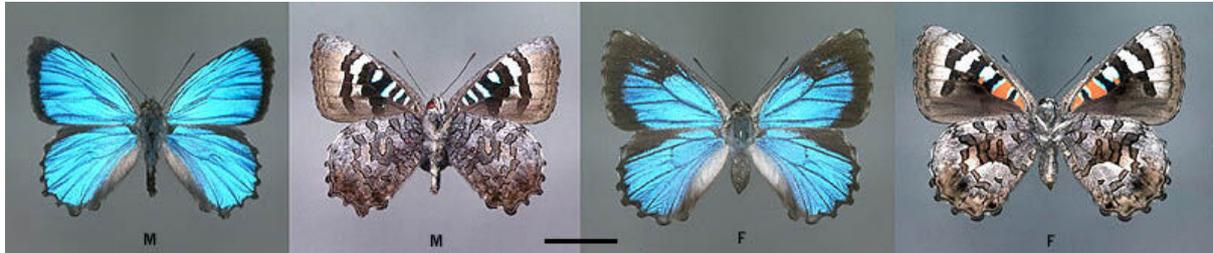


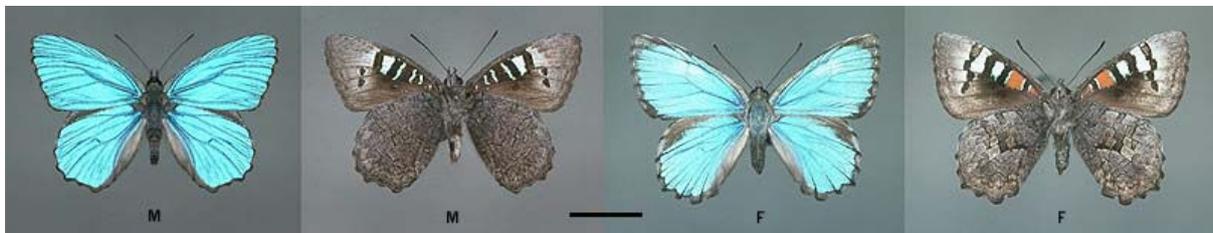
SOUTH AUSTRALIAN BUTTERFLIES

Data Sheet

Ogyris amaryllis meridionalis (Bethune-Baker) (Amaryllis Azure)



This is the coastal form of the butterfly.



form *parsonsi* Angel

Interesting aspects: The mini-morpho of Australia, as when in flight under full sun they are like glistening blue tinsel-paper and are visible to 50 m or more as they career around the trees containing their mistletoe hostplants. Yet these butterflies becomes invisible when settled, as like all other *Ogyris* species, they have cryptically marked undersides that make the butterflies indistinguishable from the rough bark of trees and bushes when they are settled. Sometimes they imitate a blackened dead leaf still attached to the bare twigs. The male butterflies are usually very active during the heat of the day and are swift in flight. They actively patrol and circle the trees and bushes harbouring the larval mistletoe hostplant, or jockey for territorial position, looking for newly emerged females. At other times they will settle for long periods on a bare twig of the mistletoe host tree, on the lee side of the wind. The females are slower in flight, and when not feeding they spend their time either fending off males or are searching for places on the mistletoe to lay eggs. The females are also active searchers of new hostplant sources and are often encountered in the middle of nowhere, at a distance from their hostplant. The males will also patrol or congregate on hill or dune tops near the hostplant.

The butterfly belongs to the group of *Ogyris* which associate with small ants, and members of this group have distinctive eggs and early stages that typify the group. *O. amaryllis* is a more isolated member of the group, and is the only member in which the post-median band on the underside of the forewings is strongly dislocated. In all other members the band is unbroken. The female is also unique in having large bright orange-red basal marks in the cell of the forewing underside. There are three colour forms of the butterfly in South Australia. A coastal form in which the black edges to the blue colouration of the butterfly wing uppersides are extensive; a widespread inland form in which the black edges are

narrow; and an unusual very rare form (*parsonsi*) found in northernmost South Australia in which the black edges (in the male at least) are almost non-existent. The width of the black edge diminishes quickly away from the coast. The coastal and inland forms do not occur together, except near Whyalla on upper Eyre Peninsula. In subspecies of the butterfly from coastal NSW and the ACT the black edges to the blue colouration of the butterfly wing uppersides are very extensive.

