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## A KEY TO GENERA OF TASMANIAN FRESHWATER CRAYFISH

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Recent work on freshwater crayfish in Tasmania has revealed the presence of a diverse fauna, with perhaps more than twenty species in four genera, forming a significant component of the benthic and fossorial fauna in Tasmania. A review of the current state of knowledge on freshwater crayfish in Tasmania is given by Horwitz (1987), including the general ecology and distributions of each genus, their aquaculture potential, and their pests and diseases. However, the work has highlighted the need for a key so that field naturalists, biology students and survey workers can, with some degree of assurity, assign generic names to freshwater crayfish.

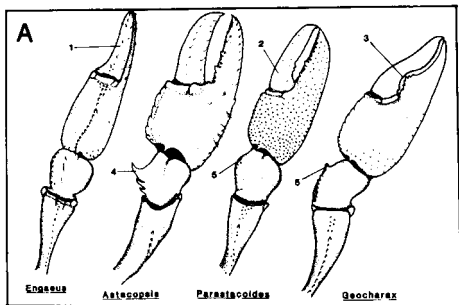
This simplified key will enable users to identify most freshwater crayfish in Tasmania (although very small, juvenile crayfish may be more difficult to identify using this key). All key characters are shown in Figure 1. some of the characters used here are from a key to most of the genera of Australian freshwater crayfishes, given in Riek (1969).

- 1a Crayfish with spines on sides of abdomen segments, and with very large spine on the carpus of the claw ..... *Astacopsis*
1. Crayfish without spines on sides of abdomen segments, and without very large spine on the carpus of the claw ..... 2
- 2a Small, mostly burrowing crayfish with claws operating in a vertical plane; mid-dorsal groove on carapace shallow and V-shaped ..... *Engaeus*
- 2b Claws not operating in a vertical plane (either oblique or horizontal); mid-dorsal groove on carapace U-shaped ..... 3
- 3a Claws (on larger animals) with a marked curve in the cutting edge of the finger; dorso-lateral grooves on carapace separated, not fused together; **never** with terminal spines on tail fans; only in north-western Tasmania ..... *Geocharax*
- 3b Claws not as above; some species with terminal spines on tail fans; dorso-lateral grooves on carapace close, becoming fused together; found throughout western Tasmania ..... *Parastacoides*

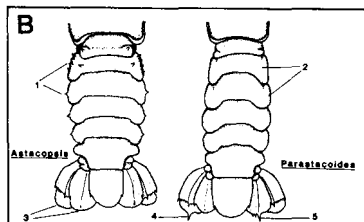
### References

- Horwitz, P. (1987) The freshwater crayfishes of Tasmania. *Inland Fisheries Commission Newsletter (Tasmania)*. 16(3).
- Riek, E.F. (1969). The Australian freshwater crayfish (Crustacea: Decapoda: Parastacidae), with descriptions of new species. *Australian Journal of Zoology* 17:855-918.

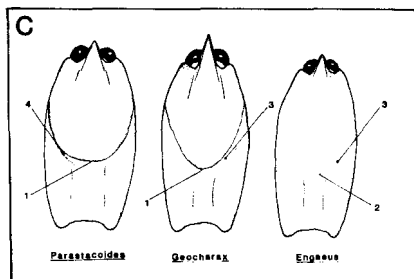
Figure 1: Key characters used to distinguish the four genera of freshwater crayfish in Tasmania.



A—The right claw of crayfish from each genus, seen from above, showing the vertical orientation of claws of *Engaeus* (1) when compared to the mainly horizontal claws of each of the other genera (eg 2), the very large spine on the carpus of the claw of *Astacopsis* (4), but not on the claws of other genera (5), and the curve in the finger of the claw of *Geocharax* (3).



B—The abdomen and tail fan of *Astacopsis* and *Parastacoides*, showing the presence (1) or absence (2) of spines on the sides of the abdominal segments, and the terminal spines on elements of the tail fan in *Parastacoides*, where the outer ramus (4) may or may not exhibit a terminal spine, and the inner ramus with one or more spines, or none at all (5). The tail fan of *Astacopsis* never has terminal spines (3).



C—The carapace of three genera of crayfish, showing the deep U-shaped dorsal grooves of *Parastacoides* and *Geocherax* (1) and the shallow V-shaped grooves of *Engaeus* (2). Laterally the grooves may be fused or almost fused (4) or widely separate (3).

