A REVIEW OF *ACLERIS UMBRANA* (HB.) (LEP.: TORTRICIDAE) IN GREAT BRITAIN SINCE 1900

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Abstract

Acleris umbrana (Hübner, 1799) has been found in Great Britain only in England. Records are given from 1900 to 2009, as well as those from the Channel Islands, and its current status is considered. Published larval foodplants are reviewed and it is noted that the only species on which larvae have been found in England and the Channel Islands is Blackthorn *Prunus spinosa*, which is apparently not given in mainland European literature. An account is provided of the biology.

Key words: Lepidoptera, Tortricidae, *Acleris umbrana*, English records, Channel Islands, *Prunus spinosa*, biology.

Introduction

This review was prompted by the comment by Clancy (2008) in his paper on the immigration of Lepidoptera to the British Isles in 2006 that the two records given there of *Acleris umbrana* are coastal/extralimital records of possible immigrant examples. These records are from Downderry, East Cornwall (VC 2) on 18 January and Brede, East Sussex (VC 14) on 17 October 2006. Downderry is on the coast and Brede is just under 10 kilometres inland. In considering whether one or both of these might have been immigrants or from hitherto unknown resident populations my interest widened and resulted in an attempt to bring together such records as I could find from 1900 to 2009 and also to review the larval foodplants cited in the British literature. This in turn seemed to show that the only confirmed British foodplant is Blackthorn *Prunus spinosa.*

It appears that the first coastal, as well as the first larval, record in the British Isles was at Heybrook Bay, South Devon (VC 3) in 1992 (Heckford, 1993). Several previously unpublished records from coastal localities in East Cornwall and South Devon are given later in this paper. At Heybrook Bay larvae were in spun leaves of Blackthorn, a foodplant not given in earlier British literature, although as will be seen from some of the records given below the moth has often been associated with this. Indeed, as long ago as 1859 Wilkinson (1859) stated that the species was far from common and that it occurred 'chiefly among Blackthorn, on which the larva most probably feeds.'

Overview of records

The question raised by Clancy's comment is whether records from the coast or not too far inland result from immigration, local dispersal or are simply overlooked populations in habitats not previously investigated for the species.

Plate 16. *Acleris umbrana*, all reared from *Prunus spinosa*, South Devon.
Photographs © Miss S. D. Beavan

Plate 17. Larva of *Acleris umbrana*. Photograph © R. J. Heckford

In order to consider this I set out all the records that I can trace from 1900 until the end of 2009. The date of 1900 is purely arbitrary. I am very conscious that it is quite likely that there are published records that I have not found as well as unpublished ones of which I am unaware. I have consulted the following journals: *Atropos* (1996 to 2010); *The Entomologist* (1900 to 1973, when it ceased publication – it was re-launched in 1988 by The Royal Entomological Society of London with different aims but publication ceased in 1997 and I have not consulted those years); *Entomologist's Gazette* (1950 to 2010); *The Entomologist's Monthly Magazine* (1900 to 1978 - after 1961 there were very few records of Lepidoptera and I have not consulted the years after 1978); *The Entomologist's Record and Journal of Variation* (1900 to 2010); *Proceedings and Transactions of the South London Entomological and Natural History Society* (1922 to 1967); *Proceedings and Transactions of the British Entomological and Natural History Society* (1968 to 1987); *British Journal of Entomology and Natural History* (1988 to 2010). Various county lists have been searched and several people (acknowledged at the end of this paper) have provided me with data. Names of those whose records are given in the next section are in brackets and not italicised.

Data has also been included from specimens that I have examined at the Natural History Museum (BMNH), London, in the J. W. Metcalfe and G. B. Coney collections (J. W. Metcalfe Coll. and G. B. Coney Coll.) at Bristol's City Museum & Art Gallery (BCMAG) and in the J. M. Jaques collection (J. M. Jaques Coll.) at Overbecks (Overbecks), Sharpitor, Devon, a National Trust property. Names of collectors given in the next section are in brackets and italicised.

Within Great Britain the species has only been found in England. It is unknown in Ireland. It is notable that there are no records from Scotland even though the species occurs in more northern European countries, such as Sweden and Norway; in the latter it has been reared from larvae found in July on Rowan *Sorbus aucuparia* and Sallow *Salix* sp. (Berggren, Svendsen & Aarvik, 1980). It has been known from the Channel Islands since 1971.

It appears that since at least 1900 the only record east of Hampshire is the one from Brede, East Sussex and the only one north of Herefordshire is from Gait Barrows, West Lancashire (VC 60) in 2009. A 1934 record from Westmorland and North Lancashire (VC 69) was published in 1935 but was subsequently shown to be *Acleris hastiana* (Linnaeus, 1758), and is discussed later.

Historically, two of the best known areas for the species had been the New Forest, South Hampshire (VC 11), and Whittlebury Forest, Nottinghamshire (VC 56), but just over 100 years ago Barrett (1905) commented that it appeared to have been more frequent formerly and that it had been found 'in some numbers in the New Forest and Whittlebury Forest, from which places recent records are rare.' He states that it has occurred, generally rarely, in Surrey, Sussex, Hampshire, Dorset, Essex, Northamptonshire and Herefordshire.

