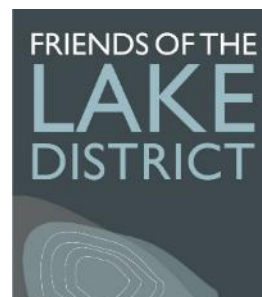

Control of infestations of Himalayan balsam in the Rothay Catchment



Report for 2020 and Proposals for 2021 and beyond

November 2020

SCRT Volunteer



Executive Summary

There is a major infestation of the invasive non-native species Himalayan Balsam (HB) in the upper catchment of the River Rothay, at the very heart of the Lake District National Park. Until 2017, it was expanding further, threatening the area's biodiversity, visual appeal and cultural heritage. Not only were plants dropping seed onto the road, any entering the river system could be washed down into Windermere and beyond. During 2020, further infestations were identified upstream (adjacent to Grasmere) and downstream (at Under Loughrigg, between Pelter Bridge and Miller Bridge). Efforts to control HB in these areas have now been incorporated into this report.

As before, nearly all landowners of affected land contributed resources to assist in the control, and support was provided by householders and the local community, as well as volunteers drawn from far and wide. This year, a phased approach was used, with mechanical control (mowing and strimming) preceding hand pulling by groups of volunteers. Strimming time was spent working in the most densely and larger infested areas, primarily in July but with further strimming on selected patches. Many small groups (maximum of 6, due to Covid-19 restrictions) were deployed – 11 on 11th July and 8 on 31st July. Smaller groups of 2, 3 or 4 people made visits to Grasmere, Under Loughrigg, and nearly all the patches at Rydal and White Moss.

Inputs in total were around:

- 13.5 days equivalent of strimming time; and
- 500 person hours of pulling (mainly at Rydal/White Moss).

These estimates relate to time spent in-the-field only. These inputs have a putative value of around £6,200. They do not include time spent travelling to/from site, survey work (unless as part of a 'pull') and volunteer management/organisation effort spent in the office, although additionally approximately £1,300 was spent in SCRT staff time to organise the Fight the Aliens days. This is a very impressive performance and thanks are due to many people for making it happen. A list of those due acknowledgement and thanks is provided in **Section 4**.

It is impossible to provide any meaningful estimate of the numbers of plants destroyed but it must have been in the millions. Some degree of control was achieved over 10 ha/25 acres of land. Of this, around 3 ha/7.5 acres have been brought to a stage where future inputs can be reduced to 'vigilance' levels. The rest will still require greater input.

It is suggested that the dry spring and mainly cool and frequently wet summer, pushed the HB growth curve to later in the season. It had been hoped that external funding would be available to fund further strimming in late season but none was forthcoming. Unfortunately, insufficient resources were available to apply as much control as would have been ideal. Even so, impacts have been very impressive on virtually all patches (see Appendix 3 for some 'before' and 'after' comparisons). It is concluded that the approach is working and good progress is being made.

In 2021, it is proposed that:

- The focus is placed on White Moss;
- The work programme should be extended into the autumn, with more but smaller pre-planned work parties;
- A further 1 or 2 committed leaders should be identified to help implement this extended programme.

We are hopeful that supporters from 2020 will continue to provide this support in 2021.

Contents

Executive Summary

| | |
|--|-----------|
| 1. Introduction | 1 |
| 1.1 Background | 1 |
| 1.2 Balsam control | 1 |
| 1.3 Extent of the problem | 2 |
| 2. Activities in 2020 | 5 |
| 2.1 Introduction | 5 |
| 2.2 Grasmere | 5 |
| 2.3 Rydal and White Moss | 6 |
| 2.3.1 Cutting | 6 |
| 2.3.2 Fight the Aliens Days – 11 th and 31 st July 2020 | 6 |
| 2.3.3 Further control activities from August to October | 8 |
| 2.3.4 Final outcome | 9 |
| 2.4 Under Loughrigg | 11 |
| 3. Proposals for 2021 and Beyond | 13 |
| 3.1 Lessons Learnt | 13 |
| 3.2 Proposals for 2021 | 13 |
| 3.2.1 Resource requirements | 14 |
| 3.2.2 Sourcing | 15 |
| 4. Acknowledgements | 17 |
| Maps and Tables | |
| Map 1.1: Known extent of balsam in autumn 2020 at Grasmere | 2 |
| Map 1.2: Known extent of balsam in autumn 2020 at White Moss | 3 |
| Map 1.3: Known extent of balsam in autumn 2020 at Rydal | 3 |
| Map 1.4: Known extent of balsam in autumn 2020 at Under Loughrigg | 4 |
| Table 2.1: Status of each patch – October 2020 | 9 |
| Table 3.1: Estimates of resources needed by patch for each of the next 3 years | 14 |
| Appendices | |
| Appendix 1 Known extent of balsam patches (as per autumn 2020) | |
| Appendix 2 Before and After photographs of selected patches | |

1. Introduction

1.1 Background

The Rothay Catchment has been infested with Himalayan balsam (*Impatiens glandulifera*) (HB) for some years (reports about its control up to 2011 have been found) but, according to anecdotal reports, there seems to have been a rapid spread and intensification of the infestation over recent years. This has prompted a joint campaign between South Cumbria Rivers Trust (SCRT) and Friends of the Lake District (FOLD), working with a range of other partners, to attempt to bring it under control and, hopefully, eradicate it in due course.

After some initial forays, a major campaign was launched in 2019 and continued in 2020, with additional groups active against infestations in Grasmere and downstream (Under Loughrigg). This document reports on these 2020 activities. **Chapter 4** lists all those individuals and organisations to which thanks are due. A selection of photos of volunteers in action during Fight the Aliens Days are included throughout the report.

1.2 Balsam control

HB features on a list of “widely-spread invasive species” which are the subject of the Invasive Alien Species (Enforcement and Permitting) Order 2019 - which came into force on 1st December 2019. It supposedly requires effective management measures to be put in place, so that the impact of these widely-spread invasive species on biodiversity, the related ecosystem services and, where applicable, on human health or the economy, are minimised. In practice, though, nothing has changed on-the-ground.



Even so, it is fair to say that control of HB and restricting its spread is ‘a good thing’. A ‘Technical Note’ is available on request which explores the legal and policy background, and range of control measures available.

A key point to bear in mind is that HB is an annual and relies on seed germinating each year to maintain itself. It is not totally clear how long seeds remain viable in the ground. Many reports suggest 1 – 2 years but direct experience of HB control leads us to suggest that seed viability may

decline exponentially over time, meaning that (where there is a huge burden of seed in the soil) some seeds will remain viable for longer than this. Plants are self-fertilising, so one plant can produce viable seeds. Consequently, a programme of HB control of a badly infested site needs to spread over several years, not just one or two. This means that work will need to continue in 2021 and beyond, if full control and eventual eradication is to be achieved.

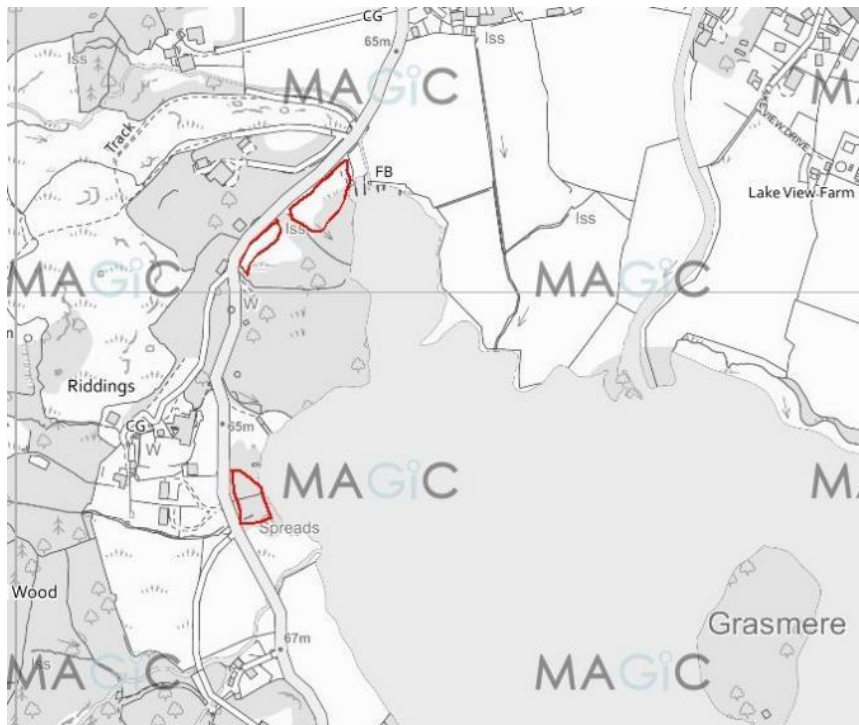
1.3 Extent of the problem

During late summer 2018 and spring of 2019, attempts were made to identify the full extent of the HB infestation. In practice, as more surveys were undertaken, particularly as the plants developed in late spring/early summer, the known extent kept expanding. Further infestations were found during preparatory work for the 2020 campaign. In addition, reports were received of infestations at Grasmere. Added to these were known (but unmapped) infestations downstream to Miller Bridge (referred to here as Under Loughrigg).

