



DEVON MOTH GROUP

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NEWSLETTER 2016 ISSUE 5 (October)

The recent change to much cooler weather, including some nights close to freezing, has led to a notable decline of moths in my garden trap and the feeling that the main part of the mothing year, both for the wonderful diversity of resident species in Devon and for exciting immigrants, is at an end. There are still wonderful species to see, of course, such as *Griposia aprilina* Merveille du Jour, and the incredible influx of exotic migrants last Christmas, served as an excellent reminder to keep running moth traps on suitable nights right through the year.

The most exciting record over the past month was the identification of *Opogona omoscopa* new for Devon during the Bioblitz on Plymouth Hoe on Friday 14th October. This Tineid micro-moth occurs as an introduced species in Europe and was first found in Britain in 2004. Roy McCormick and Paul Bowyer both trapped this species at the Bioblitz, with at least five individual moths being recorded on the night, strongly suggesting that the moth is resident in the local area.



Opogona omoscopa (Roy McCormick)

Other interesting recent records included *Thaumatotibia leucotreta* caught at light by Roy McCormick in his Teignmouth garden on 5.9.2016. This is another tropical species occasionally imported accidentally to Britain; the only previous Devon record was of one bred from a larva found in an orange by Barry Henwood in 1989.

There were two sightings of *Daphnis nerii* Oleander Hawk-moth in October, both near Kingsbridge (Phil Eden on 3.10.2016 and Celia Strong on 13.10.2016), but it is unclear whether these were genuine immigrants or released individuals. Finally, Roger Taylor found a larva of *Acherontia atropos* Death's-head Hawk-moth at Whitford, near Seaton, on 20.8.2016 and this was successfully reared through by Marjorie Waters.

Richard Fox

Members of Council: Richard Fox (Chairman) Nicola Bacciu (Membership & Distribution) Roy McCormick (Secretary/Treasurer)
Barry Henwood (Recorder), Rob Wolton (Conservation), Phil Dean (Ordinary member)

www.devonmoths.org.uk

Field Meeting Reports

Abbeyford Woods, Okehampton, 2.7.2016

July 2nd turned out to be quite a reasonable night weather-wise, with plenty of cloud cover although a breeze did get up and rain threatened but just held off. We had nine attendees on the night and managed to run five MV traps and an Actinic. Abbeyford Woods is a largely coniferous plantation with the usual fringe of broadleaves, mainly Oak and Beech with a shrub layer of Hazel and *Salix* species. A large area of Larch adjacent to the trap site had been recently felled less than a year previously so the herb layer here was sparse with Foxgloves, various rushes, thinly distributed grasses and new Bracken.

The first moth to be recorded was netted by Tim Stripp and was one of the best of the night; a Gold Swift *Phymatopus hecta*, a moth rather sparsely distributed in Devon and associated with young Bracken where the larvae mine the roots. There were remarkably few moths during the dusking period but a Peach Blossom *Thyatira batis* was netted over Bramble as was a Bee moth *Aphomia sociella* and a few Common Marbled Carpet *Chloroclysta truncata*. A lovely Beautiful Snout *Hypena crassilis* was netted along the main track, which was a nice surprise as we had not noted any Bilberry in the immediate vicinity. Another one later came to light so there must have been some suitable habitat not far away.



Gold Swift (Paul Butter)

At the traps, early arrivals included the Swallow-tailed *Ourapteryx sambucaria*, Northern Spinach *Eulithis populata*, and Tawny-barred Angle *Macaria liturata*. The Nationally Notable but frequently found Waved Carpet *Hydrelia sylvata* made an appearance, as did a couple of perfect Beautiful Carpet *Mesoleuca albicillata*. Several Clay Triple-lines *Cyclophora linearia* came in from the mature Beech, all displaying the single cross line common in the first generation. A couple of worn Brindled White-spot *Parectropis similaria* came in as did increasingly frequent Orange Footman *Eilema sororcula*.

Two of my favourite moths, the dinky Small Yellow Wave *Hydrelia flammeolaria*, which rests as if pressed out flat, and the incredibly intricately marked Scallop Shell *Rheumaptera undulata* were pleasing additions to the list. The conifer feeding Satin Beauty *Dieleptenia ribeata* turned up as might be expected and our other common in Devon but Nationally Notable moth of the night the Double Line *Mythimna turca* was also recorded.

