

Making History, *Acraea terpsicore* (Lepidoptera : Nymphalidae) - John Moss & Peter Hendry

The butterfly we now know as the Tawny Coster (*Acraea terpsicore* Linnaeus, 1758) can be traced back to 1695. Its name has a complex and confusing history which even today is not fully resolved, while the butterfly itself is still making history.

In the Beginning:

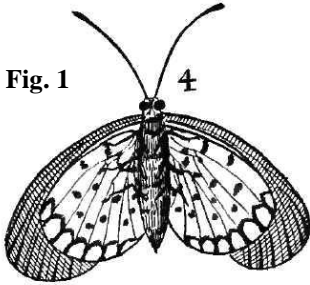
James Petiver (1663-1718), was a London apothecary (precursor to the modern-day pharmaceutical chemist). According to Salmon (2000) he *may be considered the father of British Butterflies*. He conversed with the English naturalists of the time, including identities such as John Ray (botanist and zoologist) and Sir Hans Sloane whose natural history collection, which contained some of Petiver's material, became the founding collection of the British Museum. Petiver was a member of the Temple Coffee House Botanic Club, said by Allen (1976) (in Salmon, 2000) *to have been the earliest natural history society in Britain and probably the world*. Petiver had connections in British outposts of the time and encouraged travellers to collect for him.

A Mr Edward Buckley who collected around Fort St George, Madras (now Chennai) on the Coromandel Coast of the Bay of Bengal, S. E. India, is most likely the person who collected a butterfly Petiver (1695) called *Papilio Madraspt.*, a shortening of Madraspatnam. Madraspatnam [also spelt as Madraspatam, Madraspatan, Madraspattan and from Tamil, Mādarasanpattanam] was the name of a fishing village, where in c. 1640 the British East India Company built Fort St. George, which then became known simply as Madras (Dalrymple, 2019) present day Chennai. In his description Petiver notes that *they are observed about Fort St. George in November*. Petiver (1702) in a description of his illustration (plate 40 figure 4) using the name *Papilio MADRASPATAN*, notes it was from Fort St. George and uses the common name of "Madras Fritillary". Many of Petiver's common names for British butterflies stand today, namely admirals, arguses, hairstreaks, tortoiseshells and the Brimstone (*Gonepteryx rhamni*), perhaps the original butterfly, (Salmon, 2000).

Carl Linnaeus (1707-1778) was a Swedish botanist, zoologist, and physician who formalised binomial nomenclature, the modern system of naming organisms. The 10th edition of his *Systema Naturae*, 1758 is regarded as the starting point for zoological nomenclature. However, Carl Alexander Clerck (1709 – 1765), a Swedish entomologist and arachnologist published *Svenska Spindlar* in 1757, a book on Swedish spiders. The scientific names proposed by Clerck were based on Linnaeus's binomial system and have been recognized in the International Code of Zoological Nomenclature. The first animal named under the modern system was the orb-weaving spider, *Araneus angulatus*.



Within the 10th edition of his *Systema Naturae*, 1758, Linnaeus named *Papilio terpsicore*, this proved to be the start of a long journey for both the butterfly and its name. Included in Linnaeus's description, which noted "Asia" as its habitat, was a reference, *Pet. Gaz. t. 40 f. 4*, referring to Petiver's Gazophylacium, (table 40 figure 4). [Fig. 1, reproduced here from a reissued collection of Petiver's work compiled and published by John Millan, 1767]



Linnaeus's spelling of *terpsicore* could be considered a misspelling for either one of two alternative considerations. Firstly, in Greek mythology, Terpsichore with an h, was the name of the Muse of Dance one of the nine muses

considered to be goddesses who ruled over the arts and sciences, and as Greek names were often favoured by Linnaeus, it could be considered a misspelling, [although using this form of the name could have been a deliberate intention on his part]. Thalia, the Muse of Comedy, is a name also used by Linnaeus in *Systema Naturae*, 1758. The alternative reason that *terpsicore* could be considered a misspelling, is the fact that in an expanded description of the species written by Linnaeus himself in *Museum Ludovicæ Ulricæ reginæ svecorum, gothorum, vandalarumque* (1764), he actually spelt it as "Terpsichore", i.e. with an "h"! However, in the twelfth edition of *Systema Naturae* (1767) he reverted to *terpsicore*, with a description that was an exact copy of his 1758 one, except for the addition of a reference to his 1764 work. All this aside, under current convention, the rules of the International Code of Zoological Nomenclature, dictate that the first published name must prevail. Thus "*terpsicore*" it remains!

