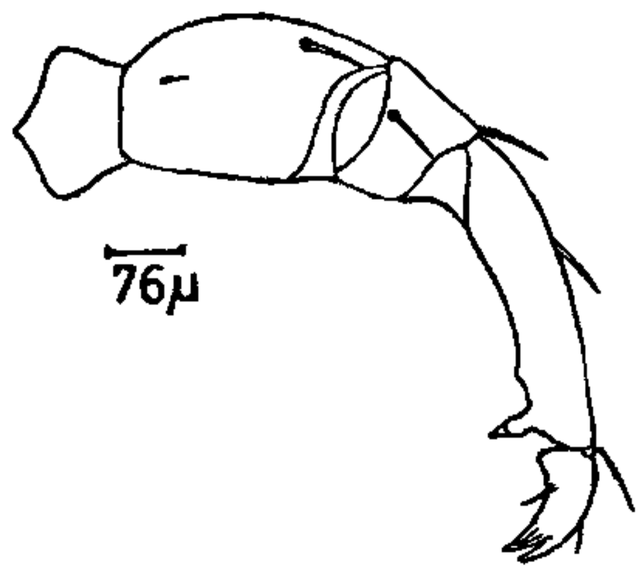

Figure 2. Palp of ♀ *E. similis.*

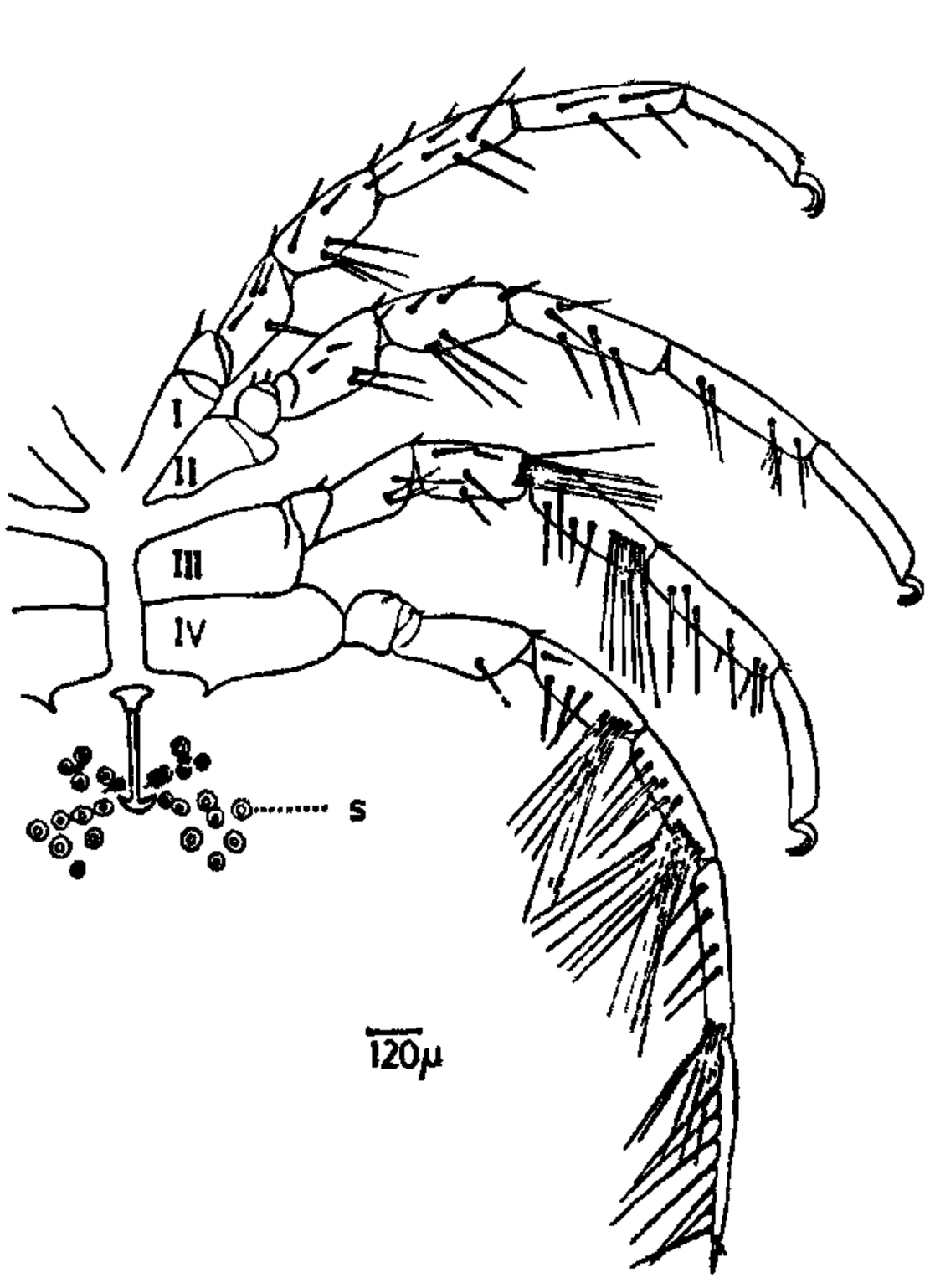

Figure 1. I, II, III and IV coxae of ♀ *E. similis* s-acetabula.

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BEAUVERIA BASSIANA (BALS.) VUILL., A POSSIBLE BIOCONTROL AGENT AGAINST *MYLLOCEROS VIRIDANUS* FABR. AND *CALOPEPLA LEAYANA* LATREILLE IN SOUTH INDIA

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TEAK (*Tectona grandis* L.), a large deciduous tree, occupies 78,452 ha of forest plantations in Kerala[1].