Micro-moths were very thin on the ground but a *Catoptria margaritella* was a good record, and a distinctive white headed male *Pandemis cinnamomeana* also came to light. The only migrant of the night was a lonely *Plutella xylostella* wondering where the other millions of its recently arrived fellow travellers were.

A jolly good night overall with 77 species in total. Thanks to all who came along and especially to those who brought traps and generators along.

Paul Butter

Okehampton Old Park, 16.7.2016

Luckily we had a big improvement in the weather for this moth event, at which we had four 125 watt MV traps and one 20 watt WEM light and an Actinic trap. Twelve members of DMG and Butterfly Conservation plus one non-member attended and for some it was the first moth night they had been on.....so no pressure to attract some show-stoppers!

The habitat was partly old Oak/Beech woodland with some Ash, a large, fairly flower-rich pasture and a marshy flush with Sallow and Birch plus some interesting herbaceous plants such as Lousewort and Bog Asphodel.

Early dusk was a bit on the thin side with a couple of Straw Dot *Rivula sericealis* in the area around the boggy flush and a Light Emerald *Campaea margaritata* in the nearby unimproved grassland. The first of many very bright, fresh V-Pug *Chloroclystis v-ata* arrived at light followed by the colourful appearance of a few Swallow-tailed Moth *Ourapterix sambucaria*. Another spectacularly marked moth but on a completely different scale was the Nationally Notable B micro *Argolamprotes micella*, for which a hand lens is needed. A single Dingy Shell *Euchoeca nebulata* made a very fleeting appearance and a single Wormwood Pug *Eupithecia absinthiata* also came along and settled on the side of the trap for the duration. The Devon specialities Double Line *Mythimna turca* and Waved Carpet *Hydrelia sylvata* both turned up. Some very bright *Agapeta zoegana* were also admired via the hand lens and some fresh Green Pugs *Eupethicia rectangulata* added to the colour. Several strongly marked *Eudonia delunella* were recorded, a moth that is reasonably frequent in Devon woods but nevertheless is Nationally Notable.

It was nice to see Lilac Beauty *Aperia syringaria* which is not common in VC4 and a couple of pristine Scallop Shell *Rheumaptera undulata* were also much appreciated. The Beech trees supplied a single Clay Triple-lines *Cyclophora linearia* and the damp marsh a Small Dotted Buff *Photedes minima*. A small pug turned out to be Slender Pug *Eupithecia tenuiata* and at last our only Hawk-moth arrived, a large female Poplar Hawk *Sphinx ligustri*. Several people then started off homewards and, as is often the case, missed those later flyers, the best of which was Cloaked Carpet *Euphyia biangulata*. We also got a Satin Beauty *Deileptenia ribeata* towards the end of the night, despite there not being any conifers obvious in the vicinity, nor were there any nearby heathers for the True Lovers' Knot *Lycophotia porphyrea*.

The last knockings also produced three Pinion-streaked Snouts *Schrankia costaestrigalis* near the marsh and a fantastic Dark Marbled Carpet *Chloroclysta citrata* in the wood. The final species total was 103, which was the best so far this year, but I felt numbers to be lower than expected at such a good site with good weather conditions.

Thanks especially to Sam Stripp for supplying the additional traps and to all who came out on the night, especially the first-timers!
Paul Butter



Dark Marbled Carpet (Paul Butter)

Ypsolopha sequella new to VC4

With the spell of warmer weather and migrant activity in September, I had been putting my 125 watt MV Robinson trap out a bit more frequently than usual. Despite my location on the northern edge of Dartmoor - not exactly a migrant hot-spot! - I have been rewarded with a Convolvulus Hawk-moth *Agrius convolvuli* on 9th September and a lot of Vestals *Rhodometra sacra*. After the first of these on 9th September, I had another on 12th, an amazing 21 on 13th, three more on 16th and two more on 19th.

On 19th September there were also six Silver Y *Autographa gamma* in the trap along with a Pearly Underwing *Peridroma saucia* but of even more interest was a rather pretty black and white patterned micro-moth that I recognised as *Ypsolopha sequella*. As I had not recorded it during the last six years at Sampford Courtenay or, indeed, anywhere else in Devon, I consulted the excellent list compiled by Stella Beavan and Bob Heckford on the Devon Moth Group website and found that *Y.sequella* was not listed for VC4. Subsequent correspondence with Bob and Barry Henwood confirmed this as the first record to be reported in VC4.

