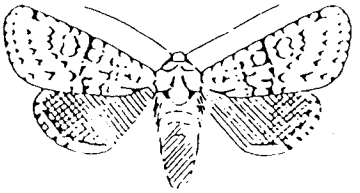
The Glamorgan Moth Recording Group



Dichonia aprilina

Founded 1995

President/Treasurer: Steve Moon
Records Secretary: Dave Gilmore
Field Meetings Sec/Newsletter Editor: Mike Powell

NEWSLETTER NO. 16 - JANUARY 1998

WINTER INDOOR MEETING

Following the success of the November 1997 indoor meeting, it has been decided to hold a further indoor meeting at Kenfig NNR Centre at 7.30 p.m. for an 8.00 p.m. start on Wednesday, 18th February.

All members and guests are invited to attend what will, hopefully, be as enjoyable as the last meeting.

MEMBERSHIP LIST

An updated membership list, as at 1st January 1998, as attached. Since our last newsletter one new member has joined the group:-

Eddie Cooper Fronawel, Trelech, Carmarthenshire

ANARSIA LINEATELLA

David Slade has pointed out that his record of *Anarsia lineatella* was in fact the first record for Wales not just for Glamorgan.

THE DELICATE SUBJECT OF VOUCHER SPECIMENS

When Bird-watchers turn their attentions to other groups, i.e. moths, the thorny subject of voucher specimens invariably causes most concern. However, entomology does not as yet have a Rarities Committee as does the birding world. Thank goodness the days that rare birds were shot on sight have long gone. The Rarities Committee was established to assess uniformly nationally rare species and not the inevitably varying standards of different counties.

Although it may seem rather Victorian, entomologists still feel that it is necessary to provide concrete proof that the species has been correctly identified. Good photographs of some species would be perfectly acceptable but photographs do have drawbacks. Without scale it can be difficult to judge size and some films or light conditions can give a false colour impression. There is also of course the problem that you cannot dissect a photograph to identify those species that are indistinguishable on external characters (e.g. Lesser Common Rustic).

Surely, it is not acceptable to publish records just because observers believe that they have got it right. There must be a list of species drawn up which require confirmation by more experienced entomologists.

With voucher specimens, perhaps lodged at the National Museum of Wales in Cardiff, experts could always have access to them. If a record is then disputed by other entomologists, possibly from other parts of the country, as may well happen, at least we would be able to show the specimen and thereby gain the respect of other entomologists countrywide.

When considering taking a voucher specimen it should be borne in mind that hundreds, even thousands, are left to continue the species. Moths are one step up the food chain from plants. They are food for birds and mammals. In order to survive the heavy losses due to predation, they have to make sure that they produce plenty of offspring. For example, work out how many caterpillars and adults are consumed by birds. Just watch a pair of Blue Tits feeding a brood of young. Even vagrants may be agricultural pests in their native country and the individual is almost certainly lost to the species and is doomed to die without breeding. Then there are the number of moths killed by cars. Colin Pratt wrote an interesting article in *Entomologist Record* (89:330), where he estimated that over 1,800 million moths were killed every year by cars. You are probably each responsible for killing more moths in this way than those taken for the cause of science.

As an example of the conservation value of taking a voucher specimen, I recount the story of my father's capture of *Agonopterix curvipunctosa* at home in Somerset a couple of years ago. After photographing it, he decided to keep the specimen even though the book described the species as being found locally in England. The record was sent to Maitland Emmet for confirmation and his reply was somewhat of a surprise. He told my dad that it was wonderful news, if he was 100% certain of the identification, since he had taken the last British specimen in Kent 30 years ago.

The specimen was then sent to the national expert of the group (John Langmaid), who confirmed the identification. The specimen is now held in the Natural History Museum in London.

Since then my dad has caught a second specimen and two national experts have located the larvae and both bred series out. These were exhibited at the Annual Exhibition of the British Entomological and Natural History Society in October. From one voucher specimen, it has emerged that Berrow may be the only place in the British Isles where this species is still found and, hopefully, it can now be preserved and used as a conservation tool against future environmental damage.

I do not want the Moth Group to abandon it's morals in favour of the wholesale slaughter of the moths in the County. All I ask is that we exercise some caution over the publishable records. At the end of the day my opinion on this matter is irrelevant. I am not the one that will judge the accuracy of your records. That responsibility falls on the national recorders. I do not want members to stop recording moths just because they will not kill them. It is far better to record what you can but without claiming infallibility. If you are not sure then the record should not be submitted.

The following species are those that, in my opinion, should not be recorded without examining the genitalia.

