News on the conservation of some UK Biodiversity Action Plan moths in 2002

The following is an update to previous annual reports on some of the moth projects in the English Nature Species Recovery Programme (*Ent. Rec.* **113**: 12-129; **114**: 149-153). This year the report is expanded to include some of the additional UK Biodiversity Action Plan priority species with which the author was involved during 2002 through Butterfly Conservation's Action for Threatened Moths project.

Barberry Carpet *Pareulype bereberata* (D.& S.)

First the native sites. At the single known Gloucestershire site the density of larvae in 2002 was the highest since the late 1980s when breeding was first confirmed and monitoring of larvae began (*Ent. Rec.* **103**: 287-292). In addition, a larva was found on one of several small bushes recently planted to increase the amount of foodplant available. At the single site in Dorset plans are underway for planting of additional home-grown wild Barberry *Berberis vulgaris* bushes, to link existing bushes and increase the effective size of the site. The single traditional site in Suffolk produced a negative result during surveys for larvae. The rest of the currently known native sites for this moth are in Wiltshire where plans for large-scale planting of wild Barberry alongside occupied bushes are being negotiated and where new stands of the plant have already been established. There are between six and nine known sites in Wiltshire, depending on whether a site is defined as a group of bushes or a larger locality. Results of larval monitoring at these sites were mixed. Some produced good densities of larvae, others produced blank results. On bushes which had been flailed in early September when larvae were feeding, the density was only one fortieth of that on nearby unflailed hedges and of that found on the same bushes in previous years prior to flailing. However, trimmed bushes generally have higher densities of larvae than untrimmed, provided they are trimmed late in the year, after the larvae have pupated beneath them. It appears that for many years the hedgerows in the Wiltshire sites, which predominantly surround fields of cattle or sheep, have been cut in November or later, which suits the moth. In this region in recent years there has been a change to arable farming, which has affected some of the sites with Barberry bushes. At these, the hedges are being trimmed after the harvest and just before the new crop is sown, which tends to be in late August or early September when the second generation of larvae are feeding.

Next, the establishment sites. The population at the main establishment site in Wiltshire is still doing well several generations after the releases of larvae and adults in 1998 and 1999. In addition, about one hundred captive-bred larvae of a different Wiltshire strain were released into the site in 2002 with the aim of widening the gene pool to offset potential inbreeding effects in the future. However, unlike in 2001 no larvae were seen in 2002 at another Wiltshire site into which occupied bushes had been translocated in February 2001, prior to the destruction of most of the donor site by mineral extraction. A population released into an unoccupied site in Suffolk has survived for two generations, as has one in Northamptonshire, where additional bushes have been planted. A release site in Lincolnshire produced negative results in 2002, but it would be premature to

conclude that this population had been lost. Hopefully all native and establishment sites will continue to be monitored in 2003.

Black-veined Moth *Siona lineata* (Scopoli)

Four sites currently support breeding populations of the Black-veined Moth. All are rough chalk grassland in Kent. The best news is that the population of one has definitely survived an instance of winter flailing which took place in February 2001 (*British Wildlife* **13**: 439-440). Three adults, including two females laying eggs, were seen there on 17 June 2002 by Sean Clancy. In 2000, up to eleven individuals had been seen on a single visit, but in June 2001 none was seen in any of the five weekly searches. There are concerns related to less than ideal management on two of the other three sites. The third is suffering from the effects of a fire in February 2001, which has promoted rapid domination of the larval foodplants by Tor Grass *Brachypodium pinnatum*. Light grazing and cutting of part of the site is planned to reverse this, with other parts of the site protected by fencing until the outcome has been assessed. No adults were seen on two additional sites in Kent where small numbers of the moth have been recorded occasionally in the last five years, one of which is an establishment site. However, only single visits were made during the appropriate flight period in 2002.

Bright Wave *Idaea ochrata* (Scopoli)

Numbers of Bright Wave seen on the various parts of the stretch of coastal grassland and shingle at Sandwich were down again, as in 2001. The condition of rough areas where the moth breeds has deteriorated, with a thatch of dry grasses dominating areas that were rich in herbs only three years ago. Management is required to restore these areas. Population densities remain higher where this habitat meets the sparsely vegetated shingle in which proliferation of grasses and other coarse vegetation has not taken place.