## PREDATION ON INTRODUCED ANIMALS BY THE TASMANIAN TIGER SNAKE

Simon Fearn

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At 11.30 am on the 10th of March, 1987 a large female Tiger Snake, *Notechis ater humphreysi*, 129cm long with a girth of 13cm was hand caught while basking outside its homesite under a wooden shed on the property of Dr Bob Brown in the Liffey Valley.

The shed is situated in an old paddock that has become partially overgrown with bracken ferns, blackberries and saplings of various trees and shrubs. This area borders forest at the foot of Dry's Bluff.

When captured a very large bulge was noticed in the posterior third of the snake. When placed in a freezer the snake regurgitated a rabbit, *Oryctolagus cuniculus*.

The head of the rabbit had been completely digested and the front legs almost so. The headless remains were whole and showed no external damage. Faeces in the lower alimentary canal contained hair and five rabbits teeth. A small portion of jaw bone with two teeth still in place was also present. Length of rabbit remains from neck to base of tail was 16cm, girth 13cm. With the head present this rabbit would have been at least 19cm long. The snake was in excellent condition internally and weighed (stomach empty) 850 grams. Rabbits are extremely common in the valley and may be a regular part of the diet of large specimens of *N.a. humphreysi*.

At 2.00 pm on the 3rd of December, 1985 an adult *N.a. humphreysi*, 107cm long, was observed feeding on two fledgling sparrow chicks, *Passer domesticus*. The snake was living in the sandstone ruins of a house in a paddock on the 'Mountainvale' property approximately 4.5 km from the Liffey Valley in northern Tasmania.

The sparrows nest was situated in a cavity in a weathered section of wall 150cm from the ground.

The snake was discovered foraging around the ruins and soon after it began to climb the wall by first utilising blackberries growing against the wall to a height of 60cm, and scaled the remaining 90cm by winding up depressions in the weathered and uneven surface of the wall. The entrance hole leading to the nest was some 6cm across and the snake crawled in to a depth of approximately 18cm.

As the snake entered the hole distressed chirping could be heard from within. After several minutes the snake retreated with a large sparrow chick, half swallowed head first. The snake then allowed itself to drop to the ground where it finished swallowing the chick. The snake then returned to the hole in the same manner and entered again. The snake remained with its head in the hole for five minutes. It then withdrew performing the post meal gaping of the mouth characteristic of this species after it feeds. A large bulge was travelling down the snake's body, indicating a second chick had been eaten. The sparrow chicks were well grown, with well developed feathers, and were nearly ready to leave the nest. The snake then returned to the ground and basked in a loose coil.

Many thanks to Dr Bob Brown for bringing the snake on his property to my attention.

## FUNNELWEBB'S FATAL FINAL FLING

*Elizabeth Turner*

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On the 3rd November, 1983, Mrs Richardson of Collinsvale donated a female Funnelweb spider (*Hadronyche venenata*) to the Tasmanian Museum. The spider was placed in a glass box with soil about 8 cm deep covering the bottom.

She quickly made a burrow and, except for rare glimpses of her at the entrance, I barely knew she was there for the next 3 years. Flies put into the case during the day were gone the next morning, and draglines of web around the case also showed that she was active at night. The entrance to the web was un-

sophisticated with just a few triplines extending from the burrow's entrance.

The next six months passed without my seeking her at all and eventually even flies were left untouched. Convinced that she had died I decided to exhume the body. Cautious digging revealed the silken nest about 1 cm from the floor of the case. No movement. Still careful, but gaining confidence, I prised open the end of the nest with long forceps.

Out rushed a very healthy, large funnelweb ready to do instant battle! I landed six feet away.

As rather a mess had been made of her nest I caught and removed the spider and rearranged the soil in the case. The nest proved to have a cast skin inside. As mature female funnelwebs are thought to moult annually it was interesting to note only the one cast.

When the spider was placed back in the case she soon made another burrow. This time, however, her behaviour was different. For the next year she could always be seen just inside the entrance, either facing out or with abdomen out. Flies were eaten overnight but mealworms were always rejected. (Most funnelwebs will not eat mealworms, which are readily accepted by most other spiders).