Sheldon (1930) described it as a 'rather mysterious species, always very local, never common, and entirely disappearing in its known haunts for years at a time. I do not know that a single example was taken in the early years of this century; for the last three or four years, however, a very few examples have turned up in the New Forest, and also in Somerset.'

The position appeared little different nearly 30 years later when Huggins (1957) wrote that the species 'does not seem to be taken often today, but probably only wants looking for. I know one place in the New Forest where one or two could usually be taken before the war, and Hayward got a few near Crewkerne in Somerset in the early 'thirties.' As will be seen from the records listed later in this paper, A. R. Hayward recorded the species from Somerset in 1926, 1933, 1934 and 1935. The first of these is almost certainly from Haselbury Plucknett which is a few kilometres to the east of Crewkerne. Hayward lived at Misterton, Somerset which is about a kilometre south-east of Crewkerne.

Bradley, Tremewan & Smith (1973) state that it is a local species, apparently never very common and sometimes not observed in its known haunts for periods of several years. They list the following counties from which it has been recorded: Essex, Sussex, Hampshire, Dorset, Somerset, Oxfordshire, Northamptonshire, Westmorland and Northumberland.

The general comments set out above are reflected in the records detailed for the period from 1900 until 1972, the year before Bradley, Tremewan & Smith's publication. As will be seen, for the period from 1973 to 2009 there are records from only 19 localities, comprising 27 adults and over 40 larvae, and in addition at least 20 adults and one larva from the Channel Islands. Except for East Sussex, these have all been from eight vice-counties in the west and north-west of England: West Lancashire, Herefordshire, Gloucestershire, Dorset, North Somerset, South Somerset, South Devon and East Cornwall.

Because *Acleris umbrana* is a rather variable species, four moths are illustrated on Plate 16.

Records between 1900 and 2009

Records given below are of adults unless stated otherwise. Localities are cited exactly as they are given on the data labels of specimens in the BMNH and BCMAG and at Overbecks, or as specified by those who have supplied the records. Some of the literature uses the generic name *Peronea* for what is now *Acleris*. In this paper the generic name *Acleris* is given when citing information from such sources, except where parts of two papers by Wright (1935a and 1935b) have been quoted.

Localities that are either coastal or within 10 kilometres of the coast are indicated by an asterisk (*) before the year of the record.

England

Up to 1900. Bright (1900) gives '*Whitley Wood* in the *N. F.* [New Forest], but seems to be rare'.

Up to 1902. Thurnall (1902) records that 'Mr. Machin and others used to get it very sparingly in Epping Forest [South Essex VC 18], but I have spent many hours in many seasons searching in vain for it.'

Up to 1905

Goss & Fletcher (1905) give 'Lewes [East Sussex VC 14], very rare' with no other data. This comment is presumably taken from Weston (1879) who states in his account of the Tortricidae of Sussex, Surrey and Kent that this 'is another insect that we appear to have lost sight of lately. It appears confined to Surrey and Sussex, the localities given being Sanderstead and Mickleham [both Surrey VC 17], and a single specimen recorded by Mr Verrall from the neighbourhood of Lewes. The moth should be looked for in September and October, and occurs chiefly among blackthorn and whitethorn.'

1926. 20 September, one, 'Somerset/H. P.' (*A. R. Hayward*) (BMNH). This is presumably the specimen recorded by Hayward (1927) as having been taken on that date 'in the neighbourhood of Misterton', South Somerset (VC 5). 'H. P.' almost certainly stands for Haselbury Plucknett, not only because it is a few kilometres to the north-east of Misterton but also because in his account of the Lepidoptera of Somerset Turner (1955) gives this as the locality for Hayward's 1926 record. This appears to be the first record from Somerset.

Only the year given, three, 'New Forest' (captor unstated but probably J. W. Metcalfe) (J. W. Metcalfe Coll., BCMAG). The handwriting on the three data labels is similar to that on other data labels in that collection with the same locality and bearing the initials 'J. W. M.'

1927. September, no exact date given, one, 'New Forest' (captor unstated but probably J. W. Metcalfe) (J. W. Metcalfe Coll., BCMAG). The handwriting is similar to that on the data labels of the three taken in the New Forest in 1926.

1928. 16 September, one at an unspecified locality in Dorset (VC 9) which appears to have been near where the specimen was taken on 20 September 1926 in South Somerset because 'Like the specimen taken two years ago in the same district, but just over the Somersetshire border, this was beaten out of dense cover in the heart of a blackthorn thicket' (Hayward, 1929).

1929. 14 September, one, 'Dorset H.' (*A. R. Hayward*) (BMNH); 18 September, one, 'W. Dorset' (*H. C. Hayward*) (BMNH); 29 September, one, 'New Forest', South Hampshire (*W. Fassnidge*) (BMNH); 7 October, one, 'New Forest, Hants' (*W. Rait-Smith*) (BMNH); October, no exact date given, one, 'New Forest' (*W. Fassnidge*) (BMNH); Fassnidge (1929) gives 'N. F., [New Forest] Whitley Wood, r., [rare] V. [Victoria County History]; N. F., v.r. [very rare] three specimens in 1929, W. F. [Fassnidge]; Brockenhurst, H. C. H. [Huggins]; four recent specimens, J. W. M. [Metcalfe].' All these localities are in South Hampshire.

