FROM ARABLE FIELDS TO BUTTERFLIES

HEATHLAND RE-CREATION AT PREES HEATH COMMON RESERVE

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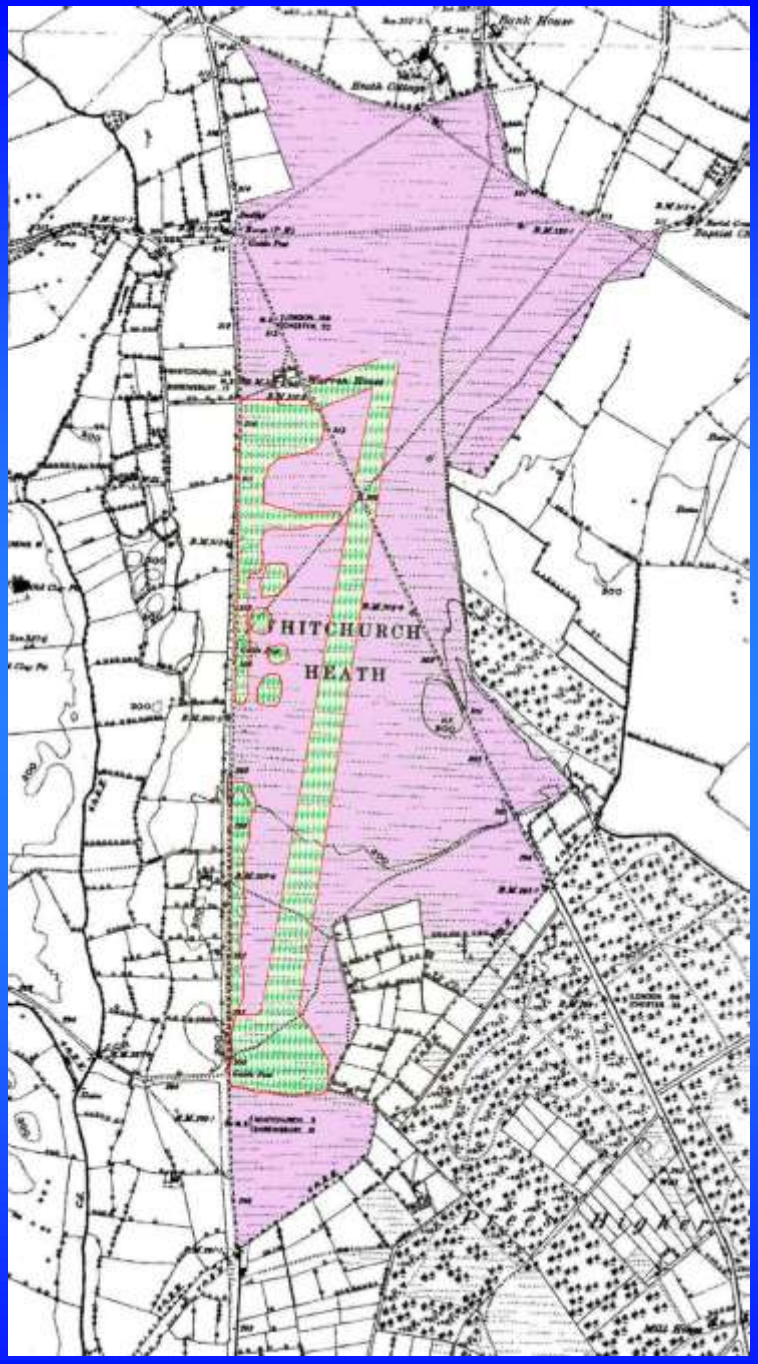
Prees Heath location - Shropshire, English Midlands

AIM

Habitat mosaic
Biodiversity

TO RE-CREATE HEATHLAND HABITAT FOR SILVER- STUDDED BLUE BUTTERFLY



PREES HEATH COMMON

Heathland heritage

Extent of heath in 1880

1915- became a trench warfare training camp

Airfield - 1940's

Conversion to arable - 98% loss of heathland - 1950's

Green shaded area = patchy relict heath - 2000

INVESTIGATION OF SOIL PROFILE

Former arable land
October 2006

300 - 400 mm topsoil

over glacial sand and gravel

SOIL CHEMICAL ANALYSIS

		Extractable mg/l		
Profile depth	pH	P	K	Ca
0 - 100 mm	7.0	58	300	1588
250 - 350 mm	6.9	38	116	1341
800 - 900 mm	6.3	6	15	70

