

without a torch was fairly straight forward. It was a warm night and produced a list of some 90 species of Lepidoptera. Only two glow-worms were seen on the track between the lights and both revealed themselves just before we packed up for the night at about 01.30 hours. Both started glowing at approximately 01.15 hours and were still illuminated when we left at about 01.30 hours. Were these just very late starters or do Welsh ones behave differently? — K. P. BLAND, National Museums of Scotland, The Granton Centre, 242 West Granton Road, Edinburgh EH5 1JH.

News on the conservation of some moths listed in UK Biodiversity Action Plan and some other nationally scarce moths in 2005

This article follows in the foot-steps of similar annual reviews since 2000 in which the author has reported on some species and projects with which he is personally involved, in most cases to achieve the objectives and targets of the UK Biodiversity Action Plan (see *Ent. Rec* **113**: 121-129 (for 2000), **114**: 149-153 (for 2001) **115**: 213-219 (for 2002), **116**: 134-137 (for 2003) and **117**: 111-124 (for 2004)). For brevity only selected highlights and key results from 2005 are included. In every case the author is indebted to Writtle College for support in writing up these results in his post as Reader within the Centre for Environment and Rural Affairs at the College and in some cases for financial help in conducting aspects of the fieldwork. Other partners and colleagues are acknowledged within each section and I am most thankful to all of them. Private land-owners and some others are generally not named, for reasons of privacy and security, but their help is also greatly appreciated. Where indicated, the studies are part of Butterfly Conservation's Action for Threatened Moths Project, which is part funded by English Nature, and the author is indebted to nominated officers Mark Parsons (BC) and David Sheppard (EN) for helping to ensure continued funding. Other aspects of the Action for Threatened Moths Project are reported elsewhere, in particular in the Lepidoptera Conservation Bulletin, issued annually by BC, which continues the National Moth Conservation Project News Bulletin which the author started in 1987 and which ran to ten issues, the last in 1999.

Barberry Carpet *Pareulype berberata* (D. & S.). Baseline monitoring of the known wild populations and the recently established colonies of the Barberry Carpet moth *Pareulype berberata* was continued in 2005, as in all previous years since 1995. This was principally by the author as part of his continuing project supported by Writtle College, but with invaluable assistance from a number of volunteers, some associated with the work since it was part of the English Nature Species Recovery Programme (1995-1999) and also previously since the author started working on the species in 1987. Larval populations of the moth appear stable at most of the various sites in Wiltshire, with definite recovery this year from previous over-zealous hedge-trimming at two of these sites. Larvae were also found at the single known site in Gloucestershire which has been monitored almost annually since larvae were first discovered there in 1988 (see *Ent. Rec.*

103: 287-292). The moth is thriving at its establishment site in Northamptonshire and at its larger establishment site in Wiltshire. It survives at lower density at the establishment site in Lincolnshire (*British Wildlife* **17**: 129 & *Ent. Rec.* **116**: 262-263). The Suffolk establishment site and the native site in Dorset were not inspected for larvae in 2005 but will be in 2006, and the plantings of extra Barberry bushes at the latter are growing well. The most exciting news is that a population has been confirmed in Oxfordshire, with discovery of larvae in 2005, following the light-trapping of two adults there in 2004 (see *Ent. Rec.* **117**: 252). Additional sites have been identified for establishment trials in the coming years and further planting of Barberry for the moth has taken place at others, including London Zoo and Whipsnade Wildlife Park. The project involves the co-operation of a large number of land-owners and the support of the Zoo Federation and associates, who are doing commendable work maintaining a captive breeding stock of the Barberry Carpet for establishment of additional populations and in planting stands of Barberry at London Zoo and Whipsnade Wildlife Park.

Black-veined moth *Siona lineata* (Scop.). Monitoring of the Black-veined moth *Siona lineata* at its four known breeding sites in Britain, all in Kent, produced rather depressing results in 2004 (see *Ent. Rec.* **117**: 113-114), with none at all seen at the smallest of the sites and numbers at another in continuing decline. In 2005 neither the weekly monitoring visits during the flight period by Sean Clancy for Butterfly Conservation, nor my own visit on 9 June, produced any adults at the smallest site so it appears the moth has indeed been wiped out by inappropriate management, as discussed at length in my previous annual reports. The habitat damage and abrupt decline of the moth dates back to February 2001 when the owner of the site machine-cut the whole of the occupied field while the larval population was attempting to overwinter on the grass-stems. Black-veined moths were counted at the other three sites in 2005 and at each there are challenging habitat management issues.