1930. 10 October, one, 'Holts' (captor unstated) (G. B. Coney Coll., BCMAG). The Ordnance Survey Gazetteer of Great Britain published in 1987 gives all place names from the 1: 50 000 Landranger Map Series. If 'Holts' is not an abbreviation, then there are two places listed with this name, one in North Essex (VC 19) at TL9431 and the other in South Lancashire (VC 59) at SD9503. This publication also gives a Holts Down in North Somerset (VC 6) at ST7769, a Holt's Farm in North Essex at TL6626, and two places called Holts Farm, one in North Essex at TL7512 and another in Oxfordshire at SP5517. Accordingly, I have not been able to trace in which vice-county 'Holts' is; 18 and 22 October, one on each date, 'New Forest, Hants' (*W. Rait-Smith*) (BMNH).

1932. 25 September, one, 'New Forest' (*W. Fassnidge*) (BMNH).

1933. 16 September, two and 4 October six at Woodfidley, South Hampshire, recorded in Fassnidge's diary (Goater, 1974). There are three Fassnidge specimens in the BMNH taken in 1933, two of whose data labels each have the date as 16 September 1933 and the locality as 'New Forest' and the third has the same locality with the date given as **6** October 1933.

In a note published on 16 December 1933, and presumably based on his visits to Woodfidley that autumn, Fassnidge (1933) comments that the habits of what he called this decidedly rare species seem to be almost unknown and sets out his experience of it in the New Forest. He states that for several years he had taken one or two specimens when beating in Blackthorn thickets for *Acleris cristana* ([Denis & Schiffermüller], 1775) but it was not until 1933 that he devised a method of working that was so successful that in one hour he took six moths. He records that *A. umbrana* is best worked for from about 4.00 pm until dusk on a calm and warm afternoon in September or early October. He notes that it does not seem to have quite the same habits as *A. cristana*, which likes the very thickest places, and is more often than not beaten out from quite close to the ground. He observes that it appears to prefer Hawthorn *Crataegus* sp. to Blackthorn, especially where the trees are old and hoary and festooned with bines of Honeysuckle *Lonicera periclymenum*. Despite having said that it is more often than not beaten out from quite close to the ground, he then comments that he believes it likes to sit high up on thicker boughs in the darker parts of Hawthorn clumps, especially where this and Blackthorn grow side by side. In such localities in the New Forest it can be made to fly by jarring the thick old boughs of Hawthorn with a heavy cudgel. He invited others to publish any information they might have; none seems to have responded.

25 September, one, 'Dorset' (*A. R. Hayward*) (G. B. Coney Coll., BCMAG); 28 September, one, 'Dorset' (*A. R. Hayward*) (J. M. Jaques Coll., Overbecks); September, no exact date given, one, 'W. Dorset' (*H. C. Hayward*) (BMNH); 6 October, one, 'New Forest' (*W. Fassnidge*) (BMNH); 7 October, one, 'Somerset' (*A. R. Hayward*) (G. B. Coney Coll., BCMAG); 13 October, one, 'Dorset' (*A. R. Hayward*) (J. M. Jaques Coll., Overbecks); 15 October, one, 'Dorset' (*A. R. Hayward*) (G. B. Coney Coll., BCMAG); October, no exact date given, one, 'Selbourne' (?*B. Smith*, the name is difficult to read) (BMNH). I assume that this is Selborne, North Hampshire (VC 12).

1934. 21 August, one, 'Dorset' (*A. R. Hayward*) (J. M. Jaques Coll., Overbecks); 11 September, one at Witherslack, Westmorland and North Lancashire (VC 69), initially recorded as this species by Wright (1935a), but later (1935b) he published a correction, stating that the specimen was *Acleris hastiana*. Wright sets out how the determination and re-determination came about. He comments that the large size, wingspan not specified, basal streak and date made him sure that it could only be a dark form of *A. umbrana*. This was confirmed by someone whose name he does not give. Later he sent the moth to W. G. Sheldon who stated that to the best of his belief it was a form of *A. hastiana*, namely var. *leucophaeana* Westwood, because the black basal streak in *A. umbrana* runs to the termen but in *A. hastiana* var. *leucophaeana* it does not. This form is mentioned and illustrated by Bradley, Tremewan & Smith (1973). Wright was clearly not convinced that Sheldon was correct because he then sent the specimen to F. N. Pierce for genitalic examination. Pierce replied that 'Mr. Sheldon is right; the moth is *P.* [*Peronea*] *hastiana*. It is extraordinary that *P. hastiana* should have a form so near *P. umbrana*. It makes one feel there is only one decisive test, the genitalia' (Wright, 1935b).