Johan Christian Fabricius (1745–1808), was a Danish zoologist and a student of Linnaeus. It was Fabricius, who in 1807, the year before his death, raised the genus *Acraea*. Today it belongs in the Nymphalidae family, subfamily Heliconiinae, tribe Acraeini. At that time Fabricius placed within the genus three species, namely: *Papilio horta* (Linnaeus, 1764), the type species by subsequent designation (Scudder, 1875), *Papilio terpsicore* (Linnaeus, 1758), using the spelling Terpsichore and *Papilio brassolis* (Fabricius, 1777) which was a replacement name for Cramer's 1775 *Papilio Bellona*. [Note, *brassolis* is now in the genus *Archonias* and is actually a member of the Pieridae family.]

Papilio violae: Not recognising the pre-existing *terpsicore* for a specimen sent to him in 1775, Fabricius described it as new, naming it *Papilio violae* [now considered to be a synonym of *A. terpsicore*] giving its locality as *habitat in violis, boragine Indiae orientalis* (in India amongst violets and the herb Borage). In trying to pin-point the exact location, it is noted that Fabricius refers to the collector as "Koenig", an author abbreviation for Johann Gerhard König, a German botanist, who was also a student of Linnaeus. König, from 1773 to 1785 worked in India as a naturalist to the Nawab of



Arcot, who during that period was Muhammad Ali Khan Wallajah. Madras (Chennai) was situated within the district of Arcot, also known as Carnatic. It is known that König embarked on trips to the mountains north of Madras (as well as to Ceylon) so it is quite possible for Fabricius's *violae* to have been collected in a similar location to Petiver's Madras Fritillary. Thus the name *violae* became widely associated with the Asian *Acraea* known as the "Tawny Coster". [As an aside, Linnaeus named the Curry Leaf Tree (*Murraya koenigii*) in König's honour].

Almost Lost in Time:

The spelling *terpsichore* was used by many of the early authors. In fact, a search of the early works on Lepidoptera will find a far greater number of references under *terpsichore* than *terpsicore*. Meanwhile the name *terpsicore* became more and more associated with African acraeas either as forms or subspecies. Thus Rothschild and Jordan (1905) in a continuation of their paper, Lepidoptera collected by Oscar Neumann in North-East Africa, incorrectly noted Linnaeus's location of *terpsicore* as in error ("Asia" *err. loci*).

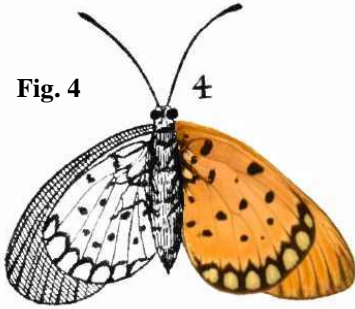
Harry Eltringham (1873-1941) was an English histologist and entomologist who specialised in Lepidoptera. Eltringham (1912) in his Monograph of the African Species of the Genus *Acraea*, using the spelling *terpsichore* describes it as an *extraordinarily variable species especially in the ♀ sex* and gives an African distribution as *from about 10.3° n to 30° s and in Madagascar and the islands*. He describes and lists many forms and several subspecies. Some examples include:



A. terpsichore f. *rangatana* which he illustrated (Fig. 2). This is now a full species, namely *Telchinia rangatana* (Eltringham, 1912). Hewitson's *A. ventura* he redescribes as *A. terpsichore* f. *ventura* (which is now *Telchinia ventura* (Hewitson, 1877) and Sharpe's *A. ochrascens* as *A. terpsichore ochrascens* (illustrated in Jordan & Eltringham, 1916) (Fig. 3) but which is now *Telchinia ventura ochrascens* (Sharpe, 1902). None of Eltringham's "terpsichore" forms and subspecies hold true today as the real *terpsicore* is not present in Africa!