The highlight of 2005 was the discovery that a substantial and widespread population of the Black-veined moth has become established on a fifth site (*BW* **17**: 53-54). The discovery was made while I was leading a combined field meeting for BC and the BENHS, with Dan Hoare and Greg Ellis on 8 & 9 June. This rough grassland site, which is in the same area as the other four sites, was inspected for five years with negative results prior to my release there in 2000 of six female and three male Black-veined moths, as part of an English Nature attempt to establish a population (*Ent. Rec.* **114**: 149-153). The moths were translocated from a native site the same day. The site had been restored to an appropriate condition by two years of carefully controlled grazing. In 2001 I saw two adult Black-veined moths on the site, at the release point used the previous year. This strongly suggested there had been successful breeding. No moths were seen there during the flight periods of 2002, 2003 or 2004 (Sean Clancy) but in 2005 we were amazed and delighted to count a total of six males and ten females distributed throughout the site on 9 June. This density currently exceeds or rivals

that on all four remaining native sites. Clearly such an adult population had not just arrived in 2005 and, for it to be so well distributed, it is unlikely to be the result of founding adults arriving in 2004. More likely the released population continued its establishment during 2002 and 2003, perhaps at low levels and in patches, undetected, from which it has now increased as grazing pressure has been relaxed further and weather and/or other factors have been favourable during vulnerable stages of the life-cycle. Irrespective of whether this is a natural or assisted colonisation, this population is most welcome and it confirms that suitable additional habitat can be provided for this endangered and protected species.

Other good news is that habitat restoration on a sixth former site for the moth is progressing and plans are underway to link it to one of the occupied sites by clearing a route through some intervening woodland, thanks to work by the Kent Wildlife Trust.

Four-spotted Moth *Tyta luctuosa* (D. & S.). During June 2005 a number of sites were searched successfully for the Four-spotted moth *Tyta luctuosa*, followed up by positive results for larvae during searches after dark in late June and July, confirming breeding. We now know that the moth is breeding in Leicestershire, at Ketton Quarry, where larvae and adults were seen simultaneously after dark on 27 June (Adrian Russell and group). An extensive population has been rediscovered along roadside verges and field margins in the vicinity of Littlebury and Great Chesterford, Essex, mainly on private land, with over one hundred individuals seen on one occasion (Phil Jenner, David Hopkins, Colin Plant, Chris Tyler-Smith and others) and larvae were found by night on 29 June (PW, Phil Jenner & Beatrix Spencer). The Essex population was known to Maitland Emmet who described it as fairly common there in 1977 (in "The larger moths and butterflies of Essex, Emmet & Pyman, 1985). Weekly transect monitoring and other work on the species continued near Peterborough, where a large population is thriving under sympathetic management by the Environment Agency and Railtrack. Results from this transect monitoring were used to direct the timing of many other searches. After visiting this site for training by the author, Sharon Hearle, BC Regional Officer) and many volunteers succeeded in searching for and finding populations of the moth at Great Wilbraham near Cambridge, where John Dawson (County Moth Recorder for Cambridgeshire) had detected adults at light in previous years, and between Kirtling Green, Cambridgeshire and Great Bradley, just over the county border into Suffolk. The moth has been known from this area for many years, but the records and knowledge of the likely breeding areas needed up-dating. Both sites are very similar in many ways to the Peterborough site. Light-trapping by Martin Cade continued to record the moth at Portland, Dorset, and the moth is doing well on a conservation site in Lincolnshire and on an adjacent farm (PW). Not all the searches were successful. A long search of the Bingham site in Nottinghamshire by the author on 23 May failed to detect the species but an unconfirmed sighting from 6 or 7 June 2004

(Richard Penson *per* Sheila Wright) suggests the moth may still survive in a disused railway cutting at nearby Barnstone. As in previous years there were records of individual Four-spotted moths in Somerset but still no population has been found. One of the sites in Oxfordshire is becoming somewhat overgrown and is in need of some specific habitat management to assist the moth. These are just some of the news items from 2005. The author continued to co-ordinate and analyse work on the moth from Writtle College for the third year of a three year project on the species, part-funded by English Nature, with assistance from Peterborough City Council, Cambridgeshire County Council and the Environment Agency. In addition to the above, he particularly thanks Adrian Russell and the site owners for arranging access and co-ordinating the searches at Ketton Quarry, and the Audley End Estate for their co-operation in Essex, and all the other site owners.