Although accepting Pierce's view, Wright was still puzzled. He comments (Wright, 1935b) that the date was the most perplexing feature as 'We usually take the larvae of *P. hastiana*

in early September and breed the moth indoors in October and November.' Yet he goes on to state that '*Peronea hastiana* is very scarce at Witherslack, and out of thousands of sallow tips gathered over a number of years, I have only bred one (of form *nigrana* Sheldon) on October 17th, 1933.'

Wright does not state the sex of the specimen found on 11 September 1934. Pierce & Metcalfe (1922) figure the genitalia of both sexes of various *Acleris* species, but there are several errors. As Hancock (1986) points out, the figure of the female genitalia purportedly of *A. umbrana* in Pierce & Metcalfe (1922) is wrong and is of *A. hastiana*. Their figure of the male of *A. umbrana* is correct. Although their figure of the female genitalia of *A. hastiana* is also correct, the male is that of *A. schalleriana* (Linnaeus, 1761); it is their figure of the male of *A. maccana* (Treitschke, 1835) which in fact is *A. hastiana*. It may well be that some mistake arose either in transposition of some slide labels or labelling of the figures in their publication. Irrespective of how these errors arose and the sex of Wright's moth, it would not have affected Pierce's determination that Wright's specimen was not *A. umbrana*. If it was a female then it would have been *A. hastiana*, if it was a male it could not have been *A. umbrana*.

1 October, one, 'Somerset' (*A. R. Hayward*) (G. B. Coney Coll., BCMAG); 14 September, one, 'Holts' (captor unstated) (G. B. Coney Coll., BCMAG).

1935. 18 September, one, 'Somerset' (*A. R. Hayward*) (G. B. Coney Coll., BCMAG).

1937. August, no exact date given, one, 'Dorset' ('*Hayward*') (J. W. Metcalfe Coll., BCMAG); 25 September, one, 'Dorset' (*A. R. Hayward*) (G. B. Coney Coll., BCMAG); 1 October, one, 'Dorset' (*A. R. Hayward*) (G. B. Coney Coll., BCMAG).

A question arises as to whether Hayward's 1937 records were from Dorset or Somerset. This is because in his account of the Lepidoptera of Somerset Turner (1955) gives 'Haselbury Plucknett (A. R. H.) 1926, 1937.' As already noted, Hayward's record of 20 September 1926 was probably from Haselbury Plucknett. Also as already noted, Hayward lived at Misterton, Somerset. Haselbury Plucknett is a few kilometres to the north-east of Misterton and about four kilometres from the Somerset/Dorset boundary. Hayward had, however, taken a specimen somewhere in Somerset on 1 October 1934. Perhaps Turner's '1937' was a misprint for '1934' and that he had information showing that the locality was Haselbury Plucknett. If not, and if Hayward had recorded the species at Haselbury Plucknett in 1937, then I have neither traced a published account, if there was one, or the moth(s). One of the frequent difficulties encountered in trying to check records is establishing the whereabouts of specimens, if still extant. This is made more difficult when a collection is not retained in its entirety. Hayward died on 27 August 1939 (Rippon, 1939). Brown (1989) states that the fate of his collection was unknown. He comments that the collection of H. C. Hayward, the brother of A. R. Hayward, was sold at auction on 19 November 1947 and it is probable that the latter's was included. As can be seen from the records given above, specimens of *Acleris umbrana* taken by A. R. Hayward are in the BMNH, BCMAG and at Overbecks. I do not know whether he took other specimens that are now held elsewhere.

2 October, one, Balmer Lawn, South Hampshire, recorded in Fassnidge's diary (Goater, 1974). Balmer Lawn is within the New Forest. There is a Fassnidge specimen in the BMNH with this date and the locality given as 'New Forest'. This appears to be the last Hampshire record; 10 October, one, 'Dorset' (*A. R. Hayward*) (G. B. Coney Coll., BCMAG).

1948. September, no exact date given, one, 'Nettlebed', presumably in Oxfordshire (VC 23) but no county is given (*R. L. E. Ford*) (BMNH).

1949. September, no exact date given, one, 'Nettlebed' (*R. L. E. Ford*) (BMNH).

1958. 2 January, one, beaten by L. Price from Bracken *Pteridium aquilinum*, Dymock, West Gloucestershire (VC 34) (Newton, 1985). When Price published this record (1958) he gave the date but not the locality, merely including it in a note on certain species of Microlepidoptera from Gloucestershire.

1971. *26 July, one female at light, confirmed by dissection, Saltash, East Cornwall (VC 2) (R. J. Heckford) (Smith, 1997); the first record from Cornwall.

1973. 16 October, one disturbed from a Blackthorn bush, Eastnor Park, Herefordshire (VC 36) (Dr M. W. Harper) (Harper & Simpson, 2004). Also recorded, without the same detail, by Harper (1987).

1974. 5 October, one disturbed from a garden hedge, Ledbury, Herefordshire (Dr M. W. Harper) (Harper & Simpson, 2004). Also recorded, without the same detail, by Harper (1987).

1992. *18 September, one larva in spun leaves of Blackthorn, moth reared 25 October 1992, Heybrook Bay, South Devon (VC 3) (R. J. Heckford) (Heckford, 1993); the first record from Devon.

