

NEW GEOGRAPHICAL RACES OF AUSTRALIAN
BUTTERFLIES, WITH A DESCRIPTION OF THE
FEMALE, LARVA, AND PUPA OF PSEUDALMENUS
CHLORINDA BARRINGTONENSIS Whs.

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Plates 3-8; Figs. 1-5.

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Family SATYRIDAE

Xenica klugi mulesi n. subsp.

Male, Above.

Forewing smoky black with orange brown markings, a white pupilled ocellus near apex, dorsum brownish black, a streak of dull black and silvery grey sex scales from vein 4 to vein 1a near its middle. This sex mark is much narrower than in typical *klugi*. Cilia greyish brown.

Hindwing smoky black with orange brown markings, a dull black band in centre crossing lower end of cell, a white pupilled ocellus near tornus, another smaller one in the subapical area.

Beneath:

Forewing similar to upperside, orange brown markings paler, apex pale dull black suffused grey, sex mark absent, ocelli as above, tornus narrowly smoky black.

Hindwing varying shades of greyish brown with darker irregular striæ, central band as above but longer, ocellus near tornus reduced to a minute spot, subapical one smaller and more obscure.

Female, Above:

Forewing smoky black with orange brown markings which are more extensive than in the male, a white pupilled ocellus near apex, sex mark absent, dorsum brownish black, cilia greyish brown.

Hindwing smoky black with orange brown markings, a dull black band in centre crossing lower end of cell, a small white pupilled ocellus near tornus, another in the subapical area which is sometimes reduced to a circular dull black spot, cilia greyish.

Beneath:

Forewing similar to upperside, orange brown markings paler, apex pale brownish black suffused greyish white, in some examples greyish white faintly tinged yellow. Ocellus as above.

Hindwing varying shades of greyish, from ashy grey to greyish brown, with darker irregular striæ which vary in distinctness in individuals. Ocellus near tornus obscure or almost absent, subapical one very faint.

This race is considerably smaller than *X. klugi klugi* Guer. and has been captured only by M. W. Mules at Wardang Island, South Australia. It has not so far been taken on the mainland. The main differences between this race and the typical *klugi* are its smaller size; paler markings on both upper and under sides; the orange brown areas more extensive; the dark markings smoky and not black; and the dorsum dark brownish black. *Xenica klugi* Guer. is a butterfly which is normally found in grassy forested country, usually associated with mountains. It is widely distributed in Australia, ranging from southern Queensland, through New South Wales, Victoria, at Wardang Island S.A., and in south western Australia. It is common also in Tasmania. In Queensland and New South Wales, it is confined to the coastal mountains, but does not actually reach the coast; in eastern Victoria it is found on the mountains further inland as well as on the coast, whilst in western Victoria it has been taken on the Grampians, and at Dimboola and Kiata, as well as nearer the coast. In Western Australia, it frequents the open forest country on coastal areas in the south-west corner of the State.

The occurrence of a subspecies at Wardang Island is certainly remarkable.

A very closely related species, *Xenica minyas* Whs. and Lyell, is common in many places in south western Australia, and it was thought for a time that this species might be the West Australian form of *X. klugi*; both species, however, have since been captured together there. *X. minyas* appears on the wing earlier (October-November) than *klugi* (late October to December), though both occur together later in the season.

Wardang Island is quite unlike any other locality where *X. klugi* has been found. With the exception of very few Casuarinas there are no trees on the island. The principal vegetation consists of saltbushes, native hop, and a species of small bushy and very prickly acacia. Sand dunes run along the western side of the island, and it was in small grassy patches amongst these dunes that Mules captured this subspecies. Its flight season is from late October until December. The total area of Wardang Island is about 5,000 acres.

Specimens of *klugi* from the Grampians are smaller than those from eastern Victoria; apart from size they do not differ very much from eastern examples. From Kiata males only have been seen by the author—these are slightly smaller than the Grampians specimens; the black markings of the upper side are not quite as dark as *klugi*, but the underside is typical. These specimens were

captured in early November in a grassy spot amongst large gum trees on the extreme northern edge of the Little Desert.