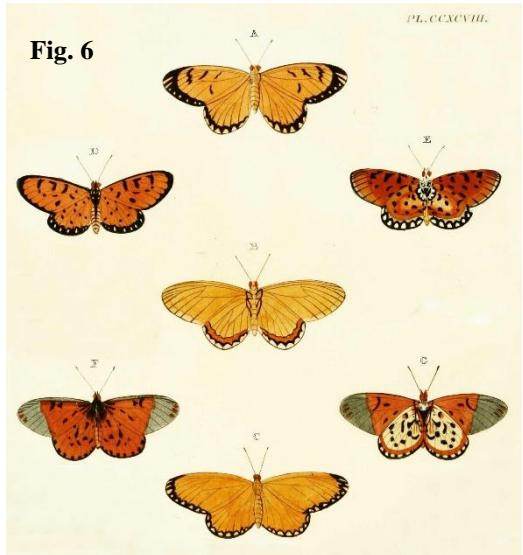


Charles Le Doux, was a German entomologist, who published extensively on the Acraeini. In 1928, Le Doux, with the help of Dr. N. D. Riley from the British Museum compared Fabricius/Konig's *violae* with Linnaeus/Petiver's Fort St. George specimen point by point, using Petiver's illustration and declared: *there is now no doubt that Linnaeus Ac. terpsichore = Ac. violae Fab. 1775.* (Fig. 4 is the author's attempt to overlay an *A. terpsichore* image with Petiver's illustration.)



In confirmation, Ackery, Smith & Vane-Wright (1995) stated that *Papilio terpsichore* is in fact the oldest available name for the Oriental species widely known as *Acraea violae* (Fabricius). They also noted that *terpsichore* was incorrectly used for the African species now known as *Acraea eponina* (Cramer) and quoted Henning, G. A. (1986) who stated that *A. terpsichore* and [the African] *A. neobule* are specifically distinct.

Some examples of the misidentification of *terpsichore* are in the illustrations from early works. Sulzer (1776) illustrated (Fig. 5) *Acraea cepheus* (Linnaeus, 1758) with what is clearly *A. terpsichore*. Cramer (1782) illustrated (Fig. 6) three species on his plate 298. His figures A, B and C (noted as *terpsichore*) are a misidentification of the Asian Yellow Coster, *Telchinia issoria* Hübner, 1819. His figures D and E which actually represent *terpsichore*, were noted as *cephea*. The other figures, F & G, are noted as *horta* (Linnaeus, 1774) the type species of *Acraea*, to which it does have some resemblance.



For a better understanding of the problems surrounding *terpsichore*, the authors recommend Pierre & Bernaud, 1997. Although written in French it translates fairly well



using the web site Google Translate. This should be followed by Honey & Scoble, 2000, who, in what must have been a massive undertaking, researched 305 species named by Linnaeus under the genus *Papilio*. Under *terpsicore* they qualified some of Pierre & Bernaud's 1997 statements regarding the examination of types and concluded, *in the absence of authenticated syntypic material, the identity of terpsicore remains, therefore, in doubt, and we view the synonymy of terpsicore and violae as likely but unestablished.*

Sanderson, Braby, Thistleton & Neal, 2012 were the first to report on the occurrence *A. terpsicore* in Australia and used *terpsicore* over *violae*, which is followed herein. However, it must be stated that while the current names of other species listed above are from the online checklist provided by Nymphalidae.net, edited by Niklas Wahlberg (accessed 15/12/2020), this checklist favours *violae* with no reference to *terpsicore* and the online barcode site IBOLD also use *violae*.

Prelude to Invasion of Australia:

Many papers have been written about the expansion of the Tawny Coster butterfly (*Acraea terpsicore*) from its original home in India and Sri Lanka. It has made a rapid progression across South and South-east Asia within the last three decades, and more recently across the Australian Continent since it first appeared on the Cox's Peninsula in the Top End of the Northern Territory in April 2012.

These sightings (and captures), initially by Chris Sanderson and Michael Braby, were first reported to the scientific community by Sanderson *et al* in the August 2012 issue of *Myrmecia* (News Bulletin of the Australian Entomological Society) and subsequently in two local publications: namely a short article by Michael Braby in the February 2013 number of *Nature Territory*, newsletter of the Northern Territory Field Naturalists' Club, followed by a similar one in the July 2014 newsletter of the Top End Native Plants Society, following Michael's June talk to the group. This talk was partly based on a presentation Michael had made in the previous year to an international symposium (on Asian butterfly biodiversity) in Taiwan which *inter alia* included discussion on actual and perceived threats to horticultural products, as some concerns had been raised by the industry of possible impacts from this immigrant butterfly. While these for the most part have been allayed, below we will discuss the issue of known and potential host plants for this species in Australia.

