

Walking back in time: conservation in Berkshire, Buckinghamshire and Oxfordshire, 1942-65, from the diaries of Charles Elton.

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Abstract

The diaries of Charles Elton, a father of community ecology, give details of over 300 visits in the counties of Berkshire, Buckinghamshire and Oxfordshire between 1940 and 1965 (excluding those made to Wytham Woods near Oxford that are reported separately). The entries illustrate the changes that took place in the countryside in the post-war period; the idiosyncrasies of protected site selection at that time; and some of the management challenges that had to be overcome. Though inevitably a partial record they provide insights relevant to modern conservation. Modern conservationists should ensure that at least the equivalent record is passed on to future generations.

Introduction

Charles S. Elton, FRS, CBE (1900-1991) was one of the fathers of community ecology (Elton 1966) and the first editor of the *Journal of Animal Ecology*. He created and directed the Bureau of Animal Population from 1932 until his retirement in 1965 (Crowcroft 1991). The Bureau was absorbed into the Department of Zoology and Elton continued to have an office there for some years after his retirement. He was also a key figure in the early years of the Nature Conservancy which was set-up in 1949, the forerunner of Natural England and the other statutory conservation agencies and was involved in discussions on which sites should become reserves or Sites of Special Scientific Interest (SSSIs).



Figure 1. Elton (in the middle, holding nets) with students in the 1950s.

Elton lived in north Oxford and there is a commemoration plaque in the pavement in Park Town. However, a far more detailed memorial exists in the diaries that he kept for much of his life, of places he visited and species seen. The original manuscripts are held by the Bodleian Library, but typed copies of those from 1942-1965 were held by the Natural History Museum in Oxford (Figure 2). In 2014 a project, organised by Nigel Fisher (Conservator, Wytham Woods) and Darren Mann (Hope Department of Entomology), allowed the creation of a digital version of the diaries relating to

Wytham Woods and locations in the three counties Berkshire, Buckinghamshire and Oxfordshire (Elton 1942-1965).