As of late 2020, the extent is thought to be as shown in **Maps 1.1 to 1.4**, below. These cover Grasmere, White Moss, Rydal and Under Loughrigg respectively. More detailed maps of each 'Patch' are given in **Appendix 1**. The downstream limit of the area covered by this report is now Miller Bridge, on the edge of Ambleside.

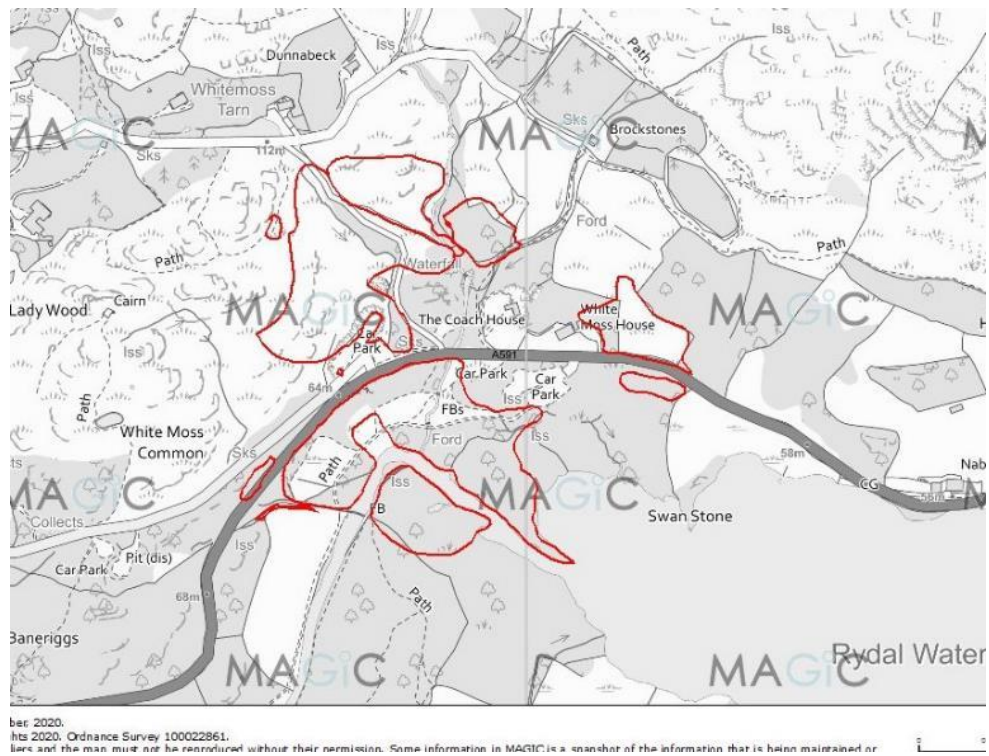
The main areas of infestation are shown ringed in red, although density of HB plants will vary within each patch. In addition to the areas ringed in red, 'outliers' – individual or small groups of plants – have been observed. Perhaps the most worrying are those near the 'Coffin Route', suggesting that the infestation is spreading uphill and not just by seeds transported in water flows.

Map 1.1: Known extent of balsam in autumn 2020 at Grasmere

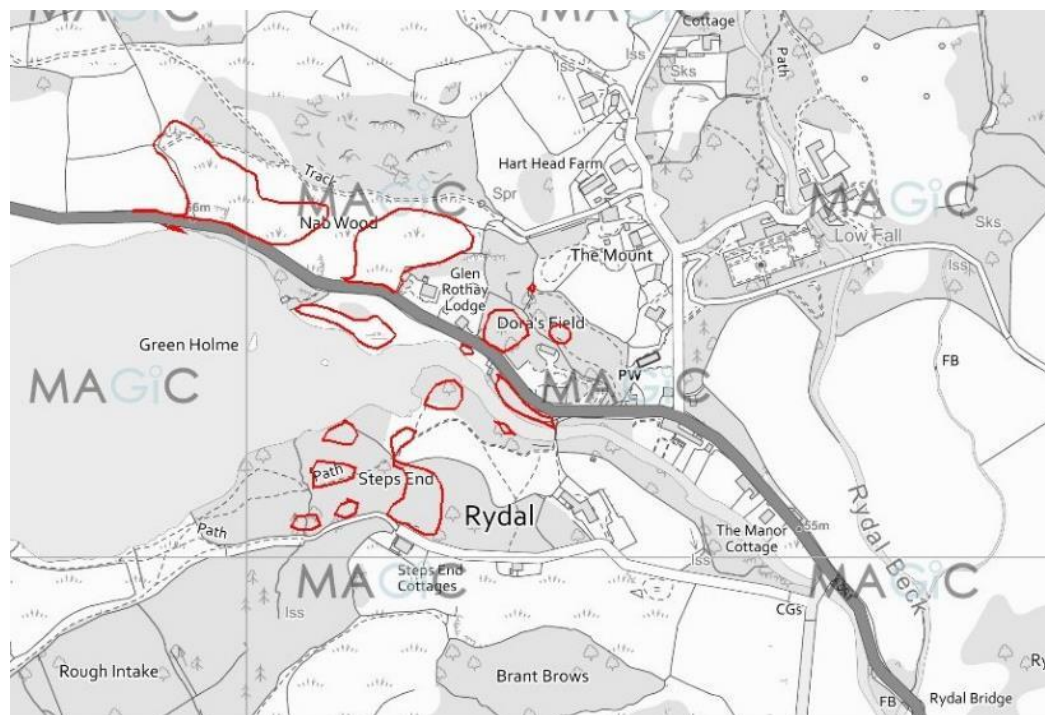


Note that scales of the maps vary.

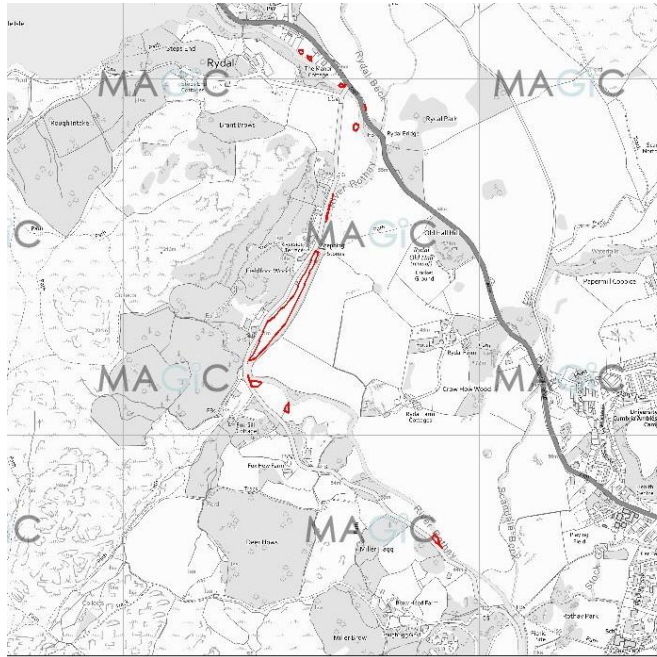
Map 1.2: Known extent of balsam in autumn 2020 at White Moss



Map 1.3: Known extent of balsam in autumn 2020 at Rydal



Map 1.4: Known extent of balsam in autumn 2020 at Under Loughrigg



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ing organisation. Please refer to the metadata for details as information may be illustrative or representative rather than definitive at this stage.



In short, it can be said, hopefully without contradiction, that HB had become a major problem in this catchment and a growing challenge to anyone wanting to bring it under control. The resources needed to tackle these new and extended areas will need to be factored into planning for 2021 and beyond (see **Section 3**).



2. Activities in 2020

2.1 Introduction

Crucial to tackling the problem on the Rothay is the importance of a partnership approach. HB spreads so easily that it is necessary to tackle it at a catchment (or sub-catchment) level, rather than at the level of individual patches. It is encouraging that most of the major landowners with affected land (C&S Hodgson, Lowther Estate, Rydal Estate, National Trust) all contributed in cash or in kind to the control programme. It is an especially positive development to be able to extend the campaign to Grasmere and Under Loughrigg.

Given the scale of the infestation, in many areas very dense as well as extensive, an approach was devised which relied on a staged approach of cutting (by mower or strimmer) followed by hand pulling. Further iterations throughout the season (June to September) would be deployed as conditions dictated. (See 2019 report for further details.) Mowing started in June, and strimming in late June/early July. The Fight the Aliens Day took place on 11th July, with a follow up on 31st July. Further visits with smaller groups took place into early October. These activities are described in more detail below.



It should be noted that estimates of inputs relate to time spent in-the-field. It does not include time spent travelling to/from site, survey work (unless as part of a 'pull') and management/organisation effort spent in the office. The last of these burdens fell mainly on SCRT and FOLD staff.

2.2 Grasmere

In preparation for work at White Moss, a socially-distanced meeting was held between representatives of Lowther Estate, National Trust and SCRT. During this discussion, mention was made of the possibility of HB infestations at Grasmere (i.e. upstream). Our efforts at Rydal and lower down the catchment could be undermined by continuing infestations further up the catchment. This led to contact being made with Mrs Sharon Savasi who volunteered to take the lead in dealing with it.

Over the early summer, she checked the area around Red Bank Road for infestations, identified landowners and contacted them. All bar one gave permission for access to allow it to be controlled (at the time of writing, no response has been received from the exception).