Meanwhile, one year later on the 27th of April 2013 Geordie Paton, a BOIC member from Broome WA, discovered the butterfly near Kununurra in the East Kimberley. This was reported in the September 2013 issue (No. 70) of *Metamorphosis Australia* by Ross Kendall, who also commented on the local literature and summarised the Tawny Coster situation up until that date. Just as interesting is his mention of Trevor Lambkin's October 2010 trip to the Lesser Sunda Indonesian island of Flores where he recorded the butterfly for the first time; it not having been present on previous



visits. Thus it is interesting to speculate whether the first Australian specimens came from Flores or Timor, the latter island being the currently accepted origin.

Peter Wilson of Bundaberg was the first to record the butterfly from Queensland with many sightings in the western Gulf of Carpentaria region including the township of Kowanyama and in the lower Mitchell River Catchment in August 2016 (as appears in the September 2016 News Bulletin of the Entomological Society of Queensland). Following those reports, the butterfly next made an appearance in February 2017, much further to the east at Talaroo Station in the Einasleigh Uplands Bioregion between Mt Surprise and Georgetown. This was reported in volume 47 of the *North Queensland Naturalist*, with the delightful title “A colourful new Australian reaches Talaroo: The Tawny Coster butterfly *Acraea terpsicore*”. The authors report the larvae as feeding on the “Lilac Spade-flower” *Hybanthus enneaspermus* (Franklin *et al.*, 2017).

Queensland East Coast Arrival:

The first news of the butterfly reaching the Queensland east coast (at Cairns on the 27th March 2017) was reported by the late BOIC member Bob Miller in a short article in *Metamorphosis Australia* entitled “They have finally arrived!” There was no mention of the butterfly’s name in the title of the article but we all knew exactly which creature Bob was referring to! Another paper appeared in volume 47 of the North Queensland Naturalist (Field, 2017) with further information on the butterfly’s appearance in the Cairns area. The following morning (28th March) the author observed a large migration of the butterfly in a south-easterly direction over Trinity Bay “carried by the strong winds of Tropical Cyclone Debbie”. Comment was also made on the observed larval food plants, being *Hybanthus enneaspermus* (now *Afrohybanthus enneaspermus*), *Adenia heterophylla* and the exotic *Passiflora foetida*. It was noticed that the butterfly appeared to have a preference for ovipositing on the *Adenia* which he pointed out is already the host plant for three other native butterflies, thus eliciting some concern about possible unhealthy host plant competition.

In quick succession the butterfly made appearances further south along the coast at Townsville from 11th to 16th May (Dunn and Woodger, 2017) and at Bowen on 5th June (Dunn and Petrie, 2017) with the observation that large areas of the exotic vine *Passiflora foetida* at Townsville were “completely denuded” by larvae of the butterfly! The migration has also been in a northerly direction, into Cape York Peninsula and further north in the Torres Strait on Horn I. (Ham, 2020).

My own personal experience [John] of this butterfly, during a May 2016 visit to the Top End, was eventful with numbers of them visiting flowers along the roadside of the Kakadu Highway about 50km ENE of Pine Creek. They were being pushed along by the smoke of a destructive fuel reduction fire (one of too many encountered in many areas visited in the Top End!). A number of these butterflies were also seen visiting weedy flowers along the river banks within the town of Katherine.



Meanwhile Michael Braby and colleagues had been alerting the scientific community to this phenomenon, with major papers in two international journals (Braby *et al* 2014a,b). The first, published in *Insect Conservation and Diversity*, covered the spatial distribution and range expansion of *A. terpsicore* in South-east Asia and Australia, including presumed factors that led to the expansion such as climate change, deforestation (e.g. for Oil Palm and acacia monoculture), other habitat deterioration (e.g. mining), and the butterfly's ability to invade disturbed areas such as weedy wasteland and roadsides. Also, using Ecological Niche Modelling, the authors were able to make interesting predictions of the where, when and how of range expansion.