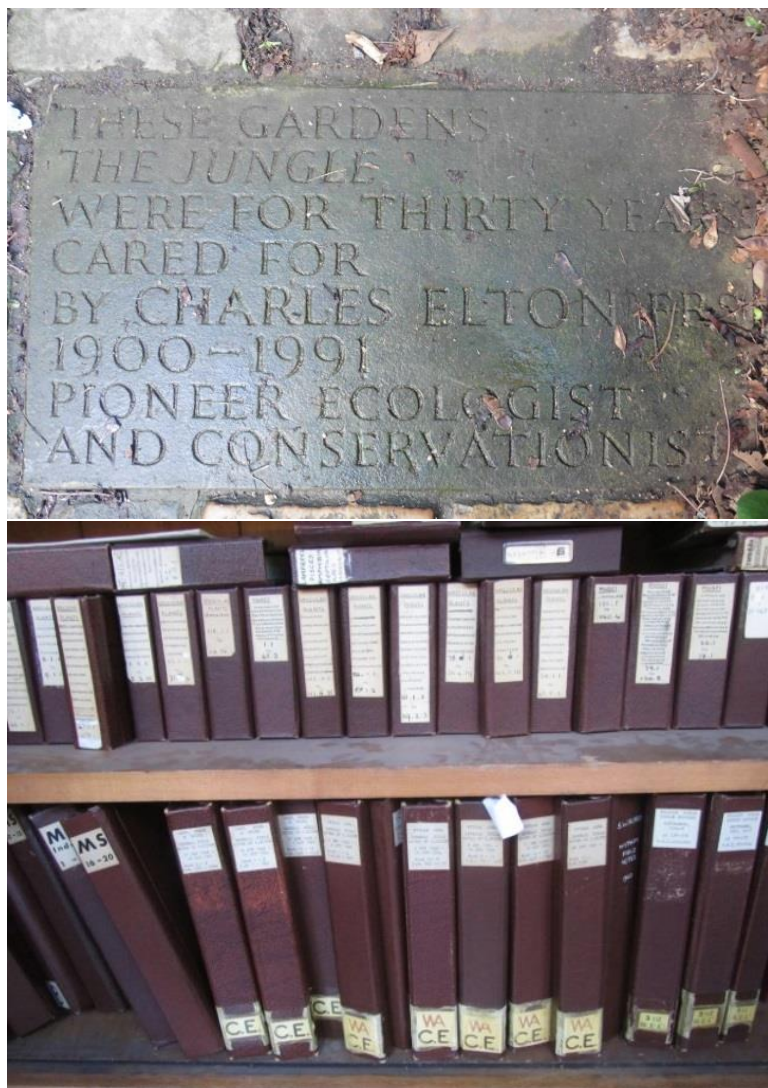


Figure 2. (a) A plaque to Elton in the pavement in Park Town where he lived; (b) the diary volumes in the Museum

Extracts from the Wytham records have already been used to explore the changing ideas on management of the woods both for forest production and conservation after the woods were left to the University of Oxford in 1942 (Kirby 2016a,b; Kirby 2017). This paper contains an overview of the entries for other places in Berkshire, Buckinghamshire and Oxfordshire, illustrating the changes that were going on in the wider countryside during the mid-twentieth century.

Methods.

The diary entries were typed but there is little contrast between the typescript and the greyish paper used; in addition, there are various hand-written additions and sketches. Simply scanning in the pages would not therefore have produced a very useful output. Instead the eighteen volumes (including the Wytham material) were 'read-in' by Professor Caroline Pond to create searchable digital versions. This is available at <https://ora.ox.ac.uk/objects/uuid:89c5e479-6003-45ba-bd78-8a8a12858bf1>.

I have then collated the entries by broad location and, from these, selected extracts to illustrate different sites and issues of interest to Elton from 1942-1965.

Results

The entries are typically short paragraphs giving brief comments on the general area or habitats being visited and then a note on any species collected or seen. There are 339 in total (1-2 per month) compared with over 400 for Wytham Woods for the same period. The locations and number of entries per location are shown in Table 1. Scattered through them are probably over a thousand species records – mainly invertebrates.

Table 1 Locations and number of visits in 5-yr periods. The counties are by pre-1974 boundaries. * = overlap with current SSSI.

Place	County	Grid ref	1942-45	1946-50	1951-55	1956-60	1961-65
1. Abingdon Sewage Works	Berks	SU492952				6	7
2. Appleton Common*	Berks	SP425005		1			
3. Aston Rowant area*	Oxon	SU750980		3	2	1	
4. Bablock Hythe	Oxon	SP435042		2	1		
5. Bagley Wood	Oxon	SP510020	12	1		3	2
6. Bernwood (Shabbington)*	Bucks	SP615110	0	2	3	6	2
7. Bernwood (Waterperry)*	Oxon	SP605095	1	1	10	5	
8. Bladon Heath	Oxon	SP455138		1			
9. Blenheim Park*	Oxon	SP365160	2	5	1	15	2
10. Cassington Pit	Oxon	SP452103	4			18	16
11. Charlbury area	Oxon	SP370200	1			2	
12. Chimney Meadows*	Oxon	SP355017			1		
13. Combe area	Oxon	SP405155	4	1	1	2	1
14. Compton-Cholsey area	Berks	SU540800	3	1			2
15. Cothill Fen*	Berks	SU461999		2			
16. Cumnor* and Hinksey Hill	Oxon	SP480050	2	1		1	
17. Ditchley Estate	Oxon	SP408208			1		
18. Enslow Bridge area	Oxon	SP477186			1	3	2
19. Fifield	Oxon	SP240190	2				
20. Great Tew/Glympton/Slope	Oxon	SP400240	2			3	
21. Hampton Poyle	Oxon	SP502155	2				
22. Howe Wood, Watlington	Oxon	SU700916			3	4	3
23. Longworth/Hinton Waldrist	Oxon	SU390990					3
24. Muswell Hill	Oxon	SP640150		3		3	
25. Nettlebed Woods	Oxon	SU710860		1			
26. Newbury*	Berks	SU455690	5				
27. North Leigh area	Oxon	SP380136	10	3	3	2	
28. North-east Oxfordshire*	Oxon	SP520240	1	2	4		
29. Otmoor area*	Oxon	SP530150	2	3		2	2
30. Oxford Canal	Oxon	SP487106	12				
31. Stanton Harcourt area	Oxon	SP400040				5	4
32. Stanton St John area*	Oxon	SP587100		1	1	2	1
33. Swyncombe Down*	Oxon	SU679914				3	