1993. *15 June, one larva in spun leaves of Blackthorn, moth reared 4 July 1993, and 11 September, larvae in spun leaves of Blackthorn, moths reared between 17 and 25 October 1993, Heybrook Bay, South Devon (R. J. Heckford) (Heckford, 1994).

2003. |*18 August, four larvae in spun leaves of Blackthorn, moths reared 22 and 29 September 2003, Heybrook Bay, South Devon (R. J. Heckford).

2004. 11 July, one at light, Wells, North Somerset (VC 6) (A. Duff) (Duff, 2005).

2006. *18 January, one male at light, confirmed by dissection, Downderry, East Cornwall (S. C. Madge) (Madge, 2006; Clancy, 2008); *19 July, two at light and 23 July, one at light, Plympton, Plymouth, South Devon (R. J. Heckford); *26 August, four larvae in spun leaves of Blackthorn, moths reared between 3 and 15 October 2006, Seaton, East Cornwall (R. J. Heckford); *17 October, one at light, Brede, East Sussex (VC 14) (D. N. Burrows) (Clancy, 2007; Clancy, 2008 and *in litt*.).

2007. *25 August, three larvae in spun leaves of Blackthorn, moth reared 2 October, Wembury, South Devon (R. J. Heckford); *28 and 31 August, 11 larvae in spun leaves of Blackthorn, moths reared between 27 and 30 October 2007, Devil's Point, Plymouth, South Devon (R. J. Heckford); *2 September, three larvae in spun leaves of Blackthorn, moth reared 27 October 2007, Rame, East Cornwall (R. J. Heckford); *23 September, one larva in spun leaves of Blackthorn, pupated but pupa died, Billacombe, Plymstock, Plymouth, South Devon (R. J. Heckford); 28 October, one at light, Langport, North Somerset, J. E. Bebbington (*www.somersetmothgroup. org.uk*); 21 November, one at light, Dewlands Farm, South Somerset (J. A. McGill: *www.somersetmothgroup.org.uk* and *in litt*.).

2008. *11 February, one male at light, Torpoint, East Cornwall (L. A. C. Truscott); 5 and 25 March, one at light on each date, Dewlands Farm, South Somerset (J. A. McGill); *17 and 25 July, one at light on each date, Plympton, Plymouth, South Devon (R. J. Heckford); *26 July, one at light, West Bexington, Dorset (Dr P. H. Sterling) (Langmaid & Young, 2009; Sterling, 2009); *30 July, one at light, Downderry, East Cornwall (J. C. Nicholls *per* L. A. C. Truscott); *28 August, one larvae in spun leaves of Blackthorn, moth reared 8 October 2008, Devil's Point, Plymouth, South Devon (R. J. Heckford); *14 September,

three larvae in spun leaves of Blackthorn, moths reared between 23 October and 1 November 2008, Billacombe, Plymstock, Plymouth, South Devon (R. J. Heckford); *20 September, five larvae in spun leaves of Blackthorn, Seaton, East Cornwall (S. D. Beavan & R. J. Heckford).

2009. 24 February, two at light, Langport, North Somerset, J. E. Bebbington (*www.somersetmothgroup.org.uk*); 27 February, one at light, Bere Alston, South Devon (T. Sleep); *22 April, one at light, Gait Barrows, West Lancashire (VC 60) (B. Hancock & R. Petley-Jones) (Langmaid & Young, 2010); the first record from West Lancashire; *13 July, one at light, Downderry, East Cornwall (J. C. Nicholls *per* L. A. C. Truscott); 18 July, one at light, Langport, North Somerset (J. E. Bebbington); *19 July, one at light, Downderry, East Cornwall (J. C. Nicholls *per* L. A. C. Truscott); *1 August, one at light, West Bexington, Dorset (Dr P. H. Sterling) (Sterling, 2010; Sterling & Sterling, 2010); *20 August, one at light, West Bexington, Dorset (M. J. Sterling) (Sterling, 2010; Sterling & Sterling, 2010); *19 September, two larvae in spun leaves of Blackthorn, moth reared 25 October 2009, lane leading to Ayrmer Cove, South Devon (R. J. Heckford); *1 December, one, Gait Barrows, West Lancashire (VC 60) (B. Hancock, R. Petley-Jones & R. Hilton *per* S. M. Palmer).

I should add that voucher specimens were retained only of moths reared from each of the localities where I found larvae, the other moths were released where the larvae had been collected.

Channel Islands (VC 113)

1971. *15 July, one female at light, Le Coin, St Ouen, Jersey (D. J. Clennet) (Long, 2008). Hancock (1986) states that in the course of examining some tortricoid moths received from Mr R. Long of Jersey he made a genitalia preparation of a female specimen thought to be *Acleris umbrana*. This did not agree with the figure for that species given by Pierce & Metcalfe (1922), but subsequent examination of the moth and genitalia slide by Mr K. R. Tuck at the BMNH showed that it was indeed *A. umbrana*. The purpose of his note was to point out, as already mentioned, that the figure of the female genitalia purportedly of this species provided by Pierce & Metcalfe is wrong and is of *Acleris hastiana*, and that this error had not been previously published. Hancock did not provide details of the date, locality or recorder in his published note but in correspondence with me in 1993 gave the date and the recorder, but not the locality. He also informed me that the specimen and slide were then in the Société Jersiaise collection. In his account of the Lepidoptera of the Channel Islands Shaffer (2008) simply says of its occurrence on Jersey 'data unknown, recorded by R. Long; [Société Sercquiaise files]**[confirmation required]**.' Long published the record with the locality, but not the recorder nor the sex of the specimen, in the same year as Shaffer's publication.

