SOUTH AUSTRALIAN BUTTERFLIES
Data Sheet

Hesperilla idothea idothea (Miskin) (Flame Sedge-skipper)
Hesperilla idothea clara Waterhouse (Flame Sedge-skipper)

Female subspecies *idothea*

Female subspecies *clara*

Interesting aspects: This is a large skipper, capable of very fast flight. Its underside is rather dull, but the uppersides of the wings have more markings, and in the female there is a large orange 'flame' marking on the hindwing from where the common name derives.

The skipper forms part of Australia's ancient endemic butterfly fauna, being confined to the cool temperate areas of southeast mainland Australia and Tasmania. It occurs as two subspecies in South Australia. The nominotypical race that occurs in the cool temperate areas of the Lower Southeast Region of South Australia, and a relict race to be found along

the South Mt Lofty Ranges and on Kangaroo Island. The morphology differences are only minor, but in general the upperside markings of both sexes are slightly better developed in the latter race.

Both sexes tend to fly close to the hostplants, but will periodically leave them to find suitable nectaring plants in adjacent areas, but later returning to the hostplants. Males will either set up territories on a hostplant or other nearby plant, or they will cruise around the wetland at a very fast rate, waiting or looking for newly emerged females to mate with. When females are scarce, the males will also hilltop (if one exists), where they set up territories on prominent rocks or exposed dead twigs on bushes and wait for the newly emerged females to fly in for mating. Occasionally they will fly off to investigate other areas of the hilltop, or to chase off other males that enter their territory. In some hilltop areas the males will settle in the outer parts of the lower canopy of trees some 4-6 metres off the ground. Females have a slower flight when in an egg laying mode, and will periodically land on the hostplants to lay eggs or sun themselves, and depending on the habitat will cover large areas looking for suitable hostplants to lay eggs. The skipper is reasonably timid, but can be approached with care when settled, especially when feeding at flowers, although once in full flight they are very quickly lost to sight due to their rapid flight.

Life History

Larval food-host: Subspecies *idothea* utilises the saw-sedges ***Gahnia clarkei*** (tall saw-sedge or cutting grass) and ***G. radula*** (thatch saw-sedge), and also very rarely ***G. trifida*** (cutting grass). Subspecies *clara* utilises ***G. sieberiana*** (red-fruit saw-sedge) and ***G. trifida*** (Cyperaceae). *G. seiberiana* is preferred as a hostplant ahead of *G. trifida*. Interestingly, the former hostplant does not occur naturally in the Southeast Region. The larvae eat the leaves of the hostplant. The skipper normally requires its hostplant to be in the shade.

Eggs: Large (1.5 mm along the long axis), hemi-ellipsoid (nearly hemispherical) with a flat base, and with about 23-28 fine vertical ribs, and the micropylar area on top of the egg is depressed. Pale green when new, but after 2 days if fertile the eggs become pale yellowish green and acquire a ragged red lateral ring and a similarly coloured micropylar area or circular dorsal patch. Laid singly on the leaves of the hostplant, usually on the lower parts of the plant on the underside of a leaf near its edge. The egg shell is eaten by the larva after its emergence.

Larvae: The first instar is long cylindrical, the forward half of the larva is pale greenish yellow and the posterior half of the larva is pale yellow with five narrow longitudinal dorsal and subdorsal brown lines that do not continue onto the anal plate. There is a large shining black head having a few long hairs, the neck (prothoracic plate) is dark brown, the neck area is dark wine red, and long recurved hairs occur posteriorly. After eating the empty eggshell the larva will eat a small portion of the hostplant to test that it is the correct hostplant, then it moves to near the tips of the leaves to form a small tubular shelter opening at the top, by silking together two or three leaves. The young larva gradually turns green as it eats the hostplant.

Subsequent instars gradually acquire indistinct pale and dark longitudinal lines and lose the long posterior hairs, and the head becomes brown and eventually by about the fourth instar, acquires the pale brown head pattern described for the final (fifth) instar larva. New silk lined tubular shelters are periodically constructed to fit the growing larvae, using leaves of

the hostplant, the internal diameter of the shelters being a close fit to the diameter of the larvae. The shelters are sealed at the base and open at the top (towards the tips of the leaves), and in the case of this skipper, the leaves are usually silked together in a straight manner. If the shelter is made in the outer parts of the hostplant then during its development the larva will eat the leaves back from the tips towards the shelter entrance. However, the late stage instar larvae of this skipper more often will utilise the tubular base of a single leaf that has separated from the main part of the tussock base, which gives the larva a ready-made tubular shelter. These larvae will then eat the leaf edges from anywhere along the length of the long leaf, or will eat down from the top an individual leaf leaving a characteristic oblique edge across the end of the leaf. Larvae feed at night for a very brief period (usually very late at night), hiding from predators during the day inside their shelters.