34. Tubney Wood & Marcham	Berks	SP445000	1	2	1		
35. Vale of White Horse	Berks	SP400820			1	2	
36. Windsor Forest*	Berks	SU960720		1			
37. Wittenham Clumps*	Berks	SU570925	2	2	1		
38. Wolvercote/Port Meadow*	Oxon	SP492097	7	3		10	6
39. Wychwood Forest*	Oxon	SP335710	1	9	5	11	10
Total			76	51	40	109	63

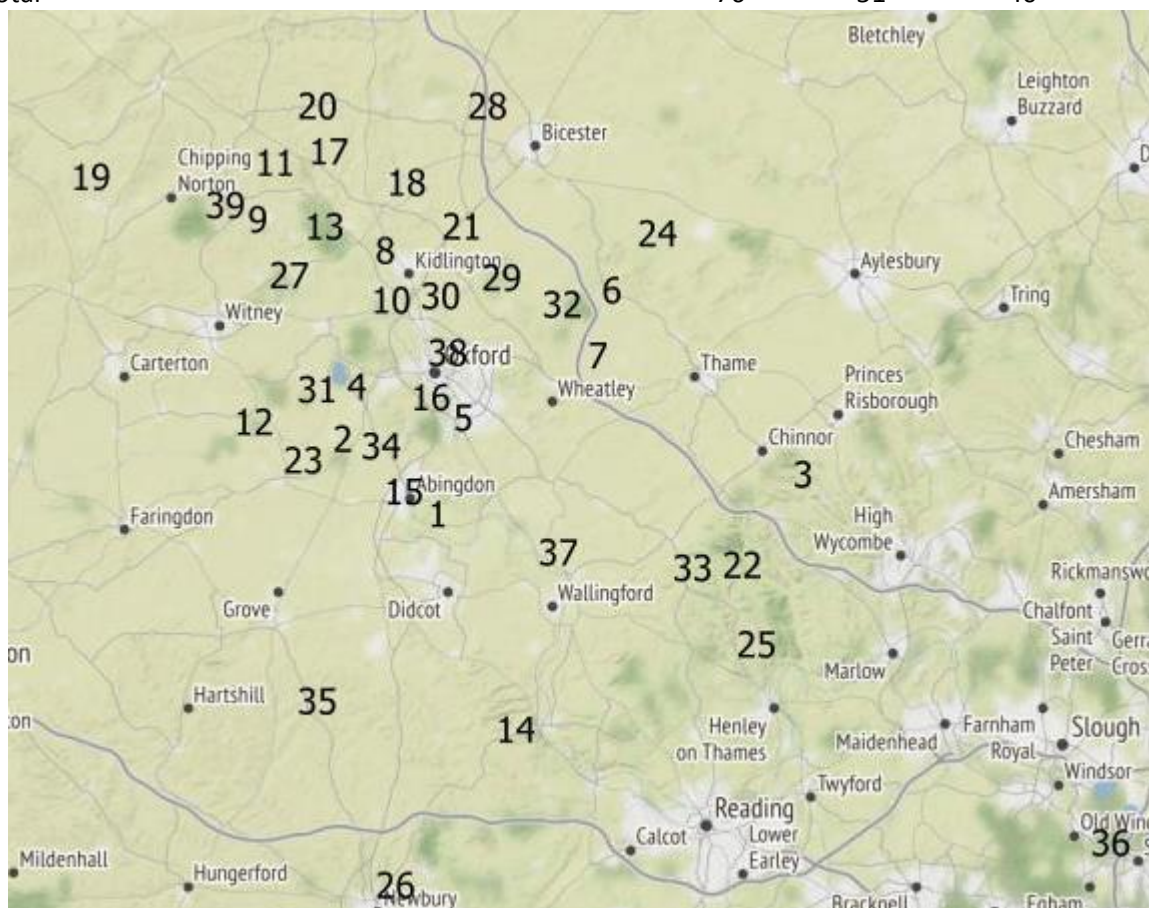


Figure 3. Locations of the areas listed in Table 1. (Background map: by Stamen Design, under CC BY 3.0. Data by OpenStreetMap, under ODbL.)

The visits to Wytham Woods, described elsewhere, were clearly connected to Elton's research and teaching; and research interests were probably also behind the early 1940s visits to Bagley Wood. In other instances, the visits were related to the selection and management of what would become SSSIs, NNRs or Trust Reserves – Aston Rowant, Bernwood Forest, Cothill Fen, Port Meadow, Blenheim Park, Wychwood Forest – others are more descriptions of the general countryside, for example the notes on the North Leigh area. The upsurge in the late 1950s visits to Abingdon Sewage Works, Cassington Pits, the gravel workings around Stanton Harcourt and Blenheim Park lake reflects his son becoming a keen bird-watcher.

Extracts, in *italics*, are given in the following section, that reflect some of the themes that emerge (with hindsight) from his entries.

The war and its aftermath ...

There is passing reference to the wartime role of the Bureau of Animal Population in studying agricultural pest control and the need to increase production (Crowcroft 1991). The conflict also added to the potential risks of surveys in some areas and created unusual development pressures.

28 August 1942. With Middleton to Compton, Berks. on a rat survey and on a piping hot day. The new plough-up of downland since the War has made a huge corn harvest that is just being gathered.

