

Hay meadow restoration at Llanerchaeron

The Llanerchaeron Estate is nestled in the Aeron valley, near Aberaeron, West Wales. It was bequeathed to the National Trust in 1989 and comprised of a Grade I listed Georgian villa, Grade II listed farm buildings and 600 hectares of improved neutral grassland and woodland. The majority of the land was tenanted out to local farmers. The Trust kept around 100 hectares of land and woodland as their 'home' farm, to be managed traditionally with local native breeds and farming systems, with the aim to showcase older practices that may not be used any longer but are part of the local heritage of the farming industry in West Wales.

In 1992, 8.5 hectares of grassland, which was part of the main Parkland area, were converted back to traditional hay management with the objective to increase

the botanical diversity in the grassland. The management comprised of hay making between July and August, with sheep and cattle aftermath grazing. No additional seed was brought onto the meadows, and since the change in management, the diversity has increased. The meadow is now fully established and has around 50 different species of grasses and herbs.

As part of the Save Our Magnificent Meadows project, the National Trust decided to expand this management to a 2 hectare field nearby, River Meadow.

River Meadow had previously been managed by intensive sheep grazing that created a very short uniform sward. It was also grazed throughout the year, so no flowering plants had the opportunity to flower and seed.



Llanerchaeron Parkland © Victoria Squire



Spreading brush-harvested seed on River Meadow © Victoria Squire

A survey of River Meadow in 2013 identified very low numbers of basal rosettes of yellow rattle and common knapweed in areas that were less accessible to sheep, indicating that there was the possibility of some wild flower species being present throughout the entire field.

Receptor site preparation

River Meadow was prepared beforehand by cutting the grass very short and baling, to allow the seed to fall onto soil. Fortunately, there was only a small presence of docks and ragwort. It was felt that harrowing the land to create more bare ground would have seen a large increase in docks, so this normal site preparation undertaken when re-seeding grassland was not completed in this instance.

Seed collection and sowing

Seed was collected from the Parkland hay meadow at Llanerchaeron using a small brush seed harvester pulled behind a quad bike. This would have provided the opportunity to dry the seed for spreading later onto River

Meadow, but there was not enough space in the farm buildings. Instead, it was decided that the brush-harvested seed should be treated like green hay and spread immediately. It was hand sown within an hour of collection with the help of volunteers.