The second major paper, in *Austral Entomology*, looked at life history and focused on the biological and host plant aspects of current and potential distribution, using feeding trials to predict plant preferences. They determined that both native species (e.g. *Afrohybanthus enneaspermus*) and some exotics (e.g. *Passiflora foetida*) [ex South America] would be utilised, but horticultural species (e.g. *Passiflora edulis* and *cucurbits*) were not at risk. We are interested to see that *A. terpsicore* may have some potential as a biological control agent for the SEQ weedy Corky Passion Vine (*P. suberosa*) [ex South America] as about 15% were reared to adults on this plant. Although the feeding trial did not include it, *Passiflora subpeltata* [prob also ex South American and similar to the exotic *P. foetida*] is another weedy passion vine common in Queensland as well as parts of Asia where *A. terpsicore* is known to use it (Nidup, 2015). Hopefully, if the butterfly is of the right stock, it may find *subpeltata* to its liking here! One of the many elucidating and interesting aspects covered in Braby 2014b was mention of the “founder effect” of limited gene pool (i.e. the original invasive stock) which was/is an important determinate in which larval food plants were preferred. If *A. terpsicore* manages to establish in SEQ it will be interesting to see if the butterfly finds “Orange Spade-flower”, *Afrohybanthus stellarioides* (Fig. 7), to its liking. This plant, extending further south in Qld & NSW, is very similar to *A. enneaspermus* and is a host for the local Glasswing butterfly, *Acraea andromacha* (Fabricius, 1775) (Fig. 8).



Fig. 7

A current working paper by Chowdhury *et al* (Nov 2020) in *Biodiversity Research*, section of *Diversity and Distributions*

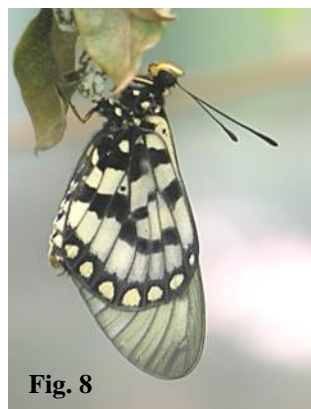


Fig. 8

[Wiley org.] covers much the same topics and enlarges on the subject of niche conservatism in the range extension of this butterfly. In a chronological



listing, the authors summarise the published records of the butterfly's progress across South and South-east Asia. They then go on to analyse the geographic spread in Australia and attempt to justify their claim that there has been nil or "little" climatic niche shift involved in the butterfly's unprecedented expansion with a determination that previous predictions were still valid.

Confounding Findings:

More recently Robert Ham discovered the butterfly had also turned up unexpectedly in drier inland centres of Queensland such as near Winton and further south-west along the Diamantina River, but also extending further south-east into the channel country between Blackall and Windorah (Ham, Sept 2020). An interesting comment is worth including here as (like Franklin *et al*, 2017) it casts some doubt on the prevailing view of limitations in the butterfly's ability to expand into areas not considered suitable for its known environmental requirements. He states: *--these locations are outside the species potential Australian geographical distribution as predicted by using ecological and bioclimatic niche modelling* which had initially been raised by Braby *et al* (2014a). However, Ham also infers that the situation may be a short term one, as it likely to have been assisted by local weather factors, as the butterfly's presence may have been the *result of dispersal aided by the high rainfall event in north-west Queensland in February 2019, and subsequent flooding of rivers into the Channel Country, promoting food plant growth, and thus the potential for dispersal*. Ham also noted that all these western locations were outside the known range of *A. enneaspermus* the primary host plant of *A. terpsicore* but another related species *A. aurantiacus* does occur in suitable habitat where the butterflies were observed. It is also known that the related endemic Australian *Acraea andromacha* uses, in these drier areas, another *Afrohybanthus* species which is probably *A. aurantiacus*, and likely to be available for *A. terpsicore* as well, thus setting the stage for potential host plant competition between the two species. This potential for competition for larval food plants with Australian species has been mentioned previously; above in Field, 2017 and Braby *et al*, 2014b.

FaceBook stories:

One reason for this part of the article is to determine the authenticity of several recent Tawny Coster sightings said to have occurred in South-east Qld and northern New South Wales. We attempt to tie together the loose (even frayed!) ends of these observations.

On the 1st November 2020 Jackie Beer of the Australian Butterfly and Moth Facebook (ABM Fb) page posted an unconvincing video. To quote: *It was Redland bay, near the Sealink ferry, 3 were seen in that location all up.* (J. Beer, pers. comm., 5th January 2021). However, her sighting was backed by Simon Paul Brown who has had some experience of the butterfly in Singapore. Both are convinced it was *A. terpsicore*.