For distribution of *X. klugi* and its race see Fig. 1.

Types, male and female, in the collection of M. W. Mules.

Addendum.—During late October and in November, 1947, the writer visited Western Australia, and there made many observations regarding the habits and distribution of *Xenica klugi klugi* Guer. in that State. The closely allied species *Xenica minyas minyas* Whs. and Lyell. occurs in the same localities as *klugi*, but is on the wing a month earlier; a period of overlapping with



FIG. 1. Distribution of *Xenica klugi* Guérin, and its race.
 (1). *Xenica klugi klugi* Guérin. Found also in Tasmania.
 (2). *Xenica klugi mulesi* n. subsp.

both species takes place, however. Specimens of *klugi* from the west are very similar to those taken in Victoria and New South Wales, and do not in any way compare with the race *mulesi* from Wardang Island, S.A., nor with the small pale examples from Kiata and the Grampians in western Victoria.

It is interesting to note that *klugi* is plentiful on Rottnest Island which is about 8 miles from the mainland, but as far as is known *X. minyas* does not occur there.

Considerable intergrading takes place between the two species; early examples of *X. minyas* are typical, but towards the end of

its season females especially are lighter in colour because of restriction of the black markings. The underside in both sexes is definitely greyer and more like that of *X. klugi*. Much interesting work remains to be done with respect to both species.

Heteronympha cordace wilsoni, n. subsp.

Male, Above:

Forewing black with bright orange brown markings, an ocellus near apex, blue pupilled.

Hindwing black with bright orange brown markings, a larger ocellus near tornus, blue pupilled.

Beneath:

Forewing similar to the upper side, black markings much reduced, outer margin broadly brown, ocellus reduced to a small black spot faintly pupilled bluish.

Hindwing uniformly dull yellow-brown, a central and several irregular markings obscurely brown, ocellus faintly visible from above.

Female, Above:

Forewing as in the male, black markings slightly broader, ocellus larger.

Hindwing as in the male, black markings broader, ocellus larger than in the male.

Beneath:

Similar to the upperside, outer margin broadly brown, ocellus much reduced in size.

Hindwing almost uniformly yellowish grey, a large central and several irregular markings yellowish brown. Two ocelli, the upper one just visible, the lower one much reduced. The two bluish-white spots between the ocelli in typical *cordace*, absent.

This race is slightly smaller than the typical species, and so far is recorded only from Dartmoor in south western Victoria, at least 200 miles west of the nearest locality where *cordace* had previously been taken, i.e., Mt. Macedon.

The first specimens were captured by F. E. Wilson in January, 1940, after whom this new race has been named.

The greatest difference between this race and typical *cordace* is in the underside which is almost devoid of markings, especially in the hindwing; the upperside is much more golden on account of the restriction of black markings. This butterfly is always taken in swampy places, where its foodplant occurs.

There is some doubt whether *Heteronympha cordace* really belongs to the genus *Heteronympha*; until the complete life history has been worked out and studied, this cannot be decided. Dr. Waterhouse and the writer have had eggs and small larvæ only. The egg is almost globular, pale creamy green in colour, and faintly ribbed. The young larva is very pale green with a black head.

Family **HESPERIDAE**Subfamily **Trapezitinae***Trapezites sciron eremicola*, n. subsp.*Male. Above:*

Forewing smoky brown-black, three subapical spots yellow, a larger yellow spot near end of cell and three others, two in discal area and one below cell, the latter very faint. Cilia greyish white.

Hindwing smoky brown-black, a central area palely dusted yellow. Cilia greyish white.

Beneath:

Forewing dull grey-brown, apical and subapical areas greyish, markings similar to upperside, subapical spots obscure.

Hindwing greyish brown, with a series of spots greyish white edged black.

Female. Above:

Forewing smoky brown black, three subapical spots yellow, a large yellow spot near end of cell, and three others, two in discal area and one below cell, yellow; the latter being the largest. All spots larger and brighter than in the male. Cilia greyish white.