Common/Lesser Common Rustic
Marbled/Tawny Marbled/Rufous Minor
Grey/Dark Dagger
Most Pug species

That is not to say that you need to kill all specimens of these species to prove their presence. Indeed, with experience it is possible to examine the genitalia of some species without the need to kill them. Large scale killing of any species for whatever reason is unnecessary and unethical.

These are my personal opinions and I accept that they may make me unpopular with some members of our Group. If this is the case, then that is unfortunate but if in the long term it benefits the Group, then that is the price I must pay. This issue is too important to just ignore. Finally, I would just like to add that I would gladly examine any moth sent to me for identification. I have a fairly extensive library and am particularly interested in the Micro's of Glamorgan.

David Slade.

MOTHS ON THE WING DURING JANUARY, FEBRUARY AND MARCH

Although generally thought of as a very quiet time for moth-trapping, the first 3 months of the year can be productive, particularly on nights when the temperature stays above 5° and the early evening is still. Stefan Golaszewski has produced a list of species on the wing at this time of year, details are overleaf.

SUPPLEMENT TO NEWSLETTER NO. 16

Enclosed with this newsletter is a report by Mike Powell and Dave Gilmore on a moth survey carried out at Coed-y-Bedw Nature Reserve between March and September 1997. A bound copy is available at a cost of £150 to cover the cost of printing/binding from Dave Gilmore.

MOTHS ON THE WING IN JANUARY, FEBRUARY & MARCH

Species	No.	1 J	2 A	3 N	4	5 F	6 E	7 B	8	9 M	10 A	11 R	12
Chestnut	2258	X	X	X	X	X	X	X	X	X	X	X	X
Satellite	2256	X	X	X	X	X	X	X	X	X	X	X	X
Pale Brindled Beauty	1926	X	X	X	X	X	X	X	X	X	X	X	X
Winter Moth	1799	X	X	X	X	X	X	X	X				
Early Moth	1960	X	X	X	X	X	X	X	X				
Pale Mottled Willow	2389					x	x	x	x	x	x	x	x
Grey Shoulder-knot	2237					X	X	X	X	X	X	X	X
Dotted Border	1934							X	X	X	X	X	X
Spring Usher	1932							X	X	X	X		
Small Brindled Beauty	1925								X	X	X	X	X
Herald	2469									X	X	X	X
Oak Nycteoline	2423									X	X	X	X
Tawny Pinion	2235									X	X	X	X
Pale Pinion	2236									X	X	X	X
Engrailed	1947									X	X	X	X
Sword-grass	2242									X	X	X	X
Red Sword-grass	2241									X	X	X	X
Autumn Green Carpet	1761									X	X	X	X
Dotted Chestnut	2260									X	X	X	X
Yellow Horned	1659									X	X	X	X
Twin-spotted Quaker	2189									X	X	X	X
Small Quaker	2182									X	X	X	X
Shoulder Stripe	1746									X	X	X	X
Red Chestnut	2139									X	X	X	X
Orange Underwing	1661									X	X	X	X
Oak Beauty	1930									X	X	X	X
Mottled Grey	1775									X	X	X	X
March Moth	1663									X	X	X	X
Hebrew Character	2190									X	X	X	X
Common Quaker	2187									X	X	X	X
Brindled Beauty	1927									X	X	X	X
Blossom Underwing	2183									X	X	X	X
Belted Beauty	1928									X	X	X	X
Dark Sword-grass	2091									X	X	X	X
Early Grey	2243											X	X
Clouded Drab	2188											X	X
Northern Drab	2184											X	X
Pine Beauty	2179												X
White-marked	2140												X
Lead-coloured Drab	2185												X

Moths in italics have not been recorded in Glamorgan since 1980

Robinson light traps and survey species lists

Introduction

The need to produce comprehensive species lists is a compelling one and is a driving force for many botanists and zoologists alike. However, at what point is a species list considered comprehensive? With Lepidoptera it is unlikely that any species list could ever be considered comprehensive as the order has so many representatives, many of which have fluctuating populations that respond to climatic, successional and anthropogenic changes. Therefore, someone trapping a site every night for ten years could still not guarantee that the list he or she produced would be comprehensive.

This article examines data obtained from regular trapping at Manselfield, Gower, using a Robinson light trap, to indicate the numbers and relative percentages of the number of species that can be expected with varying degrees of effort in our area. It should be noted that this site is probably more productive than most in the region and the figures produced are therefore likely to be correspondingly higher than those derived from many other sites.

Results

A total of 454 lepidopteran species have been recorded from the site; of which 444 have been recorded from a Robinson light trap that was run between 23rd March 1995 and 5th November 1997 on a total of 140 nights. Only those data obtained from the Robinson light trap are examined here.