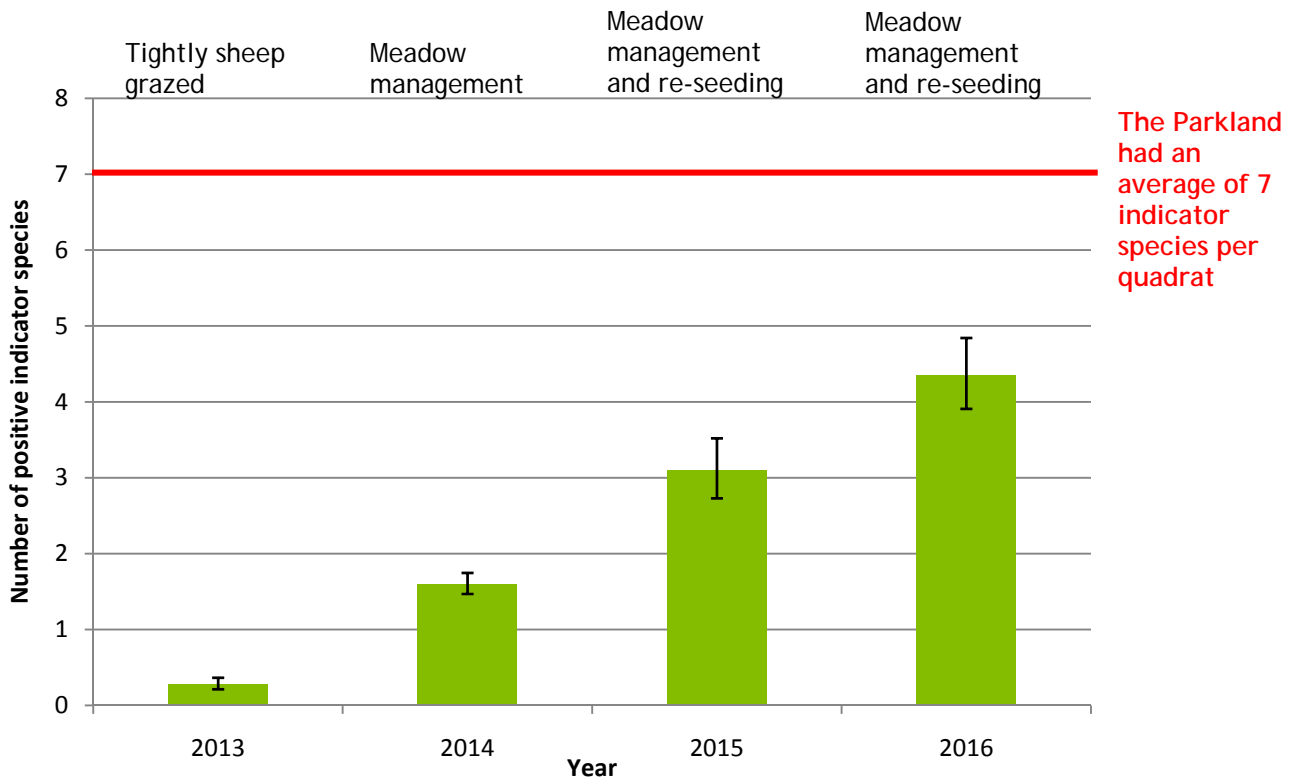
Immediate aftercare management

After the seed had been spread, cattle were introduced to River Meadow to trample the seed into the soil. This was thought to be more effective than just rolling the field, also kept the sward short enhancing germination opportunities, and as the livestock were available it was not an inconvenience. The field was then lightly grazed over the winter to keep the grass under control, particularly as one of the plants that the Trust wished to establish, yellow rattle, is shade intolerant. In April, it was shut-up to allow the grasses and flowers to grow. Yellow rattle can germinate in February, and care was taken with the livestock that they were not nibbling the tender shoots. The livestock would have been removed from the field if this had started to occur.