Hindwing smoky brown black, a central area palely suffused yellow. Cilia greyish white.

Beneath:

Forewing brown-black suffused greyish along dorsum, apical and subapical area greyish brown. Spots as above but restricted and paler.

Hindwing greyish brown, with a series of spots dull white edged black.

The species *T. sciron sciron* Whs. and Lyell. has been recorded from south-western Australia only, the holotype male coming from the Stirling Ranges. Two very worn specimens of this new sub-species were captured by M. W. Mules and the author at the Little Desert, Victoria, in early November, 1945. Both specimens were in a very wasted condition, and it was decided to visit the locality earlier the following year. This was done in late October, and both males and females obtained in excellent condition. The butterfly is apparently local, because it occurred only on three slight elevations, each about thirty feet above the surrounding country, and all within half a mile of one another. Although a week was spent collecting on the desert, no other spots were found.

Both males and females came to sport on these little ridges, the general habits and mode of flight being comparable to those of *T. luteus* which this subspecies somewhat resembles, especially on the upperside.

A diligent, though fruitless search for larvæ and pupæ was made on all likely foodplants, one in particular greatly resembling the dwarf *Xerotes* on which *Trapezites luteus* Tepper feeds. This plant has been identified as *Lepidosperma carphioides*.

All the other species of *Heteronympha* have a well defined sex mark in the forewing of the male—this is absent in *cordace*. The general appearance of the butterfly does not agree with other species of the genus, which fall naturally into two well defined sections, (a) those with dimorphic females (*H. merope* and *H. mirifica*), and (b) the remaining species, which are all very similar, even in the sexes. (*H. banksi*, *solandri*, *paradelpha* and *penelope*).



FIG. 2. Distribution of *Heteronympha cordace* Hubn. and its race.
 (1). *Heteronympha cordace cordace* Hubn. Found also in Tasmania.
 (2). *Heteronympha cordace wilsoni* n. subsp.

Heteronympha cordace has a fairly wide distribution in southern Australia, and occurs also in Tasmania. Specimens from the northern limits of its range where it is essentially a mountain butterfly, are considerably darker than those from Victoria, where it occurs at lower elevations as well as in the mountains.

Tasmanian specimens are more like Victorian ones, with the exception of those from Cradle Mountain, which are decidedly smaller than specimens from any other locality.

For distribution of *H. cordace* and its race see Fig. 2.

Types, male and female, in the collection of the author.

In general appearance *T. sciron eremicola* is darker above than typical *sciron*, and the underside shows much difference and is uniformly much greyer.

It is probable that the life history when determined will resemble that of *T. luteus*, which has a spring and an autumn brood. *T. sciron eremicola* flies with *Motasingha dirphia trimaculata* Tepper, with which species it can easily be confused. Actually the first two



FIG. 3. Distribution of *Trapezites sciron* Whs. and Lyell and its race.
 (1). *Trapezites sciron sciron* Whs. and Lyell.
 (2). *Trapezites sciron eremicola*, n. subsp.

specimens taken by Mules and myself were at first thought to be small males of *trimaculata*, but when examined, the absence of a sex mark in the male at once separated them.

The Little Desert is situated approximately six miles south of Kiata, and extends east and west for some twenty miles. It is quite likely that *T. sciron eremicola* will be found on the Ninety Mile Desert which is situated a few miles north west of Little Desert. The vegetation and type of country in both places are very similar. A butterfly which has extended its range over such great distances must surely occur at places between Western Australia and western Victoria; no doubt when more collecting has been done in the intervening country, this butterfly will be found.

For distribution of *T. sciron* and its race see Fig. 3.

Types, male and female, in the collection in the National Museum of Victoria.

Family LYCAENIDAE

Subfamily Ogyrinae

Ogyris amaryllis hopensis n. subsp.

Male. Above:

Forewing shining metallic blue with very narrow black outer margins. Cilia grey.

Hindwing shining metallic blue with very narrow black outer margins, broader at tornus. Cilia grey.

Beneath:

Forewing smoky black, broadly grey at apex narrowing to tornus, crossed with darker markings. Cell crossed by greyish white bars edged with metallic blue.