10 August 1947. A blazing sunny afternoon, with variable breeze from the north, along the edge of Fair Mile (Cholsey Downs).... There is also a huge grass field dominated by Bromus erectus, fenced off because of former bombing, but entered by us before realising this. The collecting was all done on tallish, dense grass with B. erectus and possibly some other grasses dominant. Noticed other flowers infrequent, either due to trampling/picking or grass domination, probably latter, as flowers were also scarce in the adjoining field, except on short-grass Festuca patches. Noticed Centaurea (large and small), Scabiosa columbaria, Leontodon hispidus, Pimpinella saxifraga, Plantago, Briza, etc. One lovely patch of lilac Linaria repens.

24 June 1956. Kingston Wood, Oxon [Aston Rowant area]. Mainly on the chalk grass strip below this wood and not far from and above the new radar station.... The Radar Station occupies the ground just below this marginal grass strip. It is painted green all over the huts and masts and is almost invisible from the main road. There is one tall mast that looks vaguely like something at the South Bank Exhibition and not unpleasant; at least twenty more short masts and a power line; and more than four huts or engine sheds from which a mild chugging can be heard. Granted an over-riding necessity, not a bad job, though the down is not what it was.

A changing world

Elton described the typical countryside between North Leigh and Ashford Bridge with its mosaic of habitats that would soon disappear across much of the three counties under agricultural intensification (Figure 4).

19 June 1942. Puddle End, North Leigh, not far from Witney. This is a dairy-cattle farm, with poultry as well, set in pasture and corn and other fields on a clay promontory overlying the basic limestone of the Evenlode Valley. ...The skeleton of the scenery is The Stream (the Hickmans know no special name) which rises just below Shakenoaks Farm, passes Bridewell Farm (with a little tributary joining there), Field Farm (before Bridewell, it curves by the lower field of Puddle End and used to give the water before Witney piped supplies there), crosses the road and eventually winds to Ashford Bridge to join the River Evenlode.

