

Dingy Mocha Moth Survey at Silverlake

(Grant Ref AG/CCFR1-2018)

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Summary

- The Dingy Mocha *Cyclophora pendularia* is listed as a Red Data Book and Section 41 species of principal importance in England (NERC Act 2006)
- The Dorset heathlands are the UK stronghold for this moth. It was recorded on Warmwell Heath in the recent past
- The foodplant of this species is mainly Grey Willow *Salix cinerea*
- The larvae much prefer young sallow bushes (from tiny saplings up to 2m in height) growing in open sunny situations on lowland heath or damp grassland. Larvae prefer to eat the young, expanded leaves of the current year's growth
- Habitat was surveyed across nearly 6 ha of the Silverlake site, as well as across Warmwell Heath and in the Tadnoll Brook valley
- One Dingy Mocha larva was found on one of the two former landfill sites within the site, where young Grey Willow bushes are common
- All surveyed areas have the potential to support the moth, but there is considerable scope to provide excellent quality habitat if management tuned to the habits of the moth is implemented on the former landfill sites
- Rotational cutting of the vegetation across each landfill on a 3-year cycle is recommended. Ideally if one-third of each landfill is cut each year, there will be a continuous supply of Grey Willow in the right condition to support the moth
- Grazing should ideally be restricted so that it takes place between mid-September and mid-April. If required at other times, the density of stock should be low so that the new growth of Grey Willow, on which the larvae of Dingy Mocha depend, is not denuded

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1. Introduction

The Dingy Mocha *Cyclophora pendularia* (Clerk, 1759) is classified as a Red Data Book category 3 species (Rare) and is listed as a species of principle importance in England under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006. See image of adult and larva in the Appendix below.

The Dingy Mocha is a very local species in the UK (see Figure 1). It is confined as a regularly-breeding species to the lowland heaths of Dorset, and to a few outlying colonies such as Alner's Gorse in the Blackmore Vale in north Dorset. Occasional examples are recorded in the New Forest in Hampshire, and on the Culm Grasslands of north Devon. Dingy Mocha was recorded in the recent past in the Warmwell / Silverlake area. This was in 2008 when a single larva was found on a Grey Willow bush on Warmwell Heath. The decline in distribution of this moth nationally can largely be attributed to the loss of suitable habitat due to urban development, afforestation for commercial forestry, agricultural intensification and inappropriate management.

The larva of Dingy Mocha moth feeds mainly on Grey Willow *Salix cinerea*, and has also been recorded on Creeping Willow *Salix repens*. These plants are commonly found in semi-natural habitats throughout Britain, yet the moth is highly restricted in its distribution. Part of the explanation is that its larvae feed almost exclusively on the leaves of young willow bushes growing in open sunny situations. Larvae are found on bushes from tiny saplings, just 15cm high, up to bushes of 2m, and are perhaps commonest on bushes of c.1 – 1.5m. Exceptionally larvae may be found on much larger bushes or trees, but only when the preferred bush size is present in a site in abundance.

Even within a known area for the moth, how the semi-natural habitat is managed has a significant influence on its abundance. Larvae prefer to eat the young, expanded leaves of the current year's growth, and when not feeding the larva sits openly on the upper surface of a leaf. They are thus susceptible to grazing and browsing by cattle and ponies of the current year's growth of leaves, as this is the most accessible bite for stock when they are choosing to eat willows. It is not clear whether larvae are ingested, dislodged, or that grazing reduces the availability of egg-laying sites, but it could be all of these. It is noticeable that populations of the moth are much smaller or absent on sites that have all-year-round grazing. The right size of bush may be present in plenty, but the precise microhabitat for the larvae on the exposed leaves on the outside of the bushes is much reduced.

The Dingy Mocha moth thus displays characteristics of a number of rare moth species in terms of where and how it lives. Its larvae feed on a widespread plant but the moth is highly restricted geographically within the range of the plant, and ecologically, to a narrow niche defined by plant growth, soil conditions, insolation, and habitat management.

The opportunity presented by the Silverlake development is to find one or more locations within this large site where site management can be more tailored to suit Dingy Mocha moth with the hope that it may be possible to create a local stronghold for the species at the site. Management under the sympathetic ownership of the Habitat First Group offers a unique chance to test the feasibility of this, and to work with the site managers to see what is possible. The award of the grant to Butterfly Conservation from the Silverlake Conservation and Community Fund is the first stage in longer term work at the site to try to optimise management not just for Dingy Mocha, but hopefully for a range of rare and local moths in the area, including another, the Blair's Wainscot moth, known from the Tadnoll Brook valley.

