

MONITORING PROPOSALS

PROPOSALS for FUTURE MONITORING to MEASURE IMPACTS of GRAZING at EPPING FOREST

Under the Grazing Strategy and more recently the approved Grazing Expansion Plan (GEP) the area grazed by cattle, the time period for grazing and the number of cattle are each to be increased over the next 5 years and beyond. There have been several areas selected already and monitored for different periods since the 1990s. This monitoring plan now seeks to expand the monitored areas and adopt a wider range of monitoring methodologies whilst also establishing a sustainable regime of monitoring that can fit with existing and likely future staff and financial resources.

1. Vegetation

Quadrats

A variety of quadrat-based monitoring methods have been used over the last 15 years. The Whitehall Plain plots – both species plots and grids - that were begun in 2007 will be continued. The grids with periodic randomised sampling on the heathland sites at Sunshine Plain and Deershelter Plain will also be repeated at intervals of 5-6 years.

Transects

The 50m-long transects that have been set up this year, 2013, will be monitored on an annual basis for the first 3 years, with repeated survey work in 2014 and 2015. After this, the transects will be re-surveyed at intervals of every 3 years. Additional transects will be added in each of the main wood-pasture habitats (e.g. Hornbeam-Oak dominated areas) if possible over the next 2 years (by 2015) to increase the number of replicates. These transects will be surveyed as “belt transects” of 2 x 2m quadrats and fixed point photographs using the centre-pole method will supplement the information yielded by this method.

LTMN plots

Natural England has surveyed 50 LTMN plots in Epping Forest in 2013, following nationally-accepted LTMN protocols for both soils and vegetation, with assistance from Epping Forest staff. The vegetation ordination analysis for these plots will be compared to ordination analyses for the above transect and quadrat work and the 3 approaches will be reviewed with the Grazing Auditor to ensure complementarity and the best use of resources.

Fixed-point photographs

In addition to the detailed transects above other fixed point photograph transects, using the centre-pole method, will also be set up to cover a wider range and number of transitions across the habitats both within the expanded grazing area and outside, in ungrazed areas.

Impact Assessment approach

The Natural England Grazing Impact Assessment (GIA) approach will not be adopted in full as it would require too much time to complete but it will be adapted as a “cut-down” version using W-walks in randomly-selected, stratified areas in both grazed and non-grazed areas. The vegetation will be assessed on the DAFOR scale and sighting poles will be used to allow condition assessments along the routes walked. The exact methods will be discussed with the Grazing Auditor to best suit the needs of the grazing monitoring project and resources at Epping Forest. Grazing-adapted and grazing-sensitive species will be specifically chosen to be recorded and their condition will be recorded in a simple -1, 0, +1 scoring system.

Phase 2 and NVC vegetation mapping

This will be carried out as resources allow but the target is to achieve full mapping of the grazed areas of the Forest by 2018.

Target species & features – GPS recording, mapping and census techniques

As well as selecting species for the GIA “W-walks” above, certain plant species have been and will be chosen for more detailed approaches to monitoring at different sampling periodicities. The methods will include GPS mapping of individual plants and/or patches of plants and even individual census techniques using GPS and fixed grid measurements if time or student availability allow (e.g. for Heath Spotted Orchid).

The species and features chosen so far, with the dates of GPS or other survey, are given below:

Lousewort 2001, 2005, 2007, 2012 (all GPS) – survey to be repeated by 2018

Pepper Saxifrage 1998, 2003, 2013 (all GPS) – survey to be repeated by 2018 if grazing begun on site.

Heath Spotted Orchid (census in 1995 – but incomplete); rosette and flower spike counts annually but to be mapped/censused by GPS and grid mapping by 2015, if resources allow.

Spiny Restharrow – to be GPS mapped

Butcher’s Broom – GPS map started – GPS map of Compartments 24 and 22 to be completed and then monitored at 10-year intervals by GPS survey.

Ant-hills – *Lasius flavus* ant-hills are to be mapped by GPS in future having been mapped by a combination of aerial photos and ant-hill density estimates and direct counts

Other species will be mapped in less detail and both species which are favoured and “problem” species will be mapped, including the following:

Birds-foot Trefoil – patches to be GPS mapped in grazed and ungrazed grasslands – random, stratified sampling

Fleabane or Agrimony – the latter has been partially mapped in Compartment 26 (Yates's Meadow) in 2003.

