

CHILOCORUS CIRCUMDATUS GYLLENHAL NEWLY ESTABLISHED IN AUSTRALIA AND ADDITIONAL RECORDS FOR COCCINELLA UNDECIMPUNCTATA L. (COLEOPTERA: COCCINELLIDAE)

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Abstract

Chilocorus circumdatus Gyllenhal is recorded as established in Australia for the first time with *Unaspis citri* (Comstock) and *Aspidiotus nerii* Bouché (Hemiptera: Diaspididae) as new prey records. Additional distributional records are given for *Coccinella undecimpunctata*.

Abbreviations: ANIC, Australian National Insect Collection, CSIRO, Canberra; IPS, Institute of Plant Sciences, Burnley; QDPI, Queensland Department of Primary Industries, Brisbane; WADA, Western Australia Department of Agriculture, South Perth.

Chilocorus circumdatus Gyllenhal

Material examined—QUEENSLAND: 1 ♂, 3 ♀, Charters Towers, 13.vi.1990, J. D. Brown, on citrus (QDPI) [eating *Unaspis citri* (Comstock), J. D. Brown and D. Smith pers. comm.]; CHINA: 1 ♂, 1 ♀, scale feeder (WADA); 1 ♂, scale feeder, *Aspidiotus* (WADA); 1 ♀, Zhan Jiang, 1.xi.1988, G. K. Waite, on citrus (QDPI); INDIA: 3 ♂♂, 5 ♀♀, Bangalore, 1.ii.1960 (WADA).

The specimens from Queensland agree with those from China and India in punctuation and morphology. This species is recognisable by its dorsal colour pattern, yellow with thin black external margins of the elytra. (Pang and Mao 1979, Plate VII, Fig. 67). In addition, the male and female genitalia agree with those illustrated in Miyatake (1970, Figs 39-43), Nagaraja and Hussainy (1967, Figs 2, 2a, 8, 20, 30) and Pang and Mao (1979, Fig. 79). The siphonal apex is membranous, similar to that shown in Miyatake (1970, Fig. 41) [the membranous apex is also shown in Pang and Mao (1979) but not in Nagaraja and Hussainy (1967)]. The specimens key to group III (*C. circumdatus* and *C. bijugus* Mulsant) in the key to *Chilocorus* spp. in Miyatake (1970), and to *C. circumdatus* in both keys in Nagaraja and Hussainy (1967).

This species was previously known from south China, India, Sri Lanka, Indonesia (Miyatake 1970) and Hawaii (Leeper 1976) where it was introduced from China in 1895. Attempts have been made to introduce *C. circumdatus* into a number of countries, including California, Australia and South Africa (Rosen and De Bach 1978; Rao *et al.* 1971) to control diaspid scales, e.g. *Aonidiella aurantii* (Maskell) and *Comstockaspis perniciosus* (Comstock). *C. circumdatus* was unsuccessfully imported from Hong Kong into Western Australia in 1902 to control *C. perniciosus* (Wilson 1960). It was reintroduced together with 3 other *Chilocorus* spp. into the south-west of Western Australia from India in 1960-1963 to control *A. aurantii* on citrus (Rimes 1962; Sproul 1981). The fate of these latter introductions is unknown (Anon. 1981) but Pope (1988) believed that they failed to establish. In the absence of any intervening records of *C. circumdatus* in Australia and the distance separating the earlier introductions into Western Australia and the current record in Queensland, it appears the last may be a result of a separate, later introduction.

It was fortuitous that *C. circumdatus* was collected feeding on *U. citri* (white louse scale) at Charters Towers, as this scale is the most important pest currently threatening integrated pest management in citrus (Smith and Papacek 1985). Live specimens were sent to D. F. Papacek (Integrated Pest Management Ltd, Mundubbera) who successfully reared it on *Aspidiotus nerii* Bouché, Diaspididae, on pumpkins. It has since been widely released on citrus in south-east Queensland and appears to be breeding well on *U. citri* (D. Smith, pers. comm.). It is hoped that this coccinellid predator, together with an *Aphytis* sp. (Encyrtidae) parasite of *U. citri* from Thailand (first released in 1989) will enable this key pest to be controlled under the integrated pest management program.

A wide variety of diaspid scales, including *Aspidiotus destructor* Signoret, plus a few Coccidae have been recorded as prey of *C. circumdatus* (Leeper 1976; Pang and Mao 1979; Rao *et al.* 1971; Schilder and Schilder 1928; Thompson and Simmonds 1965). *Unaspis citri* and *A. nerii* are new host records for *C. circumdatus*.

Coccinella undecimpunctata L.

Material examined—VICTORIA: 1 ♂, Traralgon, vi.1990 (IPS).

The specimen keys to *C. undecimpunctata* in Pope's (1988) revision of the Australian Coccinellinae. It also agrees with the description given by Pope and with specimens of *C. undecimpunctata* from Perth, Western Australia and Tasmania in QDPI. Its colour pattern is similar to that of Pope (1988, Fig. 12), except that the anterior elytral spot is absent. This is the first record of this species from Victoria, Pope (1988) having recorded it from Tasmania and Western Australia. This species is widely distributed in the Palaearctic (Iablokoff-Khnzorian 1982) and has been present continuously in Australia in Perth since 1959 but in New Zealand as early as 1874 (Pope 1988).

¹ Deceased.

Note

The following records for *C. undecimpunctata* were provided by Mr T. A. Weir (CSIRO, Canberra) while the manuscript was in press. They were not seen by the author. NORFOLK I.: 1 ♂, Rocky Point Reserve, 14.xi-2.xii.1984, L. Hill; 3 ♂♂, 2 ♀♀, Point Hunter Reserve, 29.xi.1984, T. A. Weir; NEW SOUTH WALES: 1 ♀, Tomakin, 1-15.i.1988, W. & T. Dressler (anterior elytral spot missing); AUSTRALIAN CAPITAL TERRITORY: 1 ♂, Monash, 30.xii.1990, W. Dressler (anterior elytral spot missing). All in ANIC.

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