Number of positive indicator species found in River Meadow





River Meadow in 2013 © Victoria Squire



River Meadow in 2016 © Victoria Squire

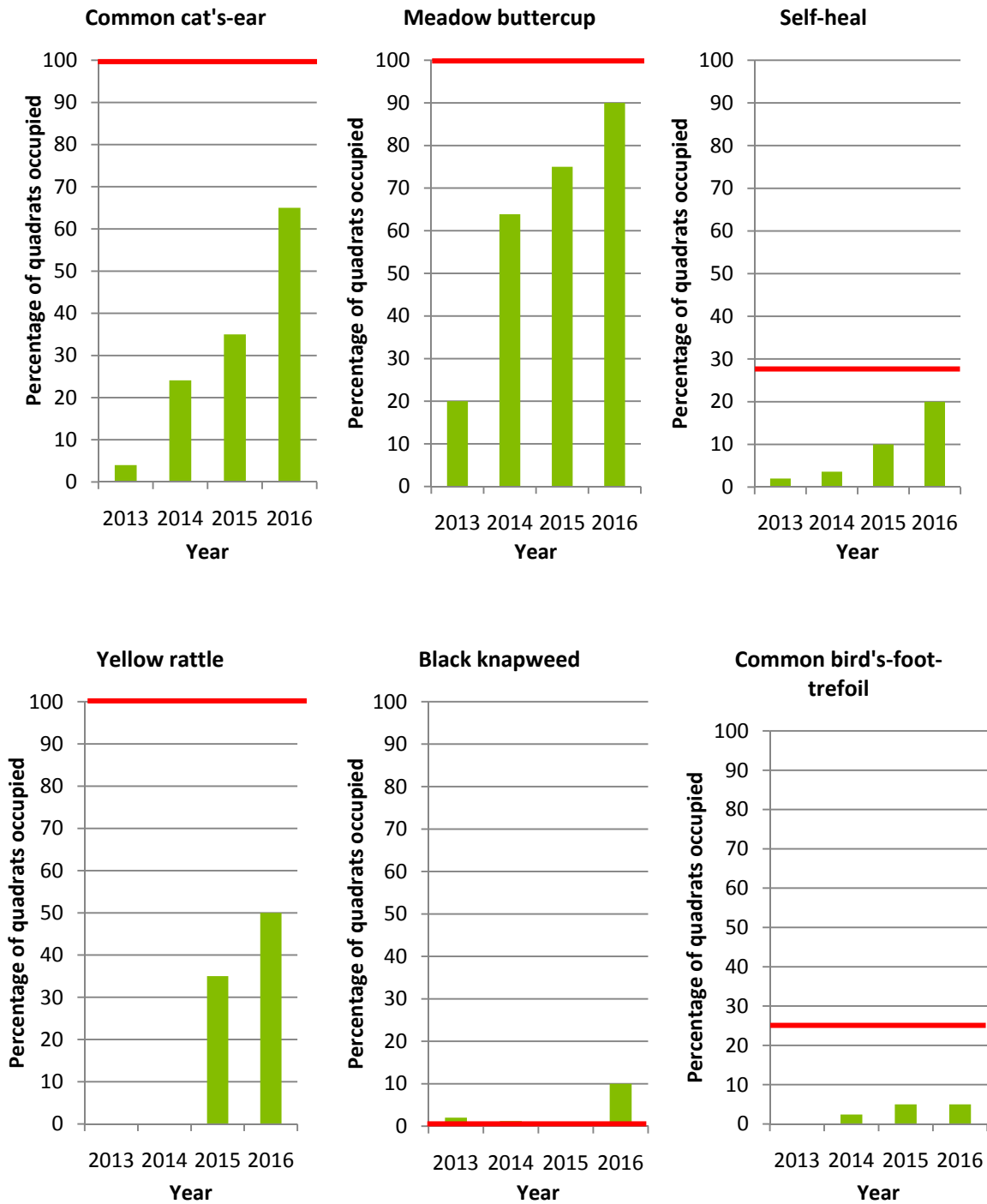
Results of the species-rich grassland restoration

The introduction of seed and the change in management has made a huge difference in River Meadow. Surveys carried out in 2015 and 2016 provide evidence for this. The number of positive indicator species has increased significantly each year. In 2013, River Meadow had an average of less than one positive indicator species per quadrat. There was a significant increase in positive indicator species with the change in management from tight sheep grazing in 2013 to hay meadow management in 2014. There was a further significant increase in positive indicator species in 2015, which was a result of the continued hay meadow management plus the seed and this trend continued in 2016 with an average of over four positive indicator species per quadrat.

Common cat's-ear, meadow buttercup and self heal were all present in River Meadow prior to the change in management, but at very low frequency, and all increased in frequency with the change in management and spreading of seed. Yellow rattle was introduced in the seed and by 2016 was found in half of the quadrats. The abundance of common knapweed also increased throughout the field. Common bird's-foot trefoil was present after the change in management, but there was no significant increase in frequency following the application of green hay unlike some of the other positive indicator species.

The Trust's vision for this field is to see it continue to improve over the years through continued hay meadow management, no fertiliser or farm yard manure and mixed cattle and sheep grazing over the winter. Rapid Assessment surveys are being carried out each year to be able to monitor the positive indicator species, as well as the negative indicator species such as nettle, thistle and ragwort to ensure management changes are made to limit their spread. It is hoped that it will become as species diverse as the donor meadow.

Frequency of individual positive indicator species found in River Meadow



Sample frequency per year of common cat's-ear, meadow buttercup, self-heal yellow rattle, common/black knapweed and common bird's-foot-trefoil present in River Meadow. The red line indicates the sample frequency at the donor site, Parkland.