



**Survey for the Mistletoe Marble
(*Celypha woodiana*) in 2009**

James McGill

2009

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McGill, J., 2009. Survey for the Mistletoe Marble (*Celypha woodiana*) in 2009. Butterfly Conservation, Wareham. (Butterfly Conservation Report No. S09-29)

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Section 1: Survey information

1.1. Summary

The Mistletoe Marble *Celypha woodiana* (Barrett, 1882) is a UK Biodiversity Action Plan Priority moth. It depends on Mistletoe *Viscum album* and has been reported from Somerset, Gloucestershire, Herefordshire, Worcestershire, Warwickshire and Monmouthshire. Within this area thirty four locations supporting the foodplant were visited, twenty seven of which had never previously been surveyed for the moth. This resulted in the discovery of ten new sites - in Gloucestershire (2), Herefordshire (1), Somerset (6) and Worcestershire (1). However, the moth was not refound at three of the locations with previous records. Management issues identified include neglect of orchards, over zealous clearance of Mistletoe, and a potential car park development.

A training event on how to survey for the moth and the importance of Mistletoe was held at Barrington Court in Somerset on 6th May 2009. This was well attended with 21 participants, representing Butterfly Conservation, the Farming and Wildlife Action Group, Herefordshire Nature Trust, the National Trust, Natural England, the People's Trust for Endangered Species, the Somerset Moth Group, Somerset County Council, South Somerset District Council and Taunton Deane Borough Council.

1.2. Acknowledgements

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Many people contributed time to locate survey sites, including Helen Barnes, Caroline Hanks, Janet Lomas, Margot Porter and Richard Roberts (FWAG), Martin Hayes (Gloucestershire Orchard Group), Rebecca Price (Gwent Wildlife Trust), Francesca Griffith and Susan Holland (Herefordshire Nature Trust), Erica Sheppard (Monmouthshire County Council), Andy Foster (National Trust), Anthony Serjeant and Rosemary Wicks (Somerset County Council), Matthew Bellew (Tir Gofal), Martyn Evans and Dave Matthews (Welsh Perry and Cider Society), Richard and Rosemary Brooks, Peter Clarkson, Jon Cooter, Julia Rabbitts, Richard Wheeler and Paul Whitehead. Particular mention must be made of the support from Anita Burrough and Christine Oines at the People's Trust for Endangered Species, who used information in their orchard inventory to identify and liaise with owners of potential survey sites.

For permission to survey in orchards I wish to thank National Trust staff, including Charlotte Allen, Katherine Alker, Christine Brain, Andy Foster, Hayley Gaisford-Gotto, Richards Higgs, Simon Larkins, Linda Roberts, Hilary Smith and Michael Smith. Also the following private landowners - Stephen Bate, Julia Bennett, Robert and Caroline Boyle, Ian Greenfield, Herefordshire Nature Trust, Margaret Jennings, John Kennedy, Martin Lattimer, Gerry Lowth, Jonquil McCullagh, Jessica Newbury, Malcolm Watkins and Hugh Whittaker.

I am grateful for assistance with fieldwork from David Agassiz, Michael Harper and Tony Simpson, and particularly Mark Parsons for independently surveying three National Trust properties.

1.3. Survey notes

A summary of the occurrence of the Mistletoe Marble in Britain and Europe, together with notes on ecology, is now available (Parsons and McGill, 2009). During the survey the moth could not be located at three sites with previous records. Anecdotal evidence suggests it is less easily found now than in the 1980s (D. Agassiz and M. Harper, pers. comm.).

The last three weeks of May are the best time to locate larval mines. At this stage they are large enough to be seen through binoculars even high up in trees (see Photo 1). Good numbers of vacated mines can still be found in mid-June with a few persisting until early July. The moth can exist at low density which makes confirming its absence at a large site very difficult. As a result, even where the species was searched for without success it could possibly be found in future.

At North Moor in Somerset larval mines were located on straggly Mistletoe plants growing in a lone hawthorn *Crataegus* spp. Many of the mined leaves were small. Several larvae had spun leaves adjacent to their original mines using silk and fed on these to complete their development. By extending beyond the original leaf, these feeding signs could potentially be confused with spinnings of other polyphagous Tortricid moths.

Species that have been reared from Mistletoe include the Large Fruit-tree Tortrix *Archips podana* (T. Simpson pers. comm.), the Light Brown Apple Moth *Epiphyas postvittana* (M. Parsons pers. comm.) and the Red-barred Tortrix *Ditula angustiorana* (Bradley, Tremewan and Smith, 1979). Where the characteristic early mine of the Mistletoe Marble is not visible observation of the larva is important to confirm the species involved. None of the others are the same deep green colour and more importantly lack a black head, prothoracic plate and anal plate (see Photo 2).

