Marches Meadow Group

**Shropshire Hills AONB Conservation Fund Award CF2021/6**
**Harvesting Meadow Plant Seed for Sward Enhancement**
**Final Report**

## Marches Meadow Group

Marches Meadow Group (MMG) was initiated in 2015 and has provided plant surveys, grassland management advice and a hay making service to its members and others for the past five years. The ultimate aims are to increase the number and area of species-rich grasslands and hence increase the opportunities for meadow plants and animals to move between existing meadows, and to enhance the landscape with flower-filled grasslands.

Many MMG members have species-poor grassland and have requested help with enhancement of their meadows. There is also increasing interest amongst existing and new community groups in managing road verges for wildflowers: MMG notes that three of the projects supported by the AONB Conservation Fund in 2020-21 were for road verge enhancement projects. There are also opportunities to enhance lawns, public open spaces, school grounds and churchyards and MMG is keen to work with community groups and schools on enhancement projects.

## Methods of Sward Enhancement

To date MMG has promoted the use of green hay as a means of transferring seeds from existing high quality meadows (the donor site) to sites in need of enhancement (the recipient site). This requires the recipient site to have been cleared of its hay and ideally scarified to create germination sites within the sward before the hay on the donor site is cut. Once cut this hay is immediately transferred to the recipient site before being spread out to dry; as the hay dries seeds from the donor site hay fall to the ground.

Green hay is a proven technique, but requires co-ordinated preparation of the recipient site with the cutting of hay on the donor site. Collecting, transporting and spreading the cut hay needs to be done quickly and requires considerable volunteer (or contractor) effort on all but the smallest sites. MMG researched alternatives to green hay and concluded that seed harvesting was a viable technique if the collected seed is used promptly – longer-term storage would require careful drying and storage of the seed in dry, cool and rodent free conditions.

MMG therefore sought to purchase a seed harvester with the aim of collecting meadow plant seed from existing species-rich meadows. MMG proposes that collected seed would be air dried but would be sown at a recipient site within a few weeks of collection. This would also ensure that seed such as Yellow Rattle that require vernalisation (a period of cold weather to break dormancy) would experience the winter chill needed.

**Seed Harvesters**

Simon Cooter (Natural England) suggested asking MMG member John Bacon, formerly a Senior Land Manager at English Nature (now Natural England), to review the harvesters available on the market. Simon had previously researched seed harvesters and suggested the review should include an Australian-made machine called a Grass Grabber. John undertook the task and prepared a report that compared hand collection techniques (such as using a 'berry-picker') with the various machines on the market. Although hand collection methods have their place for small areas or where individual species are to be harvested, larger projects would require a machine harvester.

Machines varied greatly in price (£2395-£15300) and also mode of operation e.g. some could only be used with a tractor's power take-off (PTO), others could be trailed by an ATV and some were pedestrian powered. Apart from cost and operation, MMG considered ease of transport, ease of maintenance and the potential impact on the hay crop – it was thought that many MMG members would be rightly concerned by losing some of their hay to tractor or ATV wheels. On the other hand those that relied entirely on pedestrian effort were unlikely to be suitable for larger sites. The most expensive harvester was a German made electric 'E-beetle' harvester; although the environmental benefits of an electric machine were attractive, the cost was considered too great.

The options were discussed by John, MMG's chair David Poynton and secretary Richard Small. A recommendation to purchase the Australian Grass Grabber machine was put to and agreed by the MMG committee. As well as its use in Australia the machine had been exported to various European countries, primarily for use in collecting seed from alpine hay meadows. The evidence John compiled will be summarised in the summer 2020 issue of the magazine *Conservation Land Management*, a publication aimed at professional conservation managers. (A pdf of this article is available on request).

**Importing the Grass Grabber**

Although Paul Alessi, owner of the Grass Grabber company (http://grassgrabber.com.au/index.php) was very helpful in answering queries on costs, specifications etc., obtaining firm quotes proved challenging: allowance had to be made for fluctuations in the £ to AU$ exchange rates and Paul had not previously exported to the U.K. However, by the start of March 2020 MMG was reasonably confident that the total cost would be £5477.76; some funding was available from MMG's share of the Stepping Stones project (supported by players of People's Postcode Lottery) but as the seed harvester had not been included in the original Stepping Stones bid, additional funding was needed. MMG is grateful for the award made by the AONB Conservation Fund which made purchase of the seed harvester possible.

Unfortunately Covid-19 then wreaked havoc on international transport. Most flights out of Australia were suspended and freight charges on remaining flights increased dramatically. Sea transport was considered, but sea-freight charges were increasing and Paul ascertained that he would need to use a wooden crate, involving another raft of regulations regarding timber exports. For most of March and April it was unclear whether MMG could afford the additional costs and Paul had alternative customers for the machine ordered by MMG. Eventually more flights from Australia meant air freight costs declined a little, the exchange rate appeared favourable (although volatile) and the MMG order was confirmed.