The final instar is long cylindrical, about 35-40 mm long, with the last posterior segment flattened into the anal plate, smooth, but with the posterior end having some hairs. Green coloured, sometimes bluish or yellowish, with a darker dorsal line, and sometimes there are other indistinct longitudinal lines when the larva is still in its early final instar growth. The head is large, rugose, elongate and slightly flattened, there is a distinct central longitudinal furrow, the top is rounded, with a few long hairs ventrally and there are also some very short frontal hairs that are bent and directed forwards. Pale brown coloured with a moderately broad, brown longitudinal median line in the front that expands ventrally and tapers to a point at the dorsal apex, the mouth parts are dark brown and there is an inverted pale brown coloured V mark immediately above the mouth, and there is also a yellow patch on either side of the mouth parts. The side of the head has a narrow brown vertical stripe, which continues to the top of the head and joins with the brown frontal triangular mark. The body, and particularly the anal plate on the last segment, is covered in minute secondary setae that are wine glass or vase shaped, and which are set on simple smooth raised bases that are transparent along the body but brown coloured on the anal plate. Near pupation the larvae turn pale semi-translucent green and have a dark longitudinal dorsal line.

The final larva shelter is constructed either in the outer half of the plant, or at the base of an individual leaf, and is up to 7 cm long. Shelters formed in the outer parts of the hostplant are made by joining up to six hostplant leaves together, to form a tight, strongly silk lined, straight tubular structure, sealed at the base and opening at the top. Larvae development is usually rapid in summer and autumn, and they continue to eat and develop very slowly through winter, and pupation occurs in the following spring or summer.

The presence of larvae for this species (and for all other *Hesperilla* larvae) on the hostplant are discernible by either the distinctive looping of the hostplant leaves resulting from the construction of the larval shelter in the outer parts of the hostplant, or by large serrated eat marks along the edges of the leaves, or by the leaf above the shelter being truncated at an oblique angle. The leaves used in the construction of the shelter are tightly fixed by silk to form the shelter, and as the leaves continue to grow (from the base) the unequal growth rate of each leaf causes the fastest growing leaves to produce a loop beneath the shelter.

Pupae: Long cylindrical, about 23-27 mm long, pale whitish green to pale green, sometimes yellowish or brownish, covered in a moderately heavy white powdery bloom, the latter acting as a water repellent and perhaps fungicide. Some brown coloured, very short posteriorly directed spinose bristles on the abdomen, which become more abundant

posteriorly, and which arise from conical bases. The posterior end tapers to a brown, rugose, dorsally ridged cremaster, that is flattened, and strongly divided and expanded into a bifid shape similar to 'Mickey Mouse' ears. The head is rounded, with the head cap (operculum) being black and brown coloured, having a characteristic rounded shape, and there are some short hairs that are pale coloured and spinose. The central part of the operculum is black coloured, heavily sclerotised (very rugose) and is divided into three, distinctly separated, and strongly elevated (anteriorly projected) parts. A larger oval shaped ventral part, and two smaller equal-sized, circular dorsal parts. There are further, smaller less sclerotised brown coloured areas lateral to the central part.

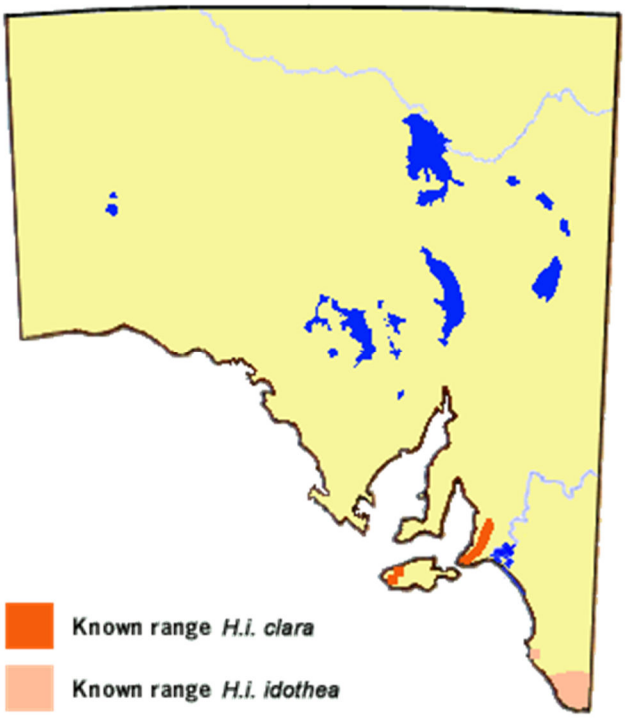
Pupation occurs in the final larval shelter on the hostplant, and the larva pupates head upwards towards the leaf tips. The pupa is secured within the silk lined shelter by very strong hooked bristles emanating from the terminal-ventral parts of the cremaster, (same principal as velcro). The pupal duration is about 22 days in late spring for subspecies *clara* near Mt Lofty, while for subspecies *idothea* it is about 13-20 days in late summer. The empty pupa case remains inside the shelter after the adult skipper emerges, and is nearly transparent in a very pale brown or whitish colour.