One can wander over pasture or the broad margins of corn and pea fields, or down the Lane – and narrow track walled with wild thick hedges of maple (Acer campestre) hazel (Corylus avellana) blackthorn (Prunus spinosa) dogwood (Cornus sanguineus) wild rose (Rosa species) turning easily by succession into elms, ashes, hollies and a few oaks. The elms are not wych, yet have a freer and more sprouting shape than some round Oxford. The hedge-flowers now are very abundant dogwood, roses, some elder, scattered Heracleum sphondylium everywhere, blue Geranium pratense, and many grasses etc. In the hedges hawthorn is not very dominant, but there are both the dissected-leaf species with one pistil, and the blunter-leaved one with two. The dogwood was just coming into flower, that did not seem to attract many insects, except small brown opaque-speckled winged triangle flies.



Figure 4. (a)A lane at North Leigh and (b) a hayfield recently cut, both taken in 1957.



Figure 5. (a) The ‘narrow track walled with thick hedges’ is still there (2016); (b) the current broad cornfield margins are recent creations funded by agri-environment schemes.

The stream. Turning off the lane to the right, before coming onto the limestone, one follows a little track passed a hedge and by the edge of a flowering wheat field, down to the bottom, where a belt of long grass grows, and a little stream runs quite fast in a cleft of banks. It has some willows and hedge scrub overhanging and shading it here, and dense nettle and grass and willow-herb on the bank. The water is shallow, a few inches, running over a bed of flattish limestone fragments mixed with a little rounded gravel (probably from the Plateau drift). Just where the track crosses a little culvert the hot baking sun on the grass, racing butterflies and feeling of insurgent insect life in the grass, change suddenly to cool shade patches by the flowering elders and a tall silvery willow, and down by the stream the hard, cool streak of protected shade and riffle over the stones, that has a slightly dank windless feel.

24 June 1942. Went further down the lane, past the turning to the stream, and as far as the head of its channel. The ground turns quite suddenly to limestone, as one crosses the boundary of the

Oxford clay on to, successively, limestone of Cornbrash, Forest Marble and Great Oolite. When one reaches the last, it is the edge of the Cotswolds! The calcareous soil is shown by big clumps of yellow rock-rose, by more Clematis in the hedges, (in one place climbing up elms to 20 ft.), Plantago media, and above all by thinning out of Dactylis glomerata and other grasses like Lolium perenne and false oat (Arrhenatherum elatius), and their partial replacement by dominant Bromus erectus. There is a little quaking grass also (Briza maxima).

Common blues (Polyommatus icarus) and large skippers (Ochlodes venatus) flying among the grass on the calcareous roadside. Also, Pieris brassicae, Euchloe cardamines, and an unidentified brown. The hay is being cut during the last few days, the weather having stayed hot and clear. An abundant ant runs on the ground among tall grass at the bottom of the field where I studied the stream. Some of these caused "nettle stings" on Joy's legs. No specimens were kept.

25 June 1942. In the evening, I visited the pasture fields of this and Field Farm, that lie on a clay (and partly plateau gravel clay) capping that forms a gentle spur down to some 350 feet. There is a pond, now empty, but obviously full in wetter times, with damp bottom still. Near it two large willows with split trunks. The pond has a little Callitriche, but is mainly filled with tall loosely rooting Glyceria, very lush. Its height and free flowering are due to fenced protection from the cattle and horses that use the field.

The Field Farm has close grazed grass, on which more than half a dozen lapwings (perhaps two of this year's families) swoop and scream, as if nesting there or with young. In a corner among some rough grass, a colony of Microtus agrestis, with holes, surface runways and traces.