By 1988 I had had her for over four years and had grown, if not fond of her, at least attached (not literally) to her. Female funnelwebs are estimated to live up to seven years or more. Males die soon after reaching sexual maturity.

During April, 1988, her behaviour changed again. While people were fearfully bringing male funnelwebs to the museum, as happens every autumn, my room-mate was 'feathering her own nest'. Up until this time she had never made a fuss over the burrow. Now she built extensive and impressive sheets of web, with a classic funnel from the entrance of the burrow, fanning out to a radius of 10cm.

By May she was sitting outside on the web most of the time and looking rather out-of-condition. All her gloss had gone and she looked dull and dusty.

On Thursday 12th May, at 3.15 pm, I noticed that she was starting to moult. As funnelwebs, like most spiders, moult in the safety of the retreat or nest because they are very vulnerable at this time, I was surprised to see her moulting out of the burrow in broad daylight.

By 4.00 pm she had removed the 3rd and 4th pairs of legs from the old skin and half of the abdomen skin and peeled off. However, even though funnelwebs usually take several hours to moult, by 5.00 pm it appeared that all was not well. She was very weak and there seemed to be some damage to the new carapace (upperside of the head section).

When I arrived at work next morning I quite expected to see her dead. She was still alive, but barely. One of the 2nd pair of legs was out and part of the 1st. However, the new carapace was split open and on Friday 13th, after 4½ years, my room-mate died.

**BETLES IN BAT DUNG***R.H. Green*

Queen Victoria Museum and Art Gallery, Launceston 7250

Beetles of the genus *Ptinus* (PTINIDAE) are well known as pests in food stores, feeding on dry materials of animal and vegetable origin. They range in length from 2-5mm and may occur in considerable numbers.

One species, *Ptinus tectus* Boieldieu, is about 2mm long and was originally described from Tasmanian specimens. It is believed to be more or less cosmopolitan, feeding on store products and the dung of non-ungulates (pers.comm. John F. Lawrence). It was recently found infesting a dung deposit beneath the roost of a colony of the Little Forest Eptescius (Bat) *Eptesicus vulturinus*.

The presence of bats in the wall cavity of an old wooden house at Underwood, Northern Tasmania, was discovered when the owner was carrying out renovations.

Twenty-one bats were collected from the site on 6 May, 1987 and were

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**BOOK R****Ferns and Allied Plants of Victoria, Tasmania and South Australia**

By Betty Duncan and Golda Isaac

Melbourne University Press, Melbourne, 1986 258pp.

Retail price approx \$26.00

*Reviewed by David Ratkowsky*

This 18cm x 25cm hardback book is *the* definitive work for anyone interested in ferns and fern allies (forkferns, clubmosses, quillworts and selaginellas) of Tasmania (and Victoria and South Australia). This wonderful book contains a wealth of information on all the species that are known in those three states and a multitude of beautiful photographs by Bruce Fuhrer, Australia's leading "academic" plant photographer. In addition, there are numerous drawings and diagrams indicating the salient features that help distinguish a species from its close relatives.

The first chapter gives a useful introduction to "What is a fern?" and to the life cycle of these vascular plants. Chapter 2 is an illustrated key to the genera of ferns and fern allies, which make it possible to find the right genus for any specimen. Chapters 3-21 are the heart of the book and deal with all the species, based on the families to which the species belong. The final chapter on propagation and cultivation by C.J. Goudey and R.L. Hill provides any persons interested in growing ferns with the appropriate information on how to collect spores, prepare the growth medium, get the spores to germinate, and how to transplant the developed fronds and their attached prothalli.

found to include two post-lactating females, 12 subadult females and seven subadult males, suggesting that the site had, in the previous few months, been occupied by a greater number of bats comprising a maternal colony.

On a ledge beneath the clustered bats dung had accumulated to a depth of about 15cm, certainly the result of some years occupancy. Much of it had been reduced to a fine powder, only the surface layer containing whole pellets. A casual search failed to reveal the presence of insects, so about one litre of this material was collected for further study.

Upon closer examination small, white, hairy grubs, about 2mm long were found, some of which were forming frail cocoons and commencing to pupate. The first adult beetle was found on 14 July. A simple trap was set up to catch and remove the adults as they emerged. Their numbers gradually increased, reaching a peak between mid September and mid October. The appearance of newly emerging adults then sharply declined and had ceased by the end of October. A series has been lodged in the collections of the Queen Victoria Museum.