The butterflies are usually very timid, especially the males, with the least amount of movement or noise making them fly. However, with extreme care the butterflies can be approached, especially the female when she is preoccupied with egg laying. Colder weather or early mornings will slow their reaction time down.

The metallic blue colour of these and other blue coloured *Ogyris* butterflies is affected by moisture, and if the blue wing scaling somehow gets wet, it irreversibly changes to green.

Life History

Larval food-host: The larvae feed on many types of *Amyema* mistletoe, including *Amyema fitzgeraldii* (pincushion mistletoe), *A. gibberula* var. *gibberula* (grevillea-hakea mistletoe), *A. linophylla orientale* (bulloak or buloke mistletoe), *A. maidenii maidenii* (pale-leaf mistletoe), *A. melaleucae* (melaleuca mistletoe), *A. miquelii* (box mistletoe), *A. miraculosa boormanii* (fleshy mistletoe), *A. pendula pendula* (drooping mistletoe), *A. preissii* (wire-leaf mistletoe), *A. quandang* var. *quandang* (grey mistletoe), *A. sanguinea* (bloodwood mistletoe) (Loranthaceae). The larvae normally eat the flower buds, flowers, leaves and soft stem parts of the host mistletoe, but are particularly fond of the flower buds. They will also eat green fruits if other parts of the hostplant are in short supply. The coastal Queensland subspecies (*hewitsoni*) of the butterfly has recently been seen to use *Diplatia furcata* mistletoe as a hostplant. This mistletoe is not present in South Australia, although a related mistletoe *Diplatia grandibractea* (Coolibah Mistletoe) occurs on riverine *Eucalypts* in northern SA, except the local subspecies of the butterfly is not known to utilise this mistletoe.

In temperate areas the female butterfly has a preference for certain mistletoes on which to lay her eggs. The melaleuca and wire-leaf mistletoes are at the top of the list, followed by the second preference fleshy, grey, pale-leaf and pincushion mistletoes, while the remaining mistletoes of the above food-host group are the least preferred. In the Far North of the state, the females are happy to lay on any *Amyema* mistletoe, although on one high hilltop that had both *Amyema miquelii* (on *Eucalyptus*) and *Amyema maidenii* (on mulga) occurring, the larvae were only using the latter host plant. Interestingly, in South Australia, the endemic Australian *Lysiana* (Harlequin) mistletoes are toxic to the larvae. (The *Amyema* mistletoe is not endemic to Australia.) Although the females will very rarely lay eggs on *A. miquelii* in South Australia, the larvae will readily accept *A. miquelii* in captivity and often develop much better on that mistletoe than on the other mistletoes.

Larval attendant ant: Larvae are usually attended by a few small ants including a dark brown and black *Crematogaster* sp and different small *Iridomyrmex* spp either black or dark brown or orange and black coloured, and there is likely also a change in ant shifts at night to include the nocturnal larger sugar ants *Camponotus* sp. Interstate the attendant ants include *Crematogaster* sp (*laeviceps* group), *Anonychomyrma* sp (*nitidiceps* group), a

black *Iridomyrmex* sp A (*rufoniger* group), *Ochetellus* sp, *Papyrius nitidus*, and *Podomyrma* sp.

Eggs: Small, blue-white to white, sometimes brownish, hemispherical shape, basally flattened, the top is domed. The sides are coarsely reticulated in a hexagonal pattern, with each reticulation intersection having a small raised blunt projection. The facets on the top of the egg are much smaller and are of irregular shape and these continue to the small-depressed micropylar area at the apex of the egg. The eggs are typical for the species-group. Larval development within the egg is variable, depending on location and time of year. An egg laid in March in the Coorong area only took five days to hatch. A clutch of eggs laid in July in the Musgraves in the Far North of the state took 17 days to hatch. In some areas where the butterflies are common, there are populations of tiny parasitoid wasps on the mistletoes and many of the eggs suffer parasitisation.

Eggs can be laid singly or in small or large batches, depending on how much time the female has to lay before being disturbed, or where they are laid on the hostplant. On the flower buds, leaves and smaller stems of the mistletoe the eggs are usually laid singly or in pairs, while batches of eggs are laid on the bole (base) and thicker stems of the mistletoe, and sometimes on adjacent parts of the mistletoe host. A single cluster of 23 eggs was laid by a female on a flower bud of *A. maidenii* in the Far North. Some collective egg batches resulting from repeat layings by the same or several females can frequently contain more than 50 eggs. In captivity, one female once laid more than 120 eggs over a two week period.

