

THE FIELD RECOGNITION OF THE LARVAE OF THREE COMMON APHID-FEEDING COCCINELLIDS

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SUMMARY

Brief descriptions of the larvae of *Coccinella undecimpunctata* Linnaeus, *C. tasmanii* White and *Adalia bipunctata* Linnaeus, indicate the colour differences allowing their separation. Larvae and adults are figured and their known prey listed.

INTRODUCTION

The Ladybird Beetles of the tribe Coccinellini are amongst the most valuable predatory insects in the natural control of agricultural pests. They are almost wholly carnivorous, having a preference for aphids and mealybugs, although eggs and younger stages of lepidoptera are often taken, the only plant food consisting of pollen and sometimes fungi.

Larvae of the tribe can be recognised from other members of the family: larva elongate or fusiform, widest at the metathorax, usually with parascoli (short cone-like projections from the body wall bearing stout setae) or strumae (short mound-like projections bearing stout setae), not with elongate projections; thoracic segments provided with dorsal shield; abdomen gradually narrows towards the caudal end, the ninth abdominal segment about as long as wide and densely setiferous; legs well developed extending from the lateral margins of the body.

Although the adults of these aphid-feeding coccinellids are readily recognised in the field the identification of the larvae presents some difficulties. The following descriptions and figures illustrate differences in colour pattern by which the species can be easily separated.

COCCINELLA UNDECIMPUNCTATA LINNAEUS

(figs 1a, b, c)

Larva: General colour dark grey to black with creamy-yellow and orange markings. Prothorax black with a median and a lateral pair of creamy-yellow stripes and a slight suffusion of orange on the postero-lateral margins. Mesothorax and metathorax with paler median areas. Abdominal segments 1-8 with two pairs of strumae on the tergum and one lateral pair each with 4-5 moderately long stout setae. The dorso-lateral and lateral strumae of the first and fourth segments bright orange coloured.

Adult (fig. 1c): Elytra brick-red with 11 black spots, a pair of yellowish spots on the anterio-median margins. Thorax black with cephalo-lateral margins yellowish; the head black.

This species was introduced into New Zealand in 1874 (Dumbleton, 1936) for the control of aphids; the earliest known introduction

of an insect for biological control. It is generally distributed throughout the country and recorded also from the Kermadec Islands (Brown, 1910) and Chatham Islands (Brookes, 1925). Colenso (1888) described a new species, *Coccinella novae-zealandiae*, but this was later shown by Wight (1891) to be the same as *C. undecimpunctata*.

Recorded prey: *Brevicoryne brassicae* (L.), *Aphis craccivora* C. L. Koch, (misident. as *Aphis rumicis* L.), *Anuraphis bakeri* (Cowan), *Eriosoma lanigerum* (Hausman), *Aphis nerii* Fons., *Aphis gossypii* Glover, *Macrosiphum euphorbiae* (Thomas), *M. rosae* Linnaeus, *Myzus persicae* Sulz. (Gourlay, 1930); *Cavariella aegopodii* Del Guericco, *Aphis spiraeicola* Patch, (Cottier 1953); *Rhopalosiphum padi* (L.), (Cumber 1962); eggs and larvae of *Pieris rapae* L. and larvae of *Plutella maculipennis* Curtis (Kelsey, pers. comm.).

ADALIA BIPUNCTATA LINNAEUS (figs 2a, b, c)

Larva: General colour is dark brown to bluish-black, with white and light yellow markings. Prothorax black with median yellow stripe and a pair of cephalo-lateral yellow areas. Mesothorax and metathorax separated by a pale yellow area. Dorso-lateral strumae of the first abdominal segment yellow-orange, lateral strumae creamy-white; mesal portions of dorsal strumae of the fourth segment yellow-orange while the lateral portions are brown to black, a creamy-white colour extending across the meson. Each struma with 3-5 short stout setae. Lateral aspects of segments 1-8 yellowish, the strumae brown except the fourth which are light yellow.

Adult (fig. 2c): Orange-red with a circular or irregularly shaped spot near the centre of each elytron. Thorax black with lateral margins yellow, sometimes two yellow spots on the posterior margin; head black sometimes with two yellow spots.

It is not known when the species became established in New Zealand. It is also recorded from Auckland Islands (Brookes 1951).

Recorded prey: Many aphids undoubtedly provide food for this species, but *Myzus cerasi* (F.) is the only record published (Cottier 1953). To this can be added *Eulachnus brevipilosus* Borne (Lowe pers. comm.), *Macrosiphum rosae* Reaum and *Aphis nerii* Fons.

