

Malcolm Tattersall for his initial identification and Martyn Robinson and Dr Dave Britten of the Australian Museum for their advice.

Colour images of Tube Spittlebugs are used with the permission of NSW Trade and Investment - Agricultural Scientific Collections Unit.

Black and white images are from "*The Insects of Australia, A Textbook for Students and Research Workers.*"

References

- Fletcher, M.J. (2009 and updates). Identification keys and checklists for the leafhoppers, planthoppers and their relatives occurring in Australia and neighbouring areas (Hemiptera: Auchenorrhyncha).
<http://www1.dpi.nsw.gov.au/keys/leafhop/index.html>
- Fletcher, M.J., Evans, J.W. and Carver, M. (1991). Superfamily Cercopoidea. pp 467–468 in Naumann, I.D. *et al.* (eds) *The Insects of Australia, A Textbook for Students and Research Workers*. Melbourne University Press, Melbourne, 1137pp
- Hacker, Henry (1922). On the emergence of two tube-dwelling homopterous insects. *Memoirs of the Queensland Museum* 7(4): 280-282.
- Marshall, Stephen A. (2006). *Insects – Their Natural History and Diversity*. Firefly Books Inc. Buffalo New York.
- McKeown, Keith C. (1942) *Australian Insects. An introductory Handbook*. Royal Zoological Society of New South Wales.

Important New Distribution Records for the Cabbage White, *Pieris rapae* (Linnaeus) (Lepidoptera: Pieridae), in Australia - *Kelvyn L. Dunn*

E-mail: kelvyn_dunn@yahoo.com

Summary

This paper documents 50 new locations for *Pieris rapae* (Linnaeus) in Australia that fall outside the boundaries of the species' distribution, as based on the range-filled map provided by Braby (2000).

Introduction

Many keen insect enthusiasts who occasionally visit remote areas of Australia often pay little attention as to whether the Cabbage White (*Pieris rapae*) is present or not. It is not hard to imagine why; it is not a native species, nor is it colourful, and neither is it rare. Its encounter in the field therefore stirs little collector interest as relatively short museum series would testify. Likewise, for those whose focus has been on things rare and infrequent, the documentation in the literature of many casual sightings over the decades will have more than likely not occurred. As a result, the known distribution that Braby (2000) presented is patchy and under-representative in some areas where the butterfly is likely widespread. Not surprisingly, its main distribution coincides with those areas where extensive butterfly observations have repeatedly taken place over the many decades of collector activity. To help rectify this



imbalance, I opportunistically investigated the distribution of the Cabbage White, over a five-year period (2007 to 2012), to determine the extent of its occurrence in the inland and the extent of its continuity in some coastal areas where knowledge gaps in its distribution were evident.

Discussion

The Cabbage White is conspicuous wherever it occurs in Australia; its crooked flight helps distinguish it, at a moderate distance, from *Appias*, *Belenois*, *Cepora*, *Catopsilia* and other white butterflies with which it bears some resemblance. I identified most adults encountered without the requirement of handling; a small number was captured and released unharmed, and very occasionally I preserved vouchers, but in doing so, it was kept in mind that museum space for common butterflies is limited and judiciously rationed – indeed, the material support for the distribution of this particular exotic is no exception here. That clarified, the 50 new locations where I found this butterfly across five states (Table 1), listed from north to south and with geocodes resolved to one minute, now add to the knowledge base and expand upon the historic literature and museum records used by Braby (2000) to construct his range-filled map.

The survey findings (Table 1) impress that the Cabbage White (Figure 1) extends much farther inland in New South Wales and southwestern Queensland, and in southwestern Western Australia, than was generally supposed. The results also show that the distribution in coastal South Australia is more extensive than was documented earlier by Braby (2000). Since then, Pierce (2010) has listed solitary records from Bourke NSW and Cunnamulla Qld, each made in June 2008, and each supports my later encounters in and near both outback towns in 2011 and 2012. In



Fig. 1 Female Cabbage White
Photo Graham MacDonald

addition, two records obtained recently in November 2012 from Ceduna SA, including one from 12km east of that town (Pierce 2013), add confirmation to my earlier encounters in and about that town in 2008; the currently known distribution extends westward to Penong. Similarly, the actual distribution in Tasmania includes more of the island than was suggested in the range-filled map by Braby (2000); that work had overlooked some eastern and western coastal records previously included on a point-plotted map of the state (see Dunn 1999). Since then, I have recorded a few other new locations in the remote northeast of the island and in conjunction with my earlier ones, these testify to a wide eastern coastal presence of the Cabbage White in that state.