Hindwing dark blackish suffused grey and lightly tinged brown, crossed by interrupted darker markings, brown-black.

Female. Above:

Forewing shining metallic blue, in some examples slightly silvery blue, margins narrow, black, interrupted with grey. In some specimens a narrow black bar at end of cell, in many absent altogether.

Hindwing shining metallic blue, sometimes slightly silvery, margins narrow and black, interrupted with grey, broadest at apex and tornus. Cilia grey.

Beneath:

Forewing similar to the male. Cell dark orange red between second and third greyish white bars.

Hindwing brown-black faintly overlaid with grey, crossed by interrupted darker brown-black markings, those on the central area black.

In typical *amaryllis* there is almost always an orange red spot between the base of the forewing and the first cross bar. The chief characteristics of this race are its darker and more smoky appearance beneath, and the greater expanse of metallic blue on the uppersides of the wings in the female. It was first taken by F. E. Wilson and the author at Mt. Hope, northern Victoria, in the larval and pupal stages. These were found sheltering beneath the bark of black wattle trees on which the foodplant, a greyish leaved mistletoe, (*Phrygilanthus eucalyptifolius*) was growing. There were no ants in attendance.

The other Victorian race, *O. amaryllis meridionalis* Beth. Baker, occurs over much of western and north western Victoria, where the larvæ feed on *Loranthus quandang*, which grows on Casuarina trees. I have many times taken larvæ and pupæ of this race, and have found them attended by no fewer than three species of ants. *O. amaryllis hopensis* appears on the wing during

October and November, and is almost certain to be double brooded, as is the case with the race *meridionalis*.

It is most likely that *hopensis* will also occur on Pyramid Hill which is 10 miles from Mt. Hope in a south-westerly direction. These two localities are very old granite residuals which have been completely surrounded and partly covered with alluvium. Between them, and the undulating Mallee country some thirty miles to the west, lies the flat flood plain of the Loddon, which

