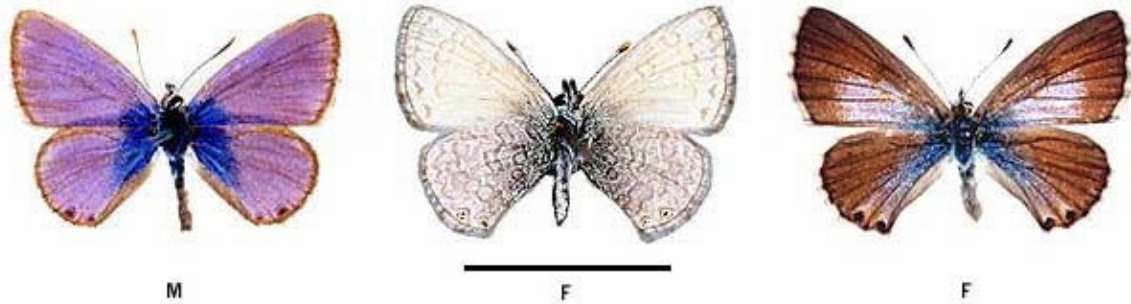


SOUTH AUSTRALIAN BUTTERFLIES

Data Sheet

Nacaduba biocellata biocellata (C. & R. Felder) (Two-spotted Line-blue)



Interesting aspects: One of the most common butterflies in Australia, particularly in the hot arid inland areas where hundreds of these butterflies can be seen flying around individual *Acacia* when in bloom. In the Far North of the state, after rains, this butterfly can occur in the millions when mass emergences occur from beneath the hostplant wattles, particularly the common Mulga (*Acacia aneura*). During this time, in the mornings, hundreds of males can be seen slowly fluttering below a height of 10 cm beneath an individual Mulga tree, waiting for the females to emerge with which they can mate. This is a spectacular sight for those privileged to witness it. If a female has already mated then she will reject the advances of a male by rapidly vibrating her wings and raising her abdomen in the air. If the male persists then she will take flight, often by first flying very slowly and still vibrating her wings, and if the male again still persists, she will change into high gear to try and lose the male.

The butterfly has a strong flight, but usually of short duration. Both sexes normally remain near the hostplant, but males will sometimes collect on hill or dune tops where they congregate around the tops of trees and bushes. Here the males have territorial battles competing for a high position on individual favoured trees (or bushes) where they wait for newly emerged females to fly in for mating. If the numbers are large, then there is a continuous flight of butterflies as each male keeps jockeying for position. In the inland areas there is usually a prevailing wind, so the flight activity is then confined to the leeward side of the tree. The same activity by the males can also occur about the top of the hostplant, particularly in the afternoons after they have lost interest in fluttering about at the base of the plant. Both sexes are also often seen feeding together at flowering trees and bushes, particularly the massed flowers of *Eucalyptus* and *Melaleuca*, and also on their hostplants. The extent of the blue areas on the wings of the female is variable, and sometimes it is absent.

The butterfly is usually seen flying about *Acacia* (wattle) trees that are in flower or late bud, as the larvae eat the flowers. However, the butterflies are sometimes seen flying about *Acacia pycnantha* in summer and autumn in the South Mt Lofty Range. These wattles bud in summer and autumn, but do not flower until winter and spring. The butterflies still lay

eggs on these buds, but as the buds remain hard until winter the emergent larvae normally perish unless they can adapt to young leaf tips.

Due to the sometimes short periods of rain and hostplant blooming in the arid inland areas, the larval stage duration of the butterfly is often very rapid and incomplete, producing some very small butterflies often only half the normal size, and some of these butterflies would be strong contenders for the smallest butterfly in the world.

Life History

Larval food-host: Probably most species of *Acacia* (wattles) (Mimosaceae). Those wattles actually recorded include *A. anceps* (Port Lincoln wattle), *A. aneura aneura* (mulga), *A. brachybotrya* (grey mulga), *A. calamifolia* (wallowa), *A. cyclops* (western coastal wattle), *A. erinacea* (prickly wattle), ***A. decurrens* (early black wattle), *A. iteaphylla* (Flinders Range wattle), *A. ligulata* (umbrella bush or sandhill wattle), *A. longifolia sophorae* (coastal wattle), **A. karroo*, *A. mearnsii* (black wattle), *A. melanoxylon* (blackwood), *A. murrayana* (sandplain wattle), *A. nematophylla* (coast wallowa), *A. oswaldii* (miljee or umbrella wattle), *A. papyrocarpa(sowdenii)* (western myall), *A. pycnantha* (golden wattle), *A. quornensis* (Quorn wattle), *A. retinodes* (Wirilda), *A. rigens* (needle wattle), *A. rupicola* (rock wattle), *A. salicina* (native willow or coobah), ***A. saligna* (golden-wreath wattle), *A. sclerophylla* (hard-leaf wattle), *A. simmonsiana*, *A. stenophylla* (river cooba), *A. tetragonophylla* (dead finish), *A. triquetra*, *A. victoriae victoriae*. The larvae usually eat only the mature flower buds and flowers of the wattles, but sometimes will eat young leaves and the young forming pods or their contained seeds if the flowers disappear before the larvae have matured. They prefer the pollen and ovary parts of the small unopened buds.

