# Coastline Azures
# (Ogyris spp.)
# Parham to Aldinga Beach

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Report Prepared for Green Adelaide Board

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# Contents

## Summary

This baseline report summarizes the distribution of *Amyema species* of mistletoes and associated occurrences of Azure butterflies**,** *Ogyris* species in coastal areas between Parham and Aldinga Beach. These species are discussed in their host and larval plant relationships and associated habitats. The association and dependence of Ogyris species larvae on mistletoes is examined and their distribution is outlined. The survey found fragmented mistletoe distributions within the coastal survey areas resulting in associated Ogyris species occurrences. Two Ogyris species were found present; the Satin Azure**,** *O. amaryllis meridionalis* found in northern Adelaide plains and Marino Conservation Park with the Purple Azure**,** *O. olane* present in Aldinga Scrub Conservation Park. *Ogyris genoveva* was not detected, however its presence is plausible based on evidence.

## Introduction

South Australia has 15 recognized mistletoe species in two genera; *Amyema* and *Lysiana*, all in the family Loranthaceae. Mistletoes are flowering aerial hemiparasites plants relying on their host plant for water and nutrients to use in their photosynthesis.

Mistletoes play an important role in the environment not only as larval host plants for the Ogyris butterflies but also for other wildlife including; birds, reptiles, mammals and other invertebrates which rely on these for food and shelter.

One specie**s** *Lysiana exocarpi* (Harlequin Mistletoe) being present in coastal areas and associated with many host plants often seen as a hyperparastite on other *Amyema spp.* is not discussed in this report due to its toxicity to *Ogyris* species larvae.

Three mistletoes associated with *Ogyris* species are recorded as present in the survey area and are discussed; *Amyema melaleucae* (Tea-tree Mistletoe), *Amyema miquelii* (Box Mistletoe) and *Amyema preissii* (Wire-leaf Mistletoe).

Three Ogyris species are known to occur along the coastal survey area; *Ogyris amaryllis meridionalis* (Satin Azure), *Ogyris olane* (Purple Azure) and *Ogyris genoveva* (Southern Purple Azure) and are surveyed.

Know distribution records for *Amyema* and *Ogyris* species are primarily sourced from ala.org.au, following the removal of erroneous records these were then ground truthed.

*Ogyris* species were surveyed using visual adult, larval and/or pupal observations.

## Survey methodology

Surveys of mistletoes were undertaken based on the data sourced from available records. Data was ground truthed with site visits which included visual location of mistletoes and identification, adult butterfly observations and larval trap deployment. The *Ogyris* larvae being nocturnal feeders naturally withdraw during daytime under bark, into holes and crevices in wood, under leaf litter at base of trees or into ant byres where suitable. Larval traps consisting of one sided corrugated flutes acting as artificial shelter belts (bands) were used to monitor for the presence of larvae (Fig 1 & 2). Traps were set just above the mistletoe foot or as close as possible on the host's branch. These were set for a period of one month during mid March to mid April 2022 allowing sufficient time for larvae to accommodate themselves with the new shelters.

The traps were then removed and investigated for presence of larvae and pupae. Findings were then identified, recorded and larvae returned to the host tree under bark. Each *Ogyris* larvae/pupae species has unique characteristics which are used in identification.

Due to the large area of Aldinga Scrub Conservation Park, with numerous records, 5 coastal transects were employed and all accessible mistletoes within 20 metres each side of each central transect line were banded.

*Fig 1: Example of banding trap.*

*Fig 2: Ogyris larva found in trap flutes.*

## The Mistletoes

*Amyema melaleucae* (Tea-tree Mistletoe) is hosted on *Melaleuca lanceolata* (Tea-Tree) and restricted mainly to coastal areas (Fig 3). *M. lanceolata* whilst common, occurring both naturally and planted within the survey areas is currently limited in hosting the mistletoe. Historically *A. melaleucae* distribution was more extensive with records dating back to Pt. Adelaide (1854) and Hallett Cove (1905, 1932 and 1940). Currently *A. melaleucae* is known from isolated coastal areas of the Adelaide International Bird Sanctuary (1997, 2016 and 2021).
Recently it has been recorded from Parham (M. Endacott., 2022).

*Amyema miquelii* (Box Mistletoe) is widely distributed and hosted on various Eucalyptus species (Fig 4). Historically the distribution of *A. miquelii* was more widespread in metropolitan coastal areas with two records labelled as "Holdfast Bay" dating 1847-1852. Currently occurrences of *A. miquelii* are restricted to Aldinga Scrub Conservation Park with hosting occurring on Eucalyptus porosa, E. macrocarpa, E. odorata and E. fasciculosa.