Marsh Moth *Athetis pallustris* (Hb.). The Marsh Moth *Athetis pallustris* provided a classic example of the need to be persistent when attempting to find some of our rarest British moths. Rick Pilcher found the species relatively easy to capture in portable light-traps at Gibraltar Point, Lincolnshire, in the 1970s (*Ent. Rec.* **85**: 230-233) but this is no longer the case. Since 2000 various people have made attempts to find the moth there. This has included deploying large numbers of light-traps over the site (e.g. *BJENH* **16**: 55-57), which was repeated again by Adrian Russell and others on 27 May 2005. All these attempts have produced negative results, but only a few days after the latest effort, a single male was recorded just 300m from one of the trap sites, by Paul Troake, at light on 5 June, the first record from this site since 17 May 1997, almost a decade ago (*per* Kevin Wilson, Site Manager). This means that there are still two sites where the Marsh Moth is known to survive in the British Isles.

As in 2004, the author organised and led a special light-trapping event jointly for the BENHS and Butterfly Conservation (BC) at the other British site, at the Saltfleetby-Theddlethorpe Dunes NNR, also on the Lincolnshire coast, as part of the BC 'Action for Threatened Moths' project (see *BJENH* **18**: 131-136). This year's meeting, on 26 May 2005, demonstrated that the Marsh Moth is more widely distributed and occurs at higher adult population density in the centre of the reserve than at the north end where almost all previous light-trapping has taken place over the years. Seven of us operated a total of eleven light traps, four in the traditional northern area, catching only two Marsh Moth (average 0.5 per trap), four in the central area catching six Marsh Moth (average 1.5 per trap), with blank results in two traps in a field in the extreme north which is being restored and in one trap to the west of the traditional site. All results since 2000 indicate that the moth is only really surviving on the traditional site in a small part near bushes. This is in contrast to the situation in the late 1980s and in 1990 when both adults and larvae were more widely spread and more frequent in the traditional field than now (the author, pers. obs.). The most obvious difference between the central and traditional northern areas is that the former is not subject to annual

hay cutting. It is lightly grazed by 18-20 cattle each year from mid October to mid-December and has been since 1977 (John Walker, site manager, pers. comm.). Hay-cutting has become annual in the traditional field in recent years, usually followed by grazing of the aftermath by sheep at the end of the year up until nearly Christmas (John Walker and Graham Weaver pers. comm.). Differences between the areas are apparent in the height of the sward, as measured by the Boorman drop-disc method (for method see *BC News* 50: 51-53). In the traditional field the mean sward heights around the northern and southern sides of the clump of bushes on 26 May 2005 were 9cm and 7.5cm, with ranges of 7-13 cm and 6-12 cm respectively, reflecting the effects of the cutting and grazing. In the central area the mean heights at the south end were 13cm and 11cm, with ranges from 4-20 and 7-15cm respectively. The results from the light-trapping events in 2004 and 2005 are consistent with the view that hay-cutting, or aftermath grazing, or both, may have resulted in a decline of the Marsh Moth on the site and that it is now only surviving in parts of the site which are long-term uncut or ungrazed, or around the bushes where cutting and grazing do not penetrate. Hopefully, the Marsh Moth will colonise the restoration field, where the mean sward height was measured at 16cm, with a range from 8-30cm and where Ribwort Plantain *Plantago lanceolata* is in ample supply as a larval foodplant, but the suitability of this sward and the colonising ability of the Marsh Moth are not yet known.

On 25 September 2005 the author found forty Marsh Moth larvae by sifting 24 litter piles kindly prepared for him by the EN reserve staff to sample the central area. This gives an average of almost two larvae per pile, which is a similar number to that found in the traditional area in the late 1980s and early 1990s. However none was found on 25 September 2005 in 22 similar piles constructed and sampled in the traditional area. This break-through result, the first time litter-piles have been used in the central area, backs up even more clearly and strongly the patterns from the light-trap catches. This example adds to existing concerns that annual hay-cutting over the entire area occupied by localised invertebrate populations can have catastrophic effects, which are probably intensified by aftermath grazing. The management of key parts of the Saltfleetby reserve is under review as a result of these findings, with further monitoring experiments planned.

The author particularly thanks John Walker, EN Assistant Site Manager, for his continuing interest and help in the monitoring and management at Saltfleetby and all those who supported and helped with the light-trapping event.

