



Archaeophytes Project 2019 Report



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

the
species
recovery
trust

The logo for The Species Recovery Trust, with the words "the", "species", "recovery", and "trust" stacked vertically. "the" and "trust" are in a light green color, while "species" and "recovery" are in a blue color. The logo is positioned in the bottom left corner of a photograph showing a mossy tree stump in a field of purple flowers.

PROJECT OVERVIEW	3
2019 SUMMARY	4
THE SITES	5
WHITTLESFORD	11
BUTSER ANCIENT FARM	5
COLLEGE LAKES	10
CHOLDERTON	10
OTHER SITES	ERROR! BOOKMARK NOT DEFINED.
PERTWOOD ESTATE	11
HENGISTBURY HEAD	11
WANDLEBURY	ERROR! BOOKMARK NOT DEFINED.
ACKNOWLEDGEMENTS	12
ABOUT US	13

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 viable quantities in the Millennium Seed Bank, researched the growth of plants in different mediums and established populations in nine field sites and two test beds at Kew Gardens and Salisbury.

This project forms part of the Government's Biodiversity 2020 strategy which contains the following targets

Darnel

- *Identify suitable source material for re-introduction/translocation and maintain ex-situ material as seed source for introduction programme.*

Upright Goosefoot

- *At key sites ensure appropriate management is in place (e.g. disturbance regimes, times of disturbance etc.).*
- *Research the availability of potential new nutrient-rich disturbed habitats (e.g. outdoor pig and poultry farming) and measures to establish populations, if considered necessary.*
- *Surveillance programme: monitor extant site and translocation/re-introduction sites.*

Work in 2019 again focussed on growing the plants in more 'natural' situations, in amongst vegetation assemblages and crops rather than in monoculture beds. The heatwave of 2018 meant that we lost nearly all the trial populations, so in 2019 had to reseed most sites with new seed from Kew Gardens.

Ergot was observed in neighbouring plant communities at Butser Ancient Farm, but once again failed to appear in any of the Darnel plants.

Upright Goosefoot once again had a very poor year, with ever smaller plants being produced from the seed.



Location of project sites

2019 Summary

What we learnt

- Upright Goosefoot appears to have extremely low tolerance to heat/drought conditions, as even in the relatively 'normal' summer of 2018 we failed to produce any large plants.
- We have still not observed Ergot in Darnel, despite the fungus being present in plants adjacent to the trial site
- The viability of the Darnel seed does appear to drop off after one year, with the 2017 batch seeds showing much lower survival rates
- Upright Goosefoot appears to have virtually no ability to regenerate from seed bank, as far as we have observed.

What our next plans are

- Commission Kew to grow up a batch of Upright Goosefoot and check the viability of the seed
- Enquire/re-survey extant Upright Goosefoot site in Essex
- Repeat uncropped margin trials at Whittlesford with larger amount of seed
- Repeat and intensify in-crop trials at Butser, combined with trial of Darnel natural regeneration bed
- Grow more Upright Goosefoot at Butser with differing manure quantities.
- Continue in-crop trials at College Lakes
- Compare growth rates of collected seed and new seed from Kew at Hengistbury Head.

For Darnel we are hoping to head towards a point where we can observe natural regeneration within a crop, which we hope our trials at Butser will allow the observation of.

The Sites

Butser Ancient Farm

A small bed of Darnel was sown in the Autumn with the intention of building up the amount of plants in this trial bed. These plants had nearly all perished in the drought of 2018 and it was felt there was not enough material present to effectively test natural regeneration from seeds dropped in the soil.

In the Spring Goosefoot was sown into a trial bed, and a large amount of Darnel seed was sown into the main crop bed, alongside side a wheat crop.

By June Darnel and Goosefoot were growing in all the trial beds. From this point onwards, the Goosefoot plants became very weak, and were rapidly overtaken by Fat Hen plants, which had to be weeded out. There had been a hot spell of weather during this period and it was most likely that that caused the plants to develop poorly – there was no evidence of any predation or pest damage on the plants.

The Darnel in the main crop bed produced an excellent crop, but unfortunately the wheat with which it was planted completely failed. The reasons for this were unclear as these had been tested for viability. This unfortunately meant we were not able to observe the Darnel growing as a crop contaminant.

The Darnel produced an initial good crop of seed but this was reduced by harvest time – either due to Deer browsing or the seeds dropping off before harvest.

In October all the beds were dug over. One trial Darnel regeneration bed was left which will have no seeds added, so see if the plants can regenerate from dropped seed. The Darnel was inter-sown with Barley and Wheat, and as a pure crop in one bed.

We are hugely gratefully for the amount of time and effort put into this work by the staff at Butser!