Fortunately, only relatively small areas of HB were found and were dealt with by:

- Strimming (on two occasions – one in patch in July, one in August) – total inputs of 3.5 person hours;
- Hand pulling (on three occasions – July, August and September) – total inputs from four individuals of about 30 person hours.

With such inputs, all accessible HB was tackled effectively. As far as we know, no HB was allowed to set seed in the two patches. As a result, plant densities should be much lower next year.

A word of caution, though - the possibility remains of further infestations as yet undiscovered; as if to underline this, Sharon received a ‘tip-off’ that some HB may be growing by the river which backs on to house on the estate up Easedale Road. Something to be explored next year.

2.3 Rydal and White Moss

2.3.1 Cutting

Cutting activities preceded, and were separated from, hand pulling giving advantages both in health and safety as well as adding to effectiveness of effort. The intention was that mowing with agricultural machinery would be done first, as this is the most cost-effective means of tackling large infestations of HB. Strimming work did not aim to clear every plant, but to cut the densest patches, with lesser stands pulled by hand (see below). However, the limitation to its use is the steep and often rocky ground. Even so, mowing was possible in some areas (Patches 6 and 7 - see maps in **Appendix 1** for details) and took place in early June.

Next in line were the trimmers, which were provided by Lowther Estate (funded by Lowther, Rydal Estate and SCRT) and National Trust. Dense patches unable to be mown were tackled at White Moss and Rydal. Lowther’s team’s work split into two tranches – the first in early July and the second in late July. Subsequent visits were made by SCRT volunteers as needed as the season progressed.

Patches strimmed were:

- In early July: Patches 1, 5, 6, 7, 8, 9, 10, 11 and 12;
- In late July: Patches 7, 8, 9, 10 and 11;
- In August: Patches 5 and 6;
- In September: Patch 5.

In total, about 13 person days of effort were spent on strimming.

2.3.2 Fight the Aliens Days – 11th and 31st July 2020

Pre-planning

Pre-planning followed a pattern similar to 2019. Not surprisingly, a major factor to be considered was the implications of the pandemic. Limitations introduced to reduce spread of the virus threatened the continuation of the event. However, rules were relaxed sufficiently to allow the event to go ahead, albeit with changes to the format:

-
- Revised risk assessment to address cross-infection risks;
 - Setting a maximum group size of 6 (leader plus 5);
 - Abandoning the mass gathering at the end.

An important addition this year was the involvement of the LDNPA volunteers. Given that LDNPA had suspended its volunteer activity, this meant we had access to its team of skilled volunteers.

Activities on the days

On 11th July, the volunteer 'army' was divided into 11 groups, each with a leader experienced in leading groups for HB pulling. The groups were centred around the east (Rydal) and the west (White Moss) of the lake, in separate car parks, where they were met by their group leaders and led to the respective sites for a briefing and to get going!

On 31st July, all effort was focused on White Moss. Eight groups were deployed on Patches 8 – 12. The numbers were boosted by a group of corporate volunteers from Wilkinson Financial Management of Wilmslow.

Most groups got to work by 09.30 and continued through until lunchtime. There was very little difficulty in identifying HB from amongst the native vegetation – in many areas there was nothing but balsam and bracken! Due to the necessary limitations on mass gatherings, volunteers dispersed when finished - around 13.00.



Inputs, Outputs and Outcomes

Inputs can perhaps be summarised quantitatively:

- 76 hand pullers (58 on 11th July and 18 for 31st July);
- 19 group leaders (11 and 8 for the two days);
- 1 organiser with no specific group on 31st July.

Outputs can be measured by assessing the extent of HB infestation tackled by area, which is about 10 ha (25 acres). However, each patch received multiple visits, so the area treatments extend to many times this. In terms of numbers of plants cleared, any estimate would come with such a low level of confidence as to be useless. Suffice it to say that many millions of plants were destroyed.

Outcomes are largely unchanged from last year but with Covid-19 adding a new dimension:

-
- It was a great ‘community’ event and shows what can be achieved when people work together, especially significant this year, when Covid restrictions had deprived many of human contact and meaningful activity;
 - All agreed that the arrangements worked well, which means they can be used for future events and as a template for events elsewhere;
 - The realisation amongst major landowners of the seriousness of the infestation, and therefore the need to do something about it, is perhaps the most significant outcome;
 - Many of the volunteers were new to balsam bashing and appeared to enjoy it. They may well volunteer again or take a more pro-active role in direct control work and/or promoting understanding of HB as a problem in some areas;
 - Community benefits were evident in the way that people locally came together for a common purpose;
 - The process of control/eradication on the Rothay catchment will be a long one, but at least it has continued to progress despite the pandemic.

2.3.3 Further control activities from August to October

Subsequent to 31st July, some ad hoc work was arranged at very short notice, arranged by SCRT volunteers:

- Repeated ‘sweeps’ through Patches 1, 2 and 3 by one or two individuals every 3-4 weeks;
- Visits to selected patches (mainly at Rydal) to clear plants and, where this was not feasible, to remove just the more mature ones. These took place every 2-3 weeks but the sites targeted varied, so each site was probably visited only once or twice during this period;
- Volunteers with climbing skills abseiled down the quarry face at White Moss upper car park to pull balsam on otherwise inaccessible ledges (see photos below).

Abseiling down the quarry face at White Moss upper car park



Inputs are estimated as:

- Abseiling – total of 15 person hours;
- Sweeps of patches 1/2/3 – total of 12 person hours;
- Other ad hoc visits – 55 person hours.

2.3.4 Final outcome

A key milestone in eradicating HB from a patch is when one can say with reasonable confidence that “no plant set seed”. It is encouraging to be able to report that this was achieved at some areas, but not at others. **Table 2.1** below provides a ‘best estimate’ of the status for each patch/sub-patch as at October 2020.

Table 2.1: Status of each patch – October 2020

| Patch | Summary of Treatments | Final state |
|---------------|---|---|
| Polly's Patch | Strimmed in August Pulled at least twice | 95+% control – very few mature seeds hit the ground |
| Boat Hire | Strimmed in August Pulled at least twice | 95+% control – very few mature seeds hit the ground |
| 1 | Regularly swept through between June and October Patch 1A Strimmed in early July | 95+% control – very few mature seeds hit the ground |
| 2 | Regularly swept through between June and October | 95+% control – very few mature seeds hit the ground |
| 3 | Regularly swept through between June and October | 95+% control – very few mature seeds hit the ground |
| 4 | Main patch - Hand pulled twice (August and September) Dora's Field – Hand pulled three times Rydal Mount – Hand pulled twice | 95+% control – a few mature seeds hit the ground |
| 5 | Strimmed in early July, late July, September and October Hand pulled in July and September | Failed to keep on top of this patch as the season progressed: A lot of seed heads had matured by the time of the last strimming, although many did not 'pop'. |
| 6 | Mown in June Strimmed in early July Hand pulled in July, August and September | 95+% control – very few mature seeds hit the ground |
| 7 | Field mown in June White Moss House and field strimmed in early and late July Garden was hand pulled on 3 occasions Field was hand pulled/slashed on two occasions | White Moss House garden and roadside verge: 95+% control – very few mature seeds hit the ground Field: Many seeds had matured by the time of the last strimming, and some popped, although number of plants was much reduced by earlier efforts. |

| | | |
|-----------------|--|--|
| 8 | Strimmed in early and late July Hand pulled in July. More mature plants pulled in September | Failed to keep on top of this patch. However, strimming meant that most of the surviving plants were very small (meaning that seed yield will be low – two photos below illustrate this point). |
| 9 | Parts of the area strimmed in early and late July Parts hand pulled in early July More mature plants pulled in September, and the stream banks cleared of plants | Failed to keep on top of this patch. Some parts of the patch were not touched, meaning that some areas received a full loading of mature seeds. However, where treatments were applied, most of the surviving plants were very small (meaning that seed yield will be low). |
| 10 | Most parts strimmed in early and late July Most parts hand pulled in early and late July Quarry face cleared by abseil on 3 occasions A few mature plants pulled in September, and the stream banks cleared of plants | Roadside sub-patch, isolated sub-patch at eastern end and upper car park (including quarry face) - 95+% control – very few mature seeds hit the ground Elsewhere - failed to keep on top of this patch. However, where treatments were applied, most of the surviving plants were very small (meaning that seed yield will be low). |
| 11 | Most of the area strimmed in early and late July Parts hand pulled in early and late July A few mature plants pulled in September, and the stream banks cleared of plants | Failed to keep on top of this patch. However, where treatments were applied, most of the surviving plants were very small (meaning that seed yield will be low). |
| 12 | Most of the area strimmed in early and late July Parts hand pulled in early and late July | Failed to keep on top of this patch. However, where treatments were applied, most of the surviving plants were very small (meaning that seed yield will be low). |
| Under Loughrigg | Main area mown in August Pulling and slashing during repeated visits | Varied, good control in some areas, less so in others. |

Recovered plants after strimming (top) – a much reduced seed burden compared to untreated ones (bottom picture)





An overall assessment would be that patches at Rydal, with the exception of Patch 5, are now under control but vigilance will need to be maintained for some years yet. White Moss is the reverse – with the possible exception of Patch 7, HB is still thriving, albeit at reduced levels. The failure to gain better control at White Moss is thought to be due to two key factors:

- The nature of the growing season: the dry spring seemed to delay growth. The cool and frequently wet mid-season meant that a further surge of germination took place, plus some/many of the stalks of HB plants left after early strimming recovered and grew to produce flowers. The net effect was to 'skew' the growing season by 2-3 weeks later than was expected;
- Lack of resources to acquire and organise more strimming and pulling effort from August to October, which could have been used to good effect, especially in Patches 9, 10, 11 and 12 (and Patch 5 at Rydal). A conscious decision was made after the end of July 'bash' to focus limited resources on Rydal patches. This shortfall was anticipated in last year's proposals but plans to plug this gap from external funds (e.g. SLDC's Locally Important Projects, from Cumbria County Council's Biodiversity budget) were not forthcoming.