The continued existence of a population of the Bright Wave at Kingsdown, some four kilometres south of the Sandwich population, was confirmed by the author and Sean Clancy, with the sighting of at least six of individuals on 26 June 2002. A local recorder, Nigel Jarman, noted the moth there in 2000 and 2001 and it was reported previously in the same area by Andrew Foster. The habitat is very different from the occupied ground at Sandwich, containing many tall ruderal plants on shingle, such as Ox-eye Daisies *Leucanthemum vulgare*, Red Valerian *Centranthus ruber*and Great Mullein *Verbascum thapsus* amongst Hop Trefoil *Trefolium campestre*, Bird's-foot Trefoil *Lotus corniculatus*, Kidney-vetch *Anthyllis vulneraria* and bedstraws *Galium* spp. with many small patches of bare ground within the vegetation. On 9 July 1998 the author searched the nearby vegetated shingle and cliffs to the Kingsdown Golf Course without seeing the moth. The golf course appears too intensively managed to support the moth, but around the edges there were a few very small amounts of habitat like that occupied at Sandwich.

A population of the Bright Wave was also confirmed on the north shore of Pegwell Bay in 2002 with the sighting of six by Sean Clancy on 4 July. Over a dozen were

seen there by Francis Solly on 27 June 2000. A search by Ian Ferguson and the author on 4 July 2001 had proved negative despite very hot sunny weather, but parts of the habitat looked suitable and further searches on slightly earlier dates were recommended.

Although the Bright Wave may be seen as late as the third week in July, the first individuals emerge from the third week of June. It is best to have searches underway by the last week in June because in some years numbers build to a peak quickly and may fall off as quickly in early July.

No adult moths were seen in 2002 on the site further south on the Kent coast into which seven gravid wild females were released by the author on 3 July 2001, by special arrangement with the landowners and English Nature. This was despite inspection of the site by the author and Sean Clancy on 26 June 2002 and by Sean again on 29 June, 2, 10, 11 and 15 July. The site will be inspected again in 2003.

Dark Bordered Beauty *Epione vespertaria* (L) (= *parallelaria* (D.& S.)

A minimum of thirteen adults, including four females, were seen at Strensall Common, Yorkshire, on 27 July 2002, during a joint field meeting between Butterfly Conservation, the British Entomological and Natural History Society and the Yorkshire Naturalists' Union (*British Wildlife* **14**: 133-134). The moths were on both the Yorkshire Wildlife Trust reserve and the Ministry of Defence land, but were only seen in some parts of the latter. Further areas remain to be searched. Notes were made and photographs taken of the habitat, for comparison with the condition of the three known sites for this moth in Scotland. No Dark Bordered Beauty were seen at Newham Bog, Northumberland, in several visits including three by the author, on 28 and 29 July and 8 August. Newham Bog is the second of only two sites currently known to support the moth in England. It now appears that none was seen at Newham Bog in 2001, but precautions against the spread of Foot & Mouth Disease largely prevented access to the site that year. In the last couple of years Newham Bog has become a much wetter site, with standing water in the breeding areas for longer (Phil Davey, Site Manager, pers. comm.). This may be implicated in the apparent rarity of the moth on the site. Previously several adults could be seen on a single day-time visit. It is now a matter of urgency that the moth is refound on the site and its egg-laying, larval habits and major causes of mortality studied in this situation. A search of a quarry site in Upper Teesdale, Co. Durham was made on 29 July by the author, Alan and Jeri Coates and others, with negative results. This is now believed to be the site in which a singleton was collected by Ian Findlay on 13 August 1976.

Butterfly Conservation, the Royal Society for the Protection of Birds and Scottish Natural Heritage have continued to support work on the Dark Bordered Beauty in its sites Scotland. This is being reported elsewhere.

Four-spotted *Tyta luctuosa* (D.& S.)

The major news of 2002 was the sighting of a minimum of sixty-four moths at a site in Lincolnshire on 8 June (*British Wildlife* **14**: 58). The moth has been known from

this site since the 1980s, but has never been recorded in such numbers here previously. This may be only because visits may not have coincided with peak season and a systematic survey has not been attempted previously. Until this result, only Portland, Dorset, and a site near Peterborough, Northamptonshire, were known to support populations of comparable size in recent years. The moth appears to have dwindled at the other British sites which supported good numbers in the 1980s, but still turns up in small numbers, or more frequently as singletons, in several counties each year, suggesting that there are populations awaiting discovery.

At the Peterborough site the numbers seen were higher in 2002 than in 2001, coincident with an adjustment to the timing of an annual cut and scrape of the vegetation on an important part of the breeding area to maintain a water-course. In 2000, the management took place between 9 and 14 July, when the wild larvae were partly grown. In 2001, the scraping was less severe and took place between 1 and 7 August, by which time many larvae should have pupated below ground.

The moth started to emerge at the Peterborough site earlier in May 2002 than in May 2001 and the peak numbers were seen earlier, but the flight season still continued into early July as in 2001. Four individuals of a partial second generation were seen in 2002 compared to two in 2001, and they were in late July rather than early August. Two training sessions were held on site for Robin Field and Butterfly Conservation's Cambridgeshire and Essex Branch to show members the habits of the moth in the adult and larval stages to assist survey work at other sites.

