

ENALLAGMA GLAUCUM (BURMEISTER), A NEWLY RECORDED PREDATOR OF THE CITRUS PSYLLA, TRIOZA ERYTREAЕ (DEL GUERCIO) (ZYGOPTERA: COENAGRIONIDAE; – HEMIPTERA: TRIOZIDAE)

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Abstract – Adults of *E. glaucum* scan the growth points and leaves of citrus and False Horsewood trees by flying about 30 mm from them. The damselfly catches adult *T. erytreae* by picking them from the trees. This is probably the first record of a zygopteran displaying this beha-

viour in combination with the predation of a major citrus pest.

Introduction

The citrus psylla, *Triozza erytreae* (Del Guercio), is an important vector of greening disease in

South Africa (McCLEAN & OBERHOLZER, 1965), Réunion and Mauritius (MOREIRA, 1967). It is indigenous to Africa and has been found in many countries on this continent, from the Cape Province, South Africa, in the south (LOUNSBURY, 1897) to Eritrea, Ethiopia, in the north-east (DEL GUERCIO, 1918) and Cameroon in the west (AUBERT et al., 1988). Apart from the islands of Mauritius, Madagascar and Réunion (MOREIRA, 1967), it has also spread to St Helena (WALLACE, 1960), and was recently reported from North Yemen (BOVÉ & GARNIER, 1984), Saudi Arabia and the Yemen Arab Republic (BOVÉ, 1986). Trees severely affected by greening are badly stunted and produce poor crops of predominantly greened, worthless fruit (McCLEAN & OBERHOLZER, 1965). Consequently, growers from certain areas have been forced to curtail citrus production (SCHWARZ, 1967; MOLL et al., 1980).

In earlier studies, 30 entomophagous insects, 2 predatory mites, a reed frog (VAN DEN BERG et al., 1987) and 18 spider species (VAN DEN BERG et al., 1992) were listed as predators of the citrus psylla. In an ongoing study of the natural enemies of the citrus psylla, more predators were encountered.

Material and methods

Observations on predators of the citrus psylla were made in a citrus orchard, the progeny of crosses of sweet orange cultivars and of rootstocks, on the Burgershall Experimental Farm (25°07'S, 31°05'E), eastern Transvaal. The observations were also made on False Horsewood trees, *Clausena anisata* (Willd.) Hook. f. ex Benth, an indigenous Rutaceae growing adjacent to Valencia citrus at the Nelspruit Experimental Farm (25°27'S, 30°58'E), eastern Transvaal. Any possible predator observed was studied to determine its association with the citrus psylla and was collected for identification.

The searching behaviour of the damselflies was studied with the naked eye and, to confirm that they were in fact preying on adult citrus psylla, some were caught when feeding.

Observations and discussion

Adult *Enallagma glaucum* (Burm.) were often encountered among citrus trees at Burgershall,

as well as False Horsewood trees at Nelspruit that were infested with citrus psylla. Adult psylla are caught by this damselfly. It scans the growth points and leaves by flying about 30 mm from them, moving up and down the leaves. If an adult psylla is seen, the latter is "picked" off the plant. In most cases observed, this catching technique was successful. The damselfly then flies to a nearby perch where the psylla is devoured.

E. glaucum seem to be fairly active in certain areas, especially close to open water where breeding takes place. However, their contribution to the control of the citrus psylla is probably small.

Scanning behaviour was also observed in other zygopteran species, but they were not seen to prey on citrus psylla.

Damselflies are also predators of rice pests (e.g. YASUMATSU et al., 1979). Apparently they have been recorded to catch their prey only when both the damselflies and their prey are in flight. This is their usual way of feeding, though several species in both the Zygoptera (e.g. *Megaloprepus coerulatus*; YOUNG, 1980) and the Anisoptera (e.g. *Epiaschna heros*; YOUNG & LOCKLEY, 1987) are capable of capturing prey from exposed places. The present case, however, is probably the first record of a zygopteran displaying this behaviour in combination with the predation of a major citrus pest.

Individuals of the ectoparasite, *Trombidium* sp. (Acarina: Trombididae) were often found attached to *E. glaucum* adults. Larvae of the *Trombidium* sp. were found with their mouth parts penetrating into the adult damselflies and are therefore considered to be ectoparasites rather than phoretics. About 1 in every 10 of these damselflies carried 1 to 3 of these ectoparasitic larvae. According to ÅBRO (1990) ectoparasitic larvae attach to the damselflies *Enallagma cyathigerum* and *Coenagrion hastulatum* when they emerge as adults while the damselflies *Pyrrhosoma nymphula* and *Lestes sponsa* become infested mostly during later visits to the water.

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