Archaeophytes Project

Progress Report - 2017

The Species Recovery Trust
37 Albany Road
Salisbury
SP1 3YQ
01722 322539
enquiries@speciesrecoverytrust.org.uk
www.speciesrecoverytrust.org.uk
Registered in England and Wales Charity 1146387

NATURAL ENGLAND

Summary of 2017 work

Key outcomes

- Fieldwork in Ireland to look at the last native sites for Darnel
- Research into Spring and Autumn Darnel sowing yields
- First trial of Goosefoot in arable margin carried out
- Three new sites brought into project
- Goosefoot grown in three locations, Darnel in four.
- Meetings held in advance of hopefully trialling five arable sites in 2018

We are hugely grateful to Natural England for funding this work.

Project Overview

This project aims to re-introduce Darnel (*Lolium temulentum*) and Upright Goosefoot (*Chenopodium urbicum*) back to a range of sites across England. This project so far has obtained seed for both species and bulked it up to usable quantities, researched the growth of plants in different mediums and established populations in four field sites and test beds at Kew Gardens.

We have now harvested large quantities of Goosefoot and Darnel, and have enough seed to distribute to a new network of sites.

Visits and liaison were carried out at Stonehenge, Hengistbury Head, St Lawrence Field, College Farm, Pertwood Organic Farm, Lower Smite Farm and Whittlesford, the latter five will be growing populations in arable field margins over the next year.

Darnel

The Darnel project this year focussed on three areas:

1. Research into the seed yields of spring and autumn sown plants at Kew Gardens
2. A fieldtrip to Inish Meain to observe plants and assess the conservation status of plants on the Island
3. Outdoor trials to grow plants at three locations

Inish Meain, Ireland

A field visit was carried out to Inish Meain in July 2017, with the intention of observing plants in the wild and assessing the conservation status and outlook for these populations in the future.

The visit was hosted by Patrick McGurn, from the Aran Life Project, and huge thanks are due to him to making the visit possible.

Inish Meain is a fascinating Island – ostensibly a slab of limestone set out in the Atlantic, with two neighbouring islands, which make up the Aran Islands. Farming has been made possible over the centuries by the construction of hundreds of small enclosed paddocks and over much of the Island the creation of fine topsoil through centuries of gathering and laying down seaweed.

The majority of fields contain grassland pasture, with a dizzying array of calcareous wildflowers. Potatoes are grown rotationally, and at the time of visit there were four fields growing Rye. Two were inspected and both found to be hosting Darnel plants, at a low density (roughly 1 plant per $4m^2$, although it was not possible to walk through the crop to look for more.

The Rye is typically grown in a small section of larger fields, in areas 5x10m.

There appear to be only two farmers still growing Rye, as the tradition of thatching has more or less died out on the Island, as witnessed by the large amount of derelict barns, or barns with corrugated iron roofing. A meeting was held with the farmer who had collected the original seed, now being used for the project, and we were lucky to see how he gathers the rye in bundles. He stated that while Darnel is not a huge problem, they do tend to remove it from the bundles as a matter of habit, perhaps because it makes inferior thatch. He also stated he is unlikely to grow Rye much in the future due to his deteriorating health.

There appears to now be only two buildings on the Island with a rye thatch – one small barn on the southernmost tip of the Island, and a larger house in the centre, which is curated as a museum to the playwright JM Synge who spent time on the Island at the turn of the last century.

Our feeling was that this museum is likely to continue to operate and for cultural reasons be kept with the original Rye thatch, but this may be the only reason Rye is continued to be grown on the Island, and as such would be grown sporadically. Whether the Darnel could survive on such a small scale remains to be seen.

An interesting development occurred sometime after we left the Island, with a large pharmaceutical company requesting some Rye seed from the Island. Should this lead to a more commercial propagation of this type of Rye it unlikely this will lead to an increase in Darnel being grown, as it is essentially a contaminant of Rye crops.

It was very useful to see the Darnel growing in amongst the rye as opposed to the pure stands of it we had grown in the trials, and the plans for the next phase of the project are focussing on growing it amongst crops to replicate this habitat.

It seems highly possible that Darnel will vanish of the Inish Meain at some point in the future, as there appears to be little appetite for using thatch on buildings. It also appears that Darnel is not found on the other Aran Islands or on the Irish mainland. As such, this project offers an incredibly timely lifeline to this species.

Kemerton

Once again plants were grown with relative ease in the outdoor nursery and seeds were sent to us for use at other sites

Butser Ancient Farm

Approximately 50 seeds were sown on 3rd October, and the majority of these fully grew and produced a large quantity of seed. Rough calculations showed that each plant produced roughly 150 seeds.

The Ancient Technology Centre, Cranborne

Approximately 20 seeds were sown in some dug over ground on 26th November 2016. The planting was carried out in a new area slightly away from the public due to concerns of the Darnel and associated Ergot entering the human food chain. Half the area was protected with dead thorn branches to observe what effect these would have on survival of the plants. The site was monitored in Jan 2017 and seedlings recorded in the protected area. Much fewer seedlings were present in the unprotected area, but this appeared to be due to damage from animals (badgers?) rootling in soil rather than intentionally predating on the seedlings.

On 15th June disaster struck when all the plants had their heads eaten off, we suspect by Deer. However, by October these plants had re-grown and a decent amount of seed was harvested, which was a useful exercise in seeing how the plants can regeneration after browsing damage.

Wakehurst Place, UK Native Seed Hub

Work in 2017 was focussed on comparing growth and seed production of plants sown in the Autumn and Spring – this was partly of scientific purposes but also as there has been difficulty in finding sites willing to carry out autumn sows as many plough or carry out clearance over the winter.