Larvae: The first instar is pale greyish yellow, later becoming green after eating the young leaves of the hostplant. Long onisciform shape, with scalloped lateral edges. The posterior dorso-lateral organs are not developed. The head is large, smooth, brownish yellow, hidden beneath the body. There are long dark peripheral and dorsal setae, which are longest anteriorly, posteriorly and dorsally. Dorsal setae occur in two pairs, one pair being long and recurved, the other pair being short, recumbent and directed to the rear. Intermediate instars gradually lose the long dorsal setae and gain the posterior dorso-lateral organs, and are onisciform (slater shaped). The second and third instars can be either green or brown coloured, but by the late third instar stage they are usually all brown coloured. The remaining two instars are brown coloured.

First and second instar larvae remain exposed on the leaves of the mistletoe where their colour matches the leaves, but by the third instar as they get larger and more easily recognisable to predators they will begin to hide and shelter during the day, and feed at night. The young larvae initially eat the young tips of the mistletoe, but by about the late third instar they will also eat the older leaves and flower buds. Older larvae shelter during the day under coarse old bark near or on the hostplant, or in crevices in the mistletoe host, or in borer holes or ant tunnels in the mistletoe or mistletoe host, in bird nests or in other leaf debris caught up in the mistletoe or near the hostplant. These older larvae will aggregate together if the shelter is large enough. Sometimes the places to hide on the mistletoe and mistletoe host are inadequate, and larvae will then shelter in debris around the base of the host, or even inside ant tunnels and ant nests at the base of the host tree. The numbers of larvae feeding on a mistletoe that is being utilised by the butterflies are variable, usually depending on the size and health of the mistletoe, and whether there are good hiding places present for the larvae. The numbers vary from just a few larvae, to one extreme case encountered in WA of some 200 larvae.

The fifth (final) instars are about 21-27 mm long, onisciform shaped with a thoracic dorsal furrow, the lateral edges are scalloped, the anterior and posterior areas are flattened, and there are some short peripheral hairs that are longer anteriorly and posteriorly. Generally brown coloured, with pale yellow dorsal chevron markings and other subdorsal markings, a pale yellow longitudinal subdorsal line, the anterior and posterior extremities are usually free of pale markings, and the spiracles are black. The prothoracic plate is dark brown, divided by a pale median line, the anal plate is pale coloured divided by a dark I shaped median mark. The body is covered in brown, black or white coloured, minute secondary setae, which are recumbent, club shaped and rough in appearance, set on a protuberant, angular and ridged base. The secondary setae impart a scabrous appearance to the larvae. The posterior dorso-lateral organs are well developed. The head is small, smooth, brown in front, yellowish laterally, hidden beneath the body.

Larvae normally take five instars to fully develop, but sometimes they will take more although this is sometimes indicative of the larvae having physiological problems, due probably to waste chemicals affecting the environment.

Pupae: Short cylindrical, rounded anteriorly and posteriorly, about 13-16 mm long. Normally coloured in some shade of brown, usually in a pale shade, (rarely very dark brown as in *O. olane*), with a darker dorsal line, and other darker cryptic markings. However, they can be nearly black when the rare pupation occurs during winter. There is a pair of large, dark brown dorsal spots above the head. The surface of the pupa is without hairs, but bears a reticulated pattern (similar to the eggs) that produces a very fine scabrous surface, and which includes minute specialised secondary setae that are more common around the spiracles. Pupation normally occurs in the final larvae shelter, often well away from the mistletoe towards the base of the mistletoe host tree where coarse flaking (but secure) bark and other places to hide are more prevalent. Larvae will often pupate gregariously together, and large colonies of pupae are known if a suitably large shelter is present. Larvae will also pupate in the positions of previous pupae (from which the adult butterflies have previously emerged), by first destroying the empty pupal shells. Pupae are attached to the silked substrate by anal hooks and a central girdle.