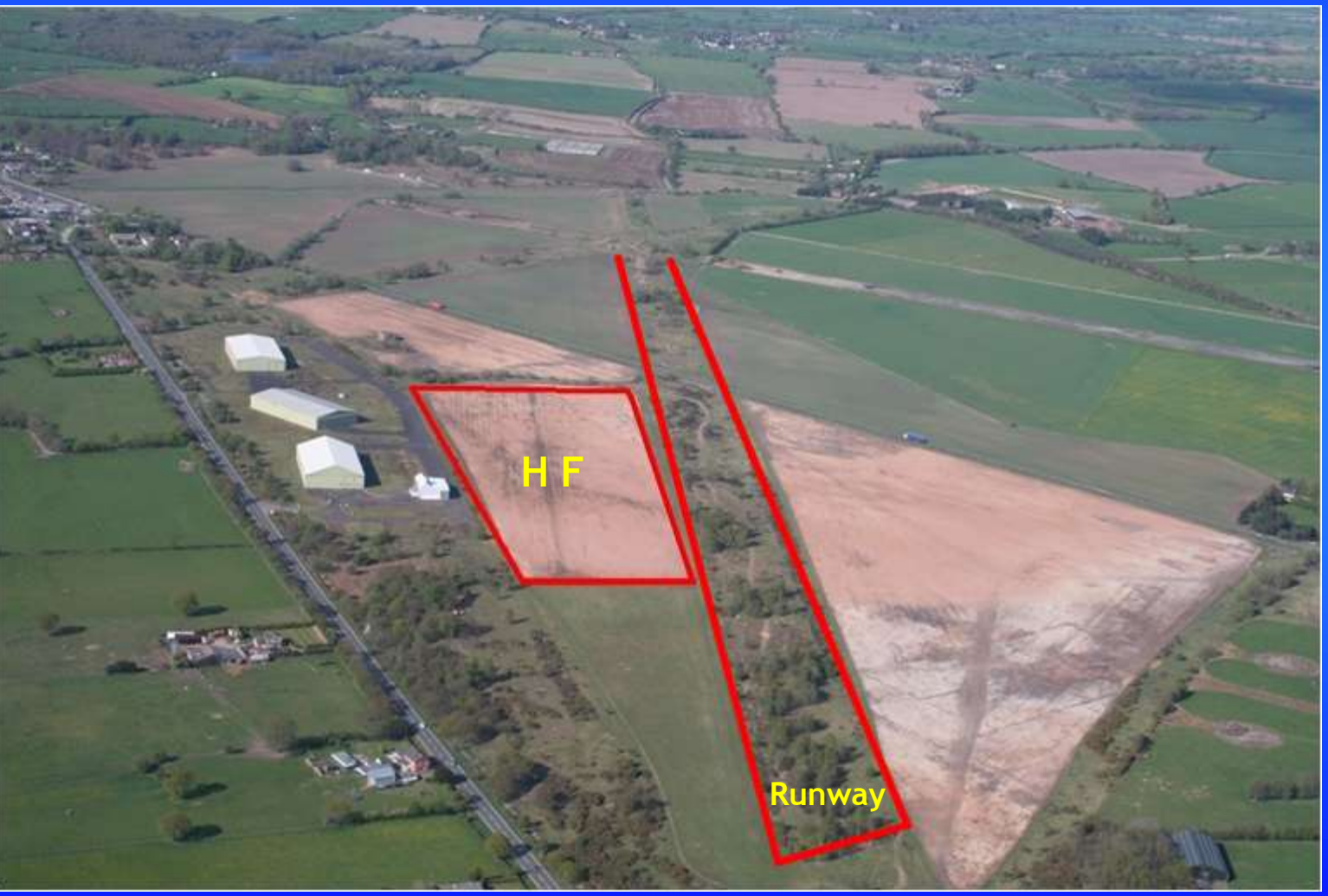
DEEP PLOUGHING, MARCH 2007

Archaeological constraints assessed

Depth 90cms

Immediately after ploughing
pH 6 - 6.5

AN AERIAL VIEW AFTER SOIL PROFILE INVERSION



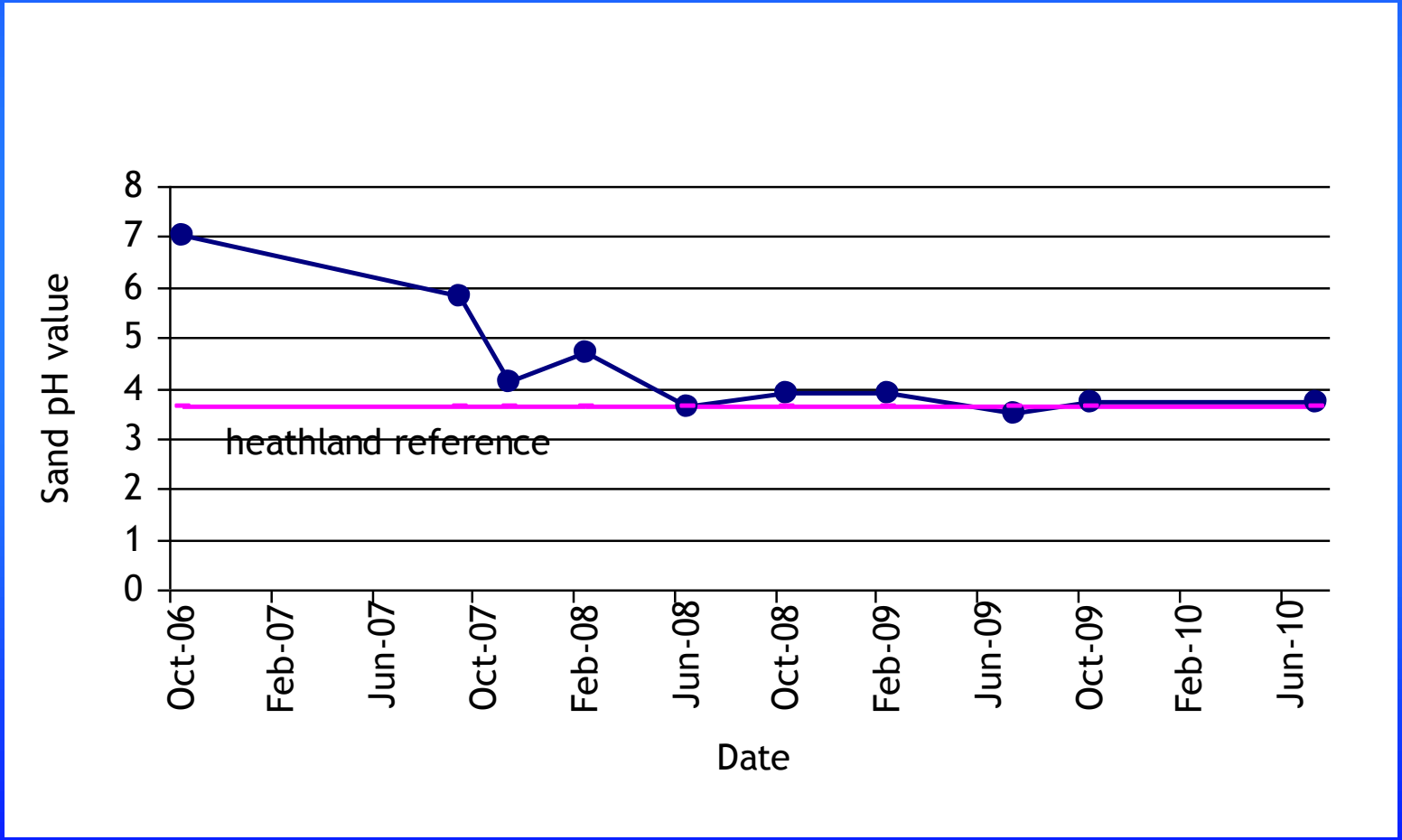
Showing the old runway which contains remnant heathland which has supported the Silver-studded Blue population.

As the new heathland develops it will be colonised from this source area.

ACIDIFICATION OF THE UPPER SOIL HORIZON - ADDITION OF SULPHUR PRILLS

- 7th August 2007 sulphur prills 1.25t/ha broadcast and harrowed into surface
- Hangars Field sulphur treated area 6.35 ha
- Intention - to reduce pH of the upper soil horizon sufficiently to favour heather seedling establishment due to non-competitive micro-sites

Progressive change in mean substrate pH in Hangars Field from October 2006 until July 2010 (0 - 100mm)



SOIL ANALYSIS HANGERS FIELD

SOIL PARAMETERS	BEFORE PLOUGHING OCT 2006	8 MONTHS AFTER PLOUGHING	31 MONTHS AFTER PLOUGHING OCT 2009
PERCENTAGE ORGANIC MATTER	4.3	0.12	0.97
PHOSPHORUS mg/l	58	11.8	23.3
CALCIUM mg/l	1588	118.5	32.7
AMMONIUM - NITROGEN mg/kg	3.8	0.21	3.3

BENCHMARK COMPARISON
Soil chemical analysis – undisturbed lowland heath – Prees Heath

Site	pH	Phosphorus mg/kg	Calcium mg/kg
Arne, Dorset	3.7	2.4	65.2
Minsmere, Suffolk	3.8	3.1	99.0
Prees Heath (June 2007)	6.1	11.8	23.3
Prees Heath (Oct 2009)	3.7	23.3	32.7