MMG was aware throughout that each increase in cost also increased the taxes payable, including UK duty on imports and VAT, which was payable on the value including import duty and transport costs. The basic cost of the Grass Grabber (including a tool kit and spares) was AU$5905 (*c.* £3108) and air freight AU$3354 (*c.* £1765); taxes and shipping agent

charges totalled AU$2600 (*c.* £1368). Thus the total cost of acquiring the Grass Grabber became £6,241, approximately £764 more than estimated in the application to the AONB Conservation Fund as a result of the increased transport costs and the taxes payable on those costs. This additional cost and the remainder of the total purchase costs after the AONB Conservation Fund contribution can be met by MMG's share of the Stepping Stones award.

Financial costs were not the only factor to increase: although not included in MMG's application to the AONB Conservation Fund it was anticipated that some volunteer time would be required to research and evaluate harvesting options, clarify specifications and costs and place the order. In the event, the uncertainties caused by Covid-19 created great demands on volunteers, especially MMG chair David Poynton who undertook all the complex procedures involved in importing goods. It is estimated that MMG volunteers put in at least 100 hours to the project; of these an estimated 60 hours (including at least 230 e-mails) were in the period 16th April to 11th May when the Grass Grabber was finally delivered.


MMG Chairman David Poynton with the assembled Grass Grabber seed harvester. Note that the wheels are in the lowest position and can be adjusted to various heights when harvesting seed. The narrow width of the wheels ensures little, if any, damage to the standing hay crop.

**Using the Grass Grabber**

Having unpacked and assembled the Grass Grabber initial impressions are favourable (despite badly damaged packaging that gave cause for concern, but fortunately the machine had sustained no damage). The Grass Grabber can be used in two modes: pedestrian operation in which the machine is pushed while the motor drives the harvesting brushes, or attached to an ATV. The machine weighs just under 40kg and the wheels and handle can be removed, allowing transport in an estate car but requiring two people to lift it in.

The first serious attempt to use the Grass Grabber was at Pollardine Farm where it was hoped that Yellow Rattle seed could be harvested. This attempt encountered a number of issues: the Yellow Rattle was relatively short compared to the grasses and other vegetation.

This resulted in grass stems becoming wrapped around the brush bearings and impairing operation. The vegetation was slightly damp and weather conditions deteriorated to become light drizzle, making seed collection more difficult. Nevertheless over 3 kg (after passing through garden sieves to extract the larger plant debris) of slightly damp plant material was collected and this was spread out under cover to air dry. This seed (plus some from other sites described below) was used to enhance wide road verges at Nind, Acton and Bow House, each approximately 0.2 ha.

The grass-stem wrapping issue clearly needed to be resolved, and a team led by David Poynton and John Bacon experimented with various modifications; in the end only one of these was needed and seed collection became much more efficient. The Grass Grabber was used on four small hay fields (total area 1.5 ha) at Hill Cottage where approximately 5 kg of air dry seed was collected. Seed was also collected from the meadows at Hurdley Hall, primarily for use by the Verges Group but with some exchanged for some of the Hill Cottage seed. As well as use by the Verges Group, 5.25 kg was distributed to six other MMG members for use on species-poor grasslands they wished to enhance. Crucially, the use of the Grass Grabber as a pedestrian machine caused minimal damage to standing hay so that the hay crop was unaffected.

Rob Rowe using the Grass Grabber seed harvester at Hurdley Hall

Seed collected from Hill Cottage meadows in the hopper of the Grass Grabber

Seed was also collected by two MMG members for use on their own fields. One of these focused on late summer meadow plants, such as Devil's-bit Scabious, Harebell and Black Knapweed to further enhance 1.5 ha of hay meadow and also to start the enhancement of the National Trust's Ragleth Meadow. A second collection by this member was used to re-seed an area within a species rich meadow that had been invaded by coarse grasses, which were first removed by top-soil scraping.

The species-rich Dry Hill Bank on Ragleth Hill. Seed was collected to restore area after clearance of the invasive grass (top right). Lady's Bedstraw, Black Knapweed, Devil's-bit Scabious and Burnet Saxifrage are amongst the species from which seed was collected.

It is not possible to be precise on the area of grassland treated with collected seed as it depends on the seed-strewing density employed by individual MMG members, but a reasonable estimate would be 3 ha. In addition, collected seed was used on 0.6 ha of wide road verge and lengths of narrower road verges.

**Summary**

The import of the Grass Grabber was more exacting, and a little more costly, than expected, partly through Covid-19 related issues. Use of the seed harvester initially encountered problems but these were resolved with ingenuity, and the modifications adopted (and others that would further improve ease of use) will be fed back to the manufacturers as suggestions for an enhanced model. However, once the teething problems were overcome the Grass Grabber worked well and seed was collected from several sites and distributed to enhance or restore grasslands from All Stretton in the north to Mainstone in the south. MMG is confident that in future summers the Grass Grabber will allow much more seed to be collected and used to enhance grasslands throughout the AONB and beyond.

MMG gratefully acknowledges the support of the Shropshire Hills AONB Conservation Fund and would be very willing to share its experience of machine importation and seed harvesting with other community groups.

Richard Small, MMG Secretary
23rd September 2020