

Life history notes on the White Migrant, *Catopsilia pyranthe crokera* (W.S. Macleay, 1826) (Lepidoptera: Pieridae)

Wesley Jenkinson

Introduction

The White Migrant *Catopsilia pyranthe crokera* (W.S. Macleay, 1826) is known sporadically from all Australian states except Tasmania (Braby 2016). The mapped range of Braby 2000 has considerably increased in Braby 2016, specifically areas in south-western Queensland, north-western New South Wales, much of the Northern Territory and northern Western Australia. This new range closely resembles the range-fill map of the species indicated by Common and Waterhouse (1981). Although widespread in its distribution, it is less frequently encountered in wet coastal areas and rainforests than in drier areas.

Adult egg-laying is not restricted to any specific habitat and the butterflies can often breed in suburban gardens. The adults tend to be transitory and will usually disperse from their breeding site within a few days of emergence.

Migrations occur irregularly (Braby 2000), but in subcoastal south-eastern Queensland, I have not observed migrations of any significance, unlike that of the Lemon Migrant (*C. pomona*) which is regularly seen migrating. Thus, in this region I would consider *C. pyranthe* movement as dispersal from the breeding sites.

Description

It should be noted that adults of the exotic Cabbage White (*Pieris rapae*), male Yellow Albatross (*Appias paulina*) and pale forms of *C. pomona* could be confused with this species by the untrained eye. Notably, *C. pyranthe* on the underside of the wings has light brown striations across the wings which are absent in the other species. It also has a stronger flight than *P. rapae* and is mostly larger. Live adults have a pale greenish-blue tinge to the wings which fades over time in set specimens.

Individual specimens show some variation in size with almost no variation in



Fig. 1. Adult feeding on Lantana flower

the width of the black margin. This species has two distinct forms; a dark form and a pale form. Dark forms have black antennae whilst pale forms have pink (Braby 2000) or brownish pink antennae. Both forms can be on the wing at the same time throughout the year (Braby 2000) and these forms appear to be much less seasonally influenced than the forms of *C. pomona*.

In flight, the sexes of both seasonal forms can be difficult to distinguish, although the female dark form, having wider black wing margins on the upperside, can often be distinguished. Males have a patch of whitish hairs on the underside of the forewing dorsum (inner margin) with a corresponding white oval patch of sex scales between the costa and vein R5 on the upperside of the hindwing.

Adults of both sexes feed on a broad range of native and exotic flowers. When feeding, the wings usually remain closed, and generally the adults do not fly higher than 2–3 m. Wingspans for the typical dark form are: males 50 mm and females 60 mm (Figs 2–5). Wingspans for the typical pale form are: males 58 mm and females 57 mm (Figs 6–9). Two female variations are pictured (Figs 10–11).



Fig. 2. Male upper (dark form)



Fig. 3. Female upper (dark form)



Fig. 4. Male under (dark form)



Fig. 5. Female under (dark form)



Fig. 6. Male upper (pale form)



Fig. 7. Female upper (pale form)



Fig. 8. Male under (pale form)



Fig. 9. Female under (pale form)



Fig. 10. Female upper (dark form variation)



Fig. 11. Female upper (pale form variation)

Larval hosts

The life history of *C. pyranthe* has been documented by G. A. Waterhouse (1932), Common & Waterhouse (1981), Braby (2000), and Sankowsky (2020).

The butterfly utilises several host plants in the Caesalpinaceae (*Cassia* and *Senna* family) (Braby 2000, 2016). Nevertheless some “*Cassia*” host species are now correctly listed as *Senna* in Moss (2019, 2020). The record of this species using *Cassia brewsteri* (Manski 1960) is now considered to be erroneous, as it was a probable misidentification of *C. pomona* for *C. pyranthe* (Moss 2020) or earlier confusion between the two genera *Cassia* and *Senna* (Sankowsky 2020).

For south-eastern Queensland and northern New South Wales, the sennas include three native species: *S. aciphylla*, *S. barclayana*, and *S. sophora* (= *S. clavigera*). Records of two other exotic species, *S. alata* and *S. didymobotrya*, appear erroneous and have probably been confused by misidentification of ovipositing aged or pale female *C. pomona* (Moss 2019, 2020). I have grown the latter in my garden for the past 20 years and have never observed *C. pyranthe* ovipositing on either juvenile or older plants. Moreover, I have not observed any females of *C. pyranthe* ovipositing on plants currently classified as *Cassia* species.