There is no obvious way of predicting which situations are most favourable for the moth, though healthy clumps of Mistletoe are preferred. However, one observation was made of mines on two adjacent Apple trees *Malus sylvestris* at Bollow in Gloucestershire. One contained nine mines on a clump of Mistletoe growing 20 feet up in the outer canopy. The other had a single mine on a clump growing six feet up, in a shaded position by the tree trunk (see Photo 3). This suggests that exposure to light is at least marginally important. It is possible that Mistletoe aloft may be preferred with an observation that two-thirds of mines were located using a ladder and out of reach from the ground (M. Harper, pers. comm.).

1.4. Management issues

Absence of the moth from seemingly suitable sites can sometimes be explained by extensive Mistletoe cropping in one or two previous years. This may not be obvious if it did not happen recently. Over-zealous clearance of Mistletoe should be avoided wherever possible by publicising the importance of the plant and its value for wildlife.

Completely neglected orchards with a limited number of healthy trees were observed to support the fewest mines or none at all, despite huge amounts of Mistletoe (see Photo 4). Management of Mistletoe and replanting of trees is

therefore desirable to ensure continuity in the availability of host trees and the foodplant. However, it is unclear what quantity of Mistletoe is sufficient to sustain the moth while at the same time prolonging the life of the trees.

Management and replanting is also potentially a threat given that the moth may only exist at low density within a site. Now that there are far fewer orchards in the landscape, it may not be able to easily recolonise ground lost following local extinction. If the moth is known from a site it is important to preserve any particular trees occupied and their nearest neighbours. Restoration work should be spread over the longest period possible and not take place all in one year.

The site with the greatest number of occupied trees observed (eight) was Sandhurst in Gloucestershire. This is an actively managed cider orchard and Mistletoe cropping takes place in the winter. Compared to neglected orchards visited, there was less Mistletoe at Sandhurst. This was estimated at between two and five clumps per tree - though these were of a large size (see Photo 5). Where it is desirable to reduce the load of Mistletoe on trees this sort of quantity is appropriate, providing that the plant is well established.

Priority should be given to keeping the largest healthy clumps of Mistletoe, particularly where partly exposed on the edge of the tree canopy. Where this micro-habitat exists, clumps which are deeply shaded in May, growing near the trunk can be considered of lower value. It is also better to keep fewer clumps of Mistletoe on many trees, rather than a small number of hosts which are heavily overloaded.

1.5. Future survey effort

There are many potential sites that still need to be searched for the Mistletoe Marble. These include orchards, hawthorn scrub and standard trees hosting Mistletoe. The following orchards were recommended as localities that might be worth visiting but could not be surveyed in the time available:

Broadway Farm (Gloucestershire, SO754148, Private)
Little Haresfield (Gloucestershire, SO809088, Private)
Moreton Valance (Gloucestershire, SO779098, Private)
Croft Castle (Herefordshire, SO448656, National Trust)
West Sedgemoor (Somerset, ST346246, Private and RSPB)
Little Comberton (Worcestershire, SO967430, Private)

Section 2: Summary of sites searched for the Mistletoe Marble

2.1. Successful searches at sites with previous records

2.1.1. Site: Curry Moor
County: Somerset
Grid ref. ST3127
Date: 28 February 2009
Recorder: J. McGill
Ownership/Site manager: Private (within Curry and Hay Moors SSSI)

Summary: One larval mine found on Mistletoe growing in the eastern of two hawthorns at ST31972737, at a height of 6ft. Two hawthorns searched for ten minutes - a vacated mine was recorded in the western bush on 8 July 2008.

Management recommendations: Scrub within Somerset Levels and Moors SSSIs is sometimes removed to improve the aquatic habitat in the ditches. Through liaison with Natural England, hawthorns supporting healthy Mistletoe should be excluded from this. The majority of scrub is not Mistletoe-bearing so this will not create a conflict with their favourable condition targets.

2.1.2. Site: Burton Farm
County: Somerset
Grid ref. ST3724
Date: 1 April 2009
Recorder: J. McGill
Ownership/Site manager: Private

Summary: One larval mine found on Mistletoe growing in an Apple tree at ST37392420, in an exposed position among the lower branches at a height of 6ft. Approximately 40 Apple trees supporting extensive growths of Mistletoe searched in one hour.

Management recommendations: This orchard is neglected with several trees standing dead and others dying off. As a result much of the Mistletoe is also in poor condition and mines were hard to find. Only one mine was also located on 1 May 2008.