Figure 1 shows a monthly breakdown of the numbers of species caught in each month in relation to trapping frequency. As expected, July is the peak month for numbers of species, but there is a diminishing return in the number of additional species recorded as trapping frequency increases. For example the plot predicts that approximately 65 species could be expected if the trap were set only once in July. If the trap were set twice that month then the number of species expected would increase by approximately 40, three trapping sessions would yield another 20 species, etc.

Figure 2 shows the relationship between total year catches and different frequencies of trapping (i.e the three curves, which represent one, two and three years of trapping). The plot shows an example of how many trapping sessions would be required over one, two and three years to obtain a species list of approximately 300. The dashed arrowed lines indicate that in one year the trap would need to be set approximately four times per month to attain this total. The same total could be obtained over two years by reducing trapping to one and a half times per month (≡ three times every two months) and over three years only one trapping session per month would be required. Put another way, to obtain the same total obtained by trapping a site once per

month over three years, it would be necessary to trap approximately four times per month for one year.

Figure 1. Monthly catches based on different frequencies of trapping. (N.B. Figures are averaged over the three seasons 1995 – 1997)

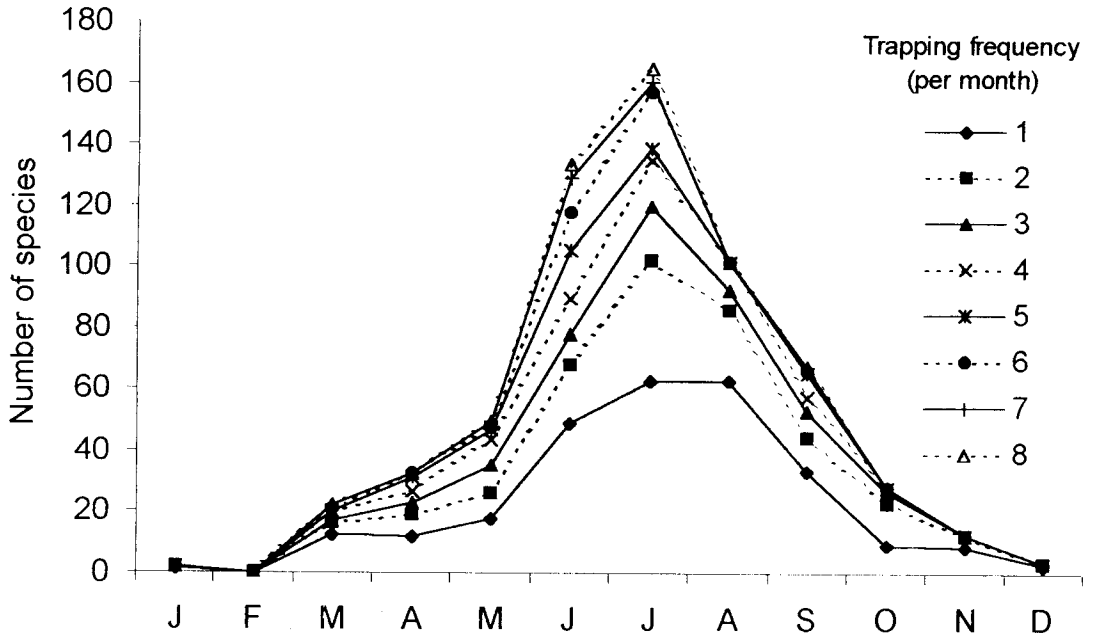
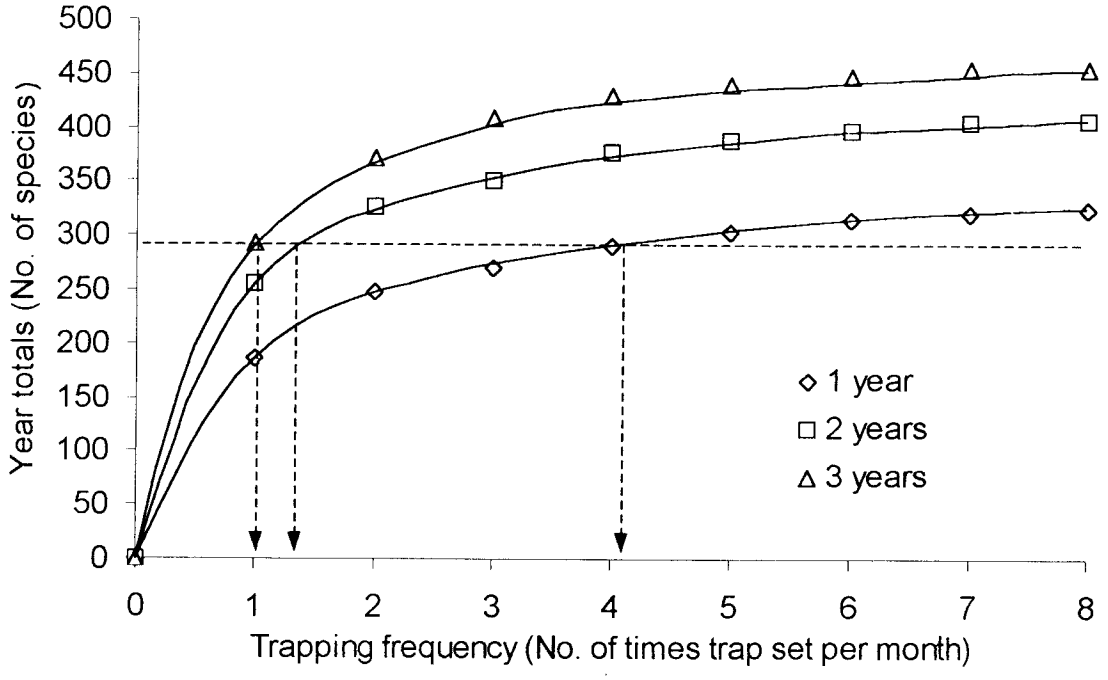