COCCINELLA TASMANII WHITE (figs. 3a, b, c)

Larva: Body colour dark grey to black with bright orange and yellow markings. Prothorax mostly black with paler median stripe and bright orange cephalo-lateral areas. Mesothorax and metathorax dark grey to black with paler median areas. Dorsal, dorso-lateral and lateral strumae on the first and fourth abdominal segments bright orange; extensive yellow-orange area mesad of the dorso-lateral strumae of the first segment and between the dorsal

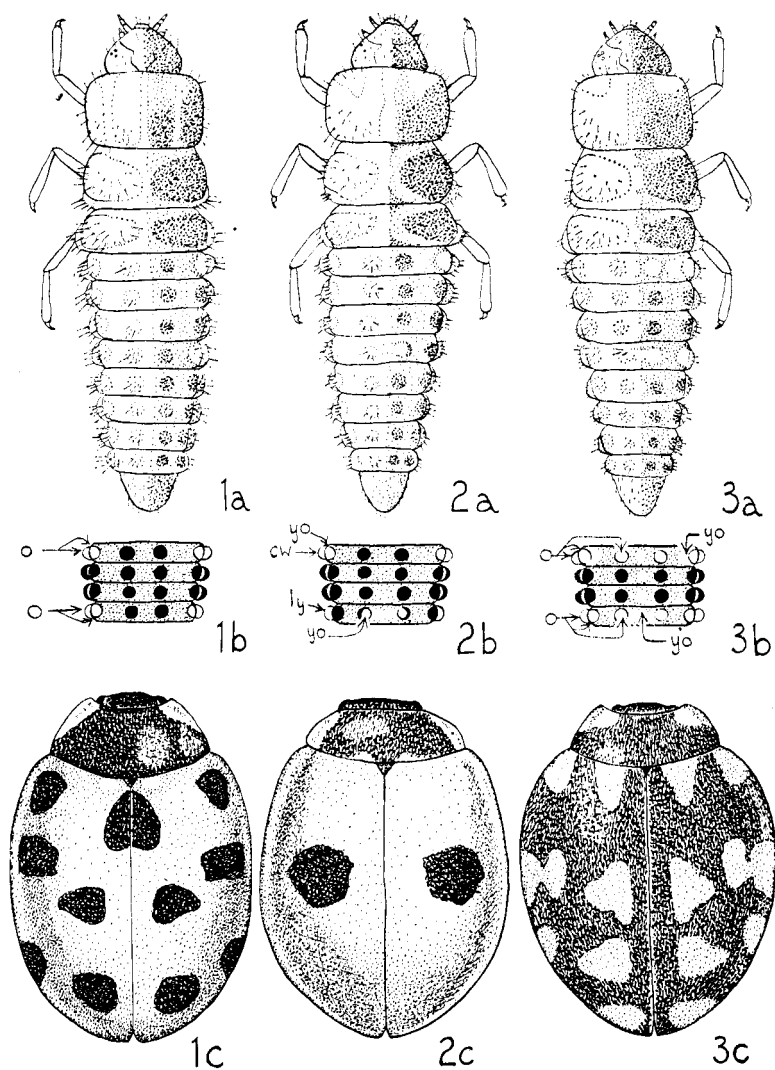


Fig. 1: *Coccinella undecimpunctata* Linnaeus. Fig. 2: *Adalia bipunctata* Linnaeus.

Fig. 3: *Coccinella tasmanii* White. (a) Fourth instar larvae. (b) Diagrammatic representation of the colour pattern on the first four segments of the abdomen. (c) Adults. O = orange; yo = yellow-orange; cw = creamy-white; ly = light yellow.

struma of the fourth segment, giving the appearance of almost complete bands of colour around these segments. Bases of all other strumae black. The strumae are all less prominent than in the first two species and have a dense pile of short setae, the longer setae fine.

Adult (fig. 3c): Black with 12 or 14 dark red spots on the elytra; thorax black with cephalo-lateral areas dark red.

Recorded prey: Gourlay (1930) records the same aphid species as are listed as prey of *C. undecimpunctata*. To these can be added *Macrosiphum rosae*.

Summary of the distinguishing characters of the larvae.

***Coccinella undecimpunctata*.** All dorsal strumae black; the dorso-lateral and lateral strumae of the first and fourth abdominal segments coloured.

***Adalia bipunctata*.** Dorsal strumae of the fourth segment partly coloured; dorso-lateral and lateral strumae of the first, and lateral strumae of the fourth segment coloured.

***Coccinella tasmanii*.** All strumae on the first and fourth segments coloured.

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