

The Argent and Sable and other moths associated with Bog Myrtle in North Wales

Bog Myrtle, *Myrica gale*, is a plant with a distinctly western distribution in North Wales. In Merionethshire, for example, it occurs in coastal bogs and throughout the Rhinogs and Moelwyns but is absent from apparently suitable habitat further inland. This sharp cut-off seems curious as transplants do thrive further east and, in fact, the plant is known from sites much further to the east, in Shropshire. Despite this restricted distribution there are still extensive areas in North West Wales where Bog Myrtle is dominant, including parts of the Anglesey Fens, various sites on the Llyn Peninsula and considerable areas in Snowdonia proper. Unfortunately, there are also many sites where the impacts of agriculture and forestry have either completely eliminated the plant or reduced it to a stunted twiggy growth. This loss has the knock on effect of eliminating those species that are entirely dependent on Bog Myrtle and of reducing populations of those that are also able to utilise other plants - the obligate and facultative associates respectively.

Many of these associated species are Lepidopteran of which the most notable must surely be the Argent and Sable, *Rheumaptera hastata*, a spectacular, black and white, day flying macro-moth which counts as a UK 'Priority Species'. This moth is now very localised in England and Wales so the recent re-discovery of the moth in North West Wales was significant in UK terms. Although there are 19th and 20th century records from scattered localities across North Wales, there had been no sightings for over thirty years until the finding of an extant colony near Trawsfynydd in 2010. Since then two further colonies have been discovered, one just north of Llyn Bodgynydd, Caernarvonshire in 2012 and the other a few miles southwest of the Trawsfynydd colony, in 2014. Of course, the moth must have been present at these sites all along but had simply been overlooked. Elsewhere in Wales the moth has been recorded, post 2000, at only two sites, both close to the border with England (Fenn's Moss, Denbighshire and Hendre Woods, near Monmouth).

The 2010 discovery resulted from a chance daytime observation of adult moths but it has since become apparent that this is not actually the best way to survey for the species. A more reliable method is to search stands of Bog Myrtle for larval spinnings. This method obviates the need for sunshine and overcomes the fact that the adult stage is of short duration and that adults are present at low density. The colony discovered in 2014 had been visited at least four times within the flight season in preceding years, without observing a single Argent and Sable imago whereas when the site was visited in late August 2014 spinnings in the Bog Myrtle shoots were obvious from a distance and a closer examination soon revealed the presence of the unmistakable larvae.

However, searching for Argent and Sable larval spinnings is not always as straight-forward as it might seem because there are other species that construct similar spinnings that must be differentiated. There are also a number of moths that feed on Bog Myrtle without creating a spun-up nest.

A selection of species to be found on Bog Myrtle in North Wales follows, based on fieldwork carried out over the last few years.

Species that form a nest from spun-together leaves

Rheumaptera hastata Argent and Sable

The Argent and Sable is known to utilise two principal foodplants in Britain, Birch and Bog Myrtle. In Northwest Wales all the larvae recorded recently have been found on Bog Myrtle and none, as yet, on Birch. According to the literature, the Bog Myrtle dependent subspecies *nigrescens*, common in Scotland, has been found previously in North Wales; however, perhaps surprisingly, the moths seen in recent years appear to be of the nominate subspecies.

The three colonies known to date are all characterised by having some degree of shelter. The Trawsfynydd colony is sheltered by an old conifer plantation and the other two are on sloping ground with scattered trees and denser woodland nearby.



Figure 1. Argent and Sable habitat

The spinnings made by the larvae of this moth are tightly formed from the terminal leaves of a shoot of Bog Myrtle, creating a completely sealed cavity within which the larva feeds. This internal feeding causes sufficient damage to the leaves such that orange-brown patches develop that contrast with the green of any undamaged portions. The frass from the final instar larva is approximately 1 mm in diameter and remains within the cavity, accumulating at the base in a characteristic manner. Living within the safety of these spinnings provides protection from predators and from parasitoid species of Diptera and Hymenoptera. However, one spinning does not provide sufficient food for a larva to mature so a move has to be made to another shoot, which is then abandoned in turn when the time

comes. The result is that, as the larva approaches pupation, there will be a cluster of nests of various ages, all in close proximity and usually on one plant. It is these groups of conspicuous orange-brown shoot tips that indicate the presence of the moth.



