

A colourful new Australian reaches Talaroo: the Tawny Coster butterfly, *Acraea terpsicore*

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Abstract

Since being first found in Australia near Darwin in 2012, the Tawny Coster butterfly (*Acraea terpsicore*; Lepidoptera, Nymphalidae) has spread rapidly. We report its presence at Talaroo Station between Mt Surprise and Georgetown in far north Queensland, the species being detected at six of 13 sites that were surveyed for butterflies in February 2017. More than ten individuals were present at three sites, and breeding was confirmed at one of these. Talaroo falls a little outside the predicted preference envelope for the species in being in uplands well away from the coast, and in that the vegetation is little-disturbed, prompting the notion that the Tawny Coster may be even more versatile in its occurrence than previously suggested.

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The Tawny Coster (*Acraea terpsicore*; Lepidoptera, Nymphalidae) (Fig. 1) was first found in Australia near Darwin in April 2012 (Sanderson *et al.* 2012). Over the ensuing 14 months, it spread west into the Kimberley and east through substantial areas of the Top End of the Northern Territory (Braby *et al.* 2014b). More recently, it has been reported to be “well established” in the Kowanyama area of Queensland’s Gulf coast (Wilson 2016) and in October 2016 one was seen near Georgetown (J. Booij, personal communication). The species is native to India and Sri Lanka, but in recent decades has expanded through South-east Asia including the Indonesian archipelago at an estimated rate of 200 km per year (Braby *et al.* 2014a). Its early expansion within Australia has been even more rapid at 315 km per year (Braby *et al.* 2014b). Based on the distribution of its main food plant in Australia, and on a climate-envelope model developed from recently-colonised sites in South-east Asia and the Northern Territory, Braby *et al.* (2014a) suggested that the species was likely to

establish throughout the coastal and sub-coastal lowlands of the Australian monsoonal tropics, and perhaps also along the north-east coast of Australia.



Figure 1. Female Tawny Coster.

The male is a more intense orange. Photographed at Talaroo by Gary Wilson.

Here we report establishment of the species at Talaroo Station (18°05'S, 143°52'E) between Georgetown and Mt Surprise in Queensland's Einasleigh Uplands Bioregion. The Station is a 31,500 hectare pastoral lease now de-stocked and run as a nature refuge by the Ewamian Aboriginal Corporation, having been formally declared as a nature refuge in 2014 under the *Nature Conservation Act 1992*. It comprises a 28 km frontage to the Einasleigh River with associated riparian vegetation, an undulating plain supporting woodland and open woodland (mostly eucalypt-dominated) on metamorphic, sandstone and granitic substrates, and an elevated granitic portion of the Newcastle Range that supports low open eucalypt woodlands and *Acacia* and *Cochlospermum* shrublands.

In May 2015 and May 2016, we surveyed flora and fauna throughout much of the Station though with limited butterfly surveys (26 species detected), and did not record the Tawny Coster.

In February 2017, we conducted butterfly surveys at thirteen sites (0.5 to c. 3 hours each; 30 species detected), and detected the Tawny Coster (Fig. 1) at six of these. At three of the six sites, we estimated that there was in excess of ten individuals (Table 1), while at the remaining sites one individual was observed. At the top of 'Telstra

Hill' and 'Etheridge Shire Hill', Tawny Coster were observed in 'patrolling' flights often at 2 to 4 m above the ground, strongly suggesting 'hill-topping behaviour' (as noted for the species by Braby *et al.* 2014b) – aggregating at hill tops to search for mates – though at both we note also that the larval food plant was present. At 'Top Horse' paddock (not on a hill), revisited by GWW on 2 March 2017, Tawny Costers flew below 2 m above the ground and mostly less than 1 m above ground, repeatedly visiting a known larval host plant (Braby *et al.* 2014b), the Lilac Spade-flower (*Hybanthus enneaspermus*, Violaceae) (Fig. 2). Several Tawny Coster caterpillars were detected on the Lilac Spade-flower (Fig. 3), and a Tawny Coster chrysalis (pupa) was located at this site (Fig. 4). Tawny Costers at this site were also often seen to feed at flowers of the Sunflower Daisy (*Wedelia asperima*, Asteraceae) (Fig. 5).

Our Tawny Coster sites were dispersed widely across the Station and in a variety of vegetation types (Table 1) on landforms ranging from plains savanna and swampland to elevated granitic hills. The furthest distance between sites was 21.8 km. The larval food plant, *Hybanthus enneaspermus*, was present and often abundant at all Tawny Coster sites and at most other of our survey sites. Apart from access roads and tracks, most of the

Table 1. Attributes of sites at Talaroo Station where the Tawny Coster was observed.

'Qld RE': Queensland Regional Ecosystem, <https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/>, version 9.0 downloaded 16 May 2015. RE matched from vegetation descriptions, not intersection with coordinates.