This was followed on the 4th November 2020 by Mark Korner who posted, on the Butterfly and Other Invertebrates Club Facebook (BOIC Fb) page, images of an adult taken at Glen Cairn, Gatton. This posting prompted quite a discussion, including a comment by Peter Erwin who noted: *There was a sighting near Redcliffe over the weekend*, which must remain unconfirmed. Mark Korner replied with: *just read that one was observed at Coffs Harbour* (New South Wales). This comment was further remarked upon, in particular by Chris Sanderson, who noted: *We had a Coffs Harbour record over the weekend as well! And: Michael Braby thinks we are looking at a vagrant event and that they won't establish this far south, but let's wait and see.*

On the 7th November 2020 Douglas Dew posted on the BOIC Fb page images of an adult taken at the Mount Basalt Environmental Reserve near Millmerran, South-east Qld. This was followed on the 16th November 2020 by Dewi Chai who posted images of adults on the ABM Fb page taken at Terania Creek (near Lismore) northern NSW.

In addition, there is an unconfirmed image of a pupa, said to be this species, taken near Bulimba Creek, Carindale, Brisbane, posted on the iNaturalist web site by katramzy63 on the 6th July 2020 (observed on the 5th). Probably determined to be a pupa of the Tawny Coster, and not the very common and similar Glasswing, based on the orange pre-emergence pupal colour in the image. Both of us live in the Redland Bay area and John is involved with the Bulimba Creek Catchment Coordinating Committee (B4C), both spend much time in our acreage gardens and nearby bush, and have yet to encounter one!

There have been no further records since November 2020 and no real indication of breeding taking place in SEQ or northern NSW. Furthermore, it is yet to be confirmed that *A. terpsicore* can acclimatise and establish itself in SEQ or any part of NSW.

Based on the Millmerran and Gatton sightings it is possible that this small influx of specimens into SEQ and northern NSW has come from the north-west rather than down the eastern seaboard. As all of these records involve single individuals or at most are very few in number, we are inclined to agree with Michael Braby that these November sightings were of vagrant individuals, possibly due to short lived local weather effects such as stronger than usual prevailing north-west winds.

Before we finish with FaceBook we need to make comment on two plants associated with this butterfly that may cause some confusion. They are Dragon Fruit (*Selenicereus undatus*) and White Alder or Morning Flower (*Turnera subulata*).

An odd report of *A. terpsicore* larvae eating Dragon Fruit was posted on the ABM Fb page by Gregorio Bortolussi on the 20th October 2018. It was accompanied by an image (Fig.9) of a larva on Dragon Fruit with the caption: *a caterpillar munching on the fleshy stem tissue*. Other images posted included an adult female *terpsicore* (Fig.10) two of pupae with one image showing two pupa hanging off the stem of a



Dragon Fruit (Fig.11) as well as an image of blackened damaged stems (Fig.12). The images were taken in the Mossman area of North Queensland.



This was not convincing, as no actual chewing damage could be seen in the image with the larva and the image of old chewings possibly being made by something else, plus the fact that the

related Glasswing (*Acraea andromacha*) is well known to travel some distance from its host plant to pupate. This was put to Bortolussi, who replied: *I was a bit late getting up there as my mate is the farmer who owns the crop and contacted me about the damage being done. The photo of the caterpillar was the last live one and it*



appears to be getting the chomp on. I do not discount the fact that the caterpillars may have moved in to pupate. Further investigation is warranted. This occurred in early May 2018 and has not been seen since. It is the view of the authors that *A. terpsicore* is not hosted by Dragon Fruit.

Another image posted on ABM Fb by Gregorio Bortolussi (Fig. 13) on 10th July 2020 was of a Tawny Coster larva: *feeding on a Morning Flower plant, Newell Beach N.Qld. Turnera subulata* which is a perennial herb in the family Turneraceae from tropical South America, first recorded as a host plant for *A. terpsicore* in 2016 at Thammampatti, Salem District, Tamilnadu, India, where it is used in preference to the usually “popular” *Passiflora foetida* (Gideon *et al*, 2016). The paper lists 7 other Indian host plants including *Afrohybanthus enneaspermus*, *Passiflora edulis*, *P. foetida*, and *P. subpeltata* which as expected would indicate a broad gene pool for the butterfly in that country.