*Amyema preissii* (Wire-leaf Mistletoe) is hosted on various Acacia species (Fig 5). There are no historic coastal records available on ALA for *A. preissii* in Marino Conservation Park except one collected by Enid Robertson on 9th Nov 2006 in the State Herbarium.
Currently it is well distributed within the site being hosted on *Acacia victoriae* (Elegant Wattle).

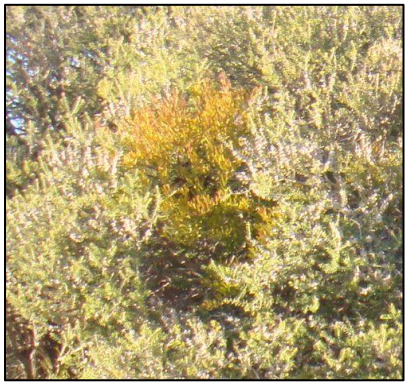

*Fig 3: A. melaleucae*

*Fig 4: A. miquelii*

*Fig 5: A. preissii*

## The butterflies

*Ogyris amaryllis meridionalis* (Satin Azure), is one of the brightest blues and widely distributed species found in most habitats is often seen flying in the vicinity of its larval host plants (Fig 6). A robust butterfly able to withstand many environmental conditions, it is a strong flyer capable of covering long distances. Larvae of this species are found on various *Amyema* species mistletoes with *Amyema melaleucae* and *A. preissii* being hosts in the coastal survey areas. The butterfly can be very common at times. The larvae are often attended by various ant species however this relationship is not obligatory. This species is present in the coastal areas hosting *A. melaleucae* and at Marino Conservation Park.

*Ogyris olane* (Purple Azure) is a dull purple butterfly, local in distribution, usually uncommon and restricted to non arid areas where its larval foodplant occurs (Fig 7). Observations of this species usually occur as flying adults at treetops of Eucalypts hosting *Amyema miquelii*. It is restricted to Aldinga Scrub Conservation Park in the survey area. The males of this species will often hill top away from it larval host plant areas. The larvae are sometimes attended by ants.

*Ogyris genoveva* (Southern Purple Azure) is the largest of the three Ogyris species and is dark purple in appearance (Fig 8). This specie is mostly found in open woodland habitats where its larval food plant occurs in association with Camponotus ants. Whist this specie can be relatively common in areas away from the coast, it has been recorded only from Aldinga Scrub Conservation Park on few occasions (A. Lines pers. comms.). The larvae use *Amyema miquelii* and have an obligate relationship with *Camponotus consobrinus* ant (Sugar ant).

*Fig 6: O. a. meridionalis, male*

*Fig 7: O. olane, male*

*Fig 8: O. genoveva, male*

# Amyema distributions


*Fig 9: Current Amyema species distribution survey sites.*

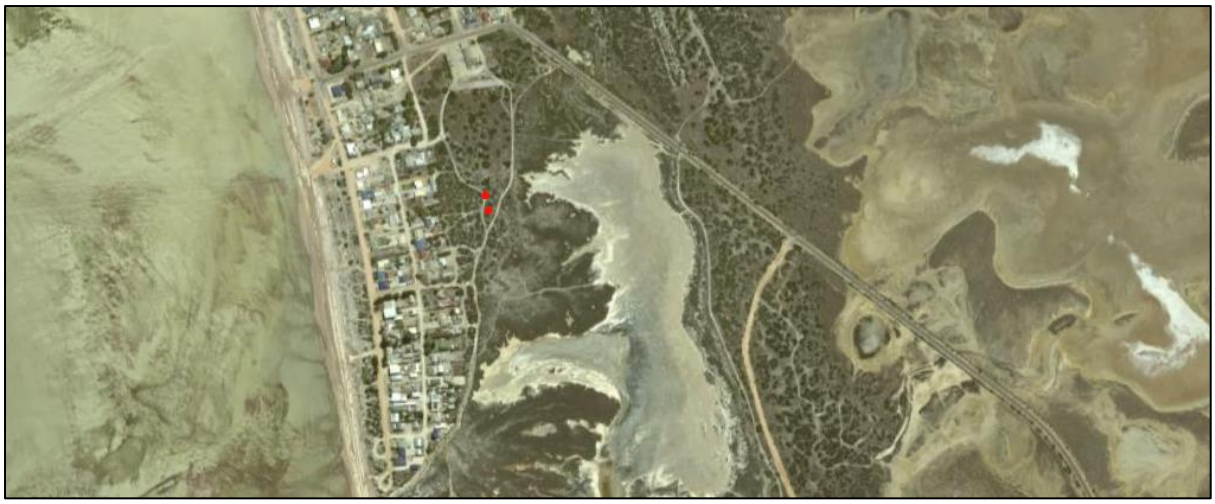

*Fig 10: Parham, Amyema melaleucae survey points.*

*Fig 11: Port Gawler, Amyema melaleucae survey points.*

*Fig 12: Marino Conservation Park, Amyema preissii survey points*.