The aim of the project this year funded by the CCF was to identify suitable habitat for the Dingy Mocha, survey for the moth, advise on land management and engage with volunteers who may be able to continue this survey work for many years to come.

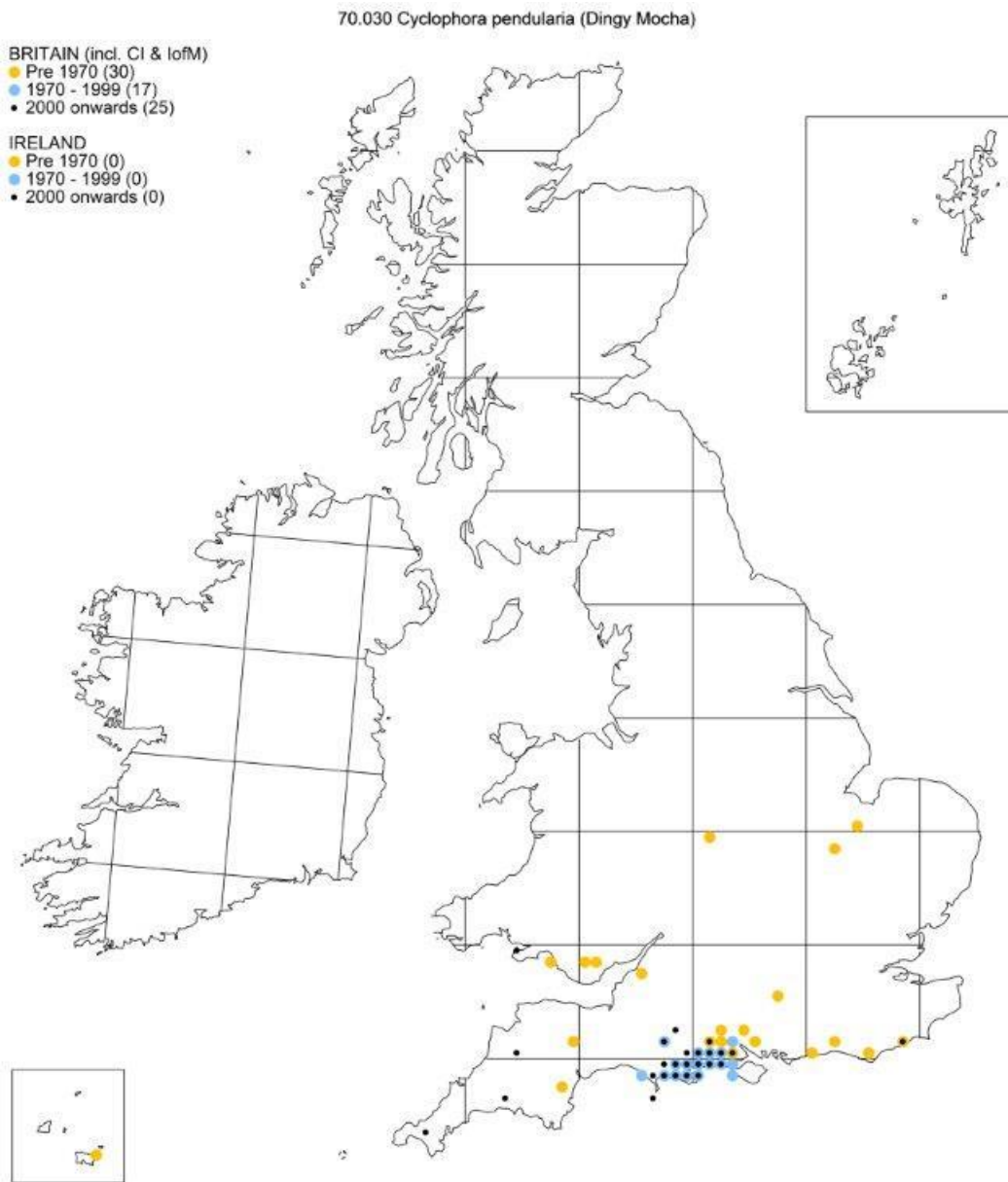


Figure 1. Distribution of the Dingy Mocha.

