

Grazing assessor's report on status of cattle grazing and associated monitoring across Epping Forest



Red poll cattle fitted with *Boviguard* & GPS collars grazing at Fairmead, Epping Forest (© P. Dennis)

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1. Introduction

This is the second report by the Independent Grazing Assessor for the Conservators of Epping Forest following a further visit to Epping Forest in August 2013 and a progress report on the implementation of the Grazing Strategy presented during a meeting with the Head of Conservation.

The purpose of this report is to comment upon the current status of the reintroduction of grazing to recently unstocked parts of Epping Forest and to evaluate the suitability of the monitoring programme established to detect vegetation change and plant and animal responses to grazing management; ultimately to inform decisions on suitable timing and stocking densities of cattle throughout the Forest. A review of the scientific evidence supporting conservation grazing programmes was presented in the previous report (Dennis, 2012). Since then, a critique of conservation grazing founded on personal observations at several smaller schemes situated elsewhere in England (Denton, 2013) has raised concerns that the introduction of grazing animals to specifically dry heath, wet heath and mire had not always been successful. Grazing livestock either did not preferentially select the target, abundant vegetation or risked damaging vulnerable *Sphagnum* pools and *Calluna vulgaris*, heather plants. The Denton (2013) observations were not based on objective survey and the incidents may have been a product of the small size of the nature reserves or habitat remnants where grazing was introduced or the previous degraded state of the wetland features. It is clearly important to scientifically validate conservation grazing regimes and it is true that there have been few scientific studies which have experimentally assessed the effect of grazing, especially on invertebrate species (Denton, 2013). However, it is also essential to apply the general scientific principles of grazing ecology with rigorous monitoring and active adjustment of the stocking densities and period of grazing, not least in response to variations in the annual productivity of the dominant vegetation at a particular site. Such unfortunate examples (Denton, 2013) may be the outcome of the addition of grazing as a low cost method of vegetation management with an absence of

adequate but essential monitoring, and a lack of associated and frequent adjustment of stocking density.

2. Progress towards the phased expansion of conservation grazing management

Reintroduction of cattle grazing to recently unstocked parts of Epping Forest, as proposed in the Grazing Strategy, is proceeding but at a slower pace than anticipated due to two factors. Cattle movements were temporarily restricted and the acquisition of additional cattle has been impeded by control measures imposed due to a Bovine Tuberculosis 'reactor' animal detected in a herd on adjacent farmland. Construction of essential roadside wooden fencing and cattle grids was also delayed due to highways engineering issues but is now very nearly complete. The construction of invisible fencing (*Boviguard* wire) remains incomplete as required to create a jigsaw of grazing compartments prior to the introduction of cattle. New *Boviguard* collars and generators have been developed for the invisible fence system which should allow modification of fence lengths and configurations and improve ease of installation. This does not detract from the suitability of the Grazing Strategy to achieve habitat and species conservation and landscape objectives for Epping Forest once fully implemented. It is recognised that grazing management is being introduced in some compartments to comply with regulations associated with Natural England Higher Level Stewardship payments and management for wood pasture "HC13 Restoration of wood pasture and parkland" and Entry Level Stewardship management options which apply to compartments 24, 26 and 9/10, "EK2 Permanent grassland with low inputs" and "EK3 Permanent grassland with very low inputs" (Natural England, no date).

During my visit in August, four English Longhorn cattle were stocked on Sunshine Plain and 8 cows on Chingford Plain throughout July to September. Ten Red poll cattle had been introduced to the Fairmead compartment and appeared to have settled well. All Red poll cattle at Fairmead had been fitted with *Boviguard* collars and four of these also had GPS collars to allow real-time tracking of their locations and as a safety precaution should cattle move outside of the designated compartment. A 'put and take' system is clearly described in the Grazing Strategy as the main way to manage the vegetation effectively in order to achieve favourable condition throughout the Forest. This system is appropriate and requires frequent adjustment of cattle numbers in relation to vegetation status rather than a fixed stocking density imposed on each compartment for all or part of the year. Challenges remain to encourage cattle to move between all parts of the grazing compartments that would benefit from grazing, to decide when to rotate grazing between compartments to more effectively utilize abundant vegetation; or to avoid poaching of soil during prolonged wet periods, disturbance of ground nesting of birds or disruption of flowering and seed production of annual plants in spring. Cattle may need to be moved on to sacrificial grazing areas (adjacent amenity or intensified grassland) under these circumstances, when overall conservation grazing targets for compartments are satisfied during certain periods each year or when the cattle require more nutritional forage to maintain body condition and health.

3. Evaluation of current and proposed monitoring methods

The combination of vegetation grids; transects along which fixed quadrats are used for plant survey; field GPS recording with GIS mapping of the distribution of specific plant species of conservation interest (e.g., *Pedicularis sylvatica* L., Lousewort on Almhouse Plain and *Silaum silaus* (L.), Pepper saxifrage at Yate's Meadow); and fixed point photography, all contribute to a suitable and effective monitoring programme, essential for successful application of the Grazing Strategy. This will enable assessment that the annual grazing effect is to consume the annual productivity of abundant, competitive plant species and to allow an increase in the population sizes of desirable plant species.

Since my last report (Dennis 2012), additional monitoring in the form of eight belt transects of 50 m length have been located on transition boundaries between woodland and open vegetation in several northern and southern compartments due to be grazed (Palmer's Bridge, Peartree Plain, Barn Hoppit, Bury Wood, Big View, Sunshine Plain (x 2) and Rushey Plain). Plant species and cover have been recorded in a total of 25 2 x 2 m quadrats along each transect. The length of the transects as written appeared too short but inspection of each of them during the August 2013 field visit demonstrated that they adequately extended into and represented the vegetation each side of the boundary.

The single belt transect per site may not be sufficiently representative of the vegetation changes that may occur within each of the grazed compartments although the eight sites do represent a broad range of typical vegetation types in Epping Forest. It would be too costly to add further belt transects and to conduct further plant recording within quadrats along these. A cost-effective compromise could be to supplement the recently implemented belt transects with Fixed Point Photography using the Centre Pole System. Transects of the same length can incorporate ranging poles at ca. 5, 15 and 25 m in each direction from the mid-point and a standardised photograph taken forwards and backwards from that mid-point for visual comparison of vegetation height and vegetation composition along each transect (Hill *et al.* (Eds), 2005).

In addition to these transects, however, there is a new set of quadrats established for the UK Long-Term Monitoring Network (LTMN) managed in England by Natural England. This provides opportunities for more representative assessments (see section a) below).

a) Additional monitoring requirements

Due consideration should be given to the frequency and year of re-survey. Priority must be given to ensure a complete and recent baseline dataset prior to the reintroduction of cattle grazing. Baseline vegetation monitoring is, on the whole, already in place and should be adequate to inform decision making on adjustments to the indicative stocking rates and periods in the proposed 'put and take' system of cattle grazing stated in the Grazing Strategy. A further baseline botanical dataset for Deershelter Plain scrape is essential before grazing commences in this small compartment due to the sensitivity of heath to cattle grazing and the need for a more recent assessment of the current extent and growth phase of heather in particular. Quadrats on existing grids or belt transects in compartments need to be resurveyed more frequently (1-2 years) following introduction of grazing but at

less frequent intervals once the management regime has settled (ca. 3-5 years). The evidence of slow vegetation change under consistent, annual management was demonstrated using earlier botanical survey data from the grassland at Whitehall Plain recorded annually by Conservation staff, 2007-2012 and recently analysed by a consultant ecologist (Bealey, 2013).

There is a need to record percentage ground cover in addition to Domin scale for each plant species in all quadrats in order to harmonise monitoring with the prescribed methods of the LTMN (a survey of 50 associated quadrats recently completed) which will enable comparisons with those data and a quantitative indication of the current community profile under the National Vegetation Classification (NVC). These quadrats provide a further independent dataset to test the information yielded from the belt transects.

Although desirable, I consider that it would be too resource demanding to include species compositional assessments of different vegetation strata within vegetation quadrats in the heathland plant community on Sunshine Plain. This was proposed by a consultant ecologist following a recent analysis of heathland monitoring data recorded at Sunshine Plain by Conservation staff, 2002 and 2007 (Bealey, 2013). However, identification of bog moss (*Sphagnum*) to species level is desirable since species such as *Sphagnum compactum* define the target NVC community and would be an indicator of success of wet heath restoration. The ability to identify whether the community is of NVC M16 *Erica tetralix/ Sphagnum compactum* wet heath (Rodwell, 1992) or another type of wet heath, mire or mesotrophic grassland is essential since M16 is a notifiable vegetation community of Natural England and is typical of mire-heath transitions on periodically waterlogged shallow peat and humic mineral soils of the southern and eastern lowlands of Britain (Rodwell, 1992). Similarly, on Whitehall Plain, there is potential for vegetation development to NVC MG5 *Cynosurus cristatus/ Centaurea nigra* grassland (Rodwell, 1998), a further notifiable community of Natural England.

Mapping of populations (individuals) of notable plant species should continue across Epping Forest. This is an effective means of assessing that there are no adverse effects of the change in management, for instance during the transition from cutting to grazing management in Yate's Meadow. The maps of the distribution of the scarce plant species, Pepper Saxifrage, 2003 and 2013 should be supplemented with the archive 1998 GPS data and represent an effective baseline dataset should the existing hay cut management be supplemented with aftermath grazing in future. Experimental investigation has shown how 75% of Pepper Saxifrage seeds fall within 1.5 m of parent plant but that grazing animals and mowing machinery and wheels can facilitate wider dispersal (Bischoff *et al.*, 2009). In addition, grazing animals can create suitable microsites for germination and establishment of seedlings since there are few gaps in a dense grass sward (Bischoff *et al.*, 2009).

Grazing is also required to suppress bramble, tall herbs and the regeneration of scrub and trees in locations where the micro-topography excludes mowing, and to protect yellow meadow ant mounds and encourage greater botanical and invertebrate diversity. Localised

rabbit grazing is also likely to be encouraged and will provide bare soil and short sward patches for Bird's foot trefoil to establish.

Similar maps have been produced for Lousewort at Almhouse Plain and the method could be applied to *Ononis spinosa* L. (Spiny restharrow), *Dactylorhiza maculata*, Heath Spotted Orchid, *Crataegus laevigata*, Midland hawthorn, *Rusus aculeatus*, Butcher's broom and *Lasius flavus*, Yellow Meadow Ant nests. The method should also be applied to track the extent of populations of undesirable plant species such as creeping thistle, marsh thistle and ragwort.

I recommend that the transects distributed in the compartments across Epping Forest should be integrated with the W walks using the Grazing Impact Assessment approach (focusing on vegetation) which assesses the species according to the DAFOR scale (dominant, abundant, frequent, occasional or rare) perhaps separately for each leg of the W within each compartment (Offer *et al.*, 2003). The proposed modification by the Epping Forest Head of Conservation, to assess a selection of grazing-adapted and grazing-sensitive plant species with a -1, 0 to +1 scale also appears appropriate (although even better to record comparable % cover estimates of selected plant species).

It should remain a general ambition to harmonise the different vegetation monitoring methods used to assess the effects of cattle grazing, progress towards stated targets of habitat condition for the Natural England nature conservation designations and objectives of the Entry Level and Higher Level Stewardship options. Additional monitoring protocols for invertebrates (e.g., butterflies, ground beetles and ant colonies), amphibians, reptiles, mammals and birds provide important additional information since changes in plant species alone often do not indicate the response of other taxa to grazing management. With pressure on resources, pioneering methods that combine smart phone technology and crowd sourced information are being developed in the EU CobWeb project as a way of increasing public engagement in biodiversity monitoring and improving data capture (COBWEB, no date). Increasingly, there is a need to continue to involve amateur specialists or engage the general public in such recording. These should be considered and used where possible at Epping Forest.

b) Student projects

Additional detailed information can be obtained by promoting engagement with Higher Education Institutions in order to realise specific, targeted student projects. It is important to co-design a project list from which students can select so that each study has management relevance but the necessary academic and scientific credibility.

Various invertebrate surveys have already been conducted throughout Epping Forest and student projects may be the best way to accumulate repeat, comparable data over time given resource constraints and priorities. This would be applicable for assessing the response of the distribution of *Omocestus viridulus*, Common green grasshopper to cattle grazing in the open vegetation of various grazed compartments.

The satellite telemetry based on the cattle GPS collars offers the opportunity for research projects on animal behaviour and habitat selection/ vegetation preferences which could identify the effectiveness of grazing on abundant plants or the vulnerability of conservation sensitive plant species. This would inform management and allow further refinement of stocking densities and the periods of grazing consistent with conservation objectives for Epping Forest.

4. Summing up

I am satisfied that the phased nature of the Grazing Strategy is a sensible, gradual and precautionary approach which, combined with the monitoring, provides ample opportunity to review and adjust management to achieve the stated objectives. With these cattle management measures in place, I consider that there is a realistic opportunity to achieve and maintain the stated objectives of the Grazing Strategy over the next 5-20 years:

- Restore and maintain the favourable condition of key forest habitats using good forest management (including conservation of scarce and notable plant and invertebrate species).
- Conserve the Forest as a special mosaic landscape distinct from surroundings.
- Maintain cultural tradition and protect common rights of pasturage.

I consider that the information from monitoring should indicate when the primary objective for achieving 'favourable condition' for the mosaic of vegetation is reached and should also be effective for informing the decision when to change the grazing management regime from one appropriate for habitat restoration to one suitable for the maintenance of the habitats.

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