The shape of the operculum and cremaster, the colour of the pupa (alive or as an empty case), and the morphological properties of the larva or discarded larval skin (see above) are diagnostic for the species and can be used during field surveys to differentiate *H. idothea* from other *Hesperilla* species in South Australia outside of the flight times for the adult skippers.

Flight period in S.A.: It is single brooded. Subspecies *clara* flies from November to January, while in the Lower Southeast, subspecies *idothea* has an extended flight from December to March. In the nearby Grampians Region of Victoria the latter subspecies starts to fly in late October.

Distribution: Subspecies *clara* is only found along the South Mt Lofty Ranges and at the western end of Kangaroo Island. Within South Australia, the nominotypical subspecies *idothea* is restricted to the Lower Southeast Region. The latter also occurs in the cool moist areas of Victoria and along the Great Dividing Range in NSW and southeast Qld, and it also occurs in Tasmania.

The range of subspecies *clara* has been in a steady decline along the South Mt Lofty Ranges due to urbanisation and degradation of creeklines, and now can only be found near to Mt Lofty or the extreme south of the Fleurieu Peninsula.



Habitat: This skipper is essentially a forest skipper, preferring the cool recesses of the forest, but it will venture into cool, moist open woodland. It requires pristine habitat and needs a cool microclimate of shady trees. Subspecies *clara* is confined to saw-sedge bearing shady creeklines and upland spring environments in cool-temperate, high rainfall elevated areas of the South Mt Lofty Ranges, and western Kangaroo Island. Subspecies *idothea* is found either in *Gahnia radula* bearing forests, or in open *Gahnia clarkei* wetlands that are surrounded by a shady cover of native trees and large bushes.

Conservation Status in S.A.: The mainland habitat of both subspecies in South Australia is now severely fragmented and degraded, due to urbanisation and agricultural use. The habitat of subspecies *clara* has been the worst affected and its status is vulnerable on the mainland. On Kangaroo Island where there has been a better retention of wetland habitat the butterfly is believed to be still stable, but very localized in distribution. The nominotypical subspecies is more stable due to the presence of its habitat in conserved native forests and conservation parks, and can be considered uncommon. This subspecies can be locally common in the extensive remnant forest areas of the eastern states.

Threats: This skipper has suffered considerably from the agricultural and urban disturbances of its saw-sedge wetland habitat. Remnant saw-sedge bearing creeklines and wetlands continue to be drained, dammed and degraded. Most creeklines are now choked and smothered with weeds and introduced trees, particularly African feather-grass, ash, blackberry, broom, couch, ivy and kikuyu. Irresponsible disposal of urban and agricultural waste products and toxins inevitably end up in wetlands contributing to their degradation.

Conservation Strategy: The retention of pristine saw-sedge wetland habitat is essential for the survival of this skipper in South Australia, and specific habitat (particularly for subspecies *clara*) may have to be conserved for its long-term survival. On the mainland

there needs to be a major revegetation of suitable creeklines with the saw-sedge hostplants, and the latter should be included in all suitable revegetation projects. Remaining saw-sedge wetlands used for pastoral purposes need to be managed in an ecologically sustainable manner, and ideally, suitable wetlands need to be fenced off from the destructive feeding habits of grazing domestic stock. (Unfortunately, most wetlands on private land, usually dairy-land, are used as a backup food source for the cattle due to the adjacent pasture land having been severely overgrazed.) The control of mosquitoes in remaining broad-acre saw-sedge wetlands through the use of broad spectrum insecticides by aerial means needs to be judicially controlled, but preferably should cease, as it can be a major cause of fauna destruction. The draining of remaining pristine wetlands needs to cease, as this practice causes summer stress to the *Gahnia* that is ultimately fatal to *Hesperilla* larvae. The dumping of urban vegetation waste into creeklines and wetlands needs to cease. There needs to be a major public education process about the continuing degradation effects on wetlands.

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