POSSIBLE SOURCES OF HEATHER PLANTS FOR RE-CREATION

Source - Cannock Chase
English Midlands

Plug plants
Erica cinerea
Prees Heath

Heather seeds
7.5 seeds per capsule

VOLUNTEERS COLLECTING SEED OF *ERICA CINEREA*, AUTUMN 2008

SPREADING HEATHER BRASH LATE NOVEMBER 2007

159 bales spread over 6.47 ha

= 24.6 bales per ha

Capsules per metre^2
4921

Seeds per metre ^{2}
37,000

PLANTING PLUGS OF *ERICA CINEREA* MID OCTOBER 2009

Plugs raised by specialist nursery
Planted in protected sites

Survival data: 51% survival July 2010

ESTABLISHED *CALLUNA VULGARIS*

August 2010

Plant density Sept 2009
51 per m²

Range 0 – 241

24 quadrat samples 2 m²

Plant density July 2010
34.5 per m²

21% *Calluna* cover

DEVELOPING HEATHLAND HABITAT SEPTEMBER 2009

Good habitat for
Silver-studded Blue
also suitable for *Lasius niger*

Rabbits crucial in order to keep heather short

How rapidly will Silver-studded Blue colonise?

BUTTERFLY WITH ANTS

Butterflies have a close association with ants and invasion by colonies of *Lasius niger* is necessary for completion of the life cycle. Ants protect larvae and pupae from predation.

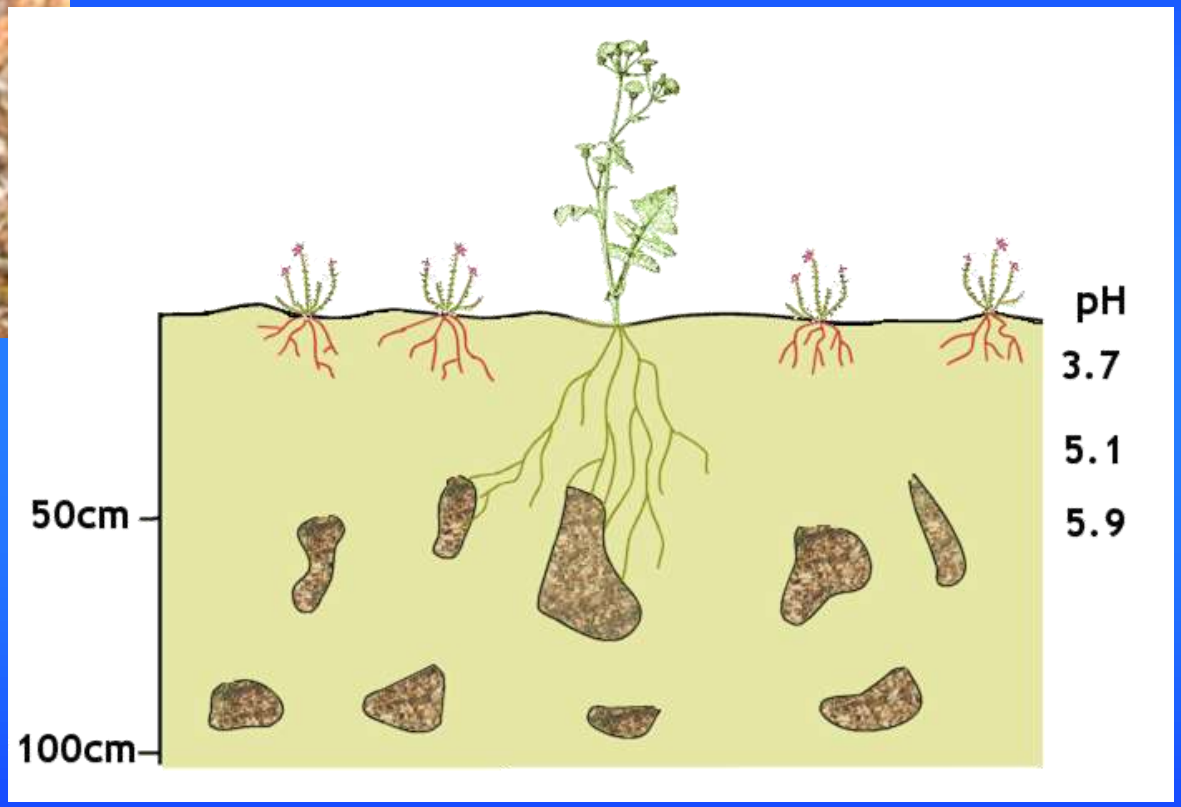
Butterflies only lay eggs when ant pheromones are detected

FUTURE POTENTIAL MANAGEMENT ISSUES

Birch invasion

Regular pulling of birch seedlings by volunteers is essential

Rabbit grazing



Deep rooting trees and perennials may tap nutrients from buried topsoil so they must be removed quickly

CONCLUSIONS

- Long –term management required
- Control of large rabbit population initially
- Stock grazing with sheep or cattle introduced after 8 - 10 years
- Restoration of the semi-natural plant communities will play an essential role in protecting and enhancing biodiversity including single species populations such as Silver-studded Blue butterfly

ACKNOWLEDGMENTS

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- The small group of Prees Heath commoners
- All the volunteers who have contributed to the project – a truly communal team working together