

# SOUTH AUSTRALIAN BUTTERFLIES

## *Data Sheet*

*Signeta flammeata* (Butler) (Bright Shield-skipper)



Male

**Interesting aspects:** This skipper is usually seen feeding at low herby flowers growing along the forest edge. It will suddenly appear out of the forest to feed, buzzing around from flower to flower to quickly obtain its fill of nectar, then will swiftly disappear back into the forest. It is irresistibly attracted to the cluster flowers of purple *Scabiosa*.

The males are easily distinguished from females, and all other skippers in its flight area, by the large black circular patch of sex scales (shield) that is present on the upperside of each forewing in the central part of the wing. This sex patch gives rise to the common name of the skipper. In hilly areas the males will hilltop.

### Life History

**Larval food-host:** Hostplants have not yet been determined in South Australia. In the eastern states the larvae utilise common grasses. Those grasses that also occur in South Australia include *\*Agrostis capillaris* (brown-top bent), *Poa* species incl. *P. tenera* (slender tussock grass) and *Tetrarrhena* spp (rice-grasses). The larvae eat the leaves of the hostplants.

In captivity in South Australia, larvae prefer *Microlaena stipoides* (rice-grass), but will develop on *\*Brachypodium distachyon* (false brome) and sometimes on *\*Ehrharta longiflora* (annual veldt grass). Young larvae will eat the soft new growth of *\*Pennisetum clandestinum* (kikuyu), but ultimately this grass is toxic to the larvae. However, mature

larvae can tolerate kikuyu for a short period. Surprisingly, considering how common the adults are in the wild, the larvae are extremely fussy eaters in captivity, requiring exacting conditions and hostplant, such as high humidity and the hostplant to remain in a green condition.

**Eggs:** Small, initially pale green, hemi-spherical (domal) with well developed vertical ribs numbering from 13-16, and additional finer cross latticing. Usually laid singly on the underside of fallen dead leaves or on vegetal-debris on the ground near its hostplants that occur in open forest areas. If the egg is fertile then after a couple of days it acquires a broad, very irregular purplish brown coloured lateral band and a large dull purplish brown dorsal area, and thereafter the background colour slowly changes from green to pale yellow. Larva development within the egg commences immediately after being laid, and the larva is ready to emerge in about 11-16 days. They eat out the top of the egg a day before emergence, then just sit inside the egg with their black head blocking the opening. They will usually wait for moist conditions, like rain or heavy overnight dew before emerging, but eventually after a few days they have to emerge from the egg and take their chances with the elements. The larvae are unable to diapause (become torpid) like *Dispar compacta*. The egg shell (chorion) is eaten by the larva after it emerges. The larva then moves off to find suitable hostplant, testing all likely grass by taking a small nibble out of the leaf edge. When it finds a suitable hostplant, it will move to the end of the leaf and make a small tubular shelter in which to hide in, by usually folding the leaf tip back on itself and binding the edges together with silk. Sometimes they will roll the leaf edges over into a tube.

**Larvae:** The first instar is long cylindrical and initially pale greyish yellow with longitudinal dark brown lines, with a large black circular head that is smooth and shiny, the upper front part weakly grooved longitudinally. There are a few short dark hairs on both the body and head, and a few long recurved hairs occur posteriorly. The neck (prothoracic plate) is dark wine red coloured. The larva is very similar to the first instar larva of *Trapezites symmomus*. After eating the hostplant, the larvae gradually become greenish. The second instar is similar to the late first instar but has a distinct, broad white longitudinal dorsal band split by a central narrow green dorsal line, and there is a further narrow white subdorsal line. Obscure remnants of the longitudinal brown lines occur laterally. The posterior end is brownish. The head is black, slightly elongate, grooved centrally producing an apical notch, with a fine granular surface and very short, white bristly hairs. The neck is reddish brown coloured. The third instar is similar to the second instar, having a similar pattern of longitudinal lines, mostly green coloured but dorsally brownish, the head differs by being brown coloured. New shelters are periodically constructed to fit the growing larvae. The early instar larvae feed at night.

The fourth instar is similar to the third instar but the head is paler brown and noticeably elongate rectangular shaped. The prothoracic plate is purplish only along the anterior edge. The lateral edge of the larva is weakly flanged. At this stage the larvae have usually outgrown the width of the hostplant leaves to construct shelters from single leaves, and if the leaves are not wide enough (as is the case of many of the host grasses) then the larvae will either make shelters from several of the host-grass leaves joined together or start to use loose, rolled leaf and bark debris as shelters, either caught up within the host grass or lying loose on the ground around the base of the grass. Once selected the leaf or bark shelter is lined with white silk, with one end sealed off with strong strands of silk, and the shelter is secured to an adjacent object also with strong strands of silk. Larval feeding is during the

night, and there is slow growth during the winter months but there is flourishing eating activity during the warmer spring months and most larvae reach the final fifth instar stage by mid spring.

