

Have you seen an enigma moth?

FACT SHEET | 2016



Fast facts:

Scientific name: *Aenigmatinea glatzella*

Habitat: near the coast on Dudley Peninsula

Host plant: southern (or slender) cypress pine, *Callitris gracilis*

Size: ≈ 8 mm wingspan, ≈ 5 mm body length

When adult moths can be found: late September to late October

Above right: Female enigma moth (G Gibbs).

Below: Enigma moth larva in a southern cypress pine chamber (R Glatz).



A new moth family discovered on KI!

First discovered on Kangaroo Island (KI) in 2009, the enigma moth is the only known surviving member of the primitive moth family, Aenigmatineidae. The last time a similar discovery was made anywhere in the world was about 40 years earlier.

What does an enigma moth look like?

The enigma moth is very small with a body only 5 mm long. The forewings are metallic dark purple and/or gold. The forewings have long, dark 'wing fringes', which are hair-like scales. The head is yellow (particularly for females) and the antennae are much shorter than the forewing. The head is unusually bald except for a small patch of hair-like scales.

How does the enigma moth live?

After adult moths mate, the female lays eggs into the growing tips of the foliage of the southern cypress pine *Callitris gracilis*. It is thought the moth larva hatches and burrows into the new soft stemmed foliage. The legless larva lives and develops in a chamber in the growing stem. It feeds on the underside of the pine bark and eventually pupates in its chamber. Once pupation is complete, the adult moth emerges from the pine branch through the bark and the life cycle begins again.



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Where does the enigma moth occur?

It is currently known at only two sites on the Dudley Peninsula of Kangaroo Island. However, there are many sites supporting southern cypress pine that are yet to be explored. It is possible that these sites also harbour the moth. Surveys are continuing to determine the extent of the moth's range.

How can I see an enigma moth?

The best way to see the moth is to watch the ends of growing cypress pine on warm days in early to mid October. Females can be seen walking over the foliage tips, often pausing while they lay eggs. Although they are small and not very abundant, they are easily seen as their dark bodies stand out against the lime green foliage.

Research on enigma moth

Discovery of the enigma moth on KI sparked an international research collaboration. The physical description of the moth was performed in Copenhagen, Denmark. DNA was sequenced in Melbourne and statistically analysed in Finland. The life cycle continues to be investigated by KI scientists.

What does the scientific name mean?

The enigma moth is named *Aenigmatinea glatzella*. *Aenigma* refers to the enigmatic physical features of the moth and *tinea* is a Latin word used to refer to small moths, so it is an enigmatic small moth. The species name *glatzella* is a play on words. It honours the local scientist who discovered the moth, Richard Glatz and also refers to the unusually bald head of the moth as *glatze* is the German word for a bald head.

No mouthparts!?

Most moths and butterflies have mouthparts like a coiled straw (a proboscis) through which they suck liquids like nectar. However, a few species of the most primitive moths have regular jaws. What about the enigma moth? It has neither. Its jaws are soft and ineffective and it has no proboscis. It is not known if the enigma moth takes in liquid through a hole where the proboscis would be or if the adults do not feed at all. The wonders of the insect world!

Image above: Enigma moth (G Gibbs).

Image below left: Enigma moth larva (R Glatz).

Image below right: Enigma moth habitat (R Glatz).



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