Nonetheless, there is still a massive improvement on the situations encountered in 2018 and 2019. To reinforce this point, **Appendix 2** contains some pictures of 'Before' and 'After' states. Some of the 'Before' pictures date from 2018 or 2019, others from just 2020: the selection of patches has been dictated by availability of pairs of pictures from near-fixed points, rather than on just showing examples that give a good impression. ALL PATCHES show significant improvement from previous years.

2.4 Under Loughrigg

SCRT was pleased when Jane Moreland expressed interest in taking responsibility for HB control downstream of Rydal. The area she agreed to tackle was between the foot bridge near Badger Bar (the lower limit of the efforts at Rydal – see above) to Miller Bridge, Ambleside. Early efforts were frustrated by Covid-19 restrictions but were able to progress rapidly once restrictions eased,

mainly thanks to help from the landowners (particularly Chris and Sharon Hodgson, who are involved and fully supportive of work at Rydal and White Moss).

It is evident that seed has washed down the Rothay and that infestations are occurring in locations that are not grazed, are difficult to reach and/or liable to flooding. From the Badger Bar to Pelter Bridge there are small infestations in a couple of gardens on the true left bank of the Rothay, where owners are not keeping on top of things but are happy for us to go and pull. These have been surveyed from across the river but not pulled. From Pelter Bridge down to Miller Bridge the infestations are all on the true right bank.

The largest scale infestation is of the wet meadow immediately south of the stepping stones. The landowner mowed the northern half of it in August and subsequently returned to cut a wide swathe around the southern half (which was less infested but very waterlogged) a bit later. They also introduced a few sheep. These actions reduced the amount of subsequent pulling quite substantially.

The strip of riverbank immediately north of the stepping stones is also badly infested and this year was slashed by volunteers as well as regularly pulled.

The densest infestation is at Fox Ghyll. This bend of the riverbank is tricky to access and to work in as it is precarious in places, straddles a water outlet and the hotel's cesspit. The HB grows in amongst brambles and raspberries. Volunteers slashed this area and returned to pull HB on a regular basis throughout the season.

Otherwise, the infestations down towards Miller Bridge have been relatively small and manageable by one or two volunteers with the key seeming to be frequent visits to survey and then slash/pull whatever is coming up.

Volunteers worked for over 38 hours spread over ten separate dates between 25 July and 1 October.



3. Proposals for 2021 and Beyond

3.1 Lessons Learnt

Experience up to and including 2020 can be summarised as follows:

- there is a still large amount of HB in the Rothay catchment upstream of Miller Bridge, especially around White Moss;
- it will still take some years to bring the worst areas under control but, elsewhere, we may be moving into the ‘vigilance’ stage;
- mechanical measures (mowing with agricultural machinery where possible, strimming of remaining areas where possible) still have a key role to play in bringing the worst patches under control;
- hand pulling will still be needed where mechanical measures are not possible (e.g. along walls, amongst/behind fences, adjacent to roadside, for individual plants/small stands, rocky ground and so on) and as patches move into the ‘vigilance’ stage;
- the ‘big bash’ concept works well for recruiting volunteers and can be managed provided there is support from all affected parties; however, this may need to be adapted as more of the area is brought under control and where vigilance is needed (requiring regular visits from one or two committed individuals who know the area well) rather than big bash (using large numbers of less-skilled volunteers).

The Fight the Aliens Day was very successful in terms of timing and also in continuing the effort in the face of what seemed at one stage insuperable obstacles (i.e. the pandemic).



3.2 Proposals for 2021

Assuming we now understand the full extent of the HB and how it can best be tackled (although there may be further discoveries at Grasmere), then proposals for 2021 and beyond should build further on the excellent work done so far. A phased approach is proposed again for next year, involving:

- mowing in the very large patches (Patches 6 and 7 at Rydal and White Moss, and wet meadows at Under Loughrigg) with wheeled machinery in mid-June (where tractorable);
- strimming once, possibly twice depending on season in at Grasmere, Patches 5, 7, 8, 9, 10, 11 and 12 at Rydal/White Moss, and in parts of Under Loughrigg;
- hand pulling using volunteers in a re-run of 'Fight the Aliens' day (in early/mid-July), but focused on White Moss and Under Loughrigg;
- development of a programme of frequent visits (say every 2-3 weeks) between early August and October (depending on season) involving small groups of volunteers. This will entail identifying/training a small number (maybe 2-3) leaders willing to implement the programme. It is hoped that SCRT, FOLD and LDNPA (and possibly National Trust) would provide support in volunteer recruitment.

3.2.1 Resource requirements

As stated before, it can be expected that for 2021 and 2022 (and possibly 2023 for the still badly affected areas), the 'footprint' of the infestation will stay the same but the density of re-growth will decline. It follows that similar inputs will be needed in those bad areas, even though they may be working less hard. In contrast, the areas moving into the vigilance stage will require a different pattern of inputs. **Table 3.1** provides details of these estimates. It is anticipated that, after the first event, then subsequent regrowth will be such that several patches can be tackled by a small group in one visit. However, the worst affected patches (at White Moss) may detain a group for the whole of its visit. This does not include the resources needed by SCRT, FOLD and others to organise the campaign.

Table 3.1: Estimates of resources needed by patch for each of the next 3 years

| Patch | Mechanical (trimmer days equivalent) | Number of hand pullers (main event + follow up), (including group leaders not organisers or trimmers)* | |
|----------|--------------------------------------|--|-----------------------|
| | | Fight the Aliens Day | Subsequent visits |
| Grasmere | 0.5 x 1 visit | 5 | 2/3 people x 2 visits |
| 1 | - | 2 | 2 people x 4 visits |
| 2 | - | | |
| 3 | - | | |
| 4 | - | | |
| 5 | 0.5 days x 2 visits | 8 | 3/4 people x 3 visits |
| 6 | 0.5 x 1 (Mowing) | 4 | |
| 7 | 0.5 x 1 (Mowing) | 5 | 3/4 people x 3 visits |
| 8 | 0.5 days x 2 visits | 5 | |
| 9 | 0.5 days x 2 visits | 5 | |

| | | | |
|-----------------|---|-----------|----------------------------|
| 10 | 1 day x 2 visits | 8 | 2/3 people x 3 visits |
| 11 | 1 day x 3 visits | 10 | 4/5 people x 3 visits |
| 12 | 1 day x 2 visits | 8 | 3/4 people x 3 visits |
| Under Loughrigg | 0.5 x 1 (Mowing) 0.5 x 1 (Strimming) | 5 | 2/3 people x 3 visits |
| Total | 11 days strimming 1.5 day mowing | 65 | 63/83 people visits |

*Note: each visit by a hand puller is assumed to be for 0.5 days

3.2.2 Sourcing

It is hoped that the resources will continue to be provided from amongst the partners involved in 2020, people directly affected and volunteers from a wider area either in cash or in kind. The main cost is likely to be machinery (wheeled vehicles and trimmers). Assuming a similar level of willingness to support the campaign as this year (i.e. 2020) and reflecting the extent of infestation expected within each patch (see Table 2.1 above), then we would hope to source the strimming day equivalents roughly in proportion to the area affected within each landownership.

We are hoping to procure 8.5 trimmer equivalent days (or cash to acquire trimmer days) in this way, leaving a shortfall of 4 trimmer days equivalent, or about £800 in cash terms. There are usually incidental costs of around £200.

Further attempts can be made to get funding from a number of sources such as:

- Grant-giving charities (e.g. Lake District Foundation);
- Local authorities and town councils (South Lakeland District Council have recognised the importance of biodiversity and may be willing to support such a relevant activity);
- Funding from government departments/agencies in support of the new legislation;
- Donations from other volunteers and those supportive of the cause (e.g. local property owners and businesses).

In addition, and very importantly, there will be a continuing need for volunteers to reach those areas not reachable by mechanical means. **Table 3.1** suggests that we will need around 65 (including group leaders) people for the Fight the Aliens Day in July and a further around 63 to 84 person half-days in the subsequent follow-up exercises. These latter inputs are expected to be made up of small groups and frequent visits. Critical to the success of this approach is being able to rely on up to 4 committed leaders.

It is hoped that the Fight the Aliens Day need can be met from:

- SCRT (group leaders);
- FOLD, LDNPA and possibly National Trust (hand pullers);
- Trying to attract from a wider public audience using greater PR;

The ‘committed leaders’ may be harder to recruit. The same sources can be tried as listed above but with a clear distinction of this important role. Discussions have been underway between SCRT

and LDNPA with this aim in mind, and this needs to be actively pursued during the winter and run-up to the 2021 season.

In addition to this, we will need help from climbers to abseil safely down the quarry face to pull any plants there.