The fifth and final instar is fat and humped, typical of the Trapezitini Tribe, about 23-26 mm long, initially greenish brown with an indistinct pale, broad dorsal band and a darker central dorsal line, and a distinct narrow white subdorsal line. The neck area (prothoracic plate) is similar to the body colour. The head is large, elongate rectangular from the front, rugose, centrally grooved longitudinally, strongly notched at the top, the sides and frontal groove are dark brown-black coloured, the remaining frontal parts on either side of the central groove are brown. The side mark is wide basally but tapers apically reaching the apex of the head, the edge with the brown area is straight, the upper part of the frontal groove is edged brown and this colour combines with the frontal brown area apically, the dark colour of the lower part of the frontal groove expands laterally into the brown frontal areas as irregular marks, and there is an additional short elongate isolated dark mark within the apical part of the brown areas either side of the groove lines. There is a diffuse large brown inverted V mark in the front lower part. The large frontal brown areas reach the basal part of the head. The head is covered with very short forward directed, curved fat, pale setae. The head pattern markings are distinctive for the species and differ from *D. compacta* by being generally much paler. The lateral edge of the larva is strongly flanged. The body is without long hairs, but is covered with numerous white, squat to occasionally elongate wine-glass shaped secondary setae set on simple smooth, raised bases. At the posterior end on the anal plate these setae stand in a small dark brown circular area that produce a brown dotted appearance. These setae impart a rough scabrous appearance to the larvae. As it grows through the fifth instar stage the larva becomes more brownish, and eventually by the pre-pupa stage the larva is pale brown.

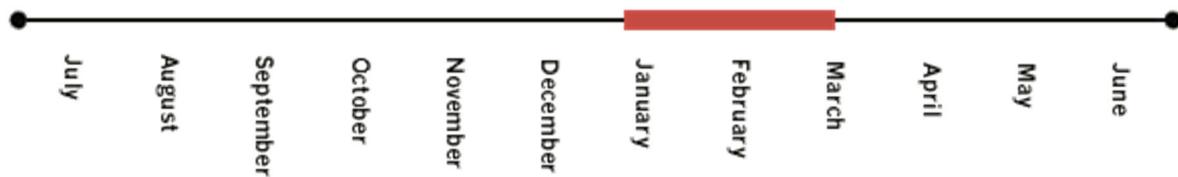
The final instar larvae continue to eat and grow strongly into early December but then slow or cease to eat and become quiescent. By the latter half of December pupation starts to occur among the larvae and these larvae then pupate at various times and some may not pupate until late summer or early autumn. These later larvae may periodically feed to keep up their energy levels.

**Pupae:** Short cylindrical, typical of the Trapezitini Tribe, about 15-18mm long, brown, but darker brown on the anterior parts of the wings, the abdomen is sometimes very pale, and the pupa is covered all over with a thin layer of white water repellent powdery bloom (probably also with anti fungal-bactericide properties) that is very easily dislodged by any wiggly movements by the live pupa, producing an irregular pattern of brown under-markings. The thorax of the pupa is humped dorsally. The head is weakly flattened anteriorly, with the head cap (operculum) being dark brown coloured. The front (anterior) part of the operculum, is strongly sclerotised (rugose) and with short, fine simple pale hairs. There are four pairs of black spots without bloom on the head area, two of the pairs occur in-line dorsally across the junction of the head with the thorax, a third pair occurs ventro-anteriorly on the front of the head, and a fourth pair occur laterally on the eyes. A fifth pair of black marks occur as short elongate marks dorsally at the posterior edge of the thorax. There are short simple bristly setae (hairs) over most of the pupa (excepting the wing areas), that become posteriorly directed on the posterior part of the abdomen. The posterior end of the pupa tapers to a black coloured, long curved cremaster, which is blunt at the end. The dorsal area of the cremaster has a series of very fine elongate ridges or

striations, and long, brown coloured, splayed cremaster hooks emanate from the dorsal posterior edge.

Pupation occurs in the final larval shelter. The pupa is secured within the silk lined shelter by the very strong, cremaster hooks. In captivity in Adelaide the pupal duration varies from 17-20 days during early summer, but is likely to be longer in the cooler Southeast Region. The empty pupal case remains inside the shelter after the adult skipper emerges, and is brown coloured.

**Flight period in S.A.:** The main flight occurs from mid January to mid March, with the odd skipper occurring into mid April. Only one brood a year.



**Distribution:** In South Australia it is confined to the extreme southeast corner of the Lower Southeast Region in areas with annual rainfall above 600 mm. The skipper is also found in the higher rainfall areas along the coast and Great Dividing Range in Victoria and New South Wales extending to the border with Queensland.



**Habitat:** The skipper usually occurs in open forest with a grassy understorey, growing in cool temperate areas. The early stages of the skipper require continuous humid conditions.

**Conservation Status in S.A.:** Rare in distribution. Suitable habitat would seem to be reasonably common in the Lower Southeast of South Australia, yet the skipper remains very restricted, suggesting the early stages have very exacting requirements. Only known from several, closely situated localities, and can be locally common where it occurs. Common in the eastern states.

**Threats:** The main threat is from toxic spray drift due to the farming and forestry practice of aerial application of insecticidal sprays.

**Conservation Strategy:** Applications of toxic sprays, particularly by aerial means, in farming and forestry areas near the known localities of the skipper should be judiciously applied.

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