To ensure the survival of the species here in the long term replanting of Apple trees is needed, along with a reduction in the Mistletoe load on the mature trees to prolong their survival.

2.1.3. Site: Barrington Court
County: Somerset
Grid ref. ST3127
Date: 15 April 2009 and 6 May 2009
Recorder: J. McGill (15 April 2009)
21 people at Mistletoe Marble workshop
(6 May 2009)
Ownership/Site manager: National Trust

Summary: One larval mine found on 15 April 2009, on Mistletoe growing in an Apple tree at ST39491840 at a height of 12ft. A second mine found on a different clump of Mistletoe in the same tree on 6 May 2009, at a height of 10ft. On both occasions approximately 80 Apple trees supporting extensive growths of Mistletoe examined, on the first date for two hours and on the second date for three person hours.

Management recommendations: The tree hosting the moth had undergone some restorative pruning between the visits in 2008 and 2009. No further healthy Mistletoe should be removed from this tree, or adjacent mature trees, at least until the moth is known to occur more widely in the orchards.

Many Apple trees have been planted in the general vicinity and Mistletoe should be encouraged on these younger trees in the coming years to ensure continuity of habitat, although care should be taken not to overload them with Mistletoe.

Additionally, consideration could be given to explaining the importance of the orchards and the associated Mistletoe fauna to the public within the grounds of the property. This could highlight the management the National Trust is undertaking to ensure the long term survival of their orchards. Due to the number of visitors to the property this might be well-suited to an interpretation panel by the orchard perimeter.

2.1.4. Site: Muchelney Abbey
County: Somerset
Grid ref. ST4224
Date: 27 April 2009
Recorder: J. McGill and M. Parsons
Ownership/Site manager: English Heritage

Summary: Two larval mines found on Mistletoe growing in a hawthorn within the grounds of the Abbey at ST42922482. Both were at a height of about 5ft. Two hawthorns and an Apple tree supporting growths of Mistletoe searched for 30 person minutes.

Management recommendations: None of the trees supporting Mistletoe should be removed. Although this colony is small, there is little scope for other conservation work (for example tree planting) due to the archaeological interest at the site.

2.2. Successful searches at sites with no previous records

2.2.1. Site: Haymoor End
County: Somerset
Grid ref. ST3026
Date: 21 April 2009
Recorder: J. McGill
Ownership/Site manager: Private (within Curry and Hay Moors SSSI)

Summary: Two larval mines found on Mistletoe growing in an Apple tree at ST30532622, this on the eastern perimeter of the orchard. The tree was covered in extensive growths of Mistletoe and the mines were at a height of

10ft, in the outer canopy (see Photo 6). Ten Apple trees supporting quite extensive growths of Mistletoe searched in 30 minutes.

Management recommendations: This orchard is abandoned with few widely separated trees remaining and no evidence of any management. No healthy Mistletoe should be removed from the tree known to support the moth. To ensure the survival of the species here in the long term replanting of Apple trees is needed, along with a reduction in the Mistletoe load on the other mature trees to prolong their survival.

2.2.2. Site: Hewish
County: Somerset
Grid ref. ST4064
Date: 22 April 2009
Recorder: D. Agassiz and J. McGill
Ownership/Site manager: Private

Summary: One larval mine found on Mistletoe growing in an Apple tree at ST40266446, at a height of 15ft. This was searched for five person minutes and was the only tree, visible from the road, in the front garden of a private residence.

Management recommendations: Due to the nature of the site it is not practical to recommend any management action.

2.2.3. Site: Brinsea
County: Somerset
Grid ref. ST4462
Date: 22 April 2009
Recorder: D. Agassiz and J. McGill
Ownership/Site manager: Private

Summary: One larval mine found on Mistletoe growing in an Apple tree at ST44606200, in an exposed position among the lower branches at a height of 6ft. Ten Apple trees supporting growths of Mistletoe searched in 30 person minutes.

Management recommendations: This orchard is attached to a private residence and is no longer managed as such, being grazed but without replanting of Apple trees. The owner states that most have died or blown over and in the medium term without replanting, the site will disappear.

However, there is a large Apple orchard with Mistletoe on the other side of the road. This was not surveyed as the owner could not be contacted but it was a locality where D. Agassiz recorded the Mistletoe Marble in the 1980s. It is likely that a larger population of the moth exists in this orchard.

2.2.4. Site: Sticklinch
County: Somerset
Grid ref. ST5639
Date: 22 April 2009
Recorder: D. Agassiz and J. McGill
Ownership/Site manager: Private

Summary: Two larval mines found on Mistletoe growing in an Apple tree at ST56703912. These were at a height of 10ft on a small clump of Mistletoe, in quite a shaded position within the lower canopy. Twenty Apple trees supporting quite extensive growths of Mistletoe searched in 30 person minutes, of at least 70 in the orchard.