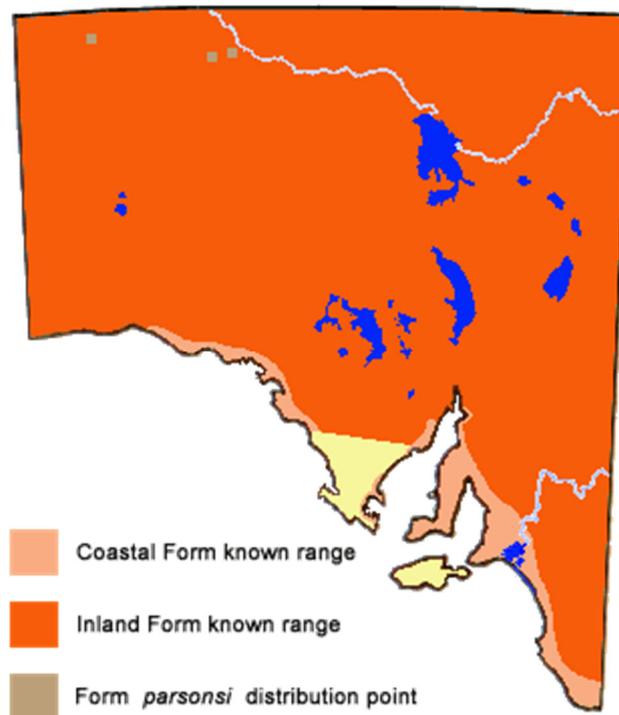
The pupa development period is variable, depending on the location and time of year, but as for all butterflies the pupal period becomes shorter as the average day temperature increases. In temperate areas, it takes 40-55 days for the pupa to develop in mid winter, in early spring 36-44 days, in late spring 19-22 days, in summer 13-15 days, in mid autumn 19-20 days, and in early winter about 31 days. Like most of the *Ogyris* butterflies, emergence of the butterfly from the pupa is rapid, and on a hot day it is flying within 1/2 an hour, sometimes even less. The butterflies usually emerge in the morning, and will emerge earlier if there has been an overnight dew and the day is hot. Like many Lycaenidae that are attended by ants, but particularly for many of the *Ogyris*, the butterflies emerge with the body covered in large quantities of fluffy grey 'down', which is discarded when the butterfly first flies. This down helps protect the butterfly from being attacked by over-zealous attendant ants, or even other small predators while the butterfly is expanding and hardening its wings in readiness for first flight.

The pupae are known to stridulate, making a series of audible clicks, which are believed used as a means of communicating with the attendant ants. There is usually at least one ant in attendance with a pupa.

Flight period in S.A.: Flight is very much dependent on the area in which the butterfly occurs. Main flights tend to coincide with the flowering of the mistletoe hostplants, which are used for nectaring purposes by the adults. In the temperate areas there are continuous broods over the warmer months, which can be completed in about 10 weeks, although there is usually a main emergence in summer, and lesser flights in spring and autumn. Larvae can go into a torpid (semi-hibernation) state over winter in very cold areas, although in temperate areas larvae will also develop very slowly over winter. Males will emerge earlier than females from a single clutch of eggs. In hot temperate and southern pastoral areas the main flights are usually in spring and autumn. In the hot Far North of the state they can fly all year round, but tend to be more common during the cooler months especially during the period when their mistletoe hostplants are in flower.



Distribution: The species is found through most of mainland Australia wherever its hostplants occur, but is yet to be found on Kangaroo Island even though one of its hostplants is present. Interestingly, only *Amyema melaleucae* occurs on Kangaroo Island and southern Eyre Peninsula. Separate subspecies of the butterfly occur in the tropical north of Australia, and in the eastern states. The butterfly can tolerate most habitats, from the hot humid tropics, the hot arid areas, to even areas with winter snow (ACT). The unusual form *parsonsi* of the butterfly is sometimes produced in captivity when immature early stages of the butterfly collected from northern South Australia are reared in cool southern areas during the cold months. Otherwise the latter butterfly is more commonly seen flying at higher elevations of the Central Australian ranges, where they can also be much larger to 44mm.



Habitat: Usually found wherever its *Amyema* mistletoe hostplants occur, and these are common and widespread occurring in most habitats. It prefers open shrub and woodland habitat on the drier side.

Conservation Status in S.A.: It can be a common butterfly when in flight. Rare in the Lower Southeast Region of the state.

Threats: Not generally under threat except in larger urban areas, where its mistletoe hostplants are usually considered pests and often removed from their hosts.

Conservation Strategy: In urban areas a public education process is required for the *Amyema* mistletoe. Healthy trees are able to support this mistletoe, and there is usually a self-induced balance between the tree host and the mistletoe. If there appears to be an imbalance then it should not be a problem to thin out some of the mistletoe. An active *Ogyris* colony will help keep the mistletoe pruned. Harlequin mistletoe (*Lysiana* sp) can be invasive and this mistletoe should not be confused with the *Amyema* mistletoes.

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