2. Method

Most moths are best looked for using light traps. However, research by Butterfly Conservation over many years has shown that larval surveys are much more efficient and practicable. The moth flies during late April – early June and again in July, so larvae are around in June and from mid-August to early September. The numbers of larvae peak in the second generation in late summer, so this is the best time to survey for them.

To search for larvae, a beating stick and tray is used to dislodge larvae from young willows. The number of willows sampled is recorded along with the location, number and instar of any Dingy Mocha larvae. Only a small number of bushes from the available

habitat is usually sampled to avoid any possible negative impact on the population of this, or other species.

3. Results

A total of 5.6 hectares of habitat, across six different areas was surveyed for Dingy Mocha at Silverlake on the 20/8/18. A total of 155 sallows were sampled with one 2nd instar larva found on Grey Willow (Figure 2). Other species recorded during the survey are listed in Appendix 2.

A walking survey for suitable habitat was undertaken across the whole of Warmwell Heath, and in the Tadnoll Brook valley between the Heath and Silverlake. However, no habitat was found to support the moth in the wider area. The grazing on the Heath and in the valley appears to have reduced the availability of bushes of Grey Willow in the right condition to support the moth.

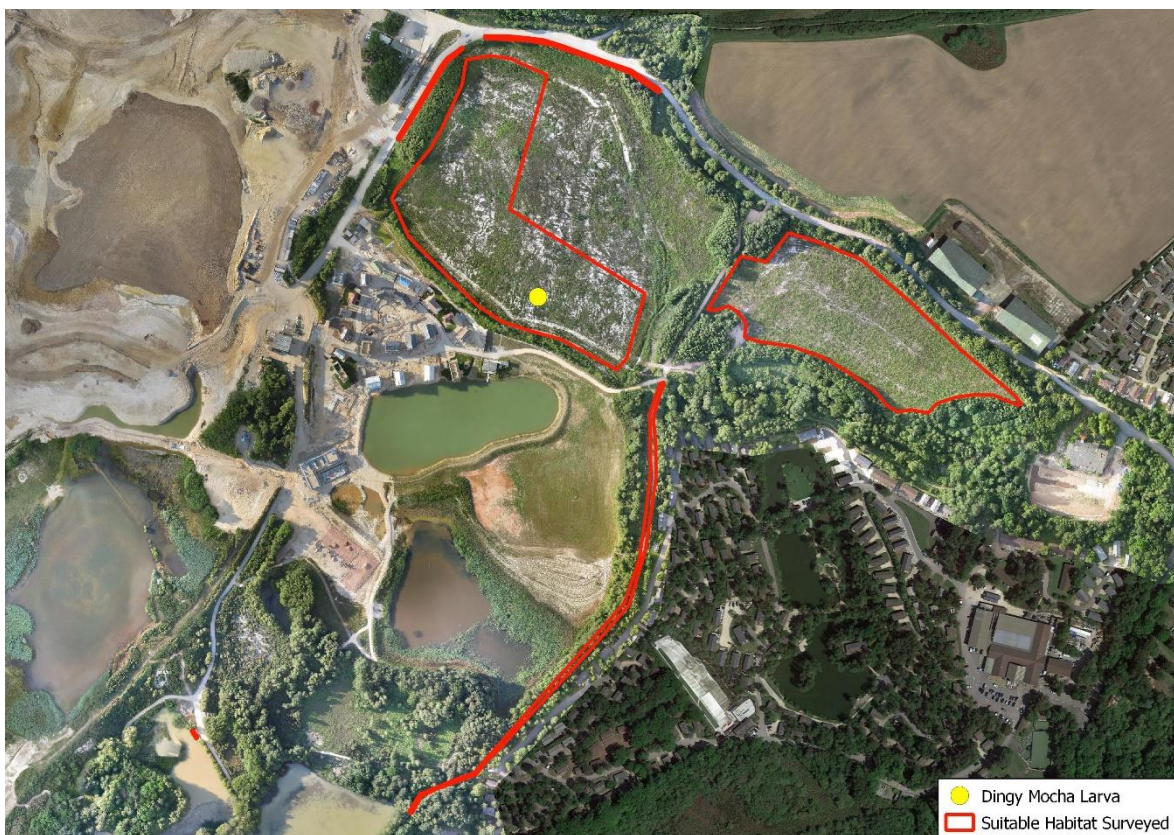


Figure 2. Location of Dingy Mocha larvae and areas of suitable habitat surveyed.

