

RECORDING AND MONITORING RARER MOTHS IN THE YORKSHIRE DALES

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Field notes on some of the Yorkshire Dales National Park's rarer moths, and the activity of the Yorkshire Dales Butterfly and Moth Action Group in increasing our knowledge of their distribution and status.

RESEARCH SUMMARY

Yorkshire Dales Butterfly and Moth Action Group

Yorkshire Dales Butterfly and Moth Action Group (YDBMAG) started in 2002 as an initiative between Butterfly Conservation, the Yorkshire Naturalists' Union and the Yorkshire Dales National Park Authority (YDNPA). Its aims and objectives are as follows:

- To advise on habitat action plans affecting Biodiversity Action Plan (BAP) Lepidoptera;
- To devise species action plans for Local Biodiversity Action Plan (LBAP) Lepidoptera;
- To monitor LBAP lepidopteran species.

The following initiatives have been promoted:

- Increase public awareness of LBAP species;
- Increase knowledge of distribution of LBAP butterfly species;
- Set up butterfly monitoring transects for LBAP species.

These initiatives have included:

- Setting up transects for small pearl-bordered fritillary and northern brown argus butterflies;
- Surveys to discover the status and distribution in the Yorkshire Dales National Park (YDNP) of small pearl-bordered fritillary butterfly 2002, 2007-8 and 2013 and northern brown argus butterfly 2002, 2007 and 2013;
- Producing reporting postcards for common blue and green hairstreak butterflies (2005-2007; 2006-2007);
- Producing an identification guide to butterflies in the YDNP, with English Nature (Whitaker, 2004);
- Setting up transects in the small pearl-bordered fritillary and northern brown argus butterfly in the YDNP, by 2003. Currently, (2013), there are six UK butterfly monitoring scheme (UKBMS) transects in the YDNP.

Status of the Yorkshire Dales National Park moths and butterflies

We know fairly accurately how many species of Lepidoptera are in Yorkshire (Table 1) and we have a good idea as to which. In the Yorkshire Dales National Park we only have a very rough idea of which moth species are present (Table 1), which are being added and which we have lost.

TABLE 1. Number of Lepidoptera species known in Yorkshire and in the Yorkshire Dales National Park (YDNP).

	Number of species in Yorkshire	Number of species in YDNP
Butterflies	c. 35 (residents)	25
Macromoths	650	c. 500
Micromoths	<1000	?

Improving moth recording

In 2011 YDMBAG undertook a new initiative 2011 to improve the monitoring of LBAP lepidopteran species, the objectives were: :

- To encourage more recorders within the YDNP;
- To provide mentoring schemes to support new recorders;
- To increase and improve recording:
 - Temporal - more trapping early and late in the season;
 - Spatial - improve coverage throughout the YDNP;
 - Targeted recording - recording in under-recorded or rare habitats (Fig. 1).

YDNP BAP Macro Moth Species for Which Targeted Monitoring is Recommended

Species	B&F	Targeted Habitat Monitoring Required	Targeted Site Monitoring Required	Targeted Temporal Monitoring Required	ID Confusions with similar spp.	Further Information
The Forester <i>Adscita statices</i>	163	No	Yes	No	Cistus Forester	One site, Ballowfield; now monitored Day Flyer
Oak Lutestring <i>Cymatophorima diluta</i>	1658	Yes	No	No		Old oak woods
Galium Carpet <i>Epirrhoe galiata</i>	1740	Yes?	?	No		Limestone Grassland Bedstraws
Grey Mountain Carpet <i>Entephria caesiata</i>	1744	Yes	?	No		Upland/Heather moorland Disturbed in day
The Spinach <i>Eulithis mellinata</i>	1757	Yes?	No	No		Garden/allotment species Currants
Grass Rivulet <i>Perizoma albulata</i> subsp. <i>albulata</i>	1807	Yes	No	No		Hay Meadows
Barred Tooth-striped <i>Trichopteryx polycommata</i>	1881	No	Yes	Yes		One Site, Grass Wood; now monitored Early Season
Figure of Eight <i>Diloba caeruleocephala</i>	2020	No	No	Yes		Late season
Heath Rustic <i>Xestia agathina</i>	2135	Yes	No	No		Heather moorland
Powdered Quaker <i>Orthosia gracilis</i>	2186	No	No	Yes		Early Season
The Sprawler <i>Asteroscopus sphinx</i>	2227	No	No	Yes		Late season
Brindled Ochre <i>Dasypolia templi</i>	2229	No	No	Yes		Upland/ Late season
Deep-brown Dart <i>Aporophyla lutulenta</i>	2231	No	No	Yes	Northern DB Dart	Lowland/Late season
Brown-spot Pinion <i>Agrochola litura</i>	2266	No	No	Yes		Late season
The Anomalous <i>Stilbia anomala</i>	2394	Yes	No	No		Heather moorland
TOTALS		5 spp.	2 spp.	7 spp.		