Paul Butter



Ypsolopha sequella (Paul Butter)

Maruca vitrata, an adventive Pyralid new to Devon

Shopping is not high on my list of the best way to spend part of the day, but on 15 September a journey to Sainsbury's on the outskirts of Plymouth had an unexpected bonus in the beans section of the green-grocery department. It was not until I got home, however, that I discovered that a sealed pack of 'Fine beans' from Kenya contained more than just the vegetables. One apparently full grown larva was the extra special added ingredient, all the better for being alive. A few photographs were taken that evening, but the larva was clearly too busy trying to find a pupation site in the container in which I had placed it to stay still long enough for a decent image.

It seemed likely that it was *Maruca vitrata*, a well-known tropical and subtropical pest of leguminous plants. This was confirmed when the moth emerged on 5 October. This is the first time that the species has been noted in Devon.

There are 14 records of adults being found in the wild in the British Isles, the first being in Essex in 1979, as well as two instances of adults found indoors, and larvae have been found as importations amongst food produce, mainly leguminous plants. The adults found in the wild here are probably the result of importations, although it is possible that some might be immigrants.

I am very grateful to Mark Parsons for the information given in the above paragraph.
Bob Heckford



Maruca vitrata (Bob Heckford)

Devon Biodiversity Records Centre

Having been kindly invited to write something for this newsletter, I took the opportunity to look back quickly to the early years of DBRC, way before my time here. Whilst there are some hazy recollections on when DBRC first began to function fully, the consensus is that it happened between 1996/1998. Having been here since the year 2000, Ellie Knott remembers signing the first agreement with Devon Moth Group back in 2004, with Roy McCormick sending us the whole DMG database via MapMate. More recently, we've worked with Barry Henwood and colleagues to ensure the most efficient data flow between us, with DBRC no longer verifying moth records separately. Instead, we now pass them directly to Barry with yearly updates coming back to us to be used in our systems and outputs. The current total stands at just over three quarters of a million moth records, with only plant records topping that on our systems at just over 1.1 million records from combined sources.

However, there isn't much point holding the information unless it gets used and, over a number of years, DBRC developed systems and protocols for the dissemination of species data. These include agreements with the local planning authorities in the county, as well as the statutory agencies, ensuring that species records which have been validated and verified can influence strategic planning, the built environment, and conservation efforts.

Alongside the information we provide to planners, our other services ensure DMG moth data are accessible to ecological consultants, researchers, students, the public and conservation organisations, in accordance with current legislation such as the Data Protection Act. Some requests have an interest in all species, but of the 1695 species (and subspecies) listed on the DMG database, the vast majority are not a material consideration in planning or national research. If they are not listed as section 41(NERC act) species, they are often left out of requests for data. In fact of those moth species found in Devon, only 182 are commonly included within the information required by ecological consultants undertaking environmental impact assessments, or by the planning authorities scrutinising an application. Obviously, biological data such as the DMG's hundreds of thousands of records have far wider interest outside of the planning world, but it is a reality that organisation's such as DBRC were developed to meet that specific need, and its vitally important that funding is derived from that system to subsidise the core work we undertake, supporting and promoting recording in the county.

Disseminating data wider afield, during the last seven or eight years DBRC has also been uploading some data to the National Biodiversity Network (NBN) Gateway, a national on-line portal for viewing species records developed and managed by the Joint Nature Conservancy Council, through the NBN Trust. Our uploads have previously included some DMG data, in line with our normal policies and constraints. And over the last year or so we have been working with Barry and Bob Heckford towards an eventual upload of all macro and micro moth records to the Gateway, once they have finished their final quality checks.

However, things have been moving fast in the last year and there are now a number of national initiatives that may influence how and when species data is uploaded to a national portal, by DBRC and many of its data providers. The NBN Gateway is due for replacement within the next 12 months by the Atlas of Living England, one of a family of online portals being launched across the UK. This launch will tie in with a shift in government strategy to their own interpretation of 'Open Data', a subject that in fact is more complicated than it sounds. Unlike its predecessor, the new Atlas will require all data to be licenced under one of four Creative Commons licences, with Defra the Atlas's funder, hoping that constraints including non-commercial use of biological data will be removed by suppliers. That's quite a leap from the current situation and DBRC will need to consider which of its own data it can or can't publish via the Atlas, without compromising its own ability to operate. For the DMG, this new portal and the subject of Open Data will no doubt need consideration, especially over the licence assigned to your data. DBRC certainly hopes that in line with its own core values of making biodiversity data more accessible and useable, we can work with data providers and the new Atlas constructively. In the meantime we look forward to another year's worth of moth recording in Devon, and the development of the Devon Priority Species List, in which Barry, Bob and Rob Wolton strongly championing the moth cause.