Management recommendations: None of the mature trees with healthy Mistletoe should be removed prematurely. Younger trees have been planted where gaps exist in the orchard and Mistletoe should be encouraged on these in the coming years to ensure continuity of habitat, although care should be taken not to overload them.

2.2.5. Site: Tintinhull
County: Somerset
Grid ref. ST5639
Date: 1 May 2009
Recorder: J. McGill
Ownership/Site manager: National Trust

Summary: One aborted and one tenanted larval mine found on Mistletoe growing in adjacent Apple trees in the Goose Orchard at ST50211968 (see Photo 7). The aborted mine was at a height of 6ft and the tenanted mine at a height of 20ft. Fifteen Apple trees supporting growths of Mistletoe searched in an hour both here and in the Garden Orchard on the opposite site of the road.

Management recommendations: None of the mature trees with healthy Mistletoe should be removed prematurely. Younger trees have been planted where gaps exist in the orchard and Mistletoe should be encouraged on these in the coming years to ensure continuity of habitat, although care should be taken not to overload them.

Additionally, consideration could be given to raising the importance of the orchards and the associated Mistletoe fauna to the public within the grounds of the property, highlighting the management the National Trust is undertaking to ensure the long term survival of this habitat.

2.2.6. Site: Sandhurst
County: Gloucestershire
Grid ref. SO8322
Date: 9 May 2009
Recorder: J. McGill
Ownership/Site manager: Private

Summary: Eight larval mines found on Mistletoe growing in eight different Apple trees at SO831228. All were growing at heights of 10-20ft, mostly on the edge of the tree canopy though in one case deep within it. Forty Apple trees supporting growths of Mistletoe searched in 45 minutes.

Management recommendations: None of the mature trees with healthy Mistletoe should be removed prematurely. The existing regime of Mistletoe cropping, leaving a smaller number of large clumps but on many trees, should be continued.

2.2.7. Site: Bollow
County: Gloucestershire
Grid ref. SO7514
Date: 9 May 2009
Recorder: J. McGill
Ownership/Site manager: Private

Summary: Ten larval mines found on Mistletoe growing in two Apple trees by a footpath along the River Severn at SO75261443. Nine mines were on one clump at a height of around 20ft, partly open to the sun and weather. The other was in a clump growing at a height of 6ft by the trunk of the adjacent tree, in a much more shaded and sheltered position. Five Apple trees supporting growths of Mistletoe searched in 20 minutes.

Suitable habitat exists in the adjoining Broadway Orchards but only those trees adjacent to the footpath could be surveyed. Contact was made with the landowner who was happy for survey to take place here but this was not possible on the dates available.

Management recommendations: None of the mature trees with healthy Mistletoe should be removed prematurely. Younger trees have been planted where gaps exist in the orchard and Mistletoe should be encouraged on these in the coming years to ensure continuity of habitat, although care should be taken not to overload them.

2.2.8. Site: Fownhope
County: Herefordshire
Grid ref. SO5834
Date: 10 May 2009
Recorder: J. McGill
Ownership/Site manager: Private

Summary: One larval mine found on Mistletoe growing in an Apple tree at SO58673440, at a height of 25ft in the outer canopy. Approximately 60 trees supporting extensive growths of Mistletoe searched in an hour and a half.

Management recommendations: None of the mature trees with healthy Mistletoe should be removed prematurely. Younger trees have been planted where gaps exist in the orchard and Mistletoe should be encouraged on these in the coming years to ensure continuity of habitat, although care should be taken not to overload them.

2.2.9. Site: Croome Park
County: Worcestershire
Grid ref. SO8845
Date: 12 May 2009
Recorder: M. Parsons
Ownership/Site manager: National Trust

Summary: Five larval mines found on Mistletoe growing in Apple trees at c.SO887453. Fifteen Apple trees supporting Mistletoe searched. Four mines were found on a tree with a broken trunk supporting a single clump of Mistletoe, this about head height and exposed to weather conditions (see Photo 8). A single mine was found on another tree with a single clump of Mistletoe, this adjacent to a derelict outbuilding, and at a height of about 10-

12ft. An adjacent pony paddock also had several Apple trees with Mistletoe; this was not searched (as not in National Trust ownership).

Management recommendations: This is an important discovery and a new site for the species which has few recent records in Worcestershire. None of these mature trees should be removed. Younger trees have been planted where gaps exist in the orchard and Mistletoe should be encouraged on these in the coming years to ensure continuity of habitat, although care should be taken not to overload them.