Key

Yes	Targeted Habitat Monitoring Required
Yes?	Targeted Habitat Monitoring Possibly Needed
Yes	Targeted Site Monitoring Required
Yes?	Targetted Site Monitoring Possibly Needed
Yes	Targeted Temporal Monitoring Required

FIGURE 1. Moth recording in under recorded or rare habitats of the Dales. Target species and habitats. (Information compiled by C.H. Fletcher, 2010)

In 2012 to address these objectives, Colin Newlands manager of Ingleborough NNR, started a programme of monitoring throughout the year and moth-trapping in a variety of habitats around Ingleborough NNR and Ian Court (YDNP species officer) has organised YDNP Rangers to do the same on other Dales sites. A standard RIS trap stand is sited at exactly the same position where the RIS trap #496 was situated in 1990 to 1993, adjacent to Colt Park Wood NNR at SD7737789, 342 m O.D (Fig. 2). This was used to provide a base, 1.2 m above ground, for a Robinson pattern light trap (made by Bioquip). The 125W mercury vapour lamp used in the trap was of the type with an internal phosphor coating. A time switch turns the light on from dusk to dawn. Trapping is attempted on suitable nights twice a month during the period March to October and once per month during other months.



FIGURE 2. Generator driven Robinson light trap on a mire on South House Moor, Ingleborough (left), and regular light trap monitoring at a single station, Colt Park Wood SSSI (right).

MACROMOTH RECORDS

Methods

- Day time observation, it is surprising how many rare species can be found by casual walk over transects and netting smaller Lepidoptera.
- Light trapping, it may be useful to use a variety of different light traps and light sources as some species may only be attracted to specific light sources.
- Temporal trapping, a group of local species can be targeted by light trapping early or late in the year.

Monitoring by increasing general light trapping

There are considered to be 44 species of UK BAP macro-moth species in the YDNP which can be adequately covered by monitoring using general light trapping. Ten can probably be safely ignored. They are species which are rare in the Dales where they are at the edges of their range, but they are often common on lowland (e.g. dot moth, powdered quaker, white-line dart, mouse moth, shoulder-striped wainscot, brown-spot pinion, dusky thorn, flounced chestnut, centre-barred sallow and dusky-lemon sallow). Many of those are occasionally recorded in Grass Wood; a warm lowland location.

1719 Oblique carpet *Orthonama vittata* (Local)

A bedstraw feeder of marshy areas, this species occurs widely but locally over much of the British Isles with stable population in much of lowland Yorkshire. This had not been seen in the YDNP since 1990s (Austwick RIS Trap) until a single record from a new recorder just outside the YDNP in Ingleton in 2013 (JP).

Targeted site monitoring

163 Forester *Adscita statices* (Local, Declining) UK BAP priority species

This is a day-flying species that is widespread but declining and absent over wide areas due to intensive grassland management. The only site in western Yorkshire is on Ballowfield LNR administered by the YDNPA. The adult flies in warm sunshine during June and July. The larva initially mines a leaf of common sorrel (*Rumex acetosa*) in July and August and then feeds externally on lower leaves until May when it pupates in a cocoon near the ground among vegetation. In 2013 the YDNP surveyed its food plant and counts have been undertaken on the site. (See Fig. 3).

164 Cistus forester *Adscita geryon* (Nationally Notable B)

This local species is found mainly on limestone outcrops and chalky habitats. The YDNP sites are amongst the most northern in the UK. It only flies in sunshine near its larval host plant common rock-rose (*Helianthemum nummularium*). Some of the transects set up in the YDNP to monitor the northern brown argus butterfly incidentally record the moth.

1880 Barred tooth-striped *Trichopteryx polycommata* (Nationally Notable B)

This species has only been recorded from a single Yorkshire location in Grass Wood, Wharfedale. It is a very rare spring flyer, on the wing in March and April. Since the YNU moth group working with Butterfly Conservation in 2004, confirmed the species was still extant, it has been recorded almost every year. Since 2010 Paul Millard (PM) has been monitoring the species, mainly by searching for larvae on its food plant privet (*Ligustrum vulgare*). (See Fig 4, Table 2).