The Cabbage White is largely associated with introduced crop-plants in townships and so has a localised or mosaic presence near settlements, far-wandering or



migratory adults aside, but in some southern coastal regions including National Parks, naturalised cruciferous weeds evidently sustain populations remote from human enterprise (Braby 2012, Faithfull & Dunn 2012). The availability of introduced hosts in both residential areas and rural farmlands means that breeding populations of this butterfly are almost certainly widespread in inland NSW. The records in Table 1 might appear as few and widely dispersed, but that is because only *selected* records for the regions concerned are included. I recorded many other sites in close proximity to these towns and in neighbouring or intermediate areas too (Dunn & Dunn database) – far too many to list comprehensively here. When taken together these and the tabled results underpin a considerably broader distribution in the states concerned. Finally, for those who wish to extend upon my study, a search for the Cabbage White in townships farther inland in the states concerned could become a useful focus for the future; and, importantly, it will help record the expansion of the species in Australia since its accidental introduction early last century.

References

- Braby, M.F. 2000. *Butterflies of Australia: their identification, biology and distribution*. CSIRO Publishing, Collingwood Vic.
- Braby, M.F. 2012. New larval food plants and biological notes for some butterflies (Lepidoptera: Papilionoidea) from eastern Australia. *Australian Entomologist* 39(2): 65-68.
- Dunn, K.L. 1999. Butterfly watching in Tasmania - Part IV. *Victorian Entomologist* 29(1): 4-9.
- Faithfull, I.G. & Dunn, K.L. 2012. Butterflies of the Wingan Inlet area, Croajingolong National Park, East Gippsland, Victoria, including a January 2012 list. *Victorian Entomologist* 42(5): 102-107 (& corrigenda 43(1): 22).
- Pierce, F. 2010. More range extension records for various butterflies throughout Australia. *Victorian Entomologist* 40(6): 132-134.
- Pierce, F. 2013. Additional range extension records for various butterflies throughout Australia. *Victorian Entomologist* 43(1): 11-12.

Table 1 Fifty significant locations for *P. rapae* beyond its known range in Australia

Location	State	Geocode	Date	Format
Kalbarri	WA	27°43'S, 114°10'E	14 Nov 2008	Obs
Northampton	WA	28°21'S, 114°38'E	17.Nov 2008	Obs
Port Denison	WA	29°16'S, 114°55'E	18 Nov 2008	Obs
2km S of Leeman	WA	29°58'S, 114°58'E	18 Nov 2008	Voucher
Koorda	WA	30°50'S, 117°29'E	11 Nov 2008	Obs
Regans Ford	WA	30°59'S, 115°42'E	12 Nov 2008	Obs

Continued on next page



Table 1 (contd.)