Creeping Thistle – as above for Bird's-foot Trefoil

Marsh Thistle – as above for Bird's-foot Trefoil

Ragwort - as above for Bird's-foot Trefoil

Michaelmas Daisy

Dechampsia caespitosa

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2. Other monitoring

Butterflies

The butterfly transects based on the national protocols (now adopted within LTMN) will be continued – having been set up prior to free-range grazing across the centre of the Forest. Three transects are currently monitored and this will be reviewed by 2014.

Grasshoppers

Grasshopper densities across selected grassland sites will be censused using modified, standardised techniques (incl. Gardiner xxxx; and Charalambous & Dagley unpublished Imperial College project) of sampling using quadrats. Different species numbers as well as male:female ratios will be assessed by these techniques.

Ant-hills

Base maps of the Yellow Meadow-ant (*Lasius flavus*) ant-hill numbers and distribution will be created and these base maps should provide future data for student research projects examining changes in numbers and distribution.

Saproxylic Insects

The surveys of 2003, 2004 and 2010 will form the basis of a scientific paper which should be published by 2015. A re-survey of some of the areas within the grazing area could be considered from 2017 onwards (or earlier) if a student/volunteers available and with some resources for identifying the species (consultancy time – likely to be between £4,000 - £6,000 depending on the number of traps and level of trapping effort).

Breeding Birds (BBS)

Breeding Bird Transects for the LTMN will be continued – 2 transects are currently being surveyed across the centre (Fairmead – Bury Wood) and north of the Forest (Long Running – Jacks Hill).

Cattle movements

GPS plotting of cattle movements: – the cattle wear GPS collars (4 cows with collars in 2013) and the number wearing collars is due to be increased significantly with the intention to have all cows with collars. Due to a limitation on resources the numbers may represent less than 50% of the herd (so fewer than 50 cows) in the first 2-3 years from 2014 – 2016.

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3. Proposed Monitoring Schedule

Monitoring technique	Year 1 - 2014	Year 2 - 2015	Year 3 – 2016	Year 4 - 2017	Year 5 - 2018
1. Vegetation quadrats	Whitehall Plain (CoL staff)	Whitehall & Sunshine Plains (CoL staff)	Deershelter “scrape”		
2. Vegetation transects	Re-survey by consultant	Re-survey by consultant			
3. LTMN vegetation plots				Natural England surveyors re- survey	
4. Fixed Point Photographs – Centre-pole method	Volunteer on 8 transects	Volunteer on 8 transects	Volunteer on 8 transects	Volunteer on 8 transects	Volunteer on 8 transects
5. Fixed Point Photographs (FPPs) – around transects and other general positions on Stewardship plots	Volunteer(s) & staff 4 extra FPP around each of the 8 transects	Volunteer(s) & staff General Stewardship FPPs	Volunteer(s) & CoL Ecologist	Volunteer(s) & CoL Ecologist	Volunteer(s) & CoL Ecologist
6. GIA (modified)			8 x 200m “W- walks” incl. the 8 transects		
7. Phase 2/NVC survey of Forest					NVC survey consultants
8. Target species GPS mapping	Heath Spotted Orchid – (CoL ecologist and/or consultant)			Lousewort mapping (various sites)	Pepper Saxifrage (Yates’s Meadow) –impact of grazing
9. Target Species – general mapping of polygons		Bird’s-foot trefoil and Thistle species (CoL staff)			
10. Butterfly transects	3 x “Pollard walk” transects	3 x “Pollard walk” transects	3 x “Pollard walk” transects	3 x “Pollard walk” transects	3 x “Pollard walk” transects
11. Grasshopper quadrats		Set up baseline	To be continued by student project		
12. Ant-hill mapping		Set up baseline	As in row above		
13. Saproxyllic trapping/				Consider re-	

surveys				survey	
14. Bird – BBS transects	2 x BBS transects CoL HoC and Ecologist	2 x BBS transects CoL HoC and Ecologist	2 x BBS transects CoL HoC and Ecologist	2 x BBS transects CoL HoC and Ecologist	2 x BBS transects CoL HoC and Ecologist
15. Reptiles – general monitoring	General heathland site surveys (volunteers)	General heathland site surveys (volunteers)	General heathland site surveys (volunteers)	Consider detailed survey	General heathland site surveys (volunteers)
16. GPS tracking and analysis of cattle	Gather & store baseline data	Gather & store baseline data	Consider student project	Consider student project	Consider student project