In preparing this article the authors would like to thank the following: Michael Braby who provided several current articles; Roger Kitching who helped in researching historical papers; Jackie Beer for providing extra information on her sightings; Gregorio Bortolussi who also provided extra information on his sightings as well as allowing the use of several images (Figs 9 -13) and finally the online Biodiversity Heritage Library for access to historical works and illustrations.

Photos represented by Figures 7 & 8 by Peter Hendry

References:

- Ackery, P.R., Smith, C.R., Vane-Wright, R.I. (Eds) 1995. *Carcasson's African Butterflies: an annotated catalogue of the Papilionoidea and Hesperioidea of the Afrotropical Region*. CSIRO Publications. Melbourne, Victoria
- Braby, M.F. 2013. The Tawny Coster (*Acraea terpsicore*) in the Northern Territory: a new butterfly for Australia. *Nature Territory (Newsletter of the Northern Territory Field Naturalists' Club Inc.)* Feb 2013
- Braby, M.F. 2014. Range expansion of an invasive butterfly in South-East Asia and Australia: a consequence of tropical deforestation or climate change? Report of June 2014 talk. In *Newsletter of the Top End Native Plant Society* July 2014
- Braby, M.F., Bertelsmeier, C., Sanderson, C. and Thistleton, B.M. 2014a. Spatial distribution and range expansion of the Tawny Coster butterfly, *Acraea terpsicore* (Linnaeus, 1758) (Lepidoptera: Nymphalidae), in South-East Asia and Australia. *Insect Conservation and Diversity* 7: 132-143
- Braby, M.F., Thistleton, B.M. and Neal, M. 2014b. Host plants, biology and distribution of *Acraea terpsicore* (Linnaeus, 1758) (Lepidoptera: Nymphalidae): a new butterfly for northern Australia with potential invasive status. *Austral Entomology* 53: 288-297
- Chowdhury, S., Braby, M.F., Fuller, R.A. and Zalucki, M.P. 2020. Coasting along to a wider range: niche conservatism in the recent range expansion of the Tawny Coster, *Acraea terpsicore* (Lepidoptera: Nymphalidae). *Biodiversity Research in Wiley: Diversity and Distributions* 2020; 00: 1-14



Cramer, P. 1775. De Uitlandsche Kapellen 1. Amsterdam.

Dalrymple, William 2019. *The Anarchy, the Relentless Rise of the East India Company*. Bloomsbury Publications, London

Dunn, K.L. & Petrie, E. 2017. Arrival of the Tawny Coster butterfly in the Bowen region, Queensland. *Victorian Entomologist* **47**(5): 109-112

Dunn, K.L. & Woodger, T. 2017. Arrival of the Tawny Coster butterfly in the Townsville region, Queensland. *Victorian Entomologist* **47**(4): 87-88

Eltringham, H. 1912. Monograph of the African Species of the Genus *Acraea*. *Transactions of the Entomological Society of London*. Richard Clay & Sons, Ltd, London & Bungay.

Fabricius, Johan Christian 1775 *Systema entomologiae, sistens insectorvm classes, ordines, genera, species, adiectis synonymis, locis, descriptionibvs, observationibvs*. Flensbvrgi, Lipsiae.

Fabricius, Johan Christian 1777. *Genera insectorvm eorvmque characteres natvrales secvndvm nvmervm, figvram, sitvm et proportionem omnivm partivm oris adiecta mantissa speciervm nvper detectarvm*. Chilonii.

Fabricius, Johan Christian 1807. Nach Fabricii Systema Glossatorum. *Magazin für Insektenkunde*. Karl Illiger, Stettin

Field, A.R. 2017. Arrival of Tawny Coster butterflies on the East Australian Coast coinciding with the winds of Tropical Cyclone Debbie. *North Queensland Naturalist* **47** (2017)

Franklin, D.C., Morrison, S.C., Wilson, G.W. 2017. A colourful new Australian reaches Talaroo: the Tawny Coster butterfly, (*Acraea terpsicore*). *North Queensland Naturalist* **47** (2017)

Gideon, Anand V., Rufus, Cyril K., & Vivekraj, P. 2016. Record of New Larval Host Plant for *Acraea terpsicore* (Tawny coster). *International Journal of Advances in Scientific Research* 2016; **2**(09): 167-168

Goeze, J.A.E. 1779. *Entomologische beyträge zu des ritter Linné 12. ausgabe des natursystems*. T3 Bd 1, Leipzig