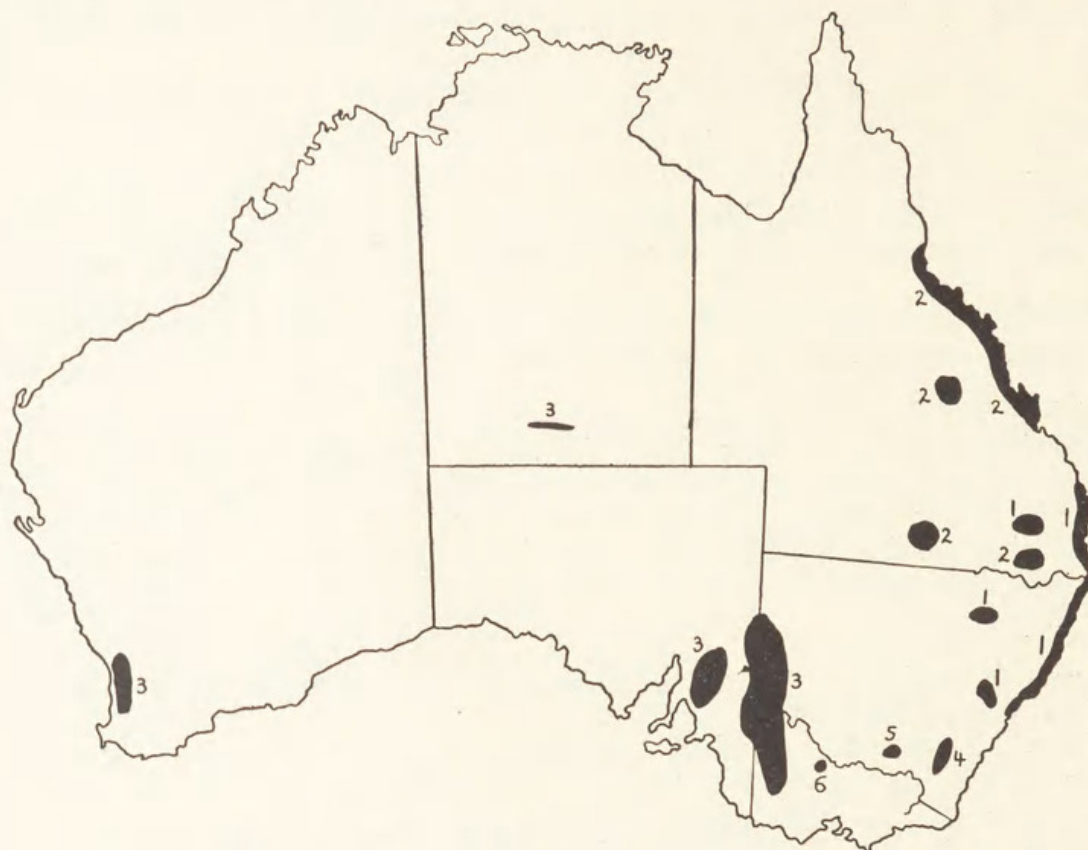


FIG. 4. Distribution of *Ogyris amaryllis* Hew. and its races.

- (1). *Ogyris amaryllis amaryllis* Hew.
- (2). *Ogyris amaryllis hewitsoni* Whs.
- (3). *Ogyris amaryllis meridionalis* Beth. Baker.
- (4). *Ogyris amaryllis amata* Whs.
- (5). *Ogyris amaryllis catherina*. Whs.
- (6). *Ogyris amaryllis hopensis* n. subsp.

extends northwards to the Murray. The vegetation on Pyramid Hill is similar to that on Mt. Hope.

O. amaryllis was described by Hewitson in *Catalogue Lycaenidae Brit. Museum*, 1862, p. 3, and since that time a number of distinct geographical races has been found and described.

The range of this butterfly is remarkable, extending from Cairns, in North Queensland, through that State, New South Wales, Victoria and South Australia to Western Australia. In

Queensland and New South Wales, it occurs along the coast as well as far inland, but is confined to inland districts in Victoria, and to a lesser extent in South and Western Australia.

For distribution of *O. amaryllis* and its races see Fig. 4.

Types, male and female, in the collection of the author.

Subfamily *Lycæninae*

Candalides heathi doddi n. subsp.

Male. Above:

Forewing dark bronze brown suffused purplish, outer margins brown-black; more broadly so than in *C. heathi heathi*. Cilia grey.

Hindwing dark bronze brown suffused purplish, outer margins brown-black. Cilia white.

Beneath:

Forewing silky white suffused cream, a series of black spots, usually six in number, near the margins, those nearest tornus being the largest.

Hindwing silky white suffused cream, a series of black spots, usually six in number, near the margins, diminishing in size from tornus towards apex.

Female. Above:

Forewing brown faintly tinged bronze, central area purplish, only faintly so in some examples. Outer margins brown-black, cilia white.

Hindwing brown faintly tinged bronze, central area purplish, faintly so in some examples. Outer margins narrow, brown-black, cilia white.

Beneath:

Forewing pale greyish white inclined to be silky, with a series of black spots as in the male.

Hindwing pale greyish white inclined to be silky, a series of six black spots diminishing in size from tornus towards apex.

This race is much larger than the typical *heathi*, or any of its other races, males averaging 30mm. across the expanded wings, and females from 31 to 34mm. Large specimens of male *heathi* on the other hand average 26mm., and females 28mm. across the wings.

C. heathi doddi was first captured by F. J. Dodd after whom it is named, on the headwaters of the Tubrabucca River, (altitude 4,300 feet) on the northern end of the Barrington Tops, New South Wales, in late December 1946. Several days later, the author in company with Dodd, took further specimens on the headwaters of the Manning River, some six miles from the original spot, and on the following day again at the original place.

No doubt this butterfly occurs at other places on the Barrington Tops. The author spent two weeks collecting there on two previous occasions, but did not encounter this butterfly. This may have been due to the fact that on these trips only the southern end of the Tops was visited, near the site of Edward's hut. This is 17 miles from the source of the Tubrabucca River.