4. Acknowledgements

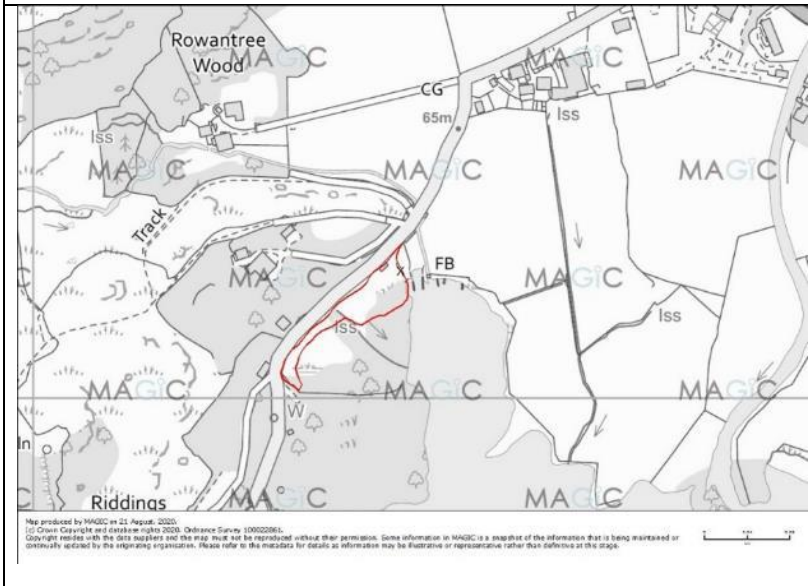
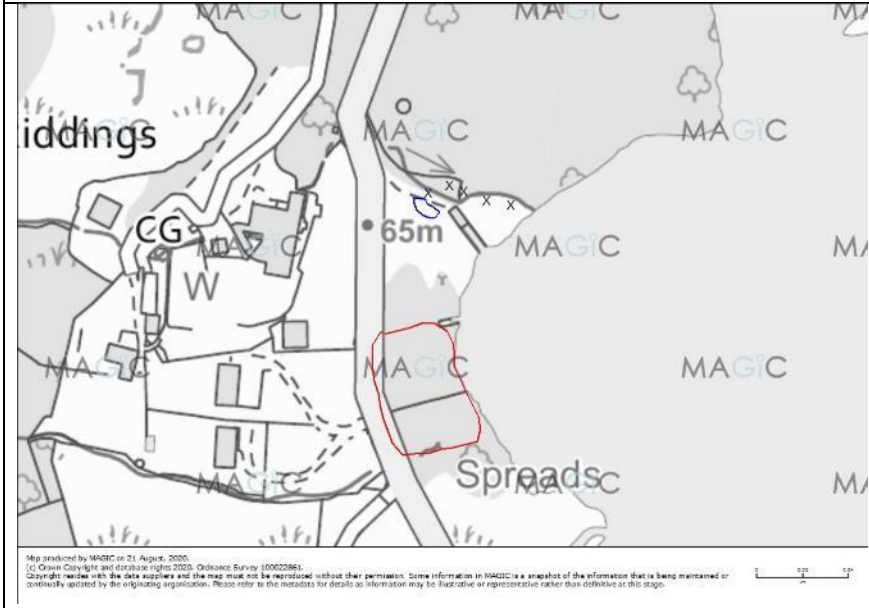
The progress made this year has been the result of help from many diverse organisations and individuals. With apologies to anyone omitted, and in no particular order of priority, thanks are due to:

| Who | Affiliation | What |
|--|--------------------------------|---|
| Volunteers | Recruited by FOLD and LDNPA | Pulling balsam!!! |
| Ken and Ros Taylor | SCRT volunteers | Organising the events and co-ordination of all parties |
| Jayne Wilkinson | SCRT | Management of events from SCRT perspective and group leader |
| Ruth Kirk and colleagues | FOLD | Management of events from FOLD perspective and group leader |
| Bruna Remesso and Rydal Hall | Rydal Hall | Provision of parking |
| Julian Lambton | Rydal Estates | Financial and moral support, provision of access |
| Andy Whitworth and his team | Lowther Estate | Provision of contract workers, access to sites, car parking |
| Chris and Sharon Hodgson | Rydal Farm | Enthusiastic support of our work, provision of access, free car parking, mowing of HB |
| Judith Furniss | Glen Rothay Lodge | Free parking |
| Caroline Langham | Cote Howe | Access to sites, offers of parking and refreshments (sadly declined) |
| Mr and Mrs Walker | Rydal Holme | Access to site, offers of parking |
| Peter and Sue Dixon | White Moss House | Access to site, pulling balsam |
| Helen Lancaster | Lake District NPA | Access to site |
| Pete Stevens, Neil Winder, Rab Smith | National Trust | Access to site, leading volunteer groups and strimming |
| Yvonne Cannon, Judith Wallen, Mary and Ian Chapman, Paul Woods, Janet Antrobus | SCRT Volunteers | Leading groups |
| Richard Langthorp, Steve and Pam Livingston | SCRT Volunteers | Abseiling and leading groups |
| Paul | Badger Bar | Access to site |
| Helen Green | Rydal Mount | Pulling balsam in Rydal Mount grounds |
| Tach Watson | Wilkinson Financial Management | Providing a group of volunteers on 31 st July |
| Roland Wicksteed | Independent Volunteer | Support with pulling throughout the season |
| Sharon Savasi | SCRT Volunteer | Leading the Grasmere group |
| Jane Moreland | SCRT Volunteer | Leading the Under Loughrigg group |
| Chris Wingrove | LDNPA | Help with recruiting volunteers |