1988. *15 October, one at light, La Broderie, St. Pierre du Bois, Guernsey (P. D. M. Costen). Austin (2001) gives the year as 1998 and this was followed by Shaffer (2008), but the correct year is 1988 (P. D. M. Costen *in litt*.).

1997. *9 July, one at light, La Broderie, St. Pierre du Bois, Guernsey (P. D. M. Costen, and *in litt*.). Shaffer (2008) only gives the month and year.

2000. *2 January, one at light, La Broderie, St. Pierre du Bois, Guernsey (P. D. M. Costen) (Austin, 2001; Shaffer, 2008).

2001. *November, no exact date given, one at light, Horticultural Research Station, St Martin, Guernsey (R. Austin) (Austin, 2002).

2002. *26 March, one at light, La Broderie, St. Pierre du Bois, Guernsey (P. D. M. Costen); 27 July, one at light, Trinity Cottages, Torteval, Guernsey (J. Hooper) (Austin, 2003); *17 November, one at light, Horticultural Research Station, St Martin, Guernsey (R. Austin) (Austin, 2003).

2004. *25 October, 22 & 23 November, one at light on each date, Horticultural Research Station, St Martin, Guernsey (R. Austin) (Austin, 2005); *5 November, one at light, The Dell Nursery, St. Peter Port, Guernsey (R. Austin) (Austin, 2005).

2005. *13 July, one at light, Grands Vaux, St Saviour, Jersey (Long, 2008 and P. D. M. Costen *in litt*.); *25 July, one at light, La Broderie, St. Pierre du Bois, Guernsey (P. D. M. Costen); 15 October, one at light, La Broderie, St. Pierre du Bois, Guernsey (P. D. M. Costen).

2006. *7 July, one at light, L'Ancresse, Vale, Guernsey (R. Austin) (Austin, 2007); *1 November, one at light, Horticultural Research Station, St Martin, Guernsey (Austin, 2007).

2007. *25 November, one at light, Horticultural Research Station, St Martin, Guernsey (Austin, 2008).

2008. *28 January, one at light, Horticultural Research Station, St Martin, Guernsey, R. Austin, (*www.societe.org.gg/sections/entomology.html*); *14 June, one larva in spun leaves of Blackthorn, moth reared 7 July 2008, L'Ancresse Common, Vale, Guernsey (Dr P. H. Sterling); *19 July, one at light, The Dell Nursery, St. Peter Port, Guernsey, R. Austin (*www.societe.org.gg/sections/entomology.html*)

Biology and description of larva

As a result of researching records from 1900 it was noted that before 1992 none was of larvae. I then tried unsuccessfully to find any published larval account in the British literature before 1900. In a paper on notes on British Tortricidae published in parts between 1872-1876 the only comment that Barrett (1873) makes about this species is that Zeller states that it is 'found among *Carpinus* (hornbeam) but rare.' Because Barrett's paper occasionally gives foodplants of other species that he mentions, but does not do so for *Acleris umbrana*, I assume that the foodplant(s) was unknown to him at that time. It also suggests that Barrett had no personal knowledge of the species, at least at that date.

Just over 30 years later Barrett (1905) lists the following foodplants, giving English vernacular names only: 'hornbeam [*Carpinus betulus*], hawthorn [*Crataegus* sp.], dogwood [*Cornus sanguinea*], mountain ash [*Sorbus aucuparia*], bird-cherry [*Prunus padus*], sallow [*Salix* sp.] and alder [*Alnus glutinosa*].' The more common vernacular name now for *Sorbus aucuparia* is Rowan. Barrett does not acknowledge the source of these foodplants but it seems unlikely that they came from observations in England, otherwise someone would surely have published them. They are more likely to be based on mainland European sources.

The following summary, which does not claim to be exhaustive but may be representative, gives foodplants cited in mainland European literature before 1905.

Rössler (1867) states that according to Heinemann the larva is on Sallow ('Saalweiden') and Rowan ('Vogelbeeren'). Kaltenbach (1874) gives *Salix caprea* and *Sorbus aucuparia* according to Zeller, and adds *Cornus sanguinea*. Hartmann

(1880) gives *Cornus sanguinea*, *Salix caprea*, *Sorbus aucuparia* and *Alnus glutinosa*, and *Prunus padus* according to Lienig. Rössler (1881) gives 'Sorbus, Alnus glutinosa, Salix, Carpinus Betulus', according to various authors. Sorhagen (1886) apparently follows Hartmann in listing *Salix caprea*, *Alnus*, *Prunus padus*, *Sorbus aucuparia* and *Cornus sanguinea*.