The country in which *doddi* was found is very steep and rocky. The butterflies were flying up and down the almost precipitous slopes, and seemed to be attracted to a native species of *Veronica* which was growing there. Though not in flower at the time, these bushes were frequented by the butterflies, but a search on them failed to reveal any eggs or larvæ. There were many other apparently similar gullies within easy distance, but in these *Veronica* was not growing, and no butterflies were seen.



FIG. 5. Distribution of *Candalides heathi* Cox and its races.

- (1). *Candalides heathi heathi* Cox.
- (2). *Candalides heathi ærata* Montague.
- (3). *Candalides heathi alpina* Waterhouse.
- (4). *Candalides heathi doddi* n. subsp.

The other mountain race of *C. heathi*—*alpina* Whs., is much smaller than this race, and can at once be distinguished by the grey-brown underside of both sexes.

Candalides heathi heathi Cox was first described in 1873 from specimens caught at Bridgewater near Adelaide. This species has a wide distribution in southern and eastern Australia, ranging from Blackwater which is 110 miles west from Rockhampton on the Longreach railway, southwards, and round to Geraldton in Western Australia. It has developed several geographical races,

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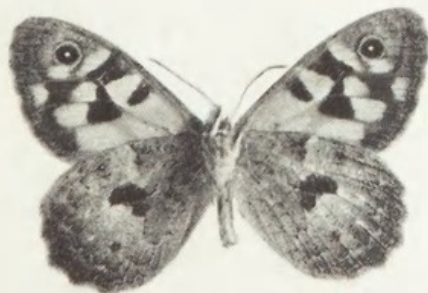
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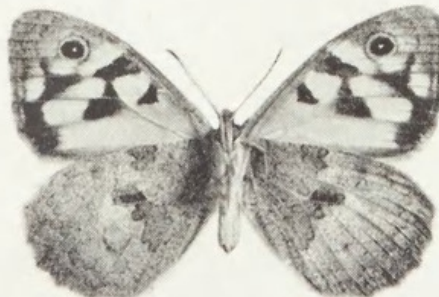
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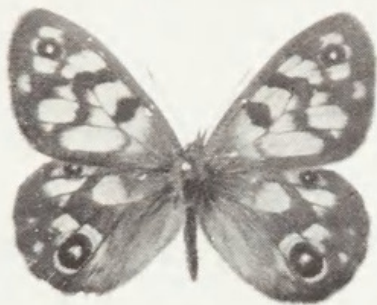
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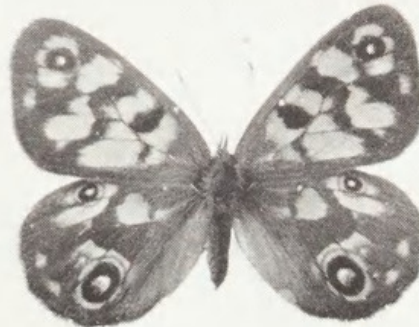
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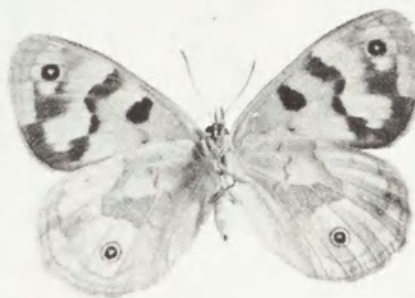
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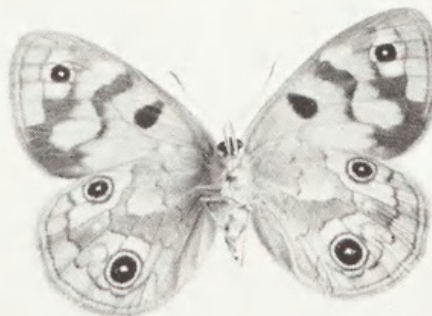
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Burns, A. N. 1947. "New geographical races of Australian butterflies, with a description of the female, larva, and pupa of *Pseudalmenus chlorinda barringtonensis* Whs." *Memoirs of the National Museum of Victoria* 15, 86–102.

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