FIGURE 3. 163 Forester *Adscita statices* at Ballowfield LNR. (Photos TW)

TABLE 2. Barred tooth-striped *Trichopteryx polycommata* monitoring Grass Wood. Larval monitoring results; three hours search of privet (PM unpublished data).

Date	No. larvae
06/06/2010	2
08/05/2011	6
27/05/2012	4
17/06/2013	4



FIGURE 4. 1880 Barred tooth-striped *Trichopteryx polycommata* (adult left, larvum right). (Photos PM & TW)

Light-trapping

Moths can be investigated by light-trapping the year around, for example:

2227 The sprawler *Asteroscopus sphinx* (Local, UK BAP priority species)

This is an elm feeder found widely over much of Yorkshire. Despite the decline of its food plant, it should be more commonly recorded on wych elm (*Ulmus glabra*) in the river valleys of the Dales. It is a late-flying species, being on the wing from late October to December. The only recent record in the YDNP is from Freeholders Wood (near Aysgarth) in 2013 (YDNP trapping initiative).

2229 Brindled ochre *Dasypolia templi* (Local, UK BAP priority species)

An under-recorded upland and coastal species. This moth has been found near the north-east coast and in south Yorkshire but most of the recent records of this species are from around Ingleborough. (TMW and HS). Its food plant, hogweed (*Heracleum sphondylium*) is found extensively so why has it this restricted distribution.

Habitat

Moths can be investigated by targeting their habitats such as: mires; old woodland; heather moorland; limestone grassland and pavement; and hay meadows.

Mires

1866 Manchester treble bar *Carsia sororiata* (Nationally Notable B)

Not recorded in the YDNP until 1997 when N. Gill recorded it at Ribblehead and on almost the same date TW recorded it at Low Bentham. These were the first records in Yorkshire for over 100 years. Subsequently TW traced the species to cranberry (*Vaccinium oxycoccus*) on a series of mire sites on Burn Moor (VCs 60 and 64) and others on the Bowland Fells (VC60). It is easily found in late summer during daylight walks over transects. A patch of suitable habitat has been found on Ribblehead Moss but searches for the moth have not yet been conducted.

2485 Marsh oblique-barred *Hypenodes humidalis* (Nationally Notable B)

One of the smallest of the macrolepidoptera (wingspan around 15 mm), it is sometimes overlooked as one of the 'micros'. Distributed rather locally in acid moorland and mosses throughout England and Wales The early stages are still undescribed but the food plants are thought to be rushes (*Juncus* spp.) or sedges (*Carex* spp.). Rare, known from three Yorkshire sites, two sites : Austwick and Malham Tarn in the YDNP but it is also present at Austwick Moss just outside the National Park. The only recent records are from Austwick Moss (TW 2011).

Grass and heather moorland

There are 91,500 ha of grass and heather moorland in the YDNP (45% of the total area). Perhaps because these habitats are common in the YDNP these local species of moths are also found to be common when the sites are investigated.

1632 Pale eggar *Trichiura crataegi* (Local) of conservation concern

Local and declining: Always rare, with few records in the YDNP for several years. Three recent records: Rise Hill (2006) (TW), Greenhow (2010), Thornton Rust (2013). It is also present on Leck Fell just outside the YDNP. Found on Ingleborough NR (South House Moor) in 2014. This heather moorland species can be found by targeting its habitat in late summer.

1723 Red carpet *Xanthorhoe decoloraria* UK BAP: Priority Species (Research only)

Local in the uplands, but widespread. The favoured habitat is rocky moorland, The larval food plant is uncertain. Commonly said to feed on lady's mantle *Alchemilla* spp. but possibly also on other low plants. In Sweden it feeds on *Galium* spp. Recent records from several sites. Many records associated with casual trapping initiatives on upland sites.

1744 Grey mountain carpet *Entephria caesiata* UK BAP: Priority Species (Research only)

An under recorded mountain and moorland species, The larvae feed on a number of low heathland plants such as heather (*Calluna*) and bilberry (*Vaccinium myrtillus*). It is widespread in the Yorkshire uplands but there are few recent records from the YDNP.