The two trees supporting the mines were in an area of land adjacent to the car park. It is understood that this area is being considered as a new car park, although the plans are to retain the trees. Extreme care is needed if this car park plan is to be carried out, and an extensive buffer area should be left around each tree. However, there is still a concern that visitors could pick the Mistletoe (bearing in mind the caterpillar feeds within a single leaf of Mistletoe for much of the year) and given what appears to be a clumped distribution of the mines, and that most mines were found on a tree at head height, this could threaten this population. Any planned car park should take these concerns into consideration and mitigate against these potential threats, e.g. consider fencing off individual trees so that no part of the tree could be reached.

Additionally, consideration could be given to raising the importance of the orchards and the associated Mistletoe fauna to the public within the grounds of the property, highlighting the management the National Trust is undertaking to ensure the long term survival of this habitat.

2.2.10 Site: North Moor
County: Somerset
Grid ref. ST3329, ST3130 and ST3229
Date: 4 June 2009, 17 June 2009 and 19 June 2009
Recorder: J. McGill
Owner ship/Site manager: Private (within North Moor SSSI)

Summary: Twenty-seven larval mines found on 4 June 2009, in five minutes search of four straggly clumps of Mistletoe growing 4-10ft up in a hawthorn at ST33632963. Three mines were tenanted, the rest vacated. Four vacated larval mines found on 17 June 2009, in two minutes search of a small clump of Mistletoe, growing 6-8ft up in a hawthorn at ST31463062. Fourteen larval mines found on 19 June 2009, in five minutes search of a clump of Mistletoe growing 8ft up in a hawthorn at ST32402904. One mine was tenanted, the rest vacated.

Isolated hawthorns with small amounts of Mistletoe usually support a greater density of mines than Apple orchards - being lower down these may also be easier to find.

Management recommendations: Scrub within Somerset Levels and Moors SSSIs is sometimes removed to improve the aquatic habitat in the ditches. Through liaison with Natural England, hawthorns supporting healthy Mistletoe should be excluded from this. The majority of scrub is not Mistletoe-bearing so this will not create a conflict with their favourable condition targets.

2.3. Unsuccessful searches at sites with previous records

2.3.1. **Site:** Churchill
County: Somerset
Grid ref. ST4459
Date: 22 April 2009
Recorder: D. Agassiz and J. McGill
Ownership/Site manager: Private

Summary: No larval mines found. Six clumps of Mistletoe on a lone Apple tree in a private garden at ST446595, searched for 20 person minutes. This was a former locality for the moth, where D. Agassiz recorded it in 1987. There was only one additional tree then so the colony was always very small and has likely been lost for this reason.

Management recommendations: Due to the nature of the site it is not practical to recommend any management action.

2.3.2. **Site:** Baregains Farm
County: Herefordshire
Grid ref. SO6738
Date: 12 May 2009
Recorder: D. Agassiz, M. Harper, J. McGill & A. Simpson
Ownership/Site manager: Private

Summary: No larval mines found. Growths of Mistletoe on ten Apple trees at SO676387, searched for 40 person minutes. This was a former locality for the moth, where M. Harper recorded ten mines in 1980. There are now extensive gaps in the orchard and the moth may have been lost from the site due to a reduction in available habitat since that time.

Management recommendations: There has been a lack of replacement planting in the orchard. To maintain this in the long term it would be necessary to restore balance to the age structure of the trees. Other than consider continuing to manage for Mistletoe, no management is recommended.

2.3.3. **Site:** West Sedgemoor
County: Somerset
Grid ref. ST3524
Date: 23 May 2009
Recorder: J. McGill
Ownership/Site manager: RSPB (within West Sedgemoor SSSI)

Summary: A mine was recorded in a large Crack Willow *Salix fragilis* at this site on 17 December 2007. The tree has since completely died along with the Mistletoe growing on it, leaving no breeding habitat for the moth.

Management recommendations: No management recommended. The moth occurs in two orchards along the moor to the east, and Mistletoe also grows in hawthorn on the adjacent grazing levels. These have not been extensively searched for larval mines. Retention of hawthorn supporting Mistletoe would make it possible for the moth to expand its population at West Sedgemoor, if it has not already done so.

2.4. Unsuccessful searches at sites with no previous records

2.4.1. **Site:** Adcombe
County: Somerset
Grid ref. ST2318
Date: 20 April 2009
Recorder: J. McGill
Ownership/Site manager: Private

Summary: No larval mines found. Extensive clumps of Mistletoe on 12 mature Apple trees in orchard at ST233189, searched for one hour.