Ian Egerton, DBRC Manager

Moth Light Traps Using LEDs

Background

The development of high-power LEDs potentially makes them a viable proposition to replace the traditional mercury vapour (MV) bulb used in light traps. LEDs are highly efficient and operate at much lower temperatures than the MV equivalent. They use low voltages thus minimising electrical hazards and so protection from rain is not critical. LEDs can happily run overnight from a relatively small battery obviating the need for a mains supply or heavy generator. Carrying a trap into more remote areas becomes much easier – especially when packing up in the early hours! Another advantage (or complication?) is that LEDs come in various colours and so I've been experimenting with LEDs of differing wavelengths to see which are best at attracting moths. There is at least one commercial LED trap (the Goodden Gemlight) but it doesn't seem to have made major inroads into the moth world. Perhaps the latest generation of high-power LEDs may give better results than hitherto.

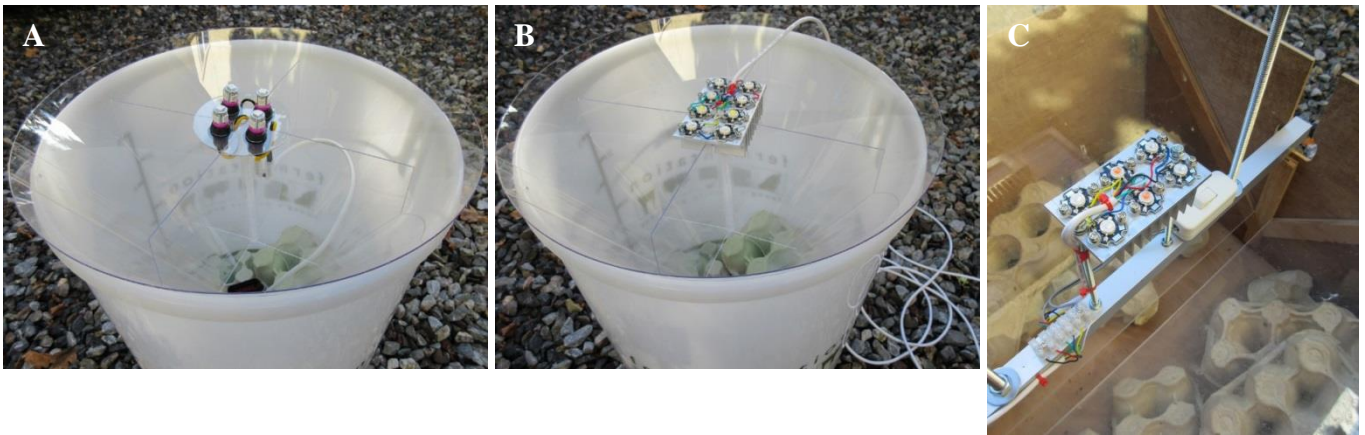
Technology

MV bulbs don't produce a continuous spectrum of light but have major energy peaks typically at 365nm, 435nm and 550nm wavelengths with many lower intensity peaks. To emulate this spectrum I've selected LEDs which are close to these wavelengths and are in the range of 3W LEDs supplied by Future Eden¹. This range provides 17 options with a wide range of colours from ultraviolet (UV; peak wavelength of 385nm) to infrared (peak wavelength = 740nm). In my light sources I've used LEDs with peaks at 385nm (UV), 440nm (blue) and 525nm (green). I've additionally tried two types of broad spectrum LEDs. The first (Daylight White) has a range of wavelengths from 420nm to 720nm with a major peak at 450nm; the second (Full Spectrum) has a similar range but with very little in the green and significantly more in the red parts of the spectrum.

I've constructed three light sources which can all be powered from the same battery and control electronics. Additionally, I've also made a light, portable Robinson-type trap based on instructions in Paul Palmer's excellent book "How To Build Your Own Moth Trap"².