In the morning, visited small wood one field away from the Lane. It is oak-hazel with mixture of other trees, degenerating entirely, as cattle have free access. Carpet is patches of bluebell, bramble, grass and Conopodium majus. A pond trampled out of existence, nearly dry. No butterflies, but some Tortrix flying.

In the Lane, collected a small heath (Coenonympha pamphilus), and saw a few Ochlodes venatus and a fast flying brown [butterfly]. Only a few large and small whites, but no cardamines flying. Perhaps the latter were near the end of first-brood life – nearly all I have examined have looked very battered. The last two nights, cold with north wind probably finish them off.

In the afternoon, we walked to Ashford Bridge [SP385155] via North Leigh. From Puddle End to the village and as far down as the fine limestone quarry (yellow Luxor ruined temple in drenching sun) by the bridge where the road crosses the Stream. There is no Bromus erectus by the roadside, though much cocksfoot and false-oat. This follows the clay especially. By the bridge erectus begins to be dominant, and continues so on the limestone all the way to Ashford Bridge. Rockrose, Clematis, Plantago media, a little Pastinaca sativa, blue Geranium, also abundant on this stretch. Saw small heaths (Coenonympha pamphilus) and a small tortoiseshell on the limestone roadside.

At Ashford Bridge, walked down the Evenlode right bank as far as the place, Whitehill Wood [SP390154], where the steep wood joins it (the one where C. Robbins and I found Gagea lutea about 1921). There is open river bank, pasture with dense nettle patches, and other tall plants. The little fringing "reed swamp" of bulrushes etc. Flying and settling on a dense nettle patch several feet high, on the bank above and abutting on the river, I saw a ♂ white-legged damselfly (Platycnemis pennipes) – blue and black small delicate dragonfly, with partly white legs, and several ♂ Agrion splendens – a vivid green, with a blue glint (not ultramarine blue as Longfield says).

27 June 1942 In the Lane, all the Euchloe cardamines have disappeared, and there are fewer Pieris brassicae, but a fair sprinkling of P. rapae, also Ochloides venatus and an occasional brown or blue [butterfly]. Today was fairly warm and sometimes sunny, as long as one got out of the north breeze.

Mr. Young worked until last week at Ashford Hill (on the Evenlode, above the bridge). The "ford" can be seen a few yards below the bridge, which is where we saw Daubenton's bats in the summer of 1939. Incidentally, there is a very fine ash near the ford. Young caught a crayfish in the Evenlode here in 1941, by turning over stones; he said they were numerous and large.

29 July 1942. Mrs. Evelyn Young, who lives at North Leigh, reports seeing a number of marbled whites (Satyrus (Agapetes) galathea) in a rough scrubby pasture field in the angle between and just behind the fringing woods of Ashford-Bridge-North-Leigh and Ashford-bridge-East-End roads on 26 July. She says that there is a badger colony in Whitehill Wood, below Ashford Bridge (informed by Mr (s) Pope of Ashford Mill, through her husband, who was working there).

Identifying sites for future designation

The Nature Conservancy was set up in 1949 as Britain's first state conservation service, partly in response to the threats that were being identified to wild species and habitats. Elton was on its Scientific Policy Committee from 1949 to 1956. One of his roles was to check areas that had been identified as potentially important by the Nature Reserve Investigation Committee.

11 July 1952. Walked through very rough pasture fields, soil is dry as a rock, to look at the "Stonepit Hills" about 1 mile NNW of the village [Weston on the Green, Oxon]. The field containing the pits (in Stonebrash or Forest Marble evidently) were quite dull grazing, and hardly any rock was exposed. Meaningless as an S.S.I. but there is a very good marsh or fen, growing on a distinctly peat soil that flanks the Gallos (sic) Brook, that comes down from Middleton Park and eventually joins the Ray.

This became Weston Fen SSSI.

25 June 1960. Holly Wood, Stanton St John. This is oak-standards and hazel coppice, with some ash etc., on