Reproductive behaviour

Mating was observed when a male landed next to a freshly emerged female with fully expanded soft wings. He appeared to push the female’s wings leftwards then quickly curled his abdomen towards the female’s abdomen and copulation commenced. Still mated, positioned side by side for a short period, they flew a short distance and settled again, each facing the opposite direction. The full duration of copulation was not recorded.

During January 2008, a female was observed laying eggs on several cultivated *S. barclayana* plants growing in my garden at Beaudesert in south-eastern Queensland. She settled on a leaf with wings closed. The abdomen was curled onto the upperside of the leaflet and a single egg was laid. This pattern was continued several times. Eggs were also laid on fresh shoots and occasionally on the underside of mature leaflets. Females oviposit between mid-morning and late afternoon in sunny conditions. Eggs are white, being approximately 1.5 mm high × 0.6 mm wide, spindle shaped with slightly raised wide longitudinal ribs.

First instars consumed the eggshell soon after emergence and fed openly during the day and at dusk. Larvae were observed openly resting on the upperside of the host plant leaflet, along the midrib on a pad of fine silk. Small larvae, when feeding, make irregular patches on leaflets, while larger larvae feed from the leaflet edge.

During heavy rain, the smaller larvae were found below the leaflets. Larvae reached a length of 33–35 mm at maturity after completing five instars (Figs 13–17).



Fig. 12. Egg



Fig. 13. Larval instar 1



Fig. 14. Larval instar 2



Fig. 15. Larval instar 3



Fig. 16. Larval instar 4



Fig. 17. Larval instar 5



Fig. 18. Pre-pupa



Fig. 19. Pupa lateral



Fig. 20. Pupa dorsal



Fig. 21. Larval instar 1 feeding



Fig. 22. Ecdysis (moulting) larva

Pupae are green in colour and measure 26 mm in length, and are found most often below a leaflet, a leaf rachis, or green seed pod of the host plant. They are typically attached to a pad of silk by the cremaster and a central girdle as described in Braby (2000).



Fig. 23. Resting adult male

Adults in captivity emerged at various times during the morning. The total time from egg to adult in Beaudesert during November–December was 25 days, with egg duration 4 d, larval duration 12 d and pupal duration 9 d.

Included below are some interesting statistics on seasonal form numbers for two broods bred in Beaudesert on the host *S. barclayana* during mid-January until late March 2004. In mid-February 15 adults emerged and of these all were the dark form, and over the period of 24–27 March, 20 emerged and of these, all except one male butterfly were the pale form.

Interestingly the rainfall total I recorded at my house in Beaudesert for February 2004 was 269 mm and March 10 mm, so humidity at time of emergence may have an effect on the prevalence of forms.

Within the boundary of the Scenic Rim Regional Shire, south of Brisbane this species can be common during late summer and early autumn with adults being present throughout the year (except for July and August). Overall, it is less frequently observed during the cooler months of the year. There are perhaps two or three generations per year in this region, which likely depend on rainfall, and the subsequent availability of fresh growth. Waterhouse (1932) reported that the early stages do not survive cold conditions or frost. Edwards (1948) also reported that, near Mitchell (inland Queensland), the early stages and host *S. barclayana* did not survive winter frosts and suggested that populations re-establish each season by migrants from the eastern coast.

Acknowledgements

I thank John Moss and an anonymous reviewer for additional suggestions to the manuscript.

References

- Braby, M. F. 2000. *Butterflies of Australia – Their Identification, Biology and Distribution*. Vol. 1. CSIRO Publishing, Melbourne.
- Braby, M. F. 2016. *The complete field guide to Butterflies of Australia* – Second edition. CSIRO Publishing, Melbourne.
- Common, I. F. B. and Waterhouse D. F. 1981. *Butterflies of Australia*. Angus & Robertson Publishers.
- Edwards, E. O. E. 1948. Notes on butterflies of western Queensland. *Australian Journal of Zoology* **11**: 225–232.
- Manski, M. J. 1960. Food plants of some Queensland Lepidoptera. *Queensland Naturalist* **16**: 68–73.
- Moss, J. T. 2019. *Butterfly Host Plants of South-east Queensland and northern New South Wales*. Fourth edition. Butterfly & Other Invertebrates Club.
- Moss, J. T. 2020. *Butterfly Host Plants of South-east Queensland and northern New South Wales*. Revised fourth edition. Butterfly & Other Invertebrates Club.
- Sankowsky, G. 2020. *A Field Guide to Butterflies of Australia*, New Holland, Sydney.
- Waterhouse, G. A. 1932. *What Butterfly is That?* Angus and Robertson, Sydney.