As can be seen, all the larval foodplants listed by Barrett (1905), except Hawthorn, had been cited in these publications. I have not been able to trace the source of Hawthorn as a foodplant.

Later British literature appears to follow Barrett. Meyrick ([1928]) gives 'hawthorn, hornbeam, *Salix*, etc.' Bradley, Tremewan & Smith (1973) and Emmet (1988) cite all the foodplants listed by Barrett. Emmet (1991) simply gives 'P. [Polyphagous] on deciduous trees'.

Blackthorn, the only species on which I have found larvae, is not included as a foodplant in any of those publications, nor in a work covering the *Acleris* species of the Palaearctic region (Razowski, 2008). It may be significant that the only larva so far found on the Channel Islands was also on Blackthorn.

Barrett (1905) describes the larva as having a black head and thoracic plate, pale green body and black thoracic legs, attributing this to Zeller but without citing any reference. I have not been able to trace whether Zeller published this description or provided Barrett with this; it is clear from Barrett's notes on British Tortricidae mentioned above that he corresponded with Zeller. The larval descriptions given by Meyrick ([1928]) and Bradley, Tremewan & Smith (1973) are in similar terms and so almost certainly based on Barrett's account. Emmet (1988 and 1991) does not provide a larval description of any species.

As set out earlier, in 1992 and 1993 I found larvae in spun Blackthorn leaves at Heybrook Bay, South Devon and reared moths. The larvae in 1992 and 1993 agreed with the description given by Barrett (1905), set out above. The larvae that I found between 2003 and 2009 accorded with Barrett's description until the final instar when the colour of the head changed from black to shining reddish brown. Because I cannot trace any illustration of the larva in the British literature and in the hope that a photograph may assist in finding larvae at other sites, Plate 17 shows a final instar larva.

All the larvae were amongst spun leaves but the methods the larvae use in spinning leaves seems to vary. Sometimes one leaf is spun above another with the larva between them and feeding on both surfaces, sometimes the larva rolls both edges of one leaf downwards, forming a pod, feeding on the tip of the leaf from within the pod. Occasionally in either method the larva also spins some silken threads from one or more leaves to the stem.

All the larvae were less than two metres from the ground; most were at less than a metre. As mentioned earlier, Fassnidge (1933) observed that adults were more often beaten out from close to the ground, so perhaps this is a species that prefers the lower areas of vegetation.

Although it appears that in mainland Europe the larvae feed on all of the species listed by Barrett, except possibly Hawthorn, it does not follow that any of them are foodplants in England. Blackthorn is the only foodplant so far known in England and it may be the sole one. This comment is based on the following observations. With the exception of Dogwood and Hawthorn, none of the other foodplants listed by Barrett (1905), Meyrick, ([1928]), Bradley, Tremewan & Smith (1973) and Emmet (1988) occurs near where I have found larvae. I have looked unsuccessfully at Dogwood and Hawthorn (*Crataegus monogyna*) where these occur with Blackthorn at localities where I have found larvae of this species. Indeed, at two of the localities Hawthorn grows amongst Blackthorn and larvae feed on Blackthorn leaves that almost touch Hawthorn leaves but despite quite extensive searching larvae were not found on the Hawthorn leaves.

It may be that in England the adults need large stands of Blackthorn, possibly old bushes, to overwinter successfully. It may also be significant that at least two males have been found in late winter, 18 January 2006 and 11 February 2008, because this may be an indication that adults that emerge in the autumn do not mate until the spring. If so then clearly it is essential that both sexes have the maximum chance to survive the winter and dense cover such as Blackthorn bushes might provide this.

Phenology

For a long time the species was considered to be univoltine in England, with larvae occurring in June and July and adults from August to April (Barrett, 1905; Bradley, Tremewan & Smith, 1973; Emmet, 1988 and 1991) and this appears to be the position in the rest of the Palaearctic region (Razowski, 2008). It is clear, however, that in England the species is now either bivoltine or at least partly so. This is shown both by records of adults in the summer, so far all in July except for two in August, as well as in the autumn/winter, and the existence of a larva in June 1993 resulting in a moth emerging in July and larvae at the same locality in the same year in September resulting in moths emerging the following month.

It is difficult to know whether in England the species used to be univoltine and has become bivoltine, or partly so, or whether this state had always existed but had not been noted, possibly due to a smaller number of moths in the summer generation. Several *Acleris* species are bivoltine in the British Isles but most are univoltine. It appears that the first record of an adult in the summer was in July 1971 and there have been several since in that month as well as two in August. It is possible that the species used to be univoltine and that climatic changes have somehow produced circumstances favouring two generations each year. This would seem to be more plausible if the 'new' generation was found in the autumn, not in the summer, but the reverse is the position.

It seems to be clear that the species is bivoltine on the Channel Islands.