Two volunteer groups with interests in moths, the local Dorset Branch of Butterfly Conservation, and the Dorset Moth Group, were contacted to see if anyone would be interested in studying Dingy Mocha moth at Silverlake. Two people have come forward from the Dorset Moth Group, Michael Woods-Espine and Julian Francis, both of whom live reasonably locally to Moreton, and who are keen to help out from 2019. Both volunteers know Dingy Mocha moth, and Mike, who works at Moors Valley Country Park currently, has undertaken survey work on the Park for this moth, and understands its habitat requirements, and knows how to survey for larvae of the moth.

4. Discussion

Management of the landfills

Habitat was surveyed across nearly 6 ha of the Silverlake development site with one Dingy Mocha larva found. All areas surveyed had the potential to support the moth due to the abundance of regenerating Grey Willow. The abundance of willow is and will continue to present a management problem at Silverlake, so its cutting and removal across the site is expected, and in places it may be possible to maximise opportunities for Dingy Mocha moth while meeting the need for willow management.

On the landfills at Silverlake the management aim is to maintain and enhance the amount of heathland habitat present, and there is already cyclical cutting of the willow and birch scrub across the sites. This scrub grows quickly, up to 1m or more in a year in places, so in order to maintain the open habitat for heather and other dwarf shrubs, rotational cutting is planned by site managers. For Dingy Mocha, it is our view that a rotational cycle of, say, 3 years would mean that there would probably be a good number of willow bushes of the right size and in the right open condition for colonisation, especially between the 2nd and 3rd years. If one-third of each landfill is cut each year, there would be a continuous supply of willows to support the moth each year, and it seems likely that the population of the moth would grow under this management regime.

We understand that grazing by cattle on the landfills is likely to continue for the foreseeable future. In our view, to help the population of Dingy Mocha to build, it would be ideal if grazing could be avoided during the main vegetation growing season, and to take place between mid-September and mid-April. If grazing by cattle and/or ponies is required over the summer, the density of stock should be low so that the current year's growth of Grey Willow, on which the larvae of Dingy Mocha depend, is not removed or reduced significantly.

Surveying and monitoring for Dingy Mocha larvae in future years

Butterfly Conservation is pleased and willing to co-ordinate survey and monitoring for Dingy Mocha in future years at Silverlake. The combination of Habitat First Group and site management staff, plus volunteers who have already come forward, will provide plenty of 'boots on the ground' to be able to undertake larval surveying on the landfill sites each year. The annual field work task could be undertaken over one day in the mid-August to early September period each year.

In advance of the survey season in August 2019, Butterfly Conservation will provide a beating tray for each volunteer and one for Habitat First Group / site management staff, and will provide the limited amount of training required to show people how to beat and what to look for.

Butterfly Conservation will continue to survey for Dingy Mocha across the known Dorset sites and in future, the data gathered from Silverlake will be added into the subsequent annual monitoring reports to enable a broader understanding of the habitat and management requirements for this rare moth.

5. Acknowledgements

We wish to acknowledge the Silverlake Conservation and Community Fund for their generosity in funding the survey work undertaken. Also, we would like to thank Dr Phoebe Carter, Habitat First Group, for her time to show us the site and discuss management recommendations during the season. Butterfly Conservation looks forward to working with Habitat First Group and Silverlake site staff on Dingy Mocha and other species monitoring at Silverlake in future years.

6. Appendices

Appendix 1. Link to Dingy Mocha priority species factsheet, which requires some updating but remains relevant https://butterfly-conservation.org/sites/default/files/dingy_mocha-psf.pdf

Appendix 2. Other Lepidoptera recorded during Dingy Mocha survey.

