2357 (9831) Large Ear *Amphipoea lucens* (Freyer, 1845) — Local

2358 (9829) Saltern Ear *Amphipoea fucosa* (Freyer, 1830)
ssp. *paludis* (Tutt, 1888) — Local

2359 (9832) Crinan Ear *Amphipoea crinanensis* (Burrows, 1908) — Local

2360 (9828) Ear Moth *Amphipoea oculea* (Linnaeus, 1761) — Common

Diagnostic external characters

The adults are variable in appearance and there are no completely reliable distinguishing external features. Therefore for the acceptance of site records, dissection is necessary. Some useful trends have been found. *A. lucens* and *fucosa* tend to be slightly larger than *oculea* and *crinanensis* (Waring *et al*., 2009). In the south, many *fucosa* are distinguishable from *oculea* by the narrower reniform stigma, and distinctly paler forewing. However, others are indistinguishable from *oculea*, which is also variable. In the north, the situation is more complex with all four species often present, and trends are difficult or impossible to determine.

Skinner (2009) found some useful trends on the hindwing underside, with *lucens* tending to be more strongly marked, with a conspicuous discal spot and thick wavy post-median cross-line. In contrast *fucosa* tended to be plain or have a weak, slightly wavy post-median line, and *oculea* and *crinanensis* only a thin, evenly curved post-median line. However, it must be emphasised that these are only trends, and some moths suspected to be *lucens* based on external characters including the undersides, which were caught outside its normal range in southern Britain, have on dissection proved to be *fucosa*.

Key to diagnostic morphological characters of the males

A. oculea and *crinanensis* can be distinguished by extruding the valvae, and very gently brushing away scales if necessary, but in the case of *lucens* and *fucosa*, the differences are more subtle, and use of this method is inadvisable. The genitalia of *lucens* and *fucosa* are also variable. The characters given below for this pair are not infallible and some specimens may appear intermediate. Therefore, in some cases it may not be possible to make a positive identification. Heath and Emmet (1983) describe differences in the cluster of spines on the aedeagus, but we have not found this to be a useful character. Provided it is not damaged, the best distinguishing feature is the harpe.

1. Harpe produced, with two arms (Figs. 114, A; 115, A; 116, A). Cucullus with distinct corona and group of spines on ventral surface near anal angle or more extensively.....2

– Harpe not produced, instead a narrow, dome-like serrated crest arising ventrally near costa (Fig. 117, A). Ventral surface of cucullus densely covered in spines with corona therefore not distinct (B).....*crinanensis*

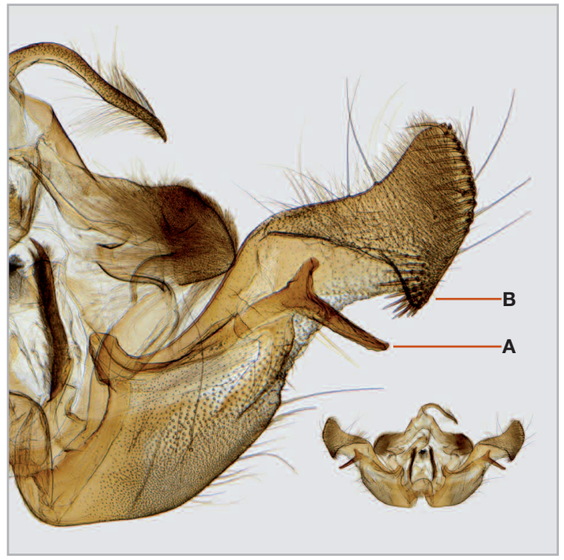
2. Harpe with short, pointed dorsal and lateral arms, of roughly equal length (Fig. 116, A).....*oculea*

– Harpe with two arms of very unequal length.....3

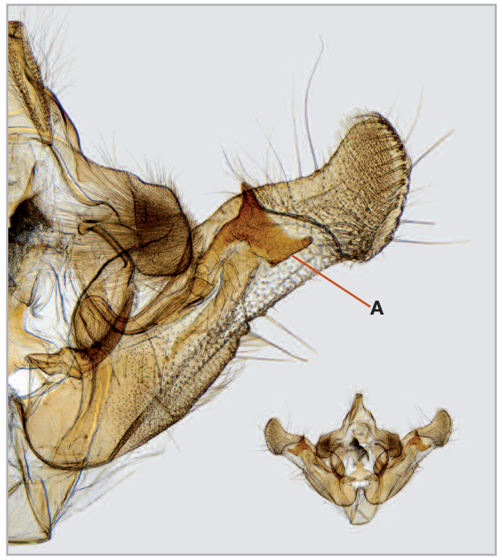
3. Long arm of harpe (Fig. 115, A) not reaching anal angle of cucullus. Short arm shorter, broader and less curved than in *lucens*. Group of spines near anal angle of cucullus usually extend on ventral surface to a point level with corona or overlapping with it (B).....*fucosa*