Figure 2. Argent and Sable larval spinnings

The larvae of the Argent and Sable can be found from about mid-July through to early September. However, later in the year, after the larvae have pupated, leaving behind the series of vacated nests, the relatively large size of the frass will provide proof of the presence of the moth. It is this large frass size that will distinguish the spinnings of the Argent and Sable from that of the next species described.



Figure 3. Argent and Sable larvae and spinnings. (Top left photo: Helen Bantock)

Hedya atropunctana

The larval spinnings of this micro-moth are the ones most likely to cause confusion with those of the Argent and Sable. However, if a larva is present it cannot be mistaken with the larva of that species. Although first instars may be paler, later stages are a dark olive green with black pinaculae. The nests are constructed from the terminal leaves of a shoot which are fastened together with silk to form a completely sealed enclosure. The frass, therefore, accumulates at the base of the chamber but can be distinguished from that of the Argent and Sable by its smaller size – up to approximately 0.4mm diameter. In addition, the exterior of the spinning tends to remain greener with less of the sharp contrast with orange-brown, dead patches as seen in the Argent and Sable spinnings. The *Hedya* nests also frequently exhibit more of a ‘pepper pot’ appearance and tend to be less clustered than those of Argent and Sable although, as the *Hedya* is a common moth, a number of nests may sometimes be found on one bush.



Figure 4. *Hedya atropunctana* spinnings and larvae. (Younger larva to the right).

Acleris rufana

This species, predominantly found on Bog Myrtle, has a UK status of Notable Na, i.e. it is known from fewer than thirty 10Km squares. This status, however, will probably require revision when all the latest Welsh records are taken into account because the moth is actually common in North Wales. The larva spins up the leaves of a shoot tip quite neatly, but without sealing the base so there is little frass accumulation. The spinning can become elongated when leaves lower down the stem are incorporated into the structure. The larva is recognised by its dark brown head, shiny black prothoracic plate and pale pinaculae on a pale, greyish-white body.



Figure 5. *Acleris rufana* larvae and spinning

Syndemis musculana

This polyphagous micro-moth is common on Bog Myrtle. The spinnings are loose and open at the base so there is very little frass accumulation. The larva has an orange head and a prothoracic plate with two laterally placed dark patches. Neither the spinning nor the larva can be confused with those of the Argent and Sable.



Figure 6. *Syndemis musculana* larva and spinning

Clepsis senecionana

This is another polyphagous species which is frequently found on Bog Myrtle but is also common in areas with Bilberry, Common Rockrose and a few other plants. The spinnings consist of a messy, crumple of leaves containing a distinctive larva with longitudinal stripes and an orange head.



Figure 7. *Clepsis senecionana* larva and spinning

Acleris caledoniana

This is an abundant moth in North Wales, occurring at high density on heather moorland as well as in areas with Bilberry and with Bog Myrtle. The rather untidy larval spinnings can be common on Bog Myrtle but are found earlier in the year (June and July) than for the species considered above so there is little overlap and thus little scope for confusion. The larva is green with an orange head and thus readily identifiable.

Diurnea fagella

The larvae of this common moth utilise many trees and shrubs including Bog Myrtle although this appears not to be a favourite foodplant in North Wales. The spinning is loose and the larva is instantly recognisable as being one of the three British Chimabachidae species due to the strangely enlarged apices of the third pair of thoracic legs. *Dasystema*

salicella is another member of the family with similar looking

larvae and this is the species that should be found on Bog Myrtle according to the literature.

However, although the species is known from North Wales the larvae have not yet been found on Bog Myrtle. However, it seems likely that they could be found so this is a species to look out for.



Figure 8. *Diurnea fagella* larva

Acleris notana

Birch is the usual larval foodplant for this common moth but its larvae have also been found on Bog Myrtle. The larvae are superficially very similar to those of *Acleris rufana* though differing in the anatomy of their anal combs. The larval spinnings are untidy nests of bunched-together leaves, quite unlike the neat constructions of *rufana*.