As these insects are known to feed on stored food products, the presence of a bat colony in the vicinity of such material, not suitably protected, may lead to its infestation.

## VIEWS

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For each species, detailed distribution maps are given for Victoria only, although the known occurrences in other Australian states and outside Australia are reported. Rainfall is the key factor in determining whether ferns will occur in a given area. Queensland is by far Australia's leader in terms of number of species of ferns and allied plants, with a hefty 350 in contrast to only 50 from South Australia. Tasmania, with 94, and Victoria, with 118, have modest numbers. The authors consider the 700mm isohyet to be the dividing line between the wet and dry parts of Victoria. This means that, except for a few isolated pockets, most of Victoria west and north of Melbourne have few fern species, whereas most of the state east of Melbourne abounds with them. In Tasmania, virtually only the dry Midlands would have a scant fern flora, using that criterion.

The tabular key to the genera, between pp.14-15, focussing on the characteristics of the spore-bearing structure, the sorus, and its covering, the indusium, is clearly intended for the professional, indicating that this book serves both amateur and professional botanist alike. It succeeds well at both levels. At a retail price of about \$26, it is a good buy and an indispensable addition to the library of any naturalist with a general interest in plants of all kinds. The numerous illustrations make it pleasurable to read through the book from cover to cover, even if one is not trying to identify any particular species.

No academic affiliation is given for the authors Betty Duncan and Golda Isaac of this scholarly work, other than the information that they are Associates of the Department of Botany at Monash University. Although it is obvious from their Acknowledgements section that they went about the project in a very professional way, one presumes that they are gifted amateurs who are being recognised by Monash University for their contribution to botany. How well they deserve that recognition, if one judges by this magnificent book alone!

## Your Garden Birds

By Ellen McCulloch, Hyland House Publishing, RRP \$19.95

*Reviewed by D.G. Hird*

For the urbanised majority of Australians, gardens provide the most frequent contact with birdlife. For the most casual observer, larger and more brightly coloured birds will often attract initial attention and the latter are especially well illustrated in this book and often in unapologetically artificial settings.

With an anecdotal rather than systematic approach, this book is aimed towards children and the less serious birdwatcher. The author's wealth of experience shows through, though, in the interesting comments. For example, the migratory feats of some common, tiny garden busybodies such as silvereyes and spotted pardalotes are mentioned, adding to the more general information on providing garden habitats and on the birds to expect in them.

A possible omission is a featured Tasmanian Endemic! This book is nonetheless recommended as a well produced attractive book, ideal as a child or new birdwatcher's present.

## Where to Find Birds in Australia

By John Bransbury. Published by Century Hutchinson Aust. Pty. Ltd.  
R R P \$35.00

*Reviewed by L.E. Wall*

This is a substantial book of over 500 pages, divided into the various States and Territories, each of which is further divided into well known and recognised districts where birds are of special significance.

All good birding districts are illustrated by detailed maps, and there are a number of coloured photographs of typical bird habitats, with a few birds also illustrated. Reference is also made to means of access to each area and facilities, including accommodation, which are available. Tasmanian notes are divided into six areas and each of these further subdivided to give greater detail of interesting bird spots.

In the description of each location there is also included a list of birds most likely to be seen; whilst these bird lists of Tasmanian localities are generally a fair indication of what can be found there are a few doubtful inclusions. For instance, I have no record of ever having seen an Australian Shelduck in the Bridgewater area but it has been quoted as being one of the most common waterfowl there.

This book is highly recommended as a useful guide to all birdwatchers, whether they be residents or visitors. Its format is excellent and the writing style very easy.



## SHELL MEASUREMENTS OF *Caryodes dufresnii* (LEACH) (MOLLUSCA:PULMONATA) FROM NORTH EASTERN TASMANIA

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Forestry Commission, Tasmania

### Introduction

Tasmania's largest land mollusc, the endemic snail *Caryodes dufresnii*, occupies a wide range of habitats throughout Tasmania. Shell variation is considerable, both in size and colouration. It has been suggested that several distinct morphs occupy the major ecological sites of dry sclerophyll forest and wet sclerophyll rainforest. In general, mature shells from high rainfall sites tend to be darker and larger, with a maximum height of 50mm, compared with those from drier sites where shells attain 35mm in height (Kershaw and Dartnall, 1972).