Three treatments were given to the seeds

- Autumn sown indoors
- Autumn sown outdoors
- Spring sown outdoors.

The results were as follows

- The timing and temperature of sowing did not affect the germination percentage significantly (around 80% for all sowings), but germination was much faster in the glasshouse and in spring.
- Seedlings over-wintered in the glasshouse were much more vigorous and flowered much earlier than those over-wintered outdoors or sown outdoors in the spring.
- Seedlings sown in autumn and over-wintered outside were slightly more advanced than seedlings sown outside in the spring.

In summary, the spring sown plants were slightly smaller than the autumn sown ones, but the difference in the plants was not that marked, meaning plants can be Spring sown with equal efficacy as autumn sown ones.

However in a natural regen setting obviously a spring cultivation would have the effect of destroying any germinated seedlings, so spring sowing can only realistically be used for newly created populations.

Hengistbury Head

Seeds were sown in October 2017 and have shown a good rate of germination.

The staff and volunteers at the site have fully engaged with the product as it has helped with their interpretation of ancient life at the Hengistbury site (which was settled from the Iron Age onwards). There are plans to dry plants and include them in the exhibits in the museum.

Wren Park Farm, Whittlesford

Discussions were held over the Autumn with Ashley Arbon about introducing both Darnel and Goosefoot into a more natural arable situation, and in October a field margin was sown with Darnel seed.

Upright Goosefoot

Kemerton

A large number of plants were once again grown at the nurseries at Kemerton, yielding 40g of seed. No problems were reported with the germination of seeds

Butser Ancient Farm

Two methodologies were trialled this year. One plot where plants grew in 2016 was simply dug over in the Spring to see whether we could achieve natural regeneration. Although a large quantity of seed has been collected off the plants a good quantity was left to fall to the ground and it was hoped this would re-grow in 2017 giving us a semblance of a natural populations. Another patch was sown with Goosefoot (collected from Kemerton) to compare sowing with natural regeneration.

Sadly no plants at all germinated in the regen plot, and only one very small plant was recorded in the sown plot, which died before flowering. As such, a comparison between the different treatments was not possible.

We initially thought there may be a problem with the seeds, but after plants were successfully grown at two other sites we discounted this. The only other theory is that the unusually hot and dry spring means either seeds did not germinate, or germinated and then withered away.

The Ancient Technology Centre, Cranborne

Goosefoot was once again sown at Cranborne, but unfortunately no plants were subsequently recorded. AS with Butser we suspected that the hot dry spring was a potential culprit, although confusingly thee plants were periodically watered, so the reasons behind the failure on this site are rather more complex!

Hengistbury Head

A small amount of seed was sown here and several plants grew, including one of the largest plants ever seems, with a multi-stemmed woody base stem.

Bredon

A small number of seeds were sown in a arable headland at this site, which neighbours Kemerton. Sadly none of them were recorded as plants, which we suspect is for similar reason at failures at other sites.

Next year we will be sowing seeds in an arable plot at Pertwood Organic Farm in Wiltshire, Wren Farm in Cambridgeshire and possibly St Lawrence Field on the Isle of Wight, to once again try and establish plants in a more 'wild' setting.

Wren Park Farm, Whittlesford

The plan is to introduce Upright Goosefoot to the edge of a manure heap in spring 2018 to observe is growing in a hyper-eutrophied environment, as many other Chenopodium species do.

Lower Smite Farm

Worcestershire Wildlife Trust have agreed to grow goosefoot in their 'mini-smite' area and assess the species before potential introduction at the main Smite site

College Lakes

BBOWT have agreed to grow Goosefoot in Spring 2018 and discussions are on-going about the potential introduction of Darnel.

Conversations were also held with Fivehead Arable Fields, Churchtown Farm, West Pentire and Tadmarton Heath Reserve, but for various reasons it was decided that these sites would not be suitable for the project at this stage.

Images

INISH MEAIN

Above: Rye crops and Darnel within crop
Below: Rye in bundle ready for thatching, ergot on Rye plant

INISH MEAIN (cont.)

Above: Rye thatch on barn and museum roofs
Below: Abandoned barn and new corrugated iron roof

rop
ing, ergot on Rye plant

KEW GARDENS, WAKEHURST

Above: Spring sown (L) and autumn sown (R) seedlings in May
Below: The outdoor trial bed

ANCIENT TECHNOLOGY CENTRE

Above: Darnel seedlings in enclosure protected by brash
Below: Darnel having suffered from deer browsing

HENGISTBURY HEAD

Above: Upright Goosefoot planting with volunteers; plants in the summer
Below: Multi-stem and partially lignified base of Goosefoot: Darnel plot in Autumn 2017

BUTSER ANCIENT FARM

Above: Weeding and rotovating Goosefoot plot for natural regen
Below: Line of Darnel seedlings in Spring 2017.

WREN FARM, WHITTLESFORD

Darnel plot before and after sowing

About Us

The Species Recovery Trust is a charity set up to tackle the loss of some of the rarest species in the UK.

There are over nine hundred native species in the UK that are classed as under threat, with several hundreds more currently widespread but known to be in significant decline. The countryside is now bereft of many species that were a familiar sight a mere generation ago.

A small number of these species are on the absolute brink of existence, poised to become extinct in our lifetimes; our goal is to stop them vanishing.

Our aim is to remove 50 species from the edge of extinction in the UK by the year 2050. In addition we are reconnecting people with wildlife and the natural world through training programmes and awareness raising.

the species recovery trust

The Species Recovery Trust
37 Albany Road
Salisbury
SP1 3YQ
01722 322539
enquiries@speciesrecoverytrust.org.uk
www.speciesrecoverytrust.org.uk
Registered in England and Wales Charity 1146387