Ham, R.D. 2020. *Acraea terpsicore* (Linnaeus, 1758) (Lepidoptera: Nymphalidae) disperses into Central-western Queensland. *Australian Entomologist* **47** (3): 113-118

Hendry, P. 2013. The genus *Acraea* (Lepidoptera: Nymphalidae). *Metamorphosis Australia* **70**: 14-20

Jordan, K. & Eltringham, H. 1916. Lepidoptera Rhopalocera Fam. Nymphalidae Subfam. Acraeinae. *Genera Insectorum*. Published by P. Wytzman

Kendall, R. 2013. A new immigrant butterfly for Australia: *Acraea terpsicore* (Linnaeus 1758) *Metamorphosis Australia* **70**: 4-6

Linnaeus C. 1758. *Systema Naturae*. Vol. I. 10th ed. Holmiae.

Linnaeus C. 1764. *Museum Ludovicae Ulricae reginae svecorum, gothorum, vandalarumque*. Holmiae.

Linnaeus C. 1767. *Systema Naturae*. Vol. I: 2. 12th ed. Holmiae.

Millan, John 1767. *Jacobi Petiveri Opera, Historiam Naturalem spectantia*: Containing Several Thousand Figures.....Vol. 2. London

Miller, R. 2017. They have finally arrived. *Metamorphosis Australia* **85**: 37-39



Nidup, T. 2015. A first sighting of Tawny Coster *Acraea violae* Fabricius, 1775 from the southern foothills of Bhutan. *Journal of Threatened Taxa* 7(8): 7484-7486

Petiver, James 1695. *Musei Petiveriani centuria prima-[decima] rariora naturae; continens: viz. animalia, fossilia, plantas, ex variis mundi plagis advecta, ordine digesta, et nominibus propriis signata*. London

Petiver, James 1702. *Gazophylacium Nature and Arts Prima*. London

Pierre, Jacques & Bernaud, Dominique 1997. *Acraea terpsicore* (Linné), problèmes de nomenclature et données biologiques (Lepidoptera, Nymphalidae). *Bulletin de la Société entomologique de France*, volume 102 (5), décembre 1997. pp. 405-412;

Rothschild, W. & Jordan, K. 1905. Lepidoptera Collected by Oscar Neumann in North-East Africa. *Novitates Zoologicae* Vol 12. Hazell, Watson & Viney, London and Aylesbury.

Salmon, Michael A. 2000. *The Aurelian Legacy, British Butterflies and their Collectors*. University of California Press, Berkely, Los Angeles

Sanderson C., Braby M.F., Thistleton B. & Neal M. 2012. First record of the Tawny Coster butterfly *Acraea terpsicore* (Linnaeus, 1758) from Australia. *Myrmecia* Vol. 48 Part 3

Scudder, S. H. 1875. Historical sketch of the generic names proposed for butterflies. A contribution to systematic nomenclature. *Proceedings of the American Academy of Arts and Sciences* Vol. 10

Sulzer, J. H. 1776. *Dr. Sulzers Abgekürzte Geschichte der Insecten nach dem Linaeischen System*. Winterthur.

Wilson, P. 2016. Tawny Coster arrives in Queensland. *News Bulletin of the Entomological Society of Queensland* 44 (6): 121-122

ITEMS OF INTEREST

Concealer moth (*Ptyoptila matutinella*) – Roger Standen

When damage to the foliage on a hedge of cultivated Callistemon “Little John”, a member of the Myrtaceae family, became too obvious to ignore, I investigated the cause and found many caterpillars sheltering in frass-covered, silken-glued hideouts. This was on September 2, 2020.

I had not seen larvae like this before, as they had a cut-off shaped rear end. I initially thought I had damaged the caterpillars when unpicking the tight vegetative shelter to see if there was anything inside, but it was the same on all the larvae. The larvae clearly lived in a communal shelter where each caterpillar had its own compartment, but there were several (possibly 5-6 or more) compartments tied together within a dried vegetative clump. But I had no sense of what adult might belong to them. A moth of some sort, but which one?

I collected several of the larvae and hoped to breed them to adulthood and answer my question. These larvae were variable in patterning, but generally had dark brown mottling around the face and first segment of the body and there was a broad, dark line running centrally from the head along the back of the caterpillar, fading as it went toward the tail. Dark shading also formed a line along the mid-side of the larvae.