MICROMOTH RECORDS

Identification of micro-moths can be difficult. Up to 2012 there were no user-friendly monographs except for Goater's book covering the Pyralidae (Goater, 1986). The two most accessible were The Ray Society Series which covered the Tortricidae (Bradley *et al.*, 1973 and 1979). The family Tortricidae has 399 species on the British list and over 40 are in the genus *Acleris*. Unfortunately many species are extremely variable. An example is the supposedly common *A. hastiana* (L.) which has over 80 recorded forms. This species is almost impossible to diagnose without genitalic dissection. Hence not a single record in the Yorkshire Dales. Although many micros are rare a large number are under recorded, but we have a new guide book Sterling *et al.* (2012) and as an example of using the new guide book let us consider :

1041 *Acleris sparsana*

This is a relatively distinctive tortricid which is common and widely distributed in Yorkshire but to look at its distribution map you would not know that. It has undoubtedly been under-recorded because it is a winter flyer. This year [2013] it has been recorded at five sites in and near the YDNP which are regularly trapped and where the species. has been looked for.

Limestone grassland and pavement

1031 *Eana penziana* (Nationally Scarce B)

Two of the ssp. of this moth occur in the UK; ssp. *colquhounana* is coastal whilst the inland race, ssp. *bellana*, is associated with limestone areas. *E. penziana bellana* is associated with upland areas. The larvae feed on *Festuca ovina* living in a silken gallery at the roots and feeding on the tips of the grass at night. This is another moth at the southern limit of its distribution as the bulk of the population was recorded in Scotland. There are historic records from Malham Tarn and in 2005. Only three post-2000 sites were known in England and one in Scotland. Sterling *et al.* (2012) stated that f. *bellana* is 'now rare or possibly even extinct' but Mark Parsons was able to update that information. *Eana penziana bellana* was recorded from one site in Scotland and from Great Asby Scar in 2012. These are currently the sole known sites (pers. comm. Mark Parsons, August 2012) but it has also been found it this year [2013] at Scar Close and at Moughton (TW). (See Fig. 5).

1510 Thyme plume *Merryfieldia leucodactyla* (Local)

Another day-flying species. *M. leucodactyla* is widespread but local in habitats where wild thyme is common. Several old records in Yorkshire but until 2013 it was only considered extant in the Yorkshire Wolds (VC61). This year, whilst surveying for northern brown argus butterflies both PM and TW found it in the YDNP on Kilnsey Crag and on Ingleborough (High Brae). At both sites it was associated with least minor. These were the first recent records for VC64. (See Fig. 5).

1743 Yellow-ringed carpet *Entephria flavicincta* (Nationally Notable B)

Another very local species. Recorded on moorland and limestone hills. It is found locally in Yorkshire, but its main haunt is central and north-west Scotland. Records from only five sites in the Yorkshire Dales including Ingleborough, Malham and near Grass Wood. Not seen since 1992 despite efforts by CF and TW on Ingleborough, until larvae were found feeding on saxifrage near Dib Scar (Grassington) by Julian Clarke in

2013. *E. caesiata* and *E. flavicinctata* larvae are impossible to tell apart when small and can feed on the same food plants so he reared one as confirmation. (See Fig. 5).

1805 Heath rivulet *Perizoma minorata* (Nationally Notable B)

Another day-flying species which is very local. Recorded on moorland and limestone hills in the north. Records from only four sites in Yorkshire. The larvae live within the seed capsules of eyebright (*Euphrasia*) feeding on the developing seeds. The only recent records in the YDNP are from the Grassington area. Paul Millard recorded it this year (2013) at Bastow Wood (near to the boundary with Dib Scar).

1843 Thyme pug *Eupithecia distinctaria* (Nationally Notable B)

A scarce and local thyme feeding species. All recent Yorkshire records are from the YDNP (Malham and Ingleborough) The latest record was in an actinic trap in 2011 on the Hay Meadows at Colt Park (TW and CF).

2344 Least minor *Photedes captiuncula* (RDB3)

A local day-flying species which occurs on patches of limestone across northern England from Cumbria to Northumberland. The larvae feed internally in the stems of glaucous sedge (*Carex flacca*). There was only one site in the Dales in 2002, Now it is reported from five 10 km squares in the YDNP with two more added by TW and PM in 2013. (See Fig. 5).