– Long arm of harpe (Fig. 114, A) at least reaches anal angle of cucullus. Short arm longer, narrower and more curved than in *fucosa*. Spines near anal angle of cucullus do not draw level with lower end of corona (B).....*lucens*

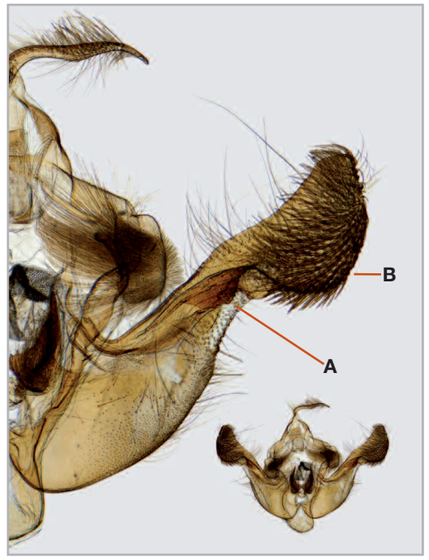
114. *Amphipoea lucens*



115. *Amphipoea fucosa*



116. *Amphipoea oculea*



117. *Amphipoea crinanensis*

Plate 31. Genitalia of male *Amphipoea* species (aedeagus not shown).

Key to diagnostic morphological characters of the females

Differences in the females are subtle, the shape of the papillae anales and the relative size of the basal prominence of the corpus bursae especially so. Therefore it may not always be possible to make a positive identification.

1. Ostium bursae deeply cleft (Fig. 120, A).....*crinanensis*

– Ostium bursae otherwise.....2

2. Ostium bursae with posterior margin forming a shallow V (Fig. 121, A).....*oculea*

– Ostium bursae with posterior margin rounded.....3

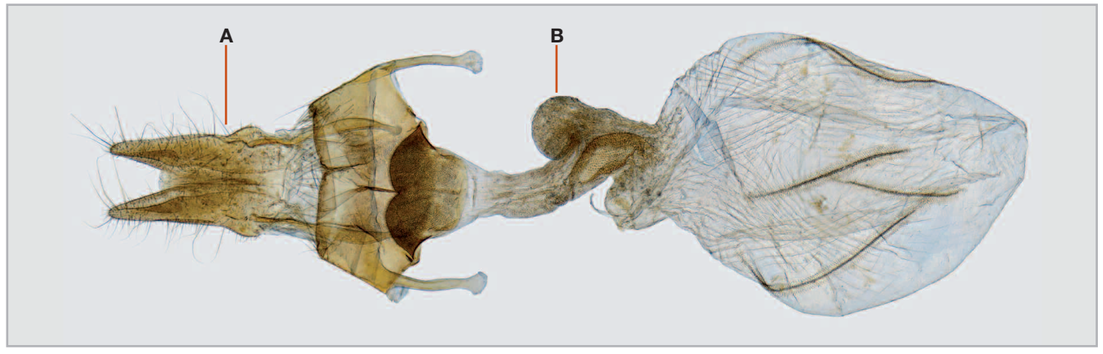
3. Papillae anales with lateral depression (Fig. 119, A).
Corpus bursae with slightly larger basal prominence (shoulder) (B).....*fucosa*

– Papillae anales weakly depressed laterally (Fig. 118, A).
Corpus bursae with slightly smaller basal prominence (shoulder) (B).....*lucens*