On Portland, the moth was not seen in May and only in numbers in mid-late July (Martin Cade). On the basis of the dates and the southerly location, it is assumed that the first generation was very poor, but that there was a larger, second generation, which seems to be the usual pattern at this site. However, it is possible that the emergence of some adults may be delayed at this site, for reasons as yet unknown.

A site in Essex where an adult was seen on 21 July 2000 was explored on a single visit on 1 July 2002, without success, but nearby habitat looked promising and the locality merits further visits. Occupied sites were also visited in Oxfordshire and Bedfordshire to examine the habitat and management requirements. A larva was found during a nocturnal search at the Bedfordshire site on 12 July. A single Four-spotted moth was seen by day at a second site in Northamptonshire on 14 June. Other records for 2002 are currently being gathered together for a report and all information will be gratefully received.

Marsh Moth *Athetis pallustris* (Hb.)

In 2002, the Marsh Moth emerged very early at its single known current British site, on the Lincolnshire coast. It was virtually over on 7 June when James McGill and the author operated nine m.v. light-traps and recorded just two worn males. This contrasts with 12 June 2001, when nine individuals, some in good condition, were captured in just two mv traps. The early emergence was unfortunate, because a BENHS field meeting had been carefully arranged for 8 June to search for the moth at Red Farm Flash, slightly further north along the coast, in similar habitat. Sixteen light-traps were operated, each catching 70-100 macro-moths, and 53 species were

seen, but no Marsh Moths. Seacroft Golf Course adjacent to Gibraltar Point Nature Reserve was explored with light-traps by Adrian Russel and Ron Follows on 6 June with negative results the night before the two worn males were seen at the known site. Both sites merit further survey.

No Marsh Moth larvae were seen in 2002 during surveys using the litter-pile technique at the known site and at Gibraltar Point. The complete lack of success in finding the moth at Gibraltar Point, despite searches for adults and larvae in 2001 and 2002, is now a cause for concern. In the 1970s, Rick Pilcher was able to find the moth easily and in numbers on various parts of the site using a single actinic light-trap.

Reddish Buff *Acosmetia caliginosa* (Hb.)

The breeding grounds of the only surviving native British population, on the Isle of Wight, involve a number of owners. During 2002, the Hampshire & Isle of Wight Wildlife Trust completed protracted negotiations and became the new owners of the largest portion. Also during 2002, virtually the entire breeding area was notified by English Nature as a Site of Special Scientific Interest. These measures are intended to secure the future of the last remaining British site for the moth for posterity. Until the Hampshire & Isle of Wight Wildlife Trust secured ownership, there was a real possibility of that portion of the site falling into unsympathetic hands. The SSSI notification was considered necessary for various reasons, including the bull-dozing of a small part of the site by one of the owners who has since planted it with grass, removing any chance of it supporting the moth.

The Reddish Buff was seen in good numbers in 2002. The moths were well on the wing on 3 June at the start of the author's first visit and on 4 June six were seen by day (a personal best) and the same night there were eight in one Robinson trap (the best over the last fifteen years is 14 in one trap). Individuals were still on the wing and in good condition when the site was light-trapped again on 18 June.

Heavy rain marred a light-trapping session on 5 June to see if any adults had been produced from larvae released in 2001as part of an English Nature authorised establishment attempt on a site in the New Forest, Hampshire. It is likely that an establishment attempt at a second site on the mainland has failed, following several years of negative monitoring results. If so, the reason is almost certainly poor weather and less than ideal management during the years the moth was released. A few moths succeeded in breeding because larvae were found subsequently. Management knowledge and capability on site has now been improved and the site merits further establishment attempts.

Square-spotted Clay *Xestia rhomboidea* (Esper)

More work was done on the Square-spotted Clay in 2002 than in the previous hundred years. Apart from one individual swept by chance 50 years ago, the larva of this moth has probably never been found in the wild in Britain, and certainly not studied. Independent nocturnal searches were made in spring 2002 in Norfolk by Gerry Haggett (*Atropos* **17**: 41-44) and in Cambridgeshire and Northamptonshire by the author, Robin Field et al. (*British Wildlife* **13**: 361-362, *Atropos* **17**: 37-41)

resulting in the finding of post-winter larvae feeding on leaves of Nettle *Urtica dioica* and Oxlip *Primula elatior* and the documenting of breeding situations to inform management. Studies began on the behaviour of the adults in the summer (see *British Wildlife* **14**: 134). Although the adults visit flowers for nectar from dusk, it was found that they only come to light-traps in numbers late at night. Consequently all-night trapping is advised. Two females were seen on the wing deep in woodland, flying slowly as if interested in egg-laying. One was flying around the leaves of Small-leaved Elm *Ulmus minor*, the other beneath them nearer to nettles. Subsequently, Ruth Edwards and Jenny Joy found five eggs on Small-leaved Elm leaves at another site. One egg was collected and sent to the author. It was an exact match to eggs laid in captivity, but it did not hatch. Further work is necessary to confirm that females lay at least some of their eggs on elms and to find out if other tree species are used. Newly hatched and older captive larvae accepted leaves of Small-leaved Elm and grew as quickly on these as on Nettle, but selected the latter when given the choice both in batches reared by Ruth Edwards and by the author.