Larval attendant ant: Larvae are normally attended by a few small black ants *Iridomyrmex* spp and in the northern areas also by the large meat ants *Iridomyrmex purpureus* and *I. viridiaeneus*.

Eggs: Very small, initially pale green, later turning bluish white, hemispherical, flattened top and bottom, with a small darker central micropylar area on top. Ornamented with large hexagonal shaped facets on the side, which have a flattened shape (compressed top and bottom). The facets on the top of the egg are much smaller and are of irregular shape. Laid singly on the hostplant, usually on the flower buds, but sometimes on other parts. The eggs hatch in about five days during spring, decreasing to 3 days in summer, but can take about 9 days to develop in late autumn. Eggs are sometimes so common on the green buds as to produce a fine speckled appearance.

Larvae: The first instar is initially pale yellow, changing colour after eating the hostplant. There is an indistinct dorsal furrow, and there are transparent peripheral setae (hairs). Those present laterally are directed downwards, are mostly short (there is an odd long hair) and strongly flattened, and the ends are distinctly blunt. The hairs present anteriorly and posteriorly are longer, and are only slightly flattened with pointed ends. There are paired, mostly very short transparent dorsal setae on each segment that are flattened and club shaped, and which are flattened against the body and directed posteriorly. Those present directly behind the head are longer and erect. The head is dark brown and smooth. As the larvae increase in size, they acquire multicolours, and dorsal and lateral protuberances, which become better developed with age.

The mature larvae are about 8 mm long. The head is small, smooth, brownish yellow, hidden beneath the body. Dorsally furrowed, with short blunt paired protuberances on thoracic segments 2-3 and abdominal segments 1-6, widely spaced near the head, but gradually coming together towards the posterior end. The lateral edge is strongly scalloped laterally, being best developed posteriorly, and with each segment triangular shaped producing a saw-tooth effect. The body has some lateral hairs, which are best developed on the anterior and posterior parts. It is covered in numerous minute secondary setae. The larvae are polymorphic (ie. they occur in many colour forms). Larvae colour and markings are highly variable and picturesque, being some combination of green, yellow, orange, pink, purple or brown, with a darker longitudinal dorsal line and adjacent forward directed chevrons, a hatched subdorsal line, sometimes additional lateral markings, and there is often a pale lateral line. The colours are cryptic and blend in with the buds, flowers and stems of the hostplant, such that the larvae are virtually invisible to the human eye. Larvae feed openly during the day. The presence of larvae on the hostplant is discernible by the presence of ants among the blossom. In the inland areas, larvae often occur in the hundreds on the flowering hostplants. The larval stage lasts about 4 weeks during spring around Adelaide.

Pupae: Short cylindrical, mostly smooth, but with short bristles on the abdomen, thorax and anterior parts, rounded anteriorly and posteriorly, about 6 mm long, polymorphic in various shades of brown, pink brown, green brown, or even translucent greenish white. The dark pupae are speckled with darker markings, and there is also a darker broken dorsal line and two subdorsal rows of black dots along the abdomen. Weakly attached to the silked substrate by anal hooks and a central girdle.

The larvae usually leave the hostplant to pupate. Most crawl to the base of the hostplant and pupate on or near its base. Others simply drop off, or are blown off, then pupate amidst the old leaf and other debris on the ground beneath the hostplant. If this debris is sparse then they will pupate beneath rocks, or in cracks or holes in the ground. Those that choose to pupate on the leaves and amongst the dead blossom of the hostplant invariably end up on the ground anyway, as their attachment is very weak and the least interference (from the wind) causes them to detach and fall to the ground. The pupation period is variable, even within the same population. It can be as short as 6-11 days during the warm months. It has not been determined if the pupae can aestivate a full year to coincide with the next season of hostplant flowering. In captivity the pupae always mature quickly.

Flight period in S.A.: It is possible to find flying butterflies throughout the year, depending on the area and the *Acacia* hostplant upon which the butterflies have colonised. The larvae usually only eat the flower buds and flowers of the wattles, and the different species of wattle bloom at different times during the year. The same species of wattle may also bloom at different times depending on whether they occur in the north or south of the state. In the Far North pastoral areas the butterfly is more common after rainy periods. In the southern temperate areas it is more common during the warmer months, but it is sometimes seen flying in winter if its hostplant is in bud. The brood period can be about 6 weeks in temperate areas, but is likely to be much more rapid in the hotter, northern pastoral areas.



Distribution: Occurs throughout mainland Australia, including Kangaroo Island, preferring the drier open woodlands. The butterfly probably has some degree of nomadic dispersal ability (typical of the *Polyommata* group of lycaenids), as their adult morphology is uniform and they often turn-up in habitat areas in which the hostplant buds are not mature enough to support the larvae. The butterfly is also found in Indonesia (Lesser Sundas) and some Pacific islands to east of Australia, but not New Zealand or New Guinea.



Habitat: Found wherever its hostplants occur, and these are common and widespread occurring in most habitats. In South Australia the butterfly is more common in warmer areas, and tends to be rare in the South Mt Lofty Range and the Lower Southeast in the cool eucalypt forests.

Conservation Status in S.A.: Locally common in breeding areas.

Threats: No major threats.

Conservation Strategy: None required.

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