Site	No. of Tawny Coster	Date	Latitude Longitude	Elevation (m ASL)	Qld RE	Vegetation description
TAL1	1	21/2/17	18°01.1'S 143°48.0'E	411	c. 9.12.27	<i>Eucalyptus microneura</i> low open woodland
below 'Ticknell's Dam'	1	21/2/17	18°01.3'S 143°47.9'E	405	c. 9.12.27	minor creekline within low woodland of <i>Corymbia ?erythrophloia</i>
'Top Horse' paddock	>10	22/2/17 also 23/2, 24/2 & 2/3	18°09'S 143°58'	360	9.5.10b	<i>Eucalyptus microneura</i> , <i>Terminalia platyptera</i> woodland
'Telstra Hill'	>10	22/2/17	18°03.6'S 143°49.7'E	399	9.12.36a	<i>Cochlospermum</i> shrubland
'Etheridge Shire Hill'	>10	22/2/17	18°03.7'S 143°49.5'E	436	9.12.36a	<i>Cochlospermum</i> shrubland
Talaroo Hot Springs	1	23/2/17	18°07'S 143°58'	345	9.3.10a	<i>Melaleuca bracteata</i> swamp



Figure 2. The main caterpillar food plant for the Tawny Coster in Australia is the Lilac Spade-flower (*Hybanthus enneaspermus*). Photographed at Talaroo by Gary Wilson.

sites were little-disturbed with intact native vegetation. Exceptions were that the pastoral fodder plant Stylo (*Stylosanthes* sp.) was prominent in the understorey at 'Top Horse' paddock, and that the Talaroo Hot Springs swampland has a history of disturbance to water flows and supports a mix of high-quality and salinated swamp vegetation.



Figure 3. Caterpillar (larva) of the Tawny Coster. Photographed at Talaroo by Gary Wilson.

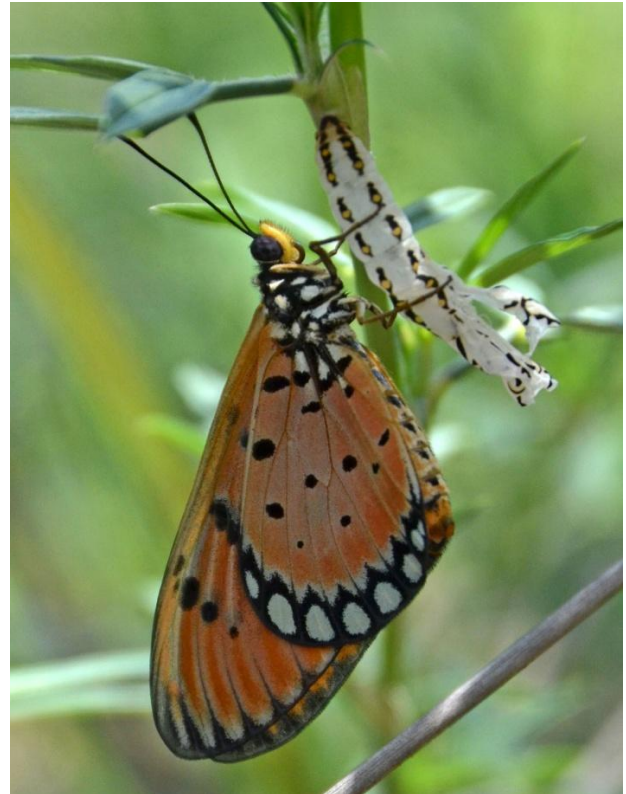


Figure 4. Tawny Coster evidently newly emerged from, and still clinging to its pupal case. Photographed at Talaroo by Don Franklin.

The Tawny Coster has already bred at Talaroo, and it is unclear to what extent its considerable abundance there is the result of immigration and local breeding. Our observations of high levels of activity at three sites is consistent with the colonisation phase of its establishment in the area (Michael Braby, personal communication). The species may have arrived at Talaroo since May 2016 as we did not detect the species then, but with a combination of limited surveys and suboptimal time-of-year (the species flies mainly in the wet season, Braby *et al.* 2014b) we cannot rule out that it was present at the time.

In one sense, the arrival and breeding of the Tawny Coster at Talaroo is to be expected, as the species is anticipated to spread rapidly across northern Australia (Braby *et al.* 2014a) and its larval food plant is common at Talaroo. However, we note that Talaroo lies within the modelled less-preferred areas, presumably due to its distance from the coast (340 km from the Gulf of Carpentaria, 220 km from the Pacific Ocean), somewhat-elevated landforms and slightly cooler climate. It would be premature to draw strong conclusions without



Figure 5. Tawny Coster feeding at a flower of the Sunflower Daisy (*Wedelia asperima*).
Photographed at Talaroo by Gary Wilson.

further observation over time and space, but our sightings suggest the hypothesis that the climate envelope model of Braby *et al.* (2014a) could be unduly conservative and that occurrence of the larval food plant may be the key to the eventual range of the Tawny Coster in Australia. Although the species utilises a wide variety of larval food plants in Asia, observation and experimentation (Braby *et al.* 2014b) demonstrate limited adaptability of the Australian population, with the Lilac Spade-flower the main food plant, the introduced Wild Passionfruit (*Passiflora foetida*, Passifloraceae) widespread in northern Australia utilised occasionally, and the monsoon liane Lacewing Vine (*Adenia heterophylla*, Passifloraceae) used only in experimental conditions. It is noteworthy also that our observations were mostly in little-disturbed vegetation, suggesting also that the species may be more versatile than noted by Braby *et al.* (2014a) for its “preference for disturbed and open degraded areas”.

It is relevant to consider whether the Tawny Coster is a welcome addition to the Talaroo butterfly fauna, and indeed to that of northern Australia. There is no evidence to suggest other than that the species has arrived in Australia of its own accord, though its spread from India and Sri Lanka may have been prompted by deforestation in South-east Asia. Braby *et al.* (2014b) evaluated the biosecurity implications of its presence in Australia, with the only possible adverse conclusions being depredation of its larval food plant and competition for those food plants with its

congeneric native Australian counterpart, the Glasswing (*Acraea andromacha*). Apart from short-term degradation of food plant stands, there is no evidence of these adverse impacts; they remain open questions for further observation.

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