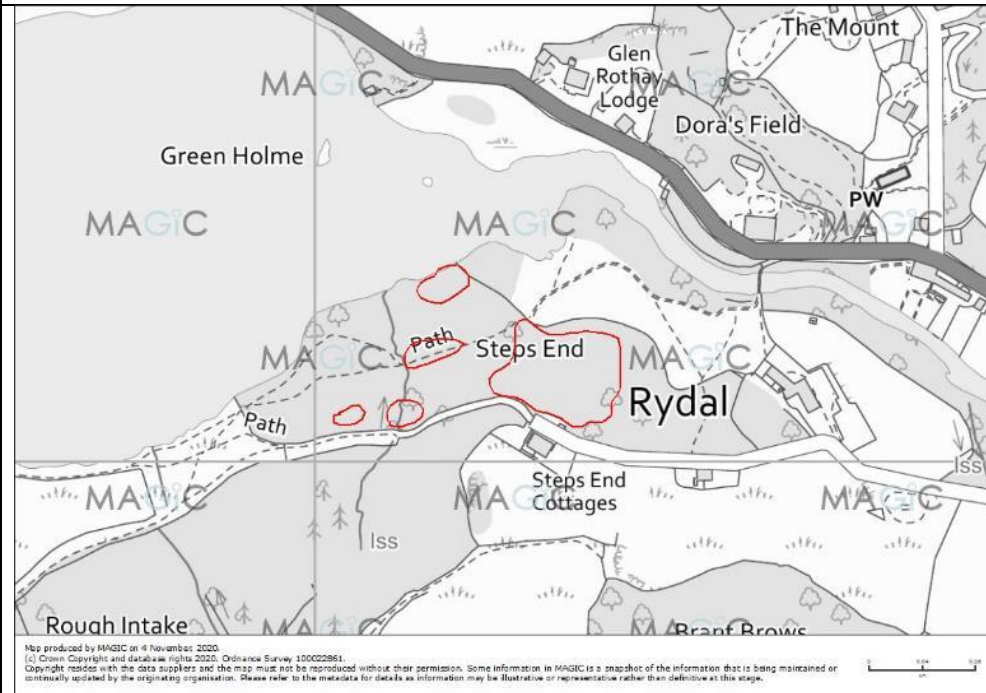
Appendix 1

Known extent of balsam patches (as per autumn 2020)*

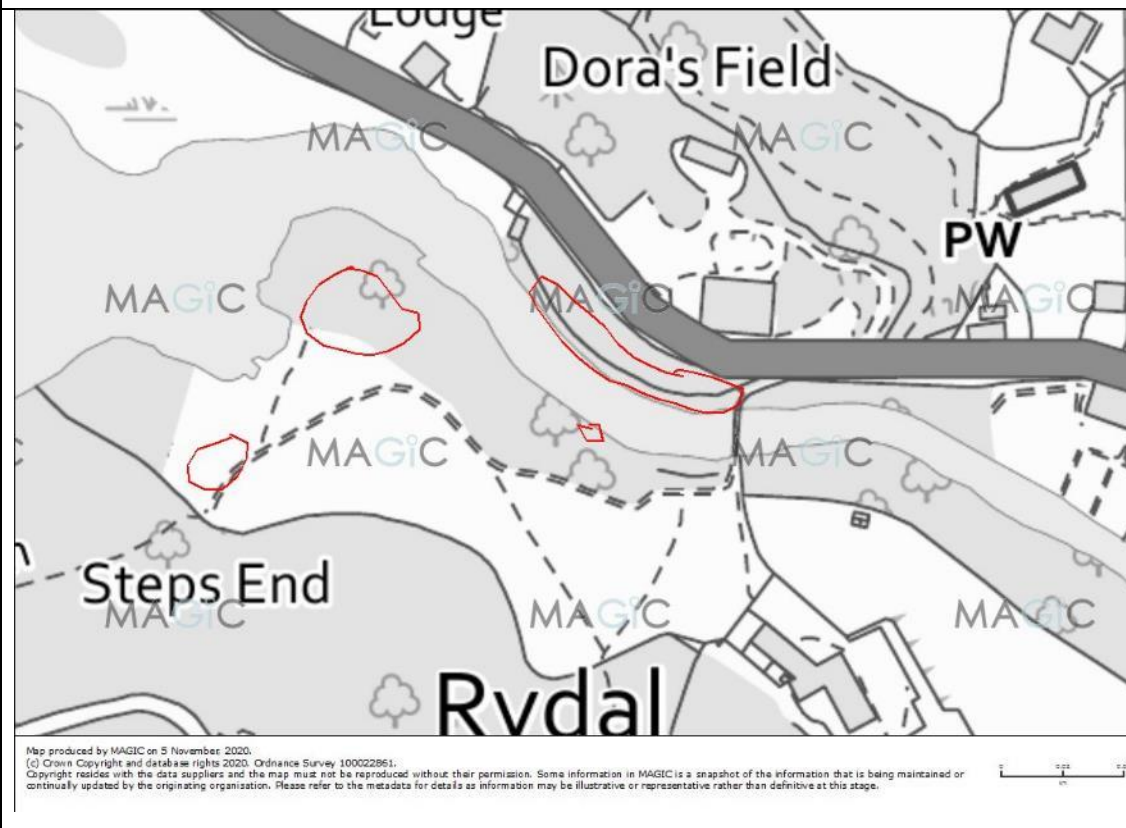
7 Pages

| |
|--|
| Grasmere – Boat Hire |
|  <p>Map produced by MAGIC on 21 August, 2020. (c) Crown Copyright and database rights 2020. Ordnance Survey 100022861. Copyright notices with the data suppliers and the map must not be reproduced without their permission. Some information in MAGIC is a snapshot of the information that is being maintained or periodically updated by the originating organisation. Please refer to the metadata for details as information may be illustrative or representative rather than definitive at this stage.</p> |
| Grasmere – ‘Polly’s Patch’ |
|  <p>Map produced by MAGIC on 21 August, 2020. (c) Crown Copyright and database rights 2020. Ordnance Survey 100022861. Copyright notices with the data suppliers and the map must not be reproduced without their permission. Some information in MAGIC is a snapshot of the information that is being maintained or periodically updated by the originating organisation. Please refer to the metadata for details as information may be illustrative or representative rather than definitive at this stage.</p> |
| <p>*Note that all boundaries are approximations based on visual observation; no GPS tracking was used. Extent of infestation may be greater than shown due to ‘outliers’. Scale of maps vary.</p> |