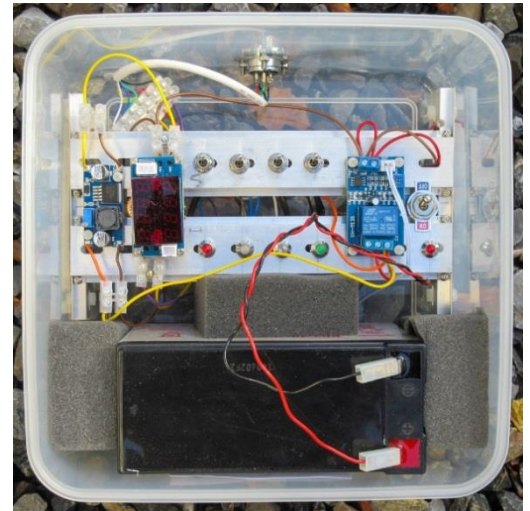
- Light Source A: This is based on Paul Palmer's book and uses four 1 Watt UV LEDs.
- Light Source B: Uses two each of the UV, blue, green and daylight LEDs. Each colour can be switched on or off so I can look at the effect on attracting moths. This source can be fitted on to the Robinson trap.
- Light Source C: Uses up to four UV and two full spectrum LEDs. Again they can be individually switched on to judge their effectiveness. This source is designed to mount on my normal Skinner trap.

The photos overleaf show all three light sources on either the Robinson or Skinner trap - with LED covers removed to show inner workings.



The control electronics (photo right) are based on an online description by Peter Mobbs³. While it initially looks complex most of the electronics is in the already-assembled modules which can be bought very cheaply from Amazon or eBay. The unit comprises:

- A 7Ah 12V battery from a defunct house intruder alarm.
- A module to sense ambient light levels and automatically switch the LEDs on and off.
- A module to step up the 12V from the battery to a higher voltage which can drive multiple LEDs.
- A constant current module to drive the power needs of LEDs.
- An array of switches to select which LEDs are to be used.



One word of warning – LEDs produce a small but intense light source and just a brief glance can create dots before the eyes. While it's easy to avoid peering too closely at white, green or blue LEDs, the UV ones produce most of their energy outside the visible spectrum and there could be concern about potential eye damage. I've covered the LEDs with a frosted Perspex cover to diffuse the light and minimise this problem. This doesn't seem to have a noticeable negative impact at attracting moths.

Results

While I've tried to compare the performance of a variety combinations of LEDs it is necessarily rather non-scientific as there are so many variables in attracting moths – wind, temperature, precipitation, cloud cover, weather in the previous one or two days. However below I've given a summary of the results to date. I've also given species counts when using the 125W mercury vapour light source on the Skinner trap.

Date	Weather Conditions	Light Source	Trap	Species Count
7 th June	Temp = 14C min ; Cloud = 50% (evening), 100% (morning) ; Wind = 0	A	Robinson	9
8 th July	Temp = 13C min ; Cloud = 100% ; Wind = 1 (evening), 5 (morning)	B with UV & daylight LEDs	Robinson	44
17 th July	Temp = 15C min ; Cloud = 100% ; Wind = 1	B with UV & daylight LEDs	Robinson	20
30 th July	Temp = 13C min (est.) ; Cloud = 100% ; Wind = 4 (evening) to 1 (morning).	B with UV & green LEDs	Robinson	63
4 th August	Temp = 13C min (est.) ; Cloud = 75% ; Wind = 5 (evening), 2 (morning)	B with UV & blue LEDs	Robinson	47
Mid-August	Not recorded	B with only daylight LEDs	Robinson	0
16 th August	Not recorded	B with only UV LEDs	Robinson	12

27 th August	Temp = 13C min ; Cloud = 0 (evening), 100% (morning) ; Wind = 1	C with UV & full spectrum	Skinner	18
7 th June - 27 th August	n/a	125W MV	Skinner	44 to 94

Despite all of the variables mentioned above a pattern does seem to be emerging. Combining UV LEDs with others that produce a significant light output in the green/blue part of the spectrum produces the best results. The MV light source still produces the highest species count but using the right combination of LEDs is not far behind.

What Next?

More tests need to be done on combinations of LED colours and spectral energy to find the most effective combinations. In particular, I shall probably abandon the full spectrum LEDs in favour of those which have more energy in the blue and green part of the spectrum. However, other questions come to mind: are different species of moths sensitive to different colours of light? Are male and female moths attracted to different colours? Finding a dead moth in the wooden Skinner trap is unusual but in the Robinson trap there are often several dead or very worn moths. The Robinson trap is made from a bucket intended for brewing beer and I speculate that its plastic can create static electricity problems for moths when fluttering against it. Lining the bucket should remove this effect.