Management recommendations: Younger trees have been planted where gaps exist in the orchard and Mistletoe should be encouraged on these in the coming years to ensure continuity of habitat, although care should be taken not to overload them.

2.4.2. **Site:** Hewish
County: Somerset
Grid ref. ST4164
Date: 22 April 2009
Recorder: D. Agassiz and J. McGill
Ownership/Site manager: Private

Summary: No larval mines found. Extensive clumps of Mistletoe on 30 mature Apple trees in orchard at ST411644, searched for two person hours.

Management recommendations: Large gaps exist in the orchard with a lack of replacement planting. To maintain the orchard in the long term it would be necessary to restore balance to the age structure of the trees. Other than consider continuing to manage for Mistletoe, no management is recommended.

2.4.3. **Site:** Montacute
County: Somerset
Grid ref. ST4917
Date: 1 May 2009
Recorder: J. McGill
Ownership/Site manager: National Trust

Summary: No larval mines found. Extensive Mistletoe on nine Apple trees in orchard at ST498173, searched for one hour.

Management recommendations: Younger trees have been planted where gaps exist in the orchard and Mistletoe should be encouraged on these in the coming years to ensure continuity of habitat, although care should be taken not to overload them.

2.4.4. **Site:** Southay Farm
County: Somerset
Grid ref. ST4319
Date: 6 May 2009
Recorder: Mistletoe Marble workshop (15 participants)
Ownership/Site manager: Private

Summary: No larval mines found. Extensive Mistletoe on approximately 30 Apple trees in orchard at ST430192, searched for two and a half person hours.

Management recommendations: Younger trees have been planted where gaps exist in the orchard and Mistletoe should be encouraged on these in the coming years to ensure continuity of habitat, although care should be taken not to overload them.

2.4.5. Site: Huntingford
County: Gloucestershire
Grid ref. ST7193
Date: 9 May 2009
Recorder: J. McGill
Ownership/Site manager: Private

Summary: No larval mines found. Mistletoe on six Apple trees in orchard at ST716937, searched for 30 minutes. More possible habitat nearby with Mistletoe growing in willow trees *Salix* spp. by the Little Avon River but too high to examine.

Management recommendations: Younger trees have been planted where gaps exist in the orchard and Mistletoe should be encouraged on these in the coming years to ensure continuity of habitat, although care should be taken not to overload them.

2.4.6. Site: Common Hill
County: Herefordshire
Grid ref. SO5934
Date: 10 May 2009
Recorder: J. McGill
Ownership/Site manager: Herefordshire Nature Trust

Summary: No larval mines found. Mistletoe on 12 Apple trees at SO590347, searched for 30 minutes. Privately-owned orchard adjacent to North Meadow also had Apple trees with Mistletoe; this was not searched.

Management recommendations: Other than consider continuing to manage for Mistletoe, no management is recommended.

2.4.7. Site: Birdwood
County: Gloucestershire
Grid ref. SO7418
Date: 10 May 2009
Recorder: J. McGill
Ownership/Site manager: Private

Summary: No larval mines found. Predominately a Plum *Prunus domestica* orchard but Mistletoe on three Apple trees at SO740184, searched for 15 minutes.

Management recommendations: Other than consider continuing to manage for Mistletoe, no management is recommended.

2.4.8. Site: Lytes Cary
County: Somerset
Grid ref. ST5326
Date: 11 May 2009
Recorder: M. Parsons
Ownership/Site manager: National Trust

Summary: No larval mines found. Three clumps of Mistletoe found in small formal orchard at approximately ST534265 adjacent to main house. An abandoned cherry plum *Prunus cerasifera* orchard and adjacent fields within the property were also searched; no Mistletoe found.

Management recommendations: Other than consider continuing to manage for Mistletoe, no management is recommended.

2.4.9. Site: Llangunville
County: Herefordshire
Grid ref. SO4916
Date: 11 May 2009
Recorder: J. McGill
Ownership/Site manager: Private

Summary: No larval mines found. Extensive growths of Mistletoe on ten Apple trees at SO492166, searched for thirty minutes.

Management recommendations: Younger trees have been planted where gaps exist in the orchard and Mistletoe should be encouraged on these in the coming years to ensure continuity of habitat, although care should be taken not to overload them.

2.4.10. Site: Perthyre
County: Monmouthshire
Grid ref. SO4816
Date: 11 May 2009
Recorder: J. McGill
Ownership/Site manager: Private

Summary: No larval mines found. Growths of Mistletoe present in two orchards at SO487161. Approximately 60 Apple trees searched for one hour. The amount of available habitat (several hundred trees) exceeded the time available to survey at this site and mines could possibly have been overlooked if present at very low density.