Figure 2. Total year catches based on different trapping frequencies. (N.B. Figures are averaged over the three seasons 1995 – 1997)



Discussion

Clearly there are a number of casual factors that are likely to have affected the accuracy of these data. Young (1997) indicates that starvation, disease. parasites, predation and climate are all important in determining lepidopteran populations. For example lower than average catches during July and August 1992 were attributed to wet periods and cold nights (Waring, 1992). Also a 10,000 fold change in density of the Larch Tortrix (*Zeiraphera diniana*) has been demonstrated to occur over an 8.2 year cycle in response to a parasitoid wasp (Young, 1997).

Variation in the total number of species recorded over the three years varied by almost 20% with 350, 337 and 286 recorded in 1995, 1996 and 1997 respectively. To compensate for this annual variation, the figures used to produce figures 1 and 2 have been derived from averages over the three years. As with many amateur studies there is a high percentage of missing data points. This should have little effect on the accuracy of predictions of percentages derived from the model, but it is likely that total numbers of species will be underestimated, particularly at the higher trapping frequencies.

Linear regression analyses performed on transformed data from Figure 2 show that very significant positive correlations occur in the 1, 2 and 3 year models shown (Significance of $F < 0.0001$), with very little error occuring in each regression model (R^2 values between 95% and 98%). However the accuracy of predictions made from these models will be influenced by the 'representativeness' of the three seasons sampled. A five year study by Bailey (1995), who used a Heath trap in his garden, showed that species tallies also varied as much as 20% between years and anecdotal evidence suggests that variation may be even greater than this between some years. Therefore caution should be applied to any prediction.

Clearly different types of trap will yield different results. For example, catches of a heath trap operated throughout the year in a lowland woodland site were analysed by Fry & Waring (1996). Trapping frequencies of once per month, twice per month and three times per month resulted in totals of 107, 146 and 185 respectively. Over 430 species are known from the woodland.

It is hoped that Figures 1 and 2 can be used as indicators by those who wish to plan a trapping programme at a particular site or wish to attempt to quantify their catches. Figure two should enable reasonably accurate estimates to be made of the percentage of species that are likely to be trapped depending upon how many times a site is planned to be trapped each month and over what length of time. It should be noted, however, that these calculations were based on only three years data. Additionally missing data has resulted in some minor anomalies in the results.

Conclusion

The implications for surveys and atlas work are self-apparent. Away from the garden, it is unlikely that any site will receive more than four nights trapping per month over a full year. Our model predicts that over 60% of species at a particular site can be recorded during one year if trapping is carried out four times per month (based on an optimal total derived from three years trapping at eight nights per month over three years). If a site were trapped two nights per month for one year then a prediction of approximately 55% of moths present at that site would be recorded (based on the same artificially derived total).

Fry & Waring (1996) recommend the following protocol for basic surveys:

1. Emphasis should be placed on the months March to October, although all months should be sampled.
2. Some species may only fly over a period of 2-3 weeks (with peak emergence over 2-3 days), therefore trapping should be carried out ideally once per fortnight.
3. If trapping is carried out in more than one year, the second and subsequent years trapping dates should be staggered.
4. Species flying in the winter months are more easily obtained as larvae during late May and June.

Acknowledgements

I must thank Paul Llewellyn upon whose land the trapping was, and still is, regularly and enthusiastically carried out. I must also thank him for accompanying me in the field and for his generous hospitality in the home after each session.

References:

Bailey, M. (1995) The good, the bad and the indifferent – Moth numbers in Avon 1989 - 1994, *Amateur Entomologists Bulletin*, **54**: 14-16.

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Barry Stewart