ZYGAENIDAE

170 (4000) Five-spot Burnet *Zygaena trifolii* (Esper, 1783)

ssp. *decreta* Verity, 1926	**Local**
ssp. *palustrella* Verity, 1926	**Local**
ssp. *subsyracusia* Verity, 1926	**(Channel Islands)**

171 (3999) Narrow-bordered Five-spot Burnet *Zygaena lonicerae* (Scheven, 1777)

ssp. *latomarginata* Tutt, 1899	**Common**
ssp. *jocelynae* Tremewan, 1962	**RDB**
ssp. *insularis* Tremewan, 1960	**(Ireland)**

Diagnostic external and ecological characters

The colonial nature of burnet moth populations and their consequently enhanced tendency to become phenotypically distinct, has resulted in the raising of many sub-species. Even within these, more subtle variations in appearance can occur between colonies of the same species.

In spite of much research, no clear and consistent differences in the genitalia, or other internal or external structural morphological characters have been found which consistently differentiate individual adult specimens of *lonicerae latomarginata* and the three British sub-species of *trifolii*, where the species are sympatric in southern Britain. DeFreina and Witt (2001) and Naumann *et al.* (1999) give genitalia differences but in terms of British material these do not appear to help. However, certain external differences can be seen when comparing a number of specimens of each, and it is clear from their ecology and biology that the two taxa are distinct. A somewhat different approach is therefore required. Thus, although it may not be possible to identify an individual from a particular site in isolation, it should be possible to establish which species are present, i.e. to identify the colony or colonies. Given the complexities, it is not possible to develop an identification key for this pair, but the known morphological and biological differences are presented here as a guide (Table 1), the information having been drawn and combined from several sources, including the personal experience of the authors.

When considering the traits against a colony of these moths, as many features as possible should be examined, and identification is best made after becoming familiar with typical examples of both species, to take account of variability. In particular, flight periods vary seasonally and with altitude and latitude. Climate change is bringing forward the flight periods of many species of Lepidoptera, especially in early summer. Moreover, a recent tendency appears to be for more extreme short-term fluctuations in temperature, which may have differential effects on species with slightly different developmental timings. This in turn may mean that their flight periods are more likely to coincide and repeat visits may be necessary to observe peaks of abundance.

Most colonies will be found to conform to one or another of the three possibilities listed below, given sufficient study. In some cases, the identity of colonies will be immediately apparent, others will seem puzzling at first. It must also be borne in mind of course that more than one species may be present. Identification is most difficult where *trifolii decreta* and *lonicerae* occur on the same site. There is also potential for overlap between *lonicerae* and *trifolii palustrella* on downland sites, where *lonicerae* is occasionally seen before mid June. In both these cases, examination of the early stages is the safest way to establish which species are present.

To further complicate matters, colonies of *trifolii* have recently been found in Cornwall feeding on Common Bird's-foot Trefoil (*Lotus corniculatus*) on coastal sand-dunes and in dry fields near coastal cliffs (Tremewan, 2007). These fly earlier than marshland colonies in Cornwall, from early June. One colony in Buckinghamshire in a scrubby field on clay has been seen in late May and early June (Wilton, 2008). Therefore, absence of Greater Bird's-foot Trefoil (*Lotus pedunculatus*) can no longer be said to preclude the presence of *trifolii* (Tremewan, 2009). The habits of *trifolii subsyracusia* are similar to those of *trifolii palustrella*.

Table 1. Summarised differences between *Zygaena trifolii* and *Z. lonicerae latomarginata*.

EXTERNAL CHARACTERS of adult	***Zygaena trifolii* ssp. *decreta***	***Zygaena trifolii* ssp. *palustrella***	***Zygaena lonicerae* ssp. *latomarginata***
Forewing markings	Median pair of red spots often confluent; more extensive confluence of spots also frequent, including specimens with all spots merged.	Median pair of red spots often confluent; more extensive confluence of spots also frequent, including specimens with all spots merged.	Specimens with spots merged rare*.
Hindwing markings	Black terminal band generally broader (may require comparison of many examples).	Black terminal band generally broader (may require comparison of many examples).	Black terminal band generally narrower (may require comparison of many examples).
Forewing shape	Apex less strongly pointed, more rounded (may require comparison of many examples).	Apex less strongly pointed, more rounded (may require comparison of many examples).	Apex more strongly pointed (may require comparison of many specimens).
Hindwing shape	Apex less strongly pointed (may require comparison of many examples).	Apex less strongly pointed (may require comparison of many examples).	Apex more strongly pointed (may require comparison of many examples).
EXTERNAL CHARACTERS of larva	Hairs short.	Hairs short.	Hairs long, 3 times longer than in *trifolii* (comparing larva of same size and instar).
BIOLOGY Structure of egg batches	Several layers forming an irregular heap.	Several layers forming an irregular heap.	A single layer.
Foodplant(s)	Greater Bird's-foot Trefoil (*Lotus pedunculatus*). Occasionally Common Bird's-foot Trefoil (*Lotus corniculatus*).	Common Bird's-foot Trefoil (*Lotus corniculatus*).	Usually: Meadow Vetchling (*Lathyrus pratensis*) Red Clover (*Trifolium pratense*) Greater Bird's-foot Trefoil (*Lotus pedunculatus*). Occasionally: Common Bird's-foot Trefoil (*Lotus corniculatus*) White Clover (*Trifolium repens*) Bitter Vetch (*Lathyrus montanus*) Sainfoin (*Onobrychis viciifolia*).
Cocoon	Opaque. High in herbaceous vegetation on stems of grasses or tall herbs.	Opaque. Low in herbaceous vegetation, often concealed.	Relatively translucent. High in herbaceous vegetation on stems of grasses or tall herbs.
Habitat	Usually: marshes, boggy heathland and damp meadows. Occasionally: dry neutral grassland, coastal dunes and coastal cliffs.	Dry chalk and limestone grassland.	Generally rather tall grasslands in a wide variety of situations, including dry calcareous sites on chalk and limestone, neutral grassland on clay, marshes, coastal cliffs and woodland rides.
Flight period	June to early August.	Mid May to mid June.	Mid June to early August.

* In *Zygaena lonicerae jocelynae* (only known from Skye, Inner Hebrides) and ssp. *insularis* (Ireland, where *trifolii* has not been found), the forewing spots are larger and examples with them merged occur regularly, especially the median pair and outer spot.