On the basis of my observations, adults occurring in July have a shorter wingspan those in the autumn. The moth at light in July 1971 has a wingspan of

18 mm and those at light in July 2006 and 2008 have wingspans of about 15-16 mm compared with those which I have reared from larvae collected in August and September whose wingspans are between 19 and 21 mm, except the one which resulted in July 1993 from the larva collected on 15 June that year whose wingspan is 17 mm. Bradley, Tremewan & Smith (1973) give a wingspan of between 18 and 20 mm. The differences of a few millimetres between the wingspan of those taken as adults in July compared with those reared does not seem much until the specimens are compared, when the difference is quite noticeable. This is not a sexual dimorphism because those found as adults and those that have been reared comprise both sexes. I do not know whether the other adults found in July and August also exhibit this difference.

Because most of the larval records given in this paper are mine and were all within 25 kilometres of where I live, it would be natural to assume an extreme recording bias. I do not think this would be entirely justified. I have failed to find larvae in apparently suitable coastal habitats in South Devon, mainly to the east of the county but also at Bovisand Bay which is less than two kilometres to the west of Heybrook Bay, where I have found larvae. I have been equally unsuccessful at finding larvae on Blackthorn at certain areas on the Lizard peninsula, Cornwall (VC 1). Also, I know that others have unsuccessfully searched for larvae in other counties.

Even if the larval records reflect extreme recording bias, records of adults, or rather lack of them, should not. Not only are more people running light traps but more are taking an interest in the Microlepidoptera, no doubt encouraged by more available identification aids both in printed form and on websites. A greater spread of people identifying Microlepidoptera means there is a greater chance of the species being recorded and this appears to be the case with the records given above from 2004 but, as also noted, with the exception of the 2006 record from East Sussex and the 2009 ones from West Lancashire, all have been from North Somerset, South Somerset, Dorset, South Devon and East Cornwall. This suggests that currently the species has a mainly south western distribution in England.

Discussion

The question which led to this paper is whether the two records from Downderry, East Cornwall and Brede, East Sussex given by Clancy (2008) were either immigrants or from hitherto unknown resident populations.

Acleris species are not generally known to migrate, but this does not rule out the possibility that they may under certain conditions. The fact that Downderry is on the coast and that Brede is within 10 kilometres of the coast does not, of itself, mean that the moths were immigrants. The fact that the species has never been recorded from certain coastal areas where light traps are run on a regular basis, such as Portland in Dorset, the Lizard peninsula in Cornwall and the Isles of Scilly may be a good indicator that it is not a migrant. However, if it were recorded from

such a place this could be indicative of migration, especially as Blackthorn is either infrequent or absent from these.

Since 1971 the species has been found in 11 areas in South Devon and East Cornwall which are either coastal or within 10 kilometres of the coast. Therefore, I consider that the specimen recorded from Downderry, East Cornwall on 18 January 2006 is unlikely to have been an immigrant; it seems more likely to have been from a resident coastal population. The fact that larvae were found on 26 August that year at Seaton, East Cornwall, and at Rame, East Cornwall in 2007 and again at Seaton in 2008, which are within 1 and 12 kilometres of Downderry respectively, suggests that immigration was not the source. I do not know anything about the habitats in the Brede area, East Sussex, but consider it more likely than not that the species is resident somewhere there.

If the records given in this paper are representative of the status and distribution of *Acleris umbrana* in England since 1900 then it has suffered a marked decline and a general contraction in its range. Between 1900 and 2009 it appears to have been recorded from only the following 12 vice-counties: East Cornwall (VC 2), South Devon (VC 3), South Somerset (VC 5), North Somerset (VC 6), Dorset (VC 9), South Hampshire (VC 11), North Hampshire (VC 12), East Sussex (VC 14), Oxfordshire (VC 23), West Gloucestershire (VC 34), Herefordshire (VC 36) and West Lancashire (VC 60). It has not been recorded in Hampshire since 1937 or Oxfordshire since 1949. The only Gloucestershire record was in 1958. The last Herefordshire record was in 1974. Its current stronghold appears to be in fairly limited areas in East Cornwall, South Devon, South Somerset and North Somerset, with a presence in Dorset, East Sussex, assuming that the specimen at Brede in 2006 was not an immigrant, and West Lancashire. The records from South Somerset and North Somerset are from one and two 10-km squares respectively. Those from East Cornwall and South Devon are from 12 localities within seven 10-km squares covering a linear distance of 34 kilometres.

Obviously it is not feasible to investigate every stand of Blackthorn and so it is quite likely that *Acleris umbrana* occurs in other localities, particularly in the south-west, but perhaps at not many more than are so far known in England.

Hymenopterous parasitoids reared from larvae of *Acleris umbrana*

Tranosemella praerogator (L.) (Ichneumonidae: Campopleginae). 1 ♀ ex larva collected on 31 August 2007 in spun leaves of Blackthorn at Devil's Point, Plymouth, South Devon, emerged 18 October 2007. This is a common parasitoid of Tortricidae and sometimes other Microlepidoptera.

Meteorus ictericus (Nees) (Braconidae: Meteorinae). 1 ♀ ex larva collected on 31 August 2007 in spun leaves of Blackthorn at Devil's Point, Plymouth, South Devon, emerged 4 October 2007.

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