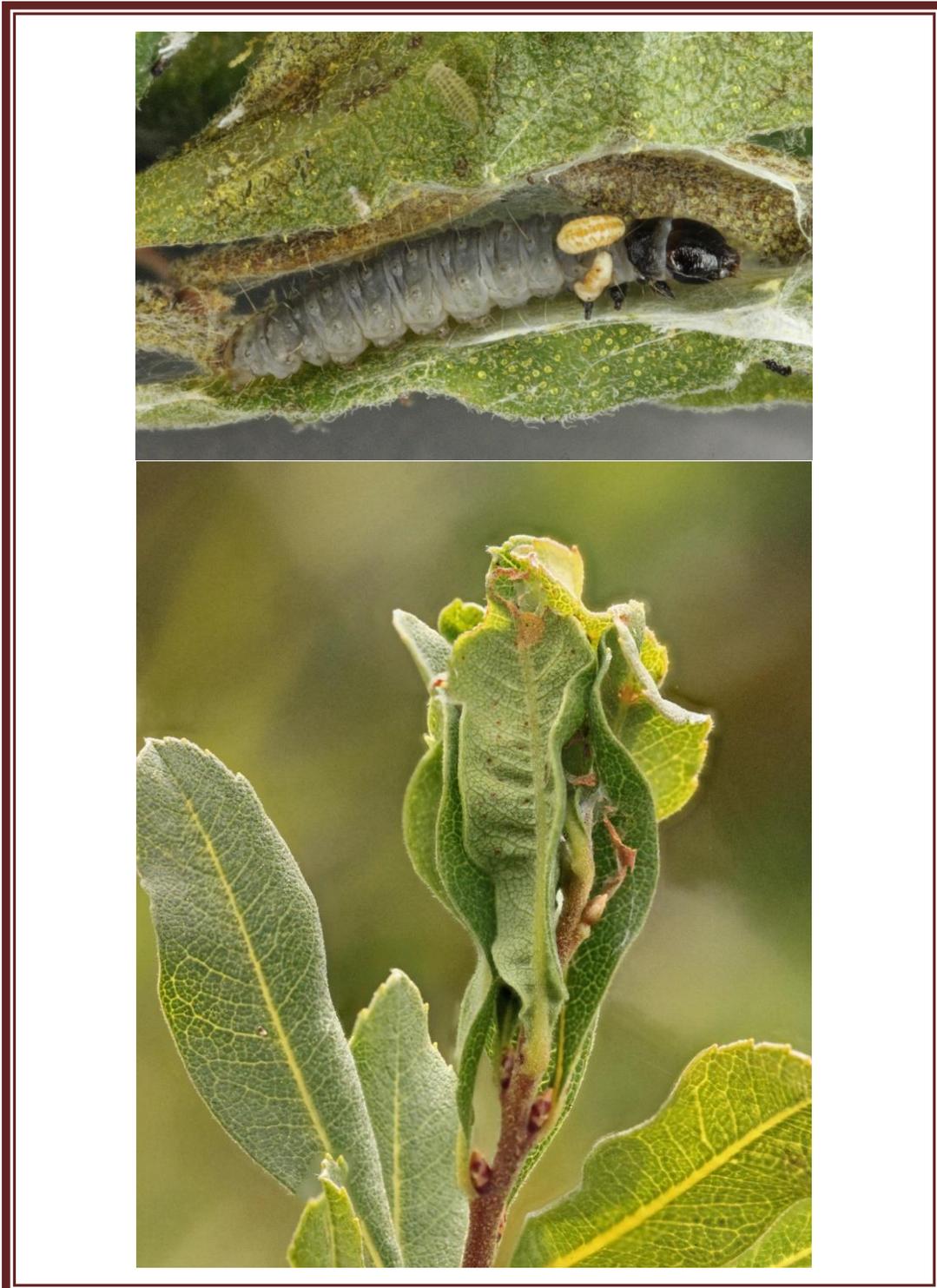


Figure 9. *Acleris notana* larva and spinning. (This larva is parasitised!)

Pseudotelphusa paripunctella

The larvae of this moth feed on either Oak or Bog Myrtle although, as yet, there is only one proven record of a larva collected from Bog Myrtle in North Wales. The larva spins two leaves flatly together and feeds within the resulting sandwich. Spinings similar to those collected in Scotland (photos below) have been observed at Cors Goch, Trawsfynydd but the larvae have not, as yet, been reared out to confirm the identification.