*Fig 13: Aldinga Scrub CP, Amyema miquelii survey points.*

## Ogyris Distributions


*Fig 14: Ogyris distributions*


*Fig 15: Marino Conservation Park, Ogyris survey points.*

*Fig 16: Aldinga Scrub Conservation Park, Ogyris survey points.*

## Results

The distribution of *Amyema* species along the coastal areas from Parham to Aldinga Beach is very limited. Isolated stands *of A. melaleucae* are present in the northern coastal areas spanning from Parham to Port Gawler and are hosted on *Melaleuca lanceolata*. There is a distinct absence of *Amyema* species occurrences from Port Gawler to Marino Conservation Park where *A. preissii* occurs on *Acacia victoriae*. Aldinga Scrub Conservation Park was found to host the only stands of *A. miquelii* hosted by various *Eucalyptus* species.

*Amyema miquelii* being the host plant for all three species was found as the larval plant for *Ogyris olane*. *Amyema preissii* and *A. melaleucae* being larval host plants for *Ogyris amaryllis meridionalis* were also found.

Historic records of *Amyema melaleuca* and *A. miquelii* were ground truthed and no evidence was found in these areas.

*Ogyris amaryllis meridionalis* was found present at Parham and Marino Conservation Park.

*Ogyris olane* was found present at Aldinga Scrub Conservation Park.

No evidence of *Ogyris genoveva* was found present at Aldinga Scrub Conservation Park, however its larval host plant *Amyema miquelii* and its obligatory *Camponotus consobrinus* ants were found present. The absence of *O. genoveva* observations, both adult and larval does not equate to lack of presence, but only implies that the species was not present in the surveyed area at that time.

Interestingly *O. a. meridionalis* also using the larval host plant *A. miquelii* has not been recorded from Aldinga Conservation Park to date.

Ogyris colonies along the coastal areas are directly correlated with the distribution of their relevant larval host plants.

## Discussion

The absence of *Amyema* mistletoes in areas between Port Gawler and Aldinga Conservation Park, the exception of Marino Conservation Park, creates a gap in the distribution of *Ogyris* species along the coastline. *Melaleuca lanceolata* occurs naturally in many northern coastal areas and is used widely as a landscape and revegetation tree within metropolitan areas. This creates an opportunity of *Amyema melaleucae* seeding to be undertaken increasing the coastal distribution of *Ogyris amaryllis meridionalis*. It would be expected that this species will naturally colonise these areas from abroad. Further to *O. a. meridionalis* colonisation of these areas, *Delias aganippe* (Wood White butterfly) also a widely distributed species will benefit as its larvae use this mistletoe.

Whilst *O. a. meridionalis* has the ability to colonise outlaying mistletoes populations with ease, similar outcomes will occur with *O. olane* providing its larval host plant *A. miquelii* distribution is relatively continuous. The current coastal distribution of *A. miquelii* is restricted to Aldinga Scrub Conservation Park, however historically it occurred further north with records from Holdfast Bay area. Opportunities for *A. miquelii* seeding are possible in suitable *Eucalyptus* species along Adelaide's metropolitan coastline creating habitats for both *O. olane* and potentially *O. genoveva* with the latter also requiring the presence of *Camponotus consobrinus* ants. Increases in coastal *A. miquelii* distributions will also benefit the *D. aganippe* butterfly.

The current colonies of *O. olane* and *O. genoveva* within Aldinga Scrub Conservation Park are potentially interconnected to colonies in the Adelaide Hills via a network of isolated *A. miquelii* stands.

The isolated colony of *O. a. meridionalis* in Marion Conservation Park is most likely the result of adult dispersion from known Adelaide hills populations.

Whilst *O. a. meridionalis* was not found at Port Gawler it is highly likely to be present based on the species habitat preferences and its robustness. It is envisaged that the two unsurveyed sites between Parham and Port Gawler will also contain the species.

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