



Kukerin Sun-Moth, *Synemon* sp. Kukerin, rediscovered

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Background

An undescribed species of sun-moth, provisionally referred to here as the 'Kukerin sun-moth', has recently been rediscovered in south-western Australia. The species was originally collected near the wheat-belt town of Kukerin in 1948, but was not recorded again until 1996, when Dr Terry Houston of the WA Museum caught a specimen near Tammin. It was initially identified as the graceful sun-moth (*Synemon gratiosa*) which it superficially resembles, but this identification was always considered doubtful. In 2010 DEC Science Division undertook surveys to determine the distribution and conservation status of the graceful sun-moth. In the course of these surveys new populations of the Kukerin sun-moth were discovered. Genetic analysis has confirmed that the Kukerin sun-moth is a distinct species. Its flight period, preferred habitat, larval host plant have now been documented.



Male Kukerin Sun-moth, showing the distinctive forewing markings and the deep bright orange hind-wings of this species

(photo Andrew Williams)



Male Kukerin Sun-moth - typical posture on upright sedge stem

(photo Andrew Williams)

As can be seen in the above photographs the Kukerin sun-moth is a very striking species. The upper side of the elongate forewing is uniform silvery grey with two oblique parallel broken black lines. The upper side of the hind-wing is very deep bright orange broadly bordered in black with a solid black band across the centre. This species is superficially similar to the graceful sun-moth *Synemon gratiosa* and the claret sun-moth *S. jcaria*.

DISTINGUISHING FEATURES AND FLIGHT TIMES OF KUKERIN, GRACEFUL AND CLARET SUN-MOTHS

SPECIES	AVERAGE WINGSPAN	FOREWING PATTERN	HIND-WING PATTERN	FLIGHT PERIOD
Kukerin Sun-moth	Male 30mm Female 32mm	Uniform silvery grey above with two oblique parallel broken black lines	Deep bright orange with a broad black border, solid black central band	November
Graceful Sun-moth	Male 24mm Female 30mm	Variably patterned above with cryptic grey, black and whitish markings	Orange with variable markings, sometimes with a curved black central band	Mid February to April
Claret Sun-moth	Male 32mm Female 38mm	Variably patterned above with cryptic grey, black and whitish markings	Orange with a blackish border, invariably with a partial or complete black curved central band	Late January to March

Findings

The Kukerin sun-moth is a small species closely related to both the graceful sun-moth *S. gratiosa* (see Information Sheet 42/2011) and its inland relative the claret sun-moth *S. jcaria*. However, unlike these two species - which both fly in late summer and autumn - the Kukerin sun-moth only appears in spring.

Surveys in the Western Australian wheatbelt resulted in the rediscovery of this little-known species. Once known only from Kukerin and more recently near Tammin, searches over the past three years have established that the species is more widely distributed than previously thought, though it is rare and very local. Initial observations have shown that the Kukerin sun-moth's flight period is only two weeks and the timing of its emergence varies from year to year. In dry years the species appears in early November, but in cooler wetter seasons it does not fly until much later in the month. It has been found in suitable habitat in the central and southern wheat-belt from Tammin south to Kukerin and east towards the western boundary of Frank Hann National Park. Kukerin sun-moths are always found in close proximity to their larval host plant *Chamaexeros fimbriata*. As with other sun-moths, the larvae feed underground in the host plant's rhizome.

The preferred habitat for the Kukerin sun-moth is in areas of open mixed low heath and sedgeland where the host plant *C. fimbriata* grows. Males set up territories in areas of open ground, and frequently use low termite mounds as territorial perching points. Females are less frequently observed.



Typical habitat for the Kukerin sun-moth. Note the *Chamaexeros fimbriata* food-plant and low termite mound (photo Andrew Williams)



Kukerin sun-moth larval food-plant *Chamaexeros fimbriata* (photo Andrew Williams)

The Kukerin sun-moth has now been found at ten localities, including Gardner Nature Reserve, Overhue Nature Reserve, Tarin Rock Nature Reserve and North Tarin Rock Nature Reserve. Two other sites, one near Corrigin and the other near Kulin, are also managed for conservation by the respective local authorities. At these locations the species may be regarded as relatively secure, at least in the short term.

Management Implications

The factors influencing this sun-moth's distribution are not clearly understood. Its larval food-plant *C. fimbriata* is widely distributed in south-western Australia, as far north as Mount Magnet and Sandstone, inland to Coolgardie and south to Grass Patch and Pingrup. However, our observations to date have only located the Kukerin sun-moth in the moister central and southern regions of the wheat-belt, even though *C. fimbriata* is common in several dry northern and inland locations. Climate change predictions point to Western Australia's wheat-belt becoming increasingly arid with less predictable rainfall. This drying trend may influence the sun-moth's ability to survive in the present northern parts of its range, where it is restricted to small remnant patches of native vegetation. It is therefore recommended that further surveys for Kukerin sun-moth colonies be undertaken in more-southern localities nearer the coast where adequate rainfall might be expected to persist. This includes Frank Hann National Park and nature reserves in the vicinity of Pingrup where the sun-moth's host plant *C. fimbriata* is known to occur. Knowledge of the locations of these sun-moth populations within the Department's estate will enable DEC conservation managers to effectively monitor and manage this species into the future.