Figure 10. *Pseudotelphusa paripunctella* larva and spinning. (Tyndrum, Scotland, 2013)

Species with larvae living in a mobile case of their own construction

Coleophora lusciniapennella

Coleophora species have larvae that live within cases they construct for themselves out of portions of the plants they are feeding on. This particular species is common on Bog Myrtle in North Wales. The larvae usually feed beneath the leaves and only reveal their presence by the scattered, pale fleck mines that are visible from above.



Figure 11. *Coleophora lusciniapennella* larval case

Coleophora violacea

This is a polyphagous species which has been found feeding on Bog Myrtle in North Wales. The larval cases are highly characteristic.



Figure 12. *Coleophora violacea* larval case and feeding signs. (Notice the neat holes where portions of leaf have been cut out to add to the larval case).

Psyche casta

This common bagworm is unlikely to be actually feeding on Bog Myrtle but several individuals have been found on the leaves. The larva lives within a little case made in a very characteristic fashion. They may also often be observed hanging from or trundling around on rocks and tree trunks.



Figure 13. *Psyche casta* larval case. (This may be on bog myrtle just by chance)

Species with free-feeding larvae

Bucculatrix cidarella

This tiny moth is abundant on Bog Myrtle across North Wales. The larvae commence as leaf-miners but depart their mines in an early instar to feed externally. The small yellow larvae are then usually to be found beneath the leaves, causing conspicuous brown blotching.



Figure 14. *Bucculatrix cidarella* larva and leaf mine.

Other Macro-moths

A number of macro-moths have larvae which feed externally on Bog Myrtle, i.e. without protection from any kind of shelter. These include Powdered Quaker, Glaucous Shears, Light Knot Grass, Red Sword-grass, Broom Moth and Golden-rod Brindle. These species all have large, easily identified larvae.



Figure 15. Light Knot Grass larva, feeding on bog myrtle

Other Orders

Surprisingly, given the importance of Bog Myrtle for so many Lepidopteran species, there are very few invertebrates from other orders living on this plant in North Wales. The weevil, *Rhamphus pulicarius*, is one such species, occurring abundantly, with larvae in small leaf mines that are present in many stands of the plant.



Figure 16. *Rhamphus pulicarius* leaf mine.

Various spiders are commonly found on Bog Myrtle though with no significance as to the choice of plant. *Clubionia reclusa* is a particularly annoying species when searching for Argent and Sable colonies in that the spinings made by this spider can look, from a distance, very Lepidopterous. A closer inspection soon reveals the true nature of occupant!



Figure 17. *Clubionia reclusa* nest in bog myrtle.

Further Surveying

It is highly likely that more Argent and Sable colonies remain to be discovered so it is hoped that these notes may encourage a closer look at the Lepidopteran larvae feeding on this charismatic plant. None of these species are at all well-known so all records are of interest. In almost every case, the larvae can be identified without the need for rearing and with little damage to the spinings although care should be taken to minimise this. So long as the larvae remain on the bog myrtle they can quickly repair any damage though some larvae do have a very effective escape strategy whereby they wriggle frantically backwards and are then likely to fall to the ground and have difficulty climbing back up to a suitable shoot-tip.

The great majority of larvae found on Bog Myrtle in North Wales will belong to the species mentioned in this article. However, the possibility exists that further species might be discovered as a few other species, known to occur in the area, are listed in the literature as occasionally feeding on Bog Myrtle. At least one obviously different larva was found in 2014, sandwiched between Bog Myrtle leaves beside Llyn Elsi, near Betws-y-coed; this was not reared out so its identity remains a mystery.

Unfortunately, the site of the rediscovery of the Argent and Sable in 2010 has suffered from agricultural improvement – mowing in this case - so the future of this particular colony looks uncertain at the time of writing. Bog Myrtle is a resilient species that will grow back when mown and recovers, in time, even from episodes of heavy grazing; however, it will eventually be eliminated by the constant nibbling of sheep. The plant is certainly not regarded favourably by farmers but is of crucial importance for the moths discussed in this article and can certainly also be appreciated in its own right, not least for the wonderful fragrance that can be such a feature of bogs in North Wales on warm summer days.

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