This note reports the find and measurement of numerous shells at Big Boggy Creek, 15km SW of Ansons Bay in north eastern Tasmania. Comparison is made with a small number of specimens from a dry forest site at Saddleback, 5km SW of Mathinna.

*Caryodes* is particularly active during wet weather so the number of days in which rain falls may be used as a site indicator combined with a suitable ground cover of leaf litter, bark ribbons and logs.

### Study Sites

The collection site at Big Boggy Creek has been cleared for eucalypt plantation establishment and windrows formed before burning. The surrounding native forest carries an overstorey of mature *Eucalyptus obliqua* and *E.globulus*, an understorey of *Olearia argophylla* (musk), *Pomaderris apetala* (dogwood) and *Acacia verticillata* (prickly moses). The ground cover is patchy, mainly ferns (*Blechnum sp.*) over a litter layer several centimetres thick and topped with bark ribbons.

Saddleback has a dense overstorey of 19 year old *E.sieberi*/*E.obliqua*/*E.amygdalina* regrowth and gaps containing *Acacia melanoxylon* (blackwood) and *Acacia dealbata* (silver wattle). Dense *Pteridium esculentum* (austral bracken) occurs over very rocky ground with a shallow litter layer and many old eucalypt logs.

Site	Altitude (metres)	Mean Annual Rainfall (mm)	Rain Days (annual)
Big Boggy Creek	120	977	145
Saddleback	620	858	122

## Results

During plantation establishment at Big Boggy Creek live snails migrated into the windrows prior to burning. Surveys of these windrows enabled a total of 164 *Caryodes* shells to be found of which 79 were undamaged. Other snails found at this site during the survey were *Victaphanta lampra*, *Thryasona sp.? diemenensi*, and *Pedicamista coesa*.

The following table lists the measurement means ( $\pm$ sd) grouped into each whorl class. All measurements were made using vernier callipers fitted to a Wild binocular microscope. The method of measurement follows that given by Smith and Kershaw (1981).

Site	Number of whorls	Number of Specimens	Height (mm)	Width (mm)	Aperture length (mm)
Big Boggy Creek	3.0—3.4	1	1.94	1.54	1.23
	3.5—3.9	6	2.13 $\pm$ 0.08	1.64 $\pm$ 0.25	1.26 $\pm$ 0.08
	4.0—4.4	27	2.83 $\pm$ 0.05	1.83 $\pm$ 0.01	1.45 $\pm$ 0.02
	4.5—4.9	37	3.28 $\pm$ 0.04	1.92 $\pm$ 0.02	1.56 $\pm$ 0.01
	5.0—5.5	8	3.53 $\pm$ 0.08	1.96 $\pm$ 0.04	1.64 $\pm$ 0.07
Saddleback	3.7	1	1.36	1.17	0.74
	5.0	1	1.88	1.27	0.83
	5.6	1	2.16	1.33	1.12

The ratio of width: aperture length of Big Boggy Creek specimens is consistent for each whorl class at 1.25:1  $\pm$  0.05. The Saddleback morph, with only three specimens measure, has a ratio of 1.43:1. A large group of dry forest morph types need to be measured to make a statistical comparison.

It is hoped that these data will help establish or confirm a distinct morph type to be compared with groups of specimens from other localities.

## Acknowledgement

My thanks to Mr Ron Kershaw (Queen Victoria Museum) for identification of snail specimens.

## References

- Kershaw, R.C. and Dartnall, A.J. (1972) The Mollusc *Caryodes dufresnii* in Tasmania. *Vict. Nat.* **89**:111-118.
- Smith, B.J. and Kershaw, R.C. (1981) In 'Tasmanian Land and Freshwater Molluscs'. Fauna of Tasmania Handbook No. 5, pp. 23-25.

## TASMANIAN HAIRSTREAK BUTTERFLY IN WESTERN TASMANIA

Peter Brown

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### Observation

On Monday the 1st December 1986, whilst crossing through a heavily wooded creekline, a northern tributary of the Pocacker River at Birchs Inlet at the very southern end of the Macquarie Harbour, I located at least 2 specimens of the adult stage of the Hairstreak Butterfly *Pseudalmenus chlorinda*.