Grid Reference	Vernacular	Scientific Name	Stage	Abundance	Status	Comments
SY760880	Beautiful Yellow Underwing	<i>Anarta myrtilli</i>	adult	1	Common	
SY760880	Silver Y	<i>Autographa gamma</i>	adult	3	Immigrant	
SY760880	Grayling	<i>Hipparchia semele</i>	adult	2	Near Threatened	
SY760880		<i>Pyrausta purpuralis</i>	adult	10	Common	
SY760880		<i>Ostrinia nubilalis</i>	adult	20	Local	
SY760880	Common Blue	<i>Polyommatus icarus</i>	adult	1	Least Concern	
SY760880		<i>Caloptilia stigmatella</i>	adult	1	Common	
SY760880	Straw Dot	<i>Rivula sericealis</i>	adult	1	Common	
SY760880		<i>Acleris emargana</i>	adult	1		
SY760880	Pale Prominent	<i>Pterostoma palpina</i>	larva	1	Common	Grey Willow
SY760880		<i>Mompha divisella</i>	workings	1	Very local	Gall and capped emergence holes in Epilobium sp
SY760880	6-spot Burnet	<i>Zygaena filipendulae</i>	cocoon	1	Common	
SY760880	Southern Hawker	<i>Aeshna cyanea</i>	adult	1		
SY757881		<i>Agriphila tristella</i>	adult	2	Common	
SY757881	Grayling	<i>Hipparchia semele</i>	adult	3	Near Threatened	
SY757881		<i>Agriphila straminella</i>	adult	2	Common	
SY757881		<i>Pyrausta purpuralis</i>	adult	10	Common	
SY757881		<i>Stenoptilia zophodactylus</i>	adult	1	Common	
SY757881	6-spot Burnet	<i>Zygaena filipendulae</i>	cocoon	3	Common	
SY757881	Small Chocolate-tip	<i>Clostera pigra</i>	larva	1	Nationally Scarce B	Grey Willow
SY757881	Buff-tip	<i>Phalera bucephala</i>	larva	1	Common	Grey Willow
SY757881	Pebble Prominent	<i>Notodonta ziczac</i>	larva	1	Common	Grey Willow
SY757881	Common White Wave	<i>Cabera pusaria</i>	larva	1	Common	Grey Willow
SY757881	Common Blue	<i>Polyommatus icarus</i>	adult	1	Least Concern	
SY757881	Small Copper	<i>Lycaena phlaeas</i>	adult	3	Least Concern	
SY757881	Sallow Kitten	<i>Furcula furcula</i>	larva	1	Common	Grey Willow
SY757881	Clouded Border	<i>Lomaspilis marginata</i>	larva	3	Common	Grey Willow

SY757881	Small White	<i>Pieris rapae</i>	larva	1	Least Concern	
SY757881	Beautiful Yellow Underwing	<i>Anarta myrtilli</i>	adult	1	Common	
SY757881	Common Carder Bumblebee	<i>Bombus pascorum</i>	adult	1		
SY757881		<i>Tischeria marginea</i>	mines	8		Bramble
SY757881		<i>Phyllonorycter joannisi</i>	mines	10		Norway Maple
SY757881	Light Emerald	<i>Campaea margaritata</i>	adult	1	Common	
SY756883	Clouded Border	<i>Lomaspilis marginata</i>	larva	1	Common	Grey Willow
SY756883	Pebble Prominent	<i>Notodonta ziczac</i>	larva	1	Common	Grey Willow
SY756883		<i>Dichrorampha acuminatana</i>	adult	1		
SY756883		<i>Celypha lacunana</i>	adult	1	Common	
SY758879		<i>Tischeria ekebladella</i>	mines	10		English Oak
SY754875	Wall	<i>Lasiommata megera</i>	adult	1	Near Threatened	

BACK COVER

Who we are

Butterfly Conservation is the UK charity dedicated to saving butterflies and moths.

Why butterflies and moths matter

Butterflies and moths are important parts of the ecosystem. They are beautiful and inspirational and people enjoy seeing them in their gardens and the countryside. They are sensitive to change and their fortunes help us assess the health of our environment. Two-thirds of butterfly and moth species are in decline. This is a warning that cannot be ignored.

What we do

Butterfly Conservation maintains and enhances landscapes for butterflies and moths. We provide advice to landowners and managers on how to conserve and restore habitats. We gather extensive butterfly and moth data and conduct research to provide the scientific evidence that underpins our work. We have an established record of reversing declines. We run programmes for more than 100 threatened species and are involved in conserving hundreds of sites and reserves. We rely on donations, memberships and grants to fund our work.

With your support we can help butterflies and moths thrive.

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