During 2002, the moth was found on a number of sites from which it had not previously been recorded and as in 2001 it was the target for a BENHS field meeting.

It is clear from both the fieldwork and examination of sites with older records that this moth is not dependent on coppicing and its decline and loss from Hampshire is probably due to some other cause. If the cause is climate change, it is likely that the moth is declining in other western parts of its distribution, such as in Oxfordshire, where it was distinctly local in the late 1970s (*Atropos* **17**: 44-45). This should be investigated by reviewing recent records and, if necessary, revisiting former sites with light-traps. The moth appears to be holding its own and even increasing its range in parts of eastern England, based on recent data. Its status in the north and far west of its range, including parts of Scotland and Wales, appears much less well known and needs investigation. Some of the records are in doubt. The moth has been rediscovered in Derbyshire after many years (*Ent. Rec.* **114**: 161).

White-spotted Pinion *Cosmia diffinis* (L.)

Larval searches during 2002 produced further information on breeding habits, and the first records of larvae from several sites in Huntingdonshire and Cambridgeshire. Rates of parasitism in penultimate instar larvae were found to be high (two out of three larvae, or 67%), as in 2000. The tachinid fly *Eumea linearicornis* (Zett.) (det. John Chainey) was reared again, as in 2000 (*Ent. Rec.* **113**: 135-138) as was a wasp *Homolobus annulicornis* (Nees) (Braconidae - Homolobinae) (det. Mark Shaw). The latter (misidentified as *H. testaceator* in British literature) is widespread in Britain, but rather rare. It has been recorded from various noctuid larvae including the Lead-coloured Drab *Orthosia populeti*, Dingy Shears *Parastichtis ypsillon* and Double Square-spot *Xestia triangulum*. The wasp reared previously (in 2000) was *Meteorus gyrator* (Thunb.) (Braconidae - Meteorinae) (*Ent. Rec.* **113**: 135-138). Larvae were found in a shelterbelt as well as deep in woodland. So far they have been found on English Elm *Ulmus procera* and Small-leaved Elm *U. minor* but not on Wych Elm *U. glabra*, though this is a reported foodplant in the literature.

The various known sites in Huntingdonshire were monitored for adults by Barry Dickerson and members of the Huntingdonshire Moth and Butterfly Group and numbers seen per trap-night were up on recent years. Ruth Edwards also had good numbers at her home site in Cambridgeshire. However, neither were fortunate enough to trap a gravid female so no eggs were available for planned rearing experiments using various elm species in different situations. Overhall Grove, Cambridgeshire, was light-trapped on 13 August 2002 by David Green, Will Kirby, James McGill and Bill Urwin, using ten light-traps and recording 42 White-spotted Pinion, all males. The distribution of males in the various traps showed that the moths were flying near most of the elm, on the edges of the wood and within and around young trees about five metres tall as well as taller, more mature examples.

Searches were also made in the woodlands immediately to the west and north of the known sites. An adult moth was light-trapped in a Bedfordshire garden by John Day. However light-trapping by the author, Charles Baker, John Comont, David Manning and Tony Smith on 13 August in Great Early Grove, Renhold, produced none. Great Early Grove has a large amount of elm and was considered one of the most promising sites in Bedfordshire. The author stayed all night with two Robinson traps. The Lesser-spotted Pinion *Cosmia affinis* was frequent, with a total of nine in the two traps. Other promising sites in Bedfordshire have been identified for future exploration. A further search and trap-night at Oxey Wood on the Milton Estate, Northamptonshire, in a wood full of Wych Elm, produced no White-spotted Pinion but the first Square-spotted Clay ever to be recorded on the site.

The White-spotted Pinion is at last being found again in Essex (Brian Goodey, pers. comm.). It was reported from two Essex sites in 2002, Chalkney Wood, Earls Colne, on 17 August 2002 (Dave Warner, Joe Firmin, Ian Rose) and Langenhoe, 19 August (Hugh Owen, Ian Rose, Joe Firmin). Other recent Essex records include singles from Saffron Walden in 1997 (Maitland Emmet). Reg Fry reports that many of the elms at the fenced gravel-pit in which he recorded the moth at Brightlingsea, Essex, in the early 1980s, have been felled.

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