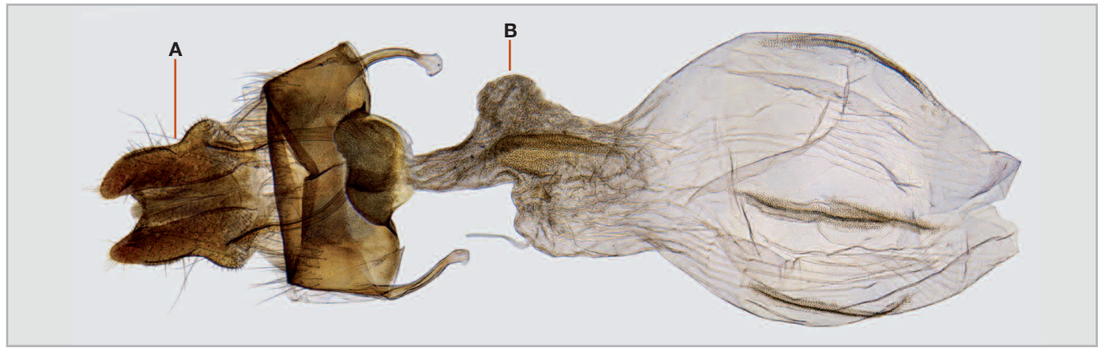
The problems in this group are particularly acute where all four are present. Populations have been studied in western Scotland in which the distinction between *lucens* and *fucosa* was found to be unclear and individuals with intermediate genitalia characters especially frequent, although where allopatric they were distinct in respect of these characters (Heath and Emmet, 1983).

Although *lucens* cannot be ruled out away from its normal habitat and geographical range, clearly the genitalia should be clear-cut before any such record is accepted. Since *fucosa* may be recorded in large numbers, it would be unnecessarily laborious to fully dissect every specimen caught in, for example, southern saltmarshes or estuarine habitats in order to try and detect the presence of *lucens*. However, in these circumstances it is worth retaining atypical examples.

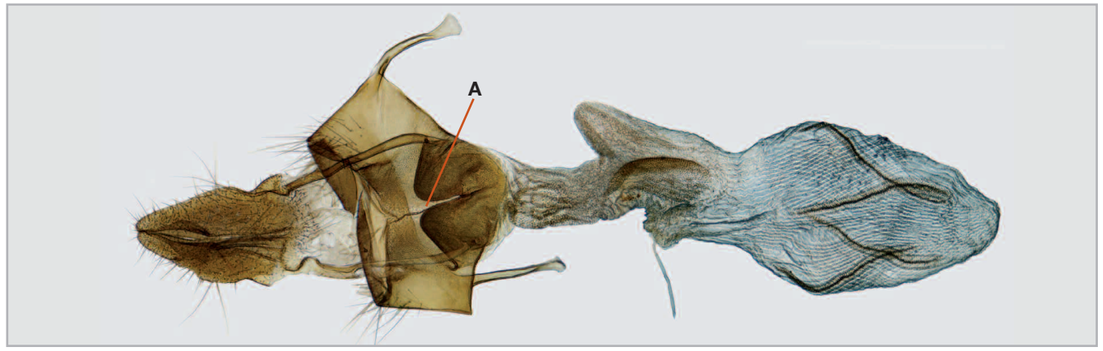
A. lucens and *fucosa* appear to be very close in evolutionary terms, and whether they are in fact merely races or sub-species, species in the process of separation or recently separated but prone to hybridisation (which is suspected to occur in northern populations) is unclear and further research would undoubtedly be worthwhile.



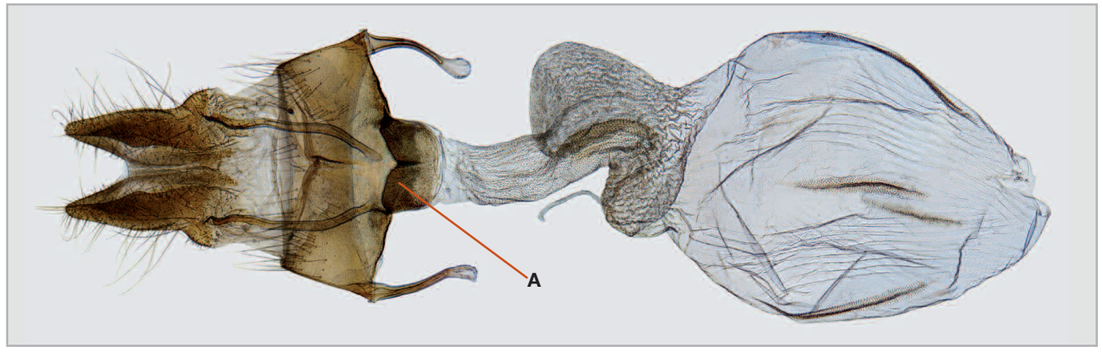
118. *Amphipoea lucens*



119. *Amphipoea fucosa*



120. *Amphipoea crinanensis*



121. *Amphipoea oculea*

Plate 32. Genitalia of female *Amphipoea* species.