Location	State	Geocode	Date	Format
Mukinbudin	WA	30°55'S, 118°12'E	11 Nov 2008	Obs
8.1km E of Southern Cross P.O.	WA	31°15'S, 119°24'E	11 Oct 2008	Obs
Merredin	WA	31°29'S, 118°16'E	10 Nov 2008	Obs
Yanchep Beach	WA	31°33'S, 115°37'E	19 Nov 2008	Obs
Narembeen	WA	32°04'S, 118°24'E	21 Nov 2008	Voucher
Norseman	WA	32°12'S, 121°47'E	24 Nov 2008	Obs
Kondinin	WA	32°30'S, 118°16'E	21 Nov 2008	Obs
West River, 37km WSW of Ravensthorpe	WA	33°40'S, 119°41'E	23 Nov 2008	Voucher
Hopetoun	WA	33°57'S, 120°07'E	17 Oct 2008	Obs
Stirling Range NP Rangers Station	WA	34°19'S, 118°12'E	23 Nov 2008	Obs
Northcliffe	WA	34°38'S, 116°07'E	22 Oct 2008	Obs
Denmark	WA	34°58'S, 117°21'E	21 Oct 2008	Obs
Albany	WA	35°00'S, 117°52'E	20 Oct 2008	Obs
Penong	SA	31°56'S, 133°01'E	07 Oct 2008	Obs
Thevenard near Ceduna	SA	32°09'S, 133°39'E	07 Oct 2008	Voucher
Streaky Bay	SA	32°48'S, 134°13'E	24 Oct 2007	Voucher
Minnippa	SA	32°51'S, 135°09'E	23 Oct 2007	Obs
Port Kenny	SA	33°10'S, 134°41'E	23 Oct 2007	Obs
Darling River (near Rotary Park), Bourke	NSW	30°05'S, 145°57'E	26 Sep 2012	Voucher
Red Earth White Cliffs	NSW	30°51'S, 143°05'E	21 Oct 2011	Obs
Tilpa	NSW	30°56'S, 144°25'E	23 Oct 2011	Obs
Bunker Creek, 23km S of White Cliffs	NSW	31°02'S, 143°03'E	21 Oct 2011	Voucher
Darling River, Wilcannia	NSW	31°33'S, 143°23'E	21 Oct 2011	Obs
Broken Hill	NSW	31°58'S, 141°27'E	22 Oct 2011	Obs
Cobar	NSW	31°30'S, 145°50'E	25 Sep 2012	Obs
Copi Hollow, W of Menindee	NSW	32°16'S, 142°23'E	22 Oct 2011	Obs
Copi Hollow, W of Menindee	NSW	32°16'S, 142°23'E	22 Oct 2011	Obs
Ivanhoe, at sports field	NSW	32°54'S, 144°18'E	24 Sep 2012	Voucher
Muggebah Creek No. 2, N of Booligal	NSW	33°46'S, 144°55'E	19 Oct 2011	Obs



Table 1 (contd.)

Location	State	Geocode	Date	Format
Torrens Creek	Qld	20°46'S, 145°01'E	28 Oct 2012	Voucher
Isisford	Qld	24°16'S, 144°26'E	03 Oct 2012	Obs
Blackall	Qld	24°26'S, 145°28'E	02 Oct 2012	Voucher
Tambo	Qld	24°53'S, 146°15'E	26 Oct 2011	Obs
Augathella	Qld	25°48'S, 146°35'E	25 Oct 2011	Obs
Charleville	Qld	26°24'S, 146°15'E	01 Oct 2012	Obs
Morven	Qld	26°25'S, 147°07'E	30 Sep 2012	Obs
Wyandra	Qld	27°15'S, 145°59'E	27 Sep 2012	Obs
1km S of Cunnamulla	Qld	28°05'S, 145°41'E	27 Sep 2012	Released
Gladstone	Tas	40°58'S, 148°01'E	13 Nov 2007	Obs
Toddys Plain, 8km SW of Waterhouse	Tas	40°58'S, 147°34'E	13 Nov 2007	Obs
Pyengana	Tas	41°17'S, 148°01'E	11 Mar 1996	Obs
St Helens	Tas	41°20'S, 148°15'E	11 Mar 1996	Obs
St Marys	Tas	41°35'S, 148°11'E	11 Mar 1996	Obs
Bicheno Lookout	Tas	41°52'S, 148°17'E	11 Mar 1996	Obs
Queenstown	Tas	42°05'S, 145°33'E	11 Nov 2007	Obs

***Oxycanus beltista* (Lepidoptera : Hepialidae) - Peter Hendry**

Late on the afternoon of the 27th April 2013, Peter Kuttner and myself set up a light sheet on private property on Mt. Tamborine S.E. Queensland. The light was turned on and we departed for dinner at the local Indian restaurant. Upon our return we were delighted to find a specimen of the family Hepialidae on the sheet. Peter set up his video camera and recorded a short video of the moth. No sooner had he finished when another Hepialid landed on the sheet. As we could only see the forewing at the time, on which the markings were completely different to the previous one, we concluded we had a second species. Peter recorded another short video of this specimen and, as before, no sooner had he finished when another Hepialid landed on the sheet. Based on the markings of the forewing another species! By now alarm bells were starting to ring, did we have three species or one variable species?

As the night progressed we recorded seven Hepialid specimens, all males. The following day as I began to set them it was clear by the salmon pink on the hind wing and abdomen, that they were all the same species. In spite of days searching I was unable to name it and finally requested the help of Ted Edwards. Ted informed me it was *Oxycanus beltista*. Armed with a name I was able to search further and came up with the original description by A.J. Turner in 1926, (Turner, 1926). It was named