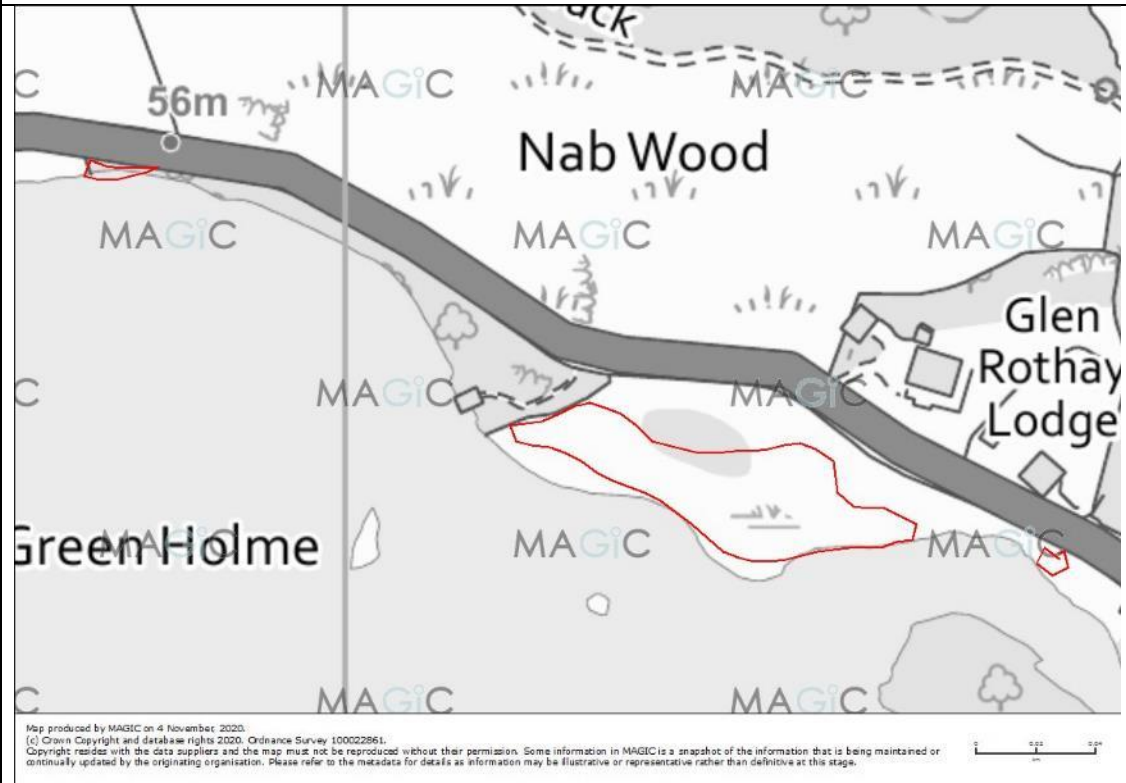
Patch 1 - Rydal



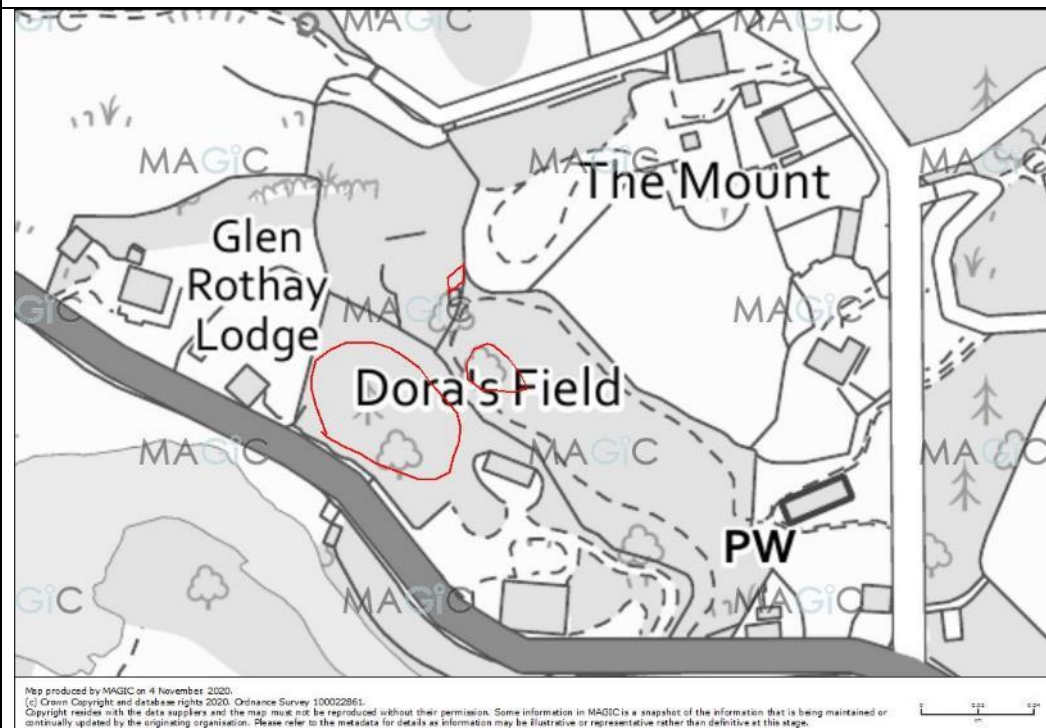
Patch 2 - Rydal



Patch 3 - Rydal

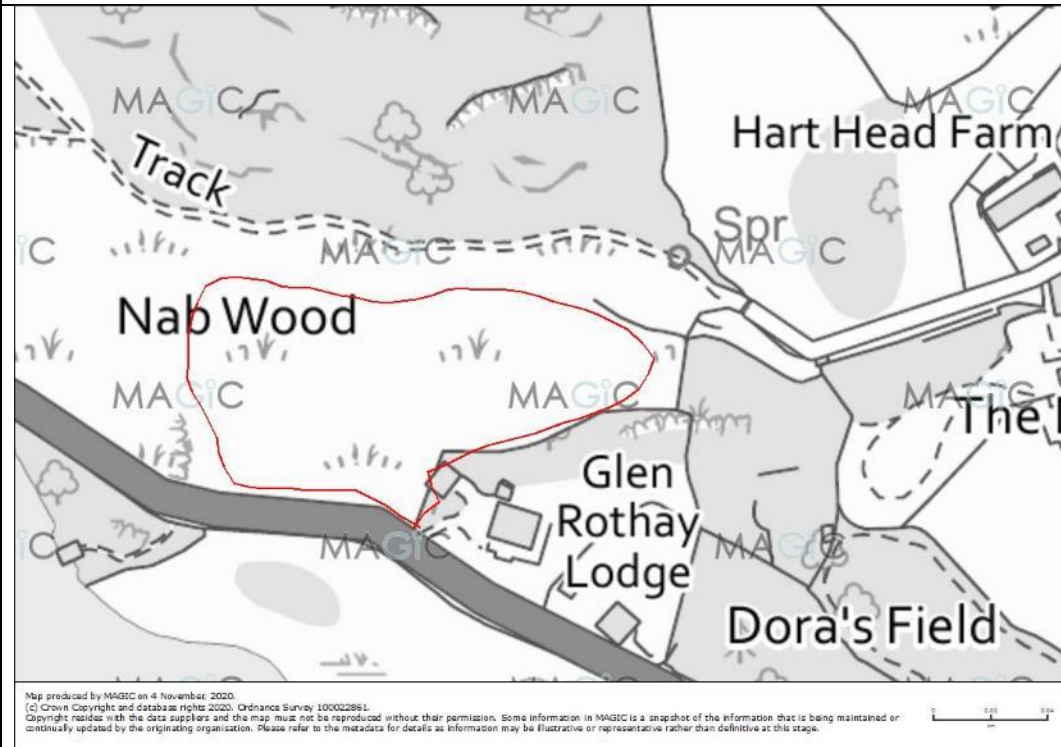


Patch 4 - Rydal

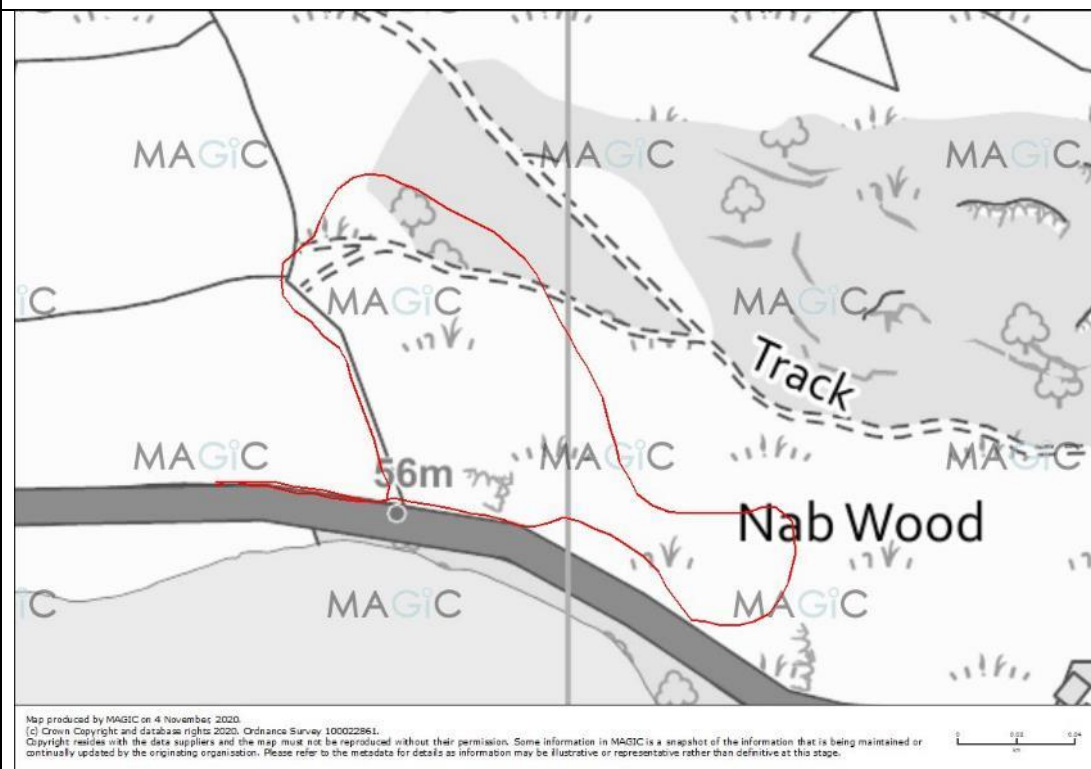


SCRT and FOLD

Patch 5 - Rydal



Patch 6 - Rydal



SCRT and FOLD

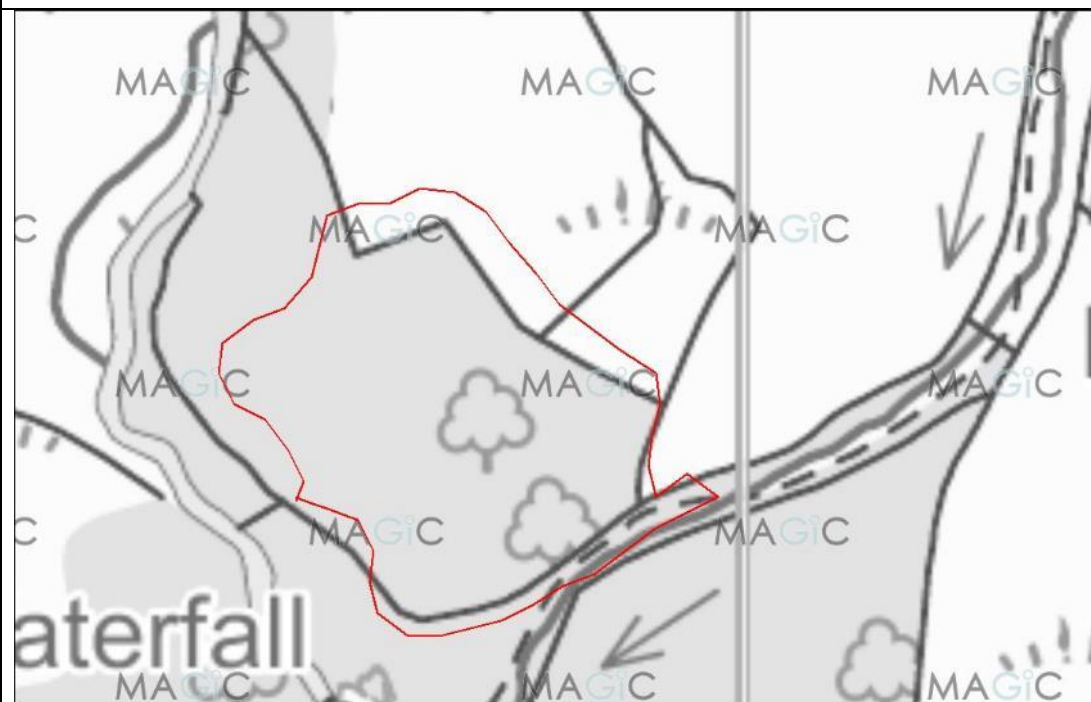
Patch 7 - White Moss



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Patch 8 - White Moss

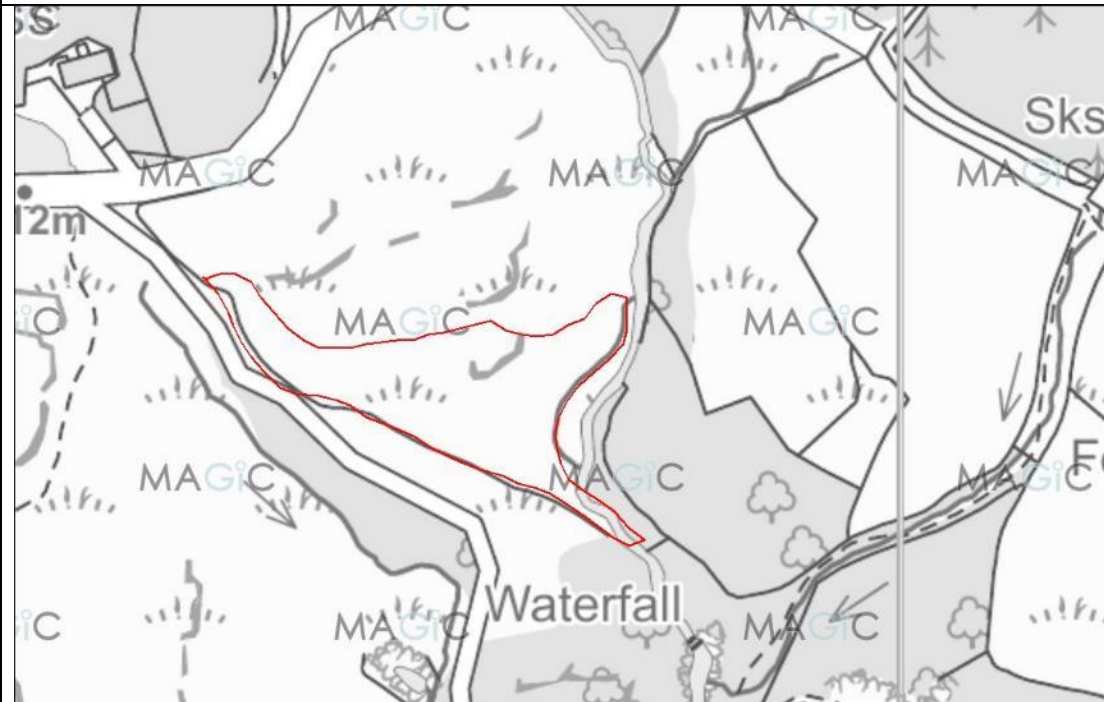


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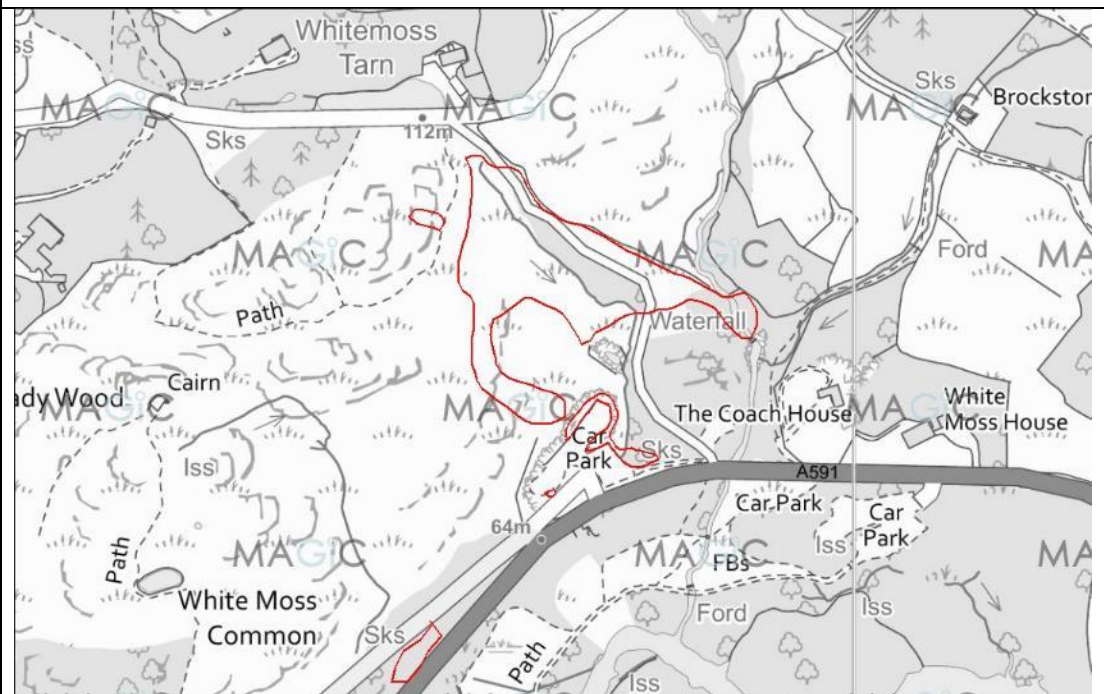
SCRT and FOLD

Patch 9 - White Moss



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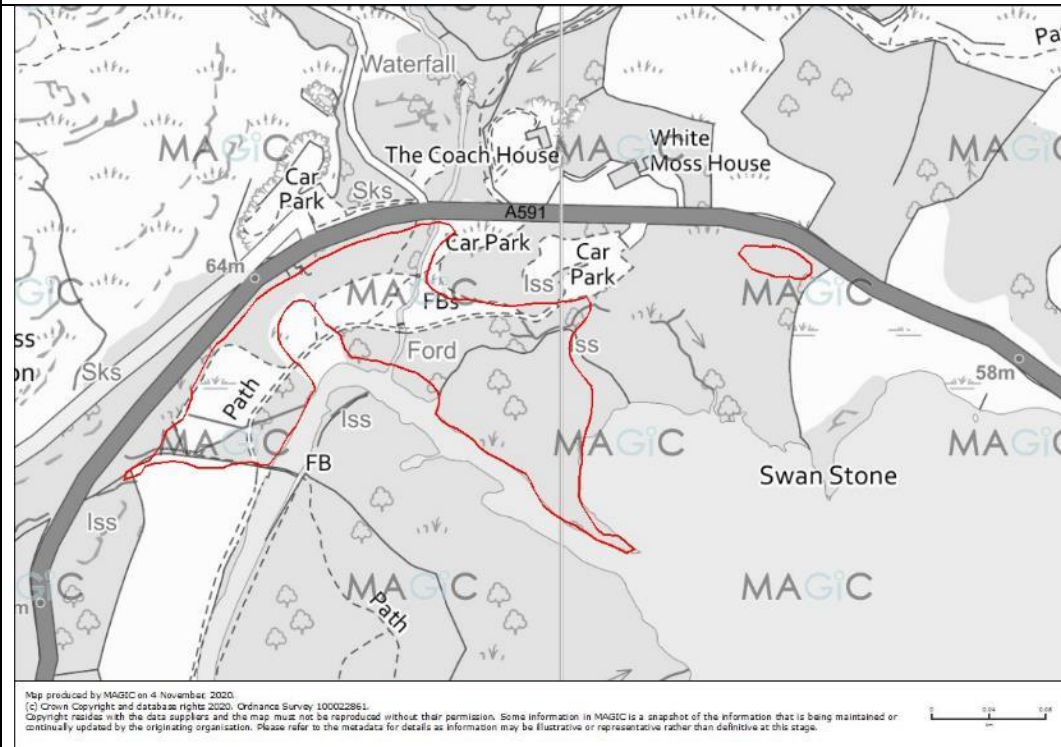
Patch 10 - White Moss



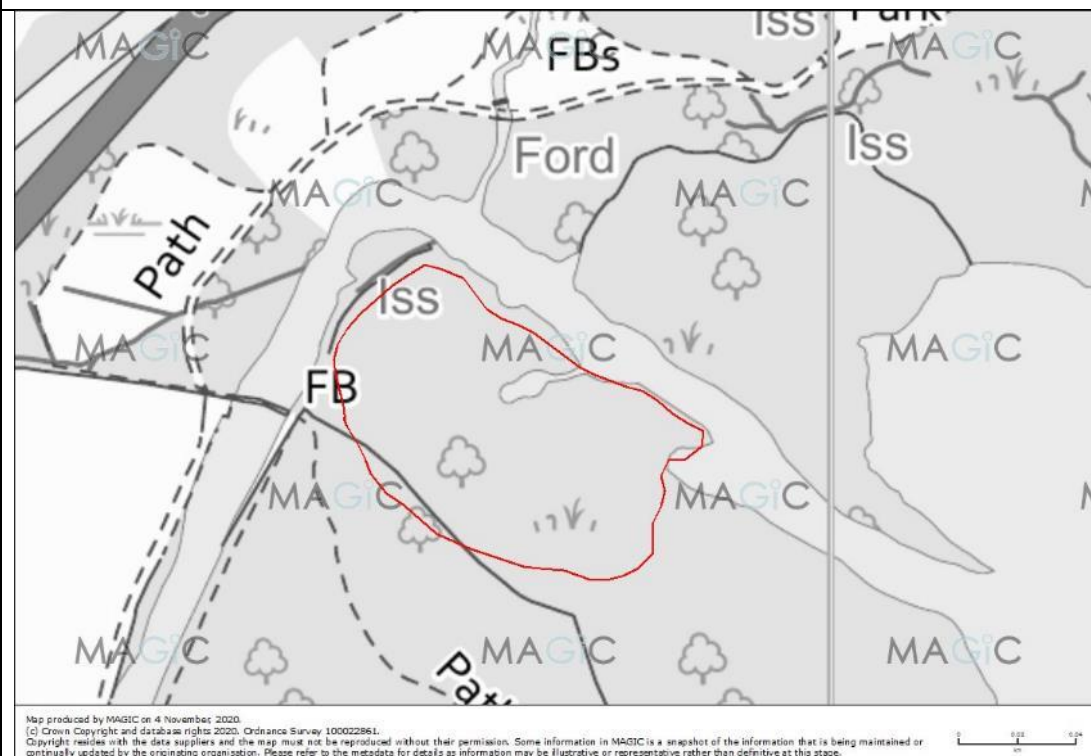
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SCRT and FOLD

Patch 11 - White Moss



Patch 12 – White Moss







SCRT and FOLD

Appendix 3

Before and After pictures for selected patches

4 Pages





| ‘Polly’s Patch – Before strimming | ‘Polly’s Patch – After strimming |
|--|--|