Management recommendations: Younger trees have been planted where gaps exist in the orchard and Mistletoe should be encouraged on these in the coming years to ensure continuity of habitat, although care should be taken not to overload them.

2.4.11. Site: Weston-under-Penyard
County: Herefordshire
Grid ref. SO6223
Date: 11 May 2009
Recorder: J. McGill
Ownership/Site manager: Private

Summary: No larval mines found. Growths of Mistletoe on 30 Apple trees at SO629231, searched for one hour. Although Mistletoe was present on most mature trees in the orchard, none of the clumps were particularly large. The owner explained that 90 per cent of the Mistletoe had been cropped about five years ago. Although it is not known whether the moth ever occurred in the area, this could easily cause it to be lost from a site.

Management recommendations: Younger trees have been planted where gaps exist in the orchard and Mistletoe should be encouraged on these in the coming years to ensure continuity of habitat, although care should be taken not to overload them.

2.4.12. Site: Snowhill Manor
County: Gloucestershire
Grid ref. SP0933
Date: 12 May 2009
Recorder: M. Parsons
Ownership/Site manager: National Trust

Summary: No larval mines found. Three clumps of Mistletoe found at SP096338, two of these small, in a small orchard. No Mistletoe noted in the immediate vicinity.

Management recommendations: Other than consider continuing to manage for Mistletoe, no management is recommended.

2.4.13. Site: Home House Farm, Brockhampton
County: Herefordshire
Grid ref. SO6956
Date: 12 May 2009
Recorder: D. Agassiz, M. Harper, J. McGill, M. Parson and A. Simpson
Ownership/Site manager: National Trust

Summary: No larval mines found. Extensive growths of Mistletoe on twenty Apple trees at SO697561, searched for one and a half person hours.

Management recommendations: Younger trees have been planted where gaps exist in the orchard and Mistletoe should be encouraged on these in the coming years to ensure continuity of habitat, although care should be taken not to overload them.

2.4.14. Site: Old Linceter, Brockhampton
County: Herefordshire
Grid ref. SO6957
Date: 12 May 2009
Recorder: D. Agassiz, M. Harper, J. McGill, and A. Simpson
Ownership/Site manager: National Trust

Summary: No larval mines found. Growths of Mistletoe on ten Apple trees at SO691576, searched for 30 person minutes.

Management recommendations: Younger trees have been planted where gaps exist in the orchard and Mistletoe should be encouraged on these in the

coming years to ensure continuity of habitat, although care should be taken not to overload them.

2.4.15. Site: Withyrows Farm
County: Gloucestershire
Grid ref. SO8311
Date: 13 May 2009
Recorder: J. McGill
Ownership/Site manager: Private

Summary: No larval mines found. Clumps of Mistletoe on seven mature Apple trees in orchard at SO834117, searched for 40 minutes.

Management recommendations: Large gaps exist in the orchard with a lack of replacement planting. To maintain the orchard in the long term it would be necessary to restore balance to the age structure of the trees. Other than consider continuing to manage for Mistletoe, no management is recommended.

2.4.16. Site: Chestnut Farm
County: Gloucestershire
Grid ref. SO8110
Date: 13 May 2009
Recorder: J. McGill
Ownership/Site manager: Private

Summary: No larval mines found. Clumps of Mistletoe on ten mature Apple trees in orchard at SO812106, searched for 45 minutes.

Management recommendations: Younger trees have been planted where gaps exist in the orchard and Mistletoe should be encouraged on these in the coming years to ensure continuity of habitat, although care should be taken not to overload them.

2.4.17. Site: Ty-du Farm
County: Monmouthshire
Grid ref. SO3811
Date: 14 May 2009
Recorder: J. McGill
Ownership/Site manager: Private

Summary: No larval mines found. Clumps of Mistletoe on 30 Apple trees in orchard at SO385119, searched for an hour and a half.

Management recommendations: Younger trees have been planted where gaps exist in the orchard and Mistletoe should be encouraged on these in the coming years to ensure continuity of habitat, although care should be taken not to overload them.