Dandelion bed in February from previous autumn sowing



Dandelion spring sowing in April



Main crop bed in June



Main crop bed in June



Upright Goosefoot - July



Detail of glands beneath leaves



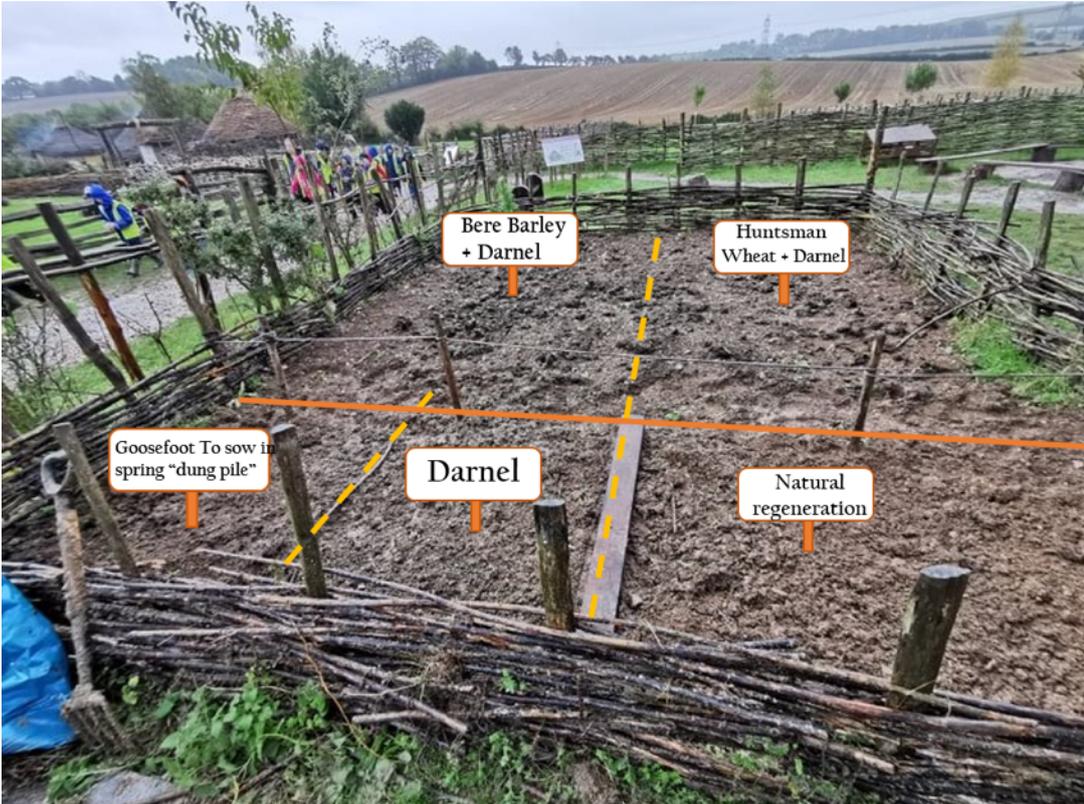
Main crop bed in July



Main crop bed in July



Preparation of beds for October sow



2019/20 Sowing plan

College Lakes

Trials here again produced very small Goosefoot plants, and staff here has raised concerns about the seed, which has prompted us to go back to Kew and request they grow some more in 2020.

The Darnel grew well in the nursery, and a small amount was moved to the crop fields where it grew well. Some plants were harvested and some left to naturally drop seed into the cropfield.

Cholderton

The Cholderton Estate, under the management of Henry Edmunds, has become a leading site for the cultivation of rare arable plants and is one of the release sites for Interrupted Brome.

After extensive discussion we were granted a small strip on the edge of a cultivated plot to try and establish both species. The site rests high on a chalk plateau with a light loamy soil and would act as a good contrast for the more clay-rich site at Butser.

Seed was sown for both Darnel and Goosefoot in April 2019. The plants were observed to germinate but sadly by the end of June had died in the hot dry spell. Further back-up specimens were planted from plugs. The Darnel once again perished from lack of moisture, but the Goosefoot did persist.

However, the plants were amongst some of the smallest produced so far, with an average height of 7cm. They did however flower and produce seed.



Trial bed at edge of spring



After the Darnel seed failed to germinate plug plants were introduced in June



Upright Goosefoot in September showing reduced size



Fat Hen at the edge of the trial bed

Pertwood Estate

Detailed examination of the trial plot was carried out to see if any Upright Goosefoot had naturally regenerated from the 2018 sowing, but no plants were found, despite there being huge amounts of Fat Hen.

Whittlesford

Sadly, in early 2019 Ashley Arbon was involved in a car crash and suffered injuries which made it impossible to carry out any work at this site in 2019. However, Ashley has made a good recovery and is extremely keen to continue with this work in 2020. We wish him a continued speedy recovery!

Hengistbury Head

Upright Goosefoot was once again planted here using seed kept back from the previous year. The plants grown were slightly larger than 2018, but still nothing in comparison to the huge plants grown in 2017. In accordance with other sites it was felt like the seed was not producing as good a yield as it was two years ago. A small amount of seed was harvested, and in 2020 this will be grown alongside new seed from Kew to compare growth rates.

The Darnel trials produced an interesting picture. The 2017 seed didn't produce any plants at all (cf. 2017 seed was grown in Salisbury successfully, but had a lot of care and watering). The 2018 seed did produce plants but of a poor crop. This site receives limited watering as it is largely cared for by volunteers. No seeds were collected as they dehisced during a dry hot spell, as witnessed in Butser.

Acknowledgements

We would like to thank everyone who has donated time and energy to the project, but in particular:

- Simon Jay, Claire Walton & Victoria Melliush; Butser Ancient Farm
- Ashley Arbon; Whittlesford
- Nick Adams; Pertwood Organics
- George Bray, Mark Vallance and Leo Keedy; BBOWT College Lakes
- Val Simcock; Hengistbury Head Visitor Centre
- Jasna Furlan; Ancient Technology Centre, Cranborne
- Caroline Corsie; Worcestershire Wildlife Trust
- Edward Wombwell; Gog Magog Hills
- Henry Edmunds; Cholderton Estate

And primarily John Martin and Jonathan Cox and Natural England for their continued support and funding of the project.

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

37 Albany Road

Salisbury

SP1 3YQ

01722 322539

enquiries@speciesrecoverytrust.org.uk

www.speciesrecoverytrust.org.uk

Registered in England and Wales Charity 1146387