|  A photograph showing a dense thicket of tall green grasses and weeds growing on a steep, eroded bank. The vegetation is thick and overgrown. |  A photograph showing the same area after strimming. The tall grasses have been cut down, revealing a layer of dry, brownish vegetation and soil on the bank. The background trees are still visible. |
| Patch 1 - July 2019 | Patch 1 - October 2020 |
|  A photograph showing a dense thicket of green plants with small pink flowers, growing on a slope. The vegetation is thick and overgrown. |  A photograph showing the same area after strimming. The dense green vegetation has been removed, revealing a layer of dry, brownish vegetation and soil on the slope. A person in a blue shirt is visible in the background, standing on the slope. |
| Patch 2 – July 2019 | Patch 2 – October 2020 |

| | |
|---|--|
|  |  |
| Patch 5 – August 2018 | Patch 5 – August 2020 |
|  |  |
| Patch 6 – August 2018 | Patch 6 - October 2020 |
|  |  |

SCRT and FOLD

| | |
|---|--|
| Patch 7 – August 2018 | Patch 7 - September 2020 |
|  |  |
| Patch 9 – July 2020 9.30am | Patch 9 – July 2020 12.00pm |
|  |  |
| Patch 10 – July 2019 (Upper CP) | Patch 10 – October 2020 |
|  |  |

SCRT and FOLD

| | |
|--|---|
| Patch 11 – September 2018 (Lower CP) © Nigel Riley | Patch 11 – October 2020 |
|  |  |
| Patch 12 – July 2020 | Patch 12 – October 2020 |
|  |  |