Scarce Hook-tip *Sabra harpagula* (Esper). On 28 June some of the hardest and bravest members of the BENHS, led by the author, gathered in the ancient limewoods of the Wye Valley on the borders of Monmouthshire and Gloucestershire. The main aim was to try and capture a fertile female Scarce Hooktip moth *Sabra harpagula* to obtain eggs for study of the larval habits on food-plants in captivity, with a view to finding and surveying the larvae more

successfully in the wild, from which there are very few records (see *Atropos* **23**: 36-44 & **25**: 68). Despite heavy rain at the start of the night a dozen light-traps were operated all night under some massive Small-leaved Limes *Tilia cordata* - reported to be the sole larval foodplant of the Scarce Hook-tip in the British Isles. A female was captured in perfect condition, together with a number of males, and she laid 224 eggs. Larvae were reared and various interesting observations made. For example, the final instar larvae readily accepted the foliage of the Large-leaved Lime *Tilia platyphyllos* and also English Elm *Ulmus procera*, in addition to the Small-leaved Lime with which they are normally associated (*British Wildlife* **17**: 54). Larvae reared indoors were pupating by 10 August in spinnings made by folding the edge of a lime leaf downwards but larvae reared outdoors were only partly grown by the start of September (Tony Rouse).

Armed with this experience, the author returned to the Wye Valley woodlands on 1 & 2 September where he was joined by Martin Anthoney, Ian Smith and staff from the local Forestry Commission (FC) office, equipped with a pole saw in addition to conventional beating trays. Despite spending most of a day searching in four sites (including St Pierre's Great Wood as well as sites along the River Wye) by eye and beating low regrowth, trunk shoots and canopy foliage obtained using the pole saw, long-handled loppers and a ladder, no larvae, nor obvious signs of feeding nor spinnings of this species were found. This suggests the larvae are probably at low density and feeding mainly high in the canopy. We are most grateful for the help and co-operation of the FC staff on both sides of the Welsh border in this project, and to Writtle College and the BENHS for financial support.

Silurian *Eriopygodes imbecilla* (Fabr.). On 13 April 2005 larvae of the Silurian moth *Eriopygodes imbecilla* were found in the wild in the British Isles for the first time, as the result of searches funded by the Blaenau Gwent Biodiversity Project, with co-ordination and assistance from Butterfly Conservation (*Atropos* **27**: 20-23 & plates). The first search on 13 April was conducted by a group of us, gathered by Martin Anthoney, Monmouthshire County Moth Recorder, around dusk and after dark in and above the gully, where the species was first discovered in Britain, by Neil Horton on 30 July 1972 (see *Ent. Gaz.* **24**: 219-222 & *Ent. Rec.* **88**: 246-248). We found no larvae in the gully but eight on the upper slopes and tops which are covered in Bilberry-dominated moorland. The larvae were found in two 15 minutes searches and a 15 minute descent, between 21.00 and 23.00hrs. Some of the larvae were seen climbing the Bilberry stems and feeding mainly on Bilberry stems and buds - only a few of the plants were showing any leaf and many had been cropped by sheep. Feeding on Heath Bedstraw *Galium saxatile* was also observed and one larva was filmed doing so. Some of the larvae were crawling across moss and most were in a slight depression area where mosses and grasses were growing in hummocks amongst the Bilberry. On 14 April the author, accompanied by Anthony Price, found two Silurian larvae in an identical situation at high altitude about 4km north of the original gully, but none

on the lower parts of similar moorland. Eight larvae were retained by the author for study, to determine when and how they pupated and whether they were carrying any parasitoids. The larvae were kept in a cool garage in mock-up habitat composed of plants and materials gathered on site. They were still feeding on inspections on 25 & 30 April, but had all pupated by 5 May. The pupae were formed in fairly tight cocoons amongst the surface of moss, which was incorporated into the cocoon. No parasitoids emerged. On 26 April Martin Anthoney was joined by Russell Hobson and Mark Parsons of butterfly Conservation for a follow-up visit to the original site. They too succeeded in finding larvae of the Silurian – six near the top of the hill in the slight depression in 50 man-minutes of search from 21.00hrs, three on Bilberry and three on moss. They did not find any in a search of similar duration nearer to the summit where the Bilberry looked slightly taller and browner and there was more heather.