Section 3: Photos



Photo 1. Fully developed larval mine of the Mistletoe Marble. (James McGill)



Photo 2. Final instar larva of the Mistletoe Marble. (Mark Parsons)



Photo 3. Apple tree supporting one Mistletoe Marble mine at Bollow, Gloucestershire. (James McGill)



Photo 4. Unmanaged Mistletoe at Llangunville, Herefordshire. (James McGill)



Photo 5. Managed Mistletoe supporting the Mistletoe Marble at Sandhurst, Gloucestershire. (James McGill)



Photo 6. Apple tree supporting the Mistletoe Marble at Haymoor End, Somerset. (James McGill)



Photo 7. Apple trees supporting the Mistletoe Marble at Tintinhull, Somerset.
(James McGill)



Photo 8. Apple tree supporting the Mistletoe Marble at Croome Park, Worcestershire.
(Mark Parsons)

Section 4: References

Bradley, J.D., Tremewan, W.G. & Smith, A. 1979. *British Tortricoid Moths. Tortricidae: Olethreutinae*. Ray Society, London.

Parsons, M. and McGill, J. 2009. Surveying for *Celypha woodiana* (Barrett) (Lep. Tortricidae). *Entomologist's Record & Journal of Variation*, **121**: 59-62.

Appendix 1: Data summary for the Mistletoe Marble survey in 2009

Species	Locality	Grid Ref.	Number	Stage	Date	Recorder	Comment
<i>Celypha woodiana</i>	Curry Moor	ST319273	1	Mine	28/02/2009	James McGill	Mistletoe on hawthorn
<i>Celypha woodiana</i>	Burton Farm	ST373242	1	Mine	01/04/2009	James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Barrington Court	ST394184	1	Mine	15/04/2009	James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Adcombe	ST233189	None		20/04/2009	James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Haymoor End	ST305262	2	Mine	21/04/2009	James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Brinsea	ST446620	1	Mine	22/04/2009	David Agassiz & James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Churchill	ST446595	None		22/04/2009	David Agassiz & James McGill	Mistletoe in garden apple tree
<i>Celypha woodiana</i>	Hewish	ST402644	1	Mine	22/04/2009	David Agassiz & James McGill	Mistletoe in garden apple tree
<i>Celypha woodiana</i>	Hewish	ST411644	None		22/04/2009	David Agassiz & James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Sticklinch	ST567391	2	Mine	22/04/2009	David Agassiz & James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Muchelney Abbey	ST429248	2	Mine	27/04/2009	James McGill & Mark Parsons	Mistletoe on hawthorn
<i>Celypha woodiana</i>	Montacute	ST498173	None		01/05/2009	James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Tintinhull	ST502196	2	Mine	01/05/2009	James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Barrington Court	ST394184	2	Mine	06/05/2009	James McGill, Bernadette Noake, Mark Parsons et. al.	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Southay Farm	ST430192	None		06/05/2009	James McGill, Bernadette Noake et. al.	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Bollow	SO752144	10	Mine	09/05/2009	James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Huntingford	ST716937	None		09/05/2009	James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Sandhurst	SO831228	6	Mine	09/05/2009	James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Common Hill	SO590347	None		09/05/2009	James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Fownhope	SO586344	1	Mine	10/05/2009	James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Birdwood	SO740184	None		10/05/2009	James McGill	Plum orchard with some Mistletoe on apple
<i>Celypha woodiana</i>	Llangunville	SO492166	None		11/05/2009	James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Perthyre	SO487161	None		11/05/2009	James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Weston-under-Penyard	SO629231	None		11/05/2009	James McGill	Mistletoe in apple orchard

Species	Locality	Grid Ref.	Number	Stage	Date	Recorder	Comment
<i>Celypha woodiana</i>	Baregains Farm	SO676387	None		12/05/2009	David Agassiz, Michael Harper, James McGill and Tony Simpson	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Croome Park	SO88745	5	Mine	12/05/2009	Mark Parsons	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Home House Farm, Brockhampton	SO697561	None		12/05/2009	David Agassiz, Michael Harper, James McGill, Mark Parsons and Tony Simpson	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Old Linceter, Brockhampton	SO691576	None		12/05/2009	David Agassiz, Michael Harper, James McGill and Tony Simpson	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Withyrows Farm	SO834117	None		13/05/2009	James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Chestnut Farm	SO812106	None		13/05/2009	James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	Ty-du Farm	SO385119	None		14/05/2009	James McGill	Mistletoe in apple orchard
<i>Celypha woodiana</i>	West Sedgemoor	ST350242	None		23/05/2009	James McGill	Mistletoe on crack willow, host tree dead
<i>Celypha woodiana</i>	North Moor	ST336296	27	Mine	04/06/2009	James McGill	Mistletoe on hawthorn, all but three mines vacated
<i>Celypha woodiana</i>	North Moor	ST314306	4	Mine	17/06/2009	James McGill	Mistletoe on hawthorn, mines vacated
<i>Celypha woodiana</i>	North Moor	ST324290	4	Mine	19/06/2009	James McGill	Mistletoe on hawthorn, all but one mine vacated