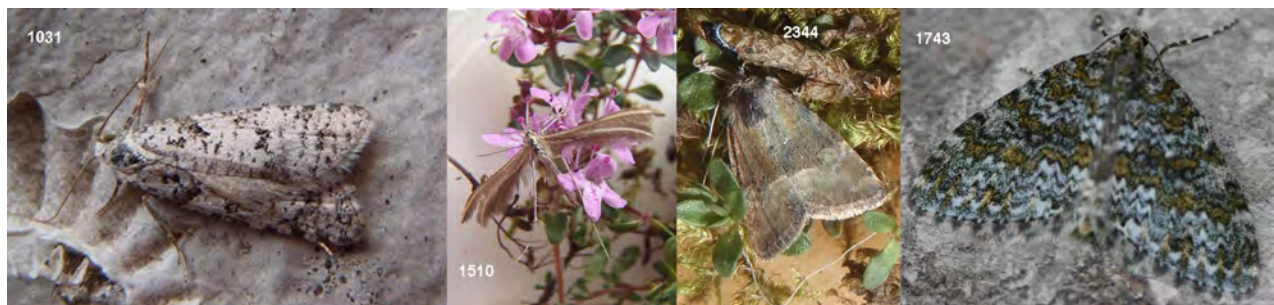


FIGURE 5. 1031 *Eana penziana*. 1510 Thyme plume *Merryfieldia leucodactyla*. 2344 Least minor *Photedes captiuncula*. 1743 Yellow-ringed carpet *Entephria flavicincta*. (Photos TW except *E. flavicincta*, Julian Clarke)

Other uncommon day-flying micro-moths of the YDNP

1298 *Crambus ericella* (Nationally Scarce A)

The only sites in Yorkshire are near Ingleborough (Scar Close NNR) where it is at its southernmost UK station. Seen every year. (See Fig. 6).

1367 *Pyrausta cingulata* (Nationally Scarce B)

All recent Yorkshire records are in the YDNP around Ingleborough and near Grass Wood. (Fig. 6).

942 *Aethes piercei* (Nationally Scarce B)

Local in damp grassy areas in the UK where the larvae feed in *Succisa pratensis*. All Yorkshire records are from the YDNP (Scar Close NNR or from Ballowfields LNR). (See Fig. 6).

913 *Scythris fallacella* (Provisional RDB1)

A very rare moth associated with rockrose. The three recent Yorkshire records are all from Ingleborough (Scar Close and Colt Park (TW) and were recorded by netting day flying Lepidoptera. There are old records from Grass Wood (probably from Lea Green). (See Fig. 6).



FIGURE 6. 1298 *Crambus ericella*. 1367 *Pyrausta cingulata*. 942 *Aethes piercei*. 913 *Scythris fallacella*. (Photos TW)

Woodland habitats (These are rather rare in the YDNP)

1801 Barred carpet *Perizoma taeniata* (Nationally Scarce A)

A scarce and local species widely scattered in the UK. Found in damp woodland and similar habitats in a single generation. The larva has not been recorded in the wild, but it is thought to feed on mosses. Currently only two extant sites in Yorkshire: near the North York Moors and Grass Wood (confirmed by PM in 2011 and 2012) but it was not found in 2013 when it may have been too dry. (See Fig. 7).

1770 Chestnut-coloured carpet *Thera cognata* (Nationally Scarce B)

This is a very rare moth dependent on juniper. Previously there were only three (Watsonian) Yorkshire records. One [unconfirmed] in Teesdale in 1880 and a single moth in an RIS trap at Austwick 1991. It was confirmed as resident by TW moth trapping for Natural England in the juniper on Moughton (Ingleborough) in 2013, with 12 moths in two traps. The second largest area of juniper 'wood' (NVC W19) in the UK (and the largest in England) is in Yorkshire VC65 (current county Durham). The second largest is Moughton on the Ingleborough NNR. Both areas are now under threat from *Phytophthora austrocedrae*, an oomycete, a fungus-like organism that infects the plant through the root system and causes the foliage to decline and eventually die. It is a new and acute threat to British juniper and related conifers and has been confirmed on the above and on 32 other UK juniper sites (Green *et al.*, 2012, Green *et al.*, 2015, Whitaker and Newbould, 2014). On a walk-over survey on Moughton in early November 2013, TW estimated that well over 70% of the plants in over 14 ha, are already dead, or moribund. Others are showing bronzing of parts of the foliage, the first sign of infection. The effect of the loss of juniper will have severe consequences for *T. cognata* and emergency conservation action may need to be taken. (See Fig. 7)).



FIGURE 7. 1801 Barred carpet *Perizoma taeniata*. 1770 Chestnut-coloured carpet *Thera cognata*. Moribund juniper on Moughton 2013. (Photos TW & PM)

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