The use of LEDs to attract moths is in its infancy. I'd be keen to hear the experiences of anybody who has tried – whether successfully or otherwise – and you can contact me at philrdean@gmail.com. I've failed to track down any published literature on the optimal light spectra to attract moths – if it does exist I'm very keen to read it.

Phil Dean

¹ <http://futureeden.co.uk/> also supply heatsinks and other LED-related components.

² Build Your Own LED Moth Trap by Paul Palmer <http://www.tombio.uk/?q=mothtrap>

³ A better moth trap using LEDs? By Peter Mobbs <https://petermobbs.wordpress.com/2015/05/09/a-better-moth-trap-using-leds/>. Note that these instructions are very helpful but beware – the LEDs used in this design need a constant current, not constant voltage, source.

Forthcoming events (see www.devonmoths.org.uk for more details)

Thursday 3 November 2016 Autumn indoor meeting at the Kenn Centre, Kennford (www.kenncentre.co.uk) 19.30 for 20.00 start. Illustrated talk by Ed Parr Ferris of the Devon Greater Horseshoe Bat Project.

Saturday 3 December 2016 Winter get-together/Christmas meal at The Welcome Stranger, Liverton (www.thewelcome.co.uk) at 19.30. See overleaf for full details and booking form.

Thursday 26 January 2017 Winter indoor meeting and AGM at the Kenn Centre, Kennford (www.kenncentre.co.uk) 19.30 for 20.00 start. Illustrated talk by John Walters.



White Satin moth recorded at light 2.8.2016 in Teignmouth garden (Roy McCormick)

Devon Moth Group Christmas meal 3.12.2016 at The Welcome Stranger, Liverton

We'd be delighted to see you at our winter get-together/Christmas meal on Saturday 3rd December at The Welcome Stranger pub in Liverton, just off the A38 near Bovey Tracey. If you would like to attend, please complete and return the form at the bottom of this page by 23 November, indicating your menu choices from the selection below.

Menu

- Homemade Leek and Potato Soup – *sprinkled with croutons and served with warm granary cob*
- Tasty Pork Pate – *a rich buttery pork pate, topped with crispy bacon, served with toast and curried peach chutney*
- Smoked Salmon and Prawn Cocktail – *finest smoked salmon and large juicy prawns with homemade marie-rose sauce, fresh lime and warm granary cob*
- Creamy Garlic Mushrooms – *mushrooms sautéed with onions in a delicious cream sauce, served with warm granary cob*
- Poached Pear with Crumbled Devon Blue Cheese - *served on a bed of salad leaves with sour cream and chive*
- Fruit Juice - *of your choice*

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- Succulent Roast Turkey – *served with stuffing, pigs in blankets and smothered with rich tasty gravy*
 - Finest Local Roast Beef – *served with a homemade Yorkshire pudding and smothered with rich tasty gravy*
 - Slow Cooked Belly Pork – *served on a bed of buttery mashed potato and a Devon red cider, apple and sage gravy*
 - Supreme of Salmon – *poached and served with a brown shrimp prawn butter sauce on a bed of leeks*
 - Roasted Red Onion and Goat's Cheese Tartlet - *with a cheese and parsley sauce*
(please see normal menu for a choice of other vegetarian dishes)
All the above main dishes are served with fresh vegetables and potatoes
 - Prime 8oz Rump Steak – *cooked to your liking and served with mushrooms, onions, tomato, chips, peas and a delicious creamy peppercorn sauce* (£3.00 supplement)

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- Christmas Pudding – *rich and moist with brandy sauce*
 - Individual Raspberry Pavlova – *drizzled with raspberry coulis*
 - Profiteroles – *with a warm Baileys caramel sauce*
 - Lemon Meringue Pie – *drizzled with a tangy lemon curd*
 - Selection of Ice-cream and Sorbet

Plus Coffee and Warm Mince Pies

✂

Christmas Event at the Welcome Stranger, Liverton on Saturday 3rd December 2016. 19.00 for 19.30 start

I would like to bookplaces @ £24 per head (£27 if having steak)

Please give your choices of meal(s) also state if you have any allergy or dietary requirements. If choosing steak indicate how you would like it done:

Please make cheques payable to Devon Moth Group. Please reply by 23 November 2016 to:
Barry Henwood, 6, Lakeland, Abbotskerswell, Newton Abbot. TQ12 5YF.