Less successful was a search for pre-hibernation larvae made on 1 September by five of us, including Martin Anthoney and Blaenau Gwent Biodiversity Project Officer Deborah Beeson. We enjoyed late afternoon sunshine and a warm evening while we searched by eye and swept the swards of predominantly Bilberry *Vaccinium myrtillus* for young larvae by daylight and after dark. Young larvae of other noctuid moths were found, but we saw none of the Silurian, even when searching the creeping growth of Heath Bedstraw by torch-light well after dusk. We noted that the Bedstraw had grown and spread greatly since the spring and that there were many new, often reddish shoots on the Bilberry. The Silurian had been found feeding on both these plants in April. Details of the larval stage prior to the winter therefore remain a mystery for another year. For the next search, a date in late September or October and use of a suction sampler to improve the detection of larvae at ground level are recommended. David Wedd (pers. comm.) finds that in captivity the small black early instar larvae will eat wilted and partially rotting leaves, so it may be that they live entirely in plant debris on the ground at this stage.

White-spotted Pinion *Cosmia diffinis* (L.). The major new discoveries from work on the elm-dependent White-spotted Pinion *Cosmia diffinis* in 2005 were the finding of a part-grown larva near Ely, Cambridgeshire, by David Hopkins and the author on 24 May, and the capture of three adults in a small copse of elms by the village of Potton, near Sandy, Bedfordshire by John Day and the author on the evening of 4 August 2005 (*antea*: 137-139). The first event confirms that the species is breeding another area to the north and east of the known populations around Huntingdon and Dry Drayton and the second confirms that at least one population the moth survives in Bedfordshire. The latter is the first population to be found in the county since the last individuals of a colony were seen at Coppice Wood, Riseley, in 1985 (Arnold *et al.*, 1997. *The butterflies and moths of Bedfordshire*, and Les Hill, Bedfordshire County Macro-moth Recorder, pers. comm.). The Potton population was located by following up records of two singletons recorded by John Day in his garden light-trap there on 2 August 2002

& 11 August 2003 which are the only others of the species seen in the county since 1985. An elm copse is just visible from John's house and almost as soon as five wine-ropes and two light-traps were set up, one moth came to a wine-rope (at 21.35hrs) and two to light from deeper in the copse. However, an extensive search for larvae there on 27 May 2005, by the author, John Day and Andrew Frost, had drawn a blank result. Coppice Wood had earlier been searched with light-traps all night on 12 August 2004 without success (see *BJENH* **18**: 153-156). Efforts to find the moth in other copses near Potton are proposed for 2006. An elm copse at Brightlingsea, on the Essex coast, was searched for larvae on 24 May 2005 by the author, Joe Firmin and others, with negative results for the second year running, following the capture of adult White-spotted Pinions at a light-trap there on 6 August 2003 (two) and subsequently. Larvae are almost certainly present however, because adults are now trapped there annually (David Scott, pers. comm.). A large elm was searched unsuccessfully for larvae in Folkesworth, Cambridgeshire, on 27 May by Andrew Frost and the author, following the capture there of a single adult to light. If the moth is not breeding on this tree, it must have flown from some distance because there are no other large elms for several hundred metres.

Meanwhile, the known populations of the White-spotted Pinion in its national stronghold around Huntingdonshire were monitored by light-trapping by Barry Dickerson in 2005, as in previous years, and by Ruth Edwards at a site in Cambridgeshire. Although the moth was seen in reasonable numbers when the weather and the health of the recorders allowed, Dutch elm disease has recently killed the majority of trees at the Cambridgeshire site and is affecting trees in various of the Huntingdonshire sites.

Huntingdonshire, Cambridgeshire, Essex and Bedfordshire are the only counties to have produced records of the White-spotted Pinion in the last ten years, despite a number of searches in elm woodland in adjacent Northamptonshire and elsewhere, including a nationwide search on National Moth Night in 2001 (see *Atropos* **16**: 34-37). But there are many elm sites awaiting investigation. Those around Milton Keynes look particularly promising and it is hoped some may be targeted in 2006.

Buttoned Snout *Hypena rostralis* (L.) and **Square-spotted Clay** *Xestia rhomboidea* (Esper). Readers who have been following the work by the author, Robin Field and others on these two species in Cambridgeshire and Essex over the last three years may be aware that the fieldwork was concluded early in 2005. Papers presenting the overall results of these two projects are now in print (see *antea*: 57-65 for Square-spotted Clay and *Ent. Rec.* **117**: 253-262 for Buttoned Snout).

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Waring, Paul. 2006. "News on the conservation of some moths listed in UK Biodiversity Action Plan and some other nationally scarce moths in 2005." *The entomologist's record and journal of variation* 118, 211–218.

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