The butterflies were flying around a group of 2 or 3 blackwood (*Acacia melanoxylon*) trees in a fairly open section of the woodland where the blackwoods, some 8-10m tall, were growing in a pyramid shape with foliage almost down to ground level.

The day was extremely hot and there was little or no wind. The butterflies were very active, spending long periods of several minutes flying around and up and down all sections of the trees. Two were flying together at one stage and then a (?third) single butterfly flew around on its own a little later. At first I was at a loss to be able to identify them for the very last thing I was thinking of was the Hairstreak on the west coast. Whilst in flight the only colours which could readily be seen was the gray of the hindwing with flashes of red from the lower forewing. It was only when one of the butterflies settled on a leaf with wings open that I realised that they were in fact Hairstreaks. The one which settled was a female and displayed the strong orange bars of the inner upperwing and a strong red bar around the inner margin of the lower wing.

I was unable to take any specimens as I was not carrying a butterfly net at the time, however I was able to examine the butterflies over a period of approximately 15-20 minutes through 7x42 binoculars and, as I am particularly familiar with this species, identification is beyond doubt.

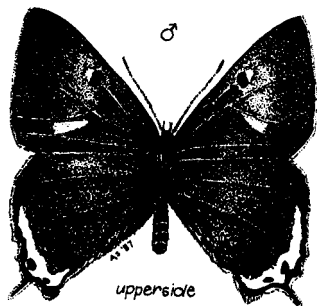
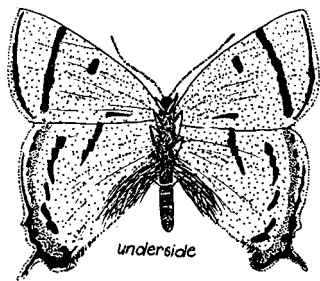
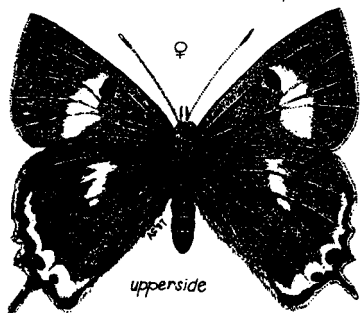
### Background

Having examined specimens from most parts of its known range in Tasmania where there are 4 described races I would conclude that this butterfly is fairly close to the nominate race *P.c. chlorinda*, although fairly bright, and perhaps most closely resembles specimens I have taken from the Buckland area.

Although the larval foodplant at most known colonies is silver wattle (*Acacia dealbata*), occasionally blackwood and other wattles are used. One notable such colony is at Port Sorell on the north coast, so the use of blackwood by the colony is by no means unique. It also uses blackwood extensively on the Australian mainland (L. Couchman pers. comm.). The life cycle of the butterfly has been described in Couchman and Couchman (1977).

In most colonies the species is associated with the ant *Iridomyrmex foetans* and larvae pupate under the bark of *Eucalyptus viminalis*. This eucalypt does not occur on the west coast other than in the far north-west. Where the butterfly was located the only eucalypts present were *E. nitida* and *E. ovata*. No effort was made to look for ants at this site, but, 'stink ants' are common in woodland in the south-west.

10mm  
hairstreak butterfly



### Significance

It had hitherto been thought that *P. chlorinda* was a species whose range was confined to dry sclerophyll woodland in the east of the State, widely distributed but in a restricted number of localised colonies east of a line from Port Sorell south to Ouse and through to Kingston, principally within the geographical range of *E. viminalis*. This find opens up the possibility that the species is in fact found throughout the State and future researchers should examine areas beyond *E. viminalis*/A. *dealbata* woodland and particularly examine shrubby and regrowth blackwood in November and December for flying insects. The butterfly which was examined whilst at rest was in fact in fairly good condition. There were slight signs of wear on the upper wing margins but my estimate would be that the butterfly was certainly less than one week old. I would guess the butterfly is on the wing between early November and mid December in the west of the State.

### Reference

Couchman, L.E. and Couchman, R. (1977). The Butterflies of Tasmania. *Tasmanian Year Book*, 11:66-96.