Knepp Wildland Project

Annual biodiversity report and monitoring update 2010

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1. Introduction

Ecological monitoring continued in 2010 in accordance with the Monitoring Strategy (Greenaway, 2007). This comprised the annual repeats of the breeding bird, butterfly and fixed-point photography surveys and in addition, the repeat of eight belt transects initially surveyed in 2005. The commissioned survey work was funded by Knepp Castle Estate. The long-awaited re-naturalisation of the Knepp stretch of the River Adur has still not commenced at the time of writing, but is hopefully due to start before the end of 2010. The ecological information has, as always, been augmented in 2010 by both voluntary surveys and casual observations.

2. Fieldwork.

Table 1 shows all commissioned monitoring carried out in 2010. Any other ecological work carried out during 2010 has been voluntary, and on behalf of the Knepp Wildland project I would like to thank all those who have generously contributed time and expertise.

Table 1. Cost of commissioned survey & monitoring 2010.

Monitoring programme & costs 2010	**Cost**
Butterfly survey & FP photography	£400.00
Breeding bird survey	£2,250.00
Ragwort survey	£3,000.00
Botanical Transect survey	£3,000.00
Digitising maps & other peripherals + VAT	£235.00
Project management & reports	£1,000.00
Total	**£9,885.00**

3. Summary of surveys

The full reports of commissioned surveys (Butterfly survey & Fixed-point photography, Breeding Bird Survey, Ragwort Monitoring and the Transect Survey) are obtainable from KCE, and summaries are presented in this report. Raw data is either held by Knepp Castle Estate, T. Greenaway or the data collector.

3.1. Fauna

3.1.1. Breeding bird survey

This survey repeated that of 2005, 2007, 2008 & 2009. The purpose of this survey is to monitor changes in breeding birds over time as the Estate moves away from intensive arable land use to a more natural grazing system. The survey was undertaken by Paul James (James, 2010), who also carried out the previous years' surveys.

Two transects were surveyed from late March – June, one in the area north of the A272 and east of Shipley Road (area A) and another in the area south of Countryman Lane and west of New Barn Farm (area B). A total of ten visits was made to each transect in the period. The surveys were conducted and the results mapped using the standard Common Birds Census species and activity codes, and digitised by Andrew Lawson (Sussex Biodiversity Record Centre).

The composition of the breeding bird species list has remained very similar for the last three years, with 58 species recorded in 2008, 61 in 2009 and 60 in 2010. However, the results for 2010 showed a downward trend in the number of territories of some of the more common resident birds such as dunnock, robin and wren, whereas numbers for summer visitors such as blackcap and chiffchaff remained more or less unchanged. It is highly probable that the severe weather in the winter of 2009/10, which was the coldest since 1978/79, was the cause of the decline.

60 species were recorded in 2010, of which 12 were Red List Species of High Conservation Concern and 15 Amber List Species of Medium Conservation Concern. This is again very similar to the 2009 results. There were some new significant records for 2010, including a sighting in April of a pair of lesser spotted woodpeckers (Red List) along Transect B. Although there were no further sightings, it is likely that they nested somewhere on the Estate.

Up to three pairs of lapwing (red list) were seen displaying in the fields adjacent to Transect B in April. This is the first time the species has been recorded since 2005. It is thought that no nesting attempts occurred in the study area, but the birds did nest in a field to the north of Countryman Lane. A woodlark (red list) heard singing along Transect B in June was the first record since 2008 and was presumably a failed breeder from elsewhere. Skylark numbers were slightly down in comparison with 2009, but still maintain a considerable increase since the early days of the Wildland project; whitethroat numbers were up on 2008 and only slightly down on 2009.

Ravens also nested in a tree by Kneppmill Pond in 2010, but the number of sightings of this large corvid indicated that there may be more than one pair on the Estate. Overall, the number of species sighted since 2005 stands now at 77.

3.1.2. BTO Breeding Bird Survey (TQ1520)

The BTO Breeding Bird Survey[1] takes place annually over a number of 100m grid squares, one of which (TQ1520) lies within the Wildland Project area. A transect across this square has been recorded by a volunteer in 2007, 2008, 2009 and 2010, and the Sussex Branch of the BTO kindly forwards the results. Identifying trends after such a short period is not possible, but the results showed considerably increased numbers of records for whitethroat, dunnock, chiffchaff and jackdaw. The good numbers of whitethroat and chiffchaff are comparable to the results from the Breeding Birds Survey (S.3.1.1.), but the increase in numbers of dunnock was pleasantly above that recorded. The eventual results of the BTO survey will be an interesting assessment of population trends across the UK, and will enable the Knepp results to be evaluated accordingly.

[1] http://www.bto.org/bbs/

3.1.3. Barn owl survey

Barrie Watson annually records barn owl breeding in nest boxes positioned in barns and trees across the Estate and rings the chicks. Only 9 chicks were ringed in 2010, half the number ringed in 2009, bringing the total number ringed on the Estate by Barrie since 1996 to 103.

3.1.4. Butterfly survey.

This is the fifth year that butterflies have been surveyed by Rich Howorth (West Weald Landscape Project Officer, Sussex Wildlife Trust) along a transect set up in 2005 (Howorth, 2010). Although this transect is surveyed following Butterfly Conservation Society methodology, this methodology does recommend walking such transects once a week for 26 weeks from spring to autumn. Resources of time and money have limited this annual survey to just one day in July.

The weather was only moderately good, but results were marginally better than in 2009 with a total of 895 individuals of 16 species recorded on the day of the survey. To date, 2006 has seen the greatest number of species recorded and 2007 the greatest number of individuals. Meadow browns were again the most abundant species in 2010, with 377 individuals recorded (42% of the total) followed by gatekeepers, with 322 records (37% of the total). Silver-washed fritillaries continue to do well and the 59 records this year is almost double those of 2009. Another welcome result was the far higher number of common blues (43) recorded along the floodplain grassland of the R. Adur. Single individuals of marbled white butterflies were also seen.

3.2. Flora

3.2.1. Repeat transect Surveys

In 2005, as part of the baseline ecological survey, vascular plants were recorded along 8 transects. This was repeated in summer 2010 for the first time. The objective of this survey is to monitor changes to both vegetation structure and composition over time, as the wildland project develops. The field survey work was carried out by Sophie Miller (SJM Ecology) in June 2010 and a full report will be available on the Knepp Castle website[2] in December 2010.

One of the most conspicuous changes in vegetation has come not from the results of the belt transect surveys but simply looking at the southern block of land that was not fenced until 2009. The fields in this area have been taken out of arable at varying times from 2002 onwards, but apart from wild roe deer and rabbits, were ungrazed until summer 2009, when livestock was introduced. In all the other areas of the project, herbivores were introduced soon after arable ceased. This has resulted in considerable areas of scrub development in much of the southern block, and relatively little in the other areas. Grazing and browsing pressure has been high, especially in the woodlands, where rootling Tamworth pigs have also made their presence felt.

An analysis of the 2010 transect data shows that there has been little structural change since 2005. In three of these areas (the old deer park, the area just south of the R.Adur and north of the A272, there is still a clear demarcation between woodland and

[2] www.knepp.co.uk

grassland. Overall, the extent of bare ground has increased especially in the woodland. The two transects that were in the southern block were sited across two former pony paddocks, unfortunately not reflecting changes away from arable - although a further transect in the southern block due to be repeated in 2012 will achieve this.

Despite this, there has been a small increase in species diversity since 2005. Although the same number of species was recorded in each year, against 28 losses there were 35 gains.

3.2.2. Ragwort Monitoring

This was the second year that ragwort has been monitored. Patrick Toe carried out a visual assessment plus photographs of the 16 fields he surveyed in 2009 (Toe & Greenaway 2010) and the results were promising – 11 fields had decreased abundance of ragwort, 2 were the same and only one field had more ragwort than in 2009. It is to be hoped that this trend will continue.

3.3. Habitat & vegetation structure

3.3.1. Fixed-point photography of the Knepp Estate 2005-2010.

Fixed-point photography has been carried out by Rich Howorth in conjunction with the butterfly survey in 2005, 2007, 2008, 2009 and 2010 (Howorth 2010). The aim is to enable a visual comparison and detection of changes in vegetation structure over time. The points selected represent geographical range, habitat diversity and past management regimes within the Wildland project area.

In general, grass growth was poorer in 2010 due to the dry weather in spring and early summer. Agricultural weed species such as thistle, ragwort and dock were generally stable although there were some localised increases as well as some declines.

4. Incidental species records.

Birds have been the stars of this year's incidental records, starting with the lapwings seen by Charlie in Church Farm South this spring - and Jill Butler heard an early nightingale in April. It was just a matter of time before ravens nested and on 10th May, Iris Simpson reported a pair seen feeding young in pine trees by the Mill Pond dam wall. On 17th May, Charlie heard the first turtle dove of the year. Ted Green and David Bucks both heard a woodlark around 20th June, most probably a wandering male, but signs of breeding are something to look out for next spring. Putting in an appearance for Charlie on 17th September, a yellow wagtail was spotted on the edge of Oaklands Lag Pond. Finally, Charlie reported lots of small copper butterflies on a sunny 14th October.

5. Discussion.

This year was the first time one of the major vegetation surveys first carried out in 2005 was repeated. It will come as no surprise to anyone looking at some of the

woodland and grassland areas, especially in the old Deer Park, to learn that the results of the transect surveys indicate little change away from the vegetation structure that was recorded in 2005. Indeed, the amount of bare ground, especially in the woodland quadrats, and in the woodlands generally, has increased dramatically. The understorey and ground flora is not doing well under the impact of browsing and rootling animals, especially deer and Tamworth pigs. This means that little tree regeneration is likely to be successful unless there is a far greater development of thorny 'nursery' shrubs such as bramble. However, overall species richness in the woodlands as well as in many areas of grassland has increased somewhat, which is a positive step forward.

Visitors to the southern block are invariably impressed with the diversity of habitats. This is due in large part to the length of time that elapsed between the cessation of arable and the introduction of herbivores in 2009, which gave scrub and rough grassland longer to become established. It is hoped that it will be possible to increase the monitoring on this area in the future, which may in turn help to inform decisions made about stocking levels.

In last year's Annual report, I noted that 2015 will mark the 10th anniversary of the baseline ecological survey, published as English Nature Research Report No. 693. Planning for repeat surveys between now and 2015 will be drafted early in 2011, with the hope that adequate funding can be found to resource this effort. A thorough evaluation of all the effects that the Wildland Project has had on all aspects of biodiversity, ecology and landscape will be an opportunity not to be missed. As well as these issues, it will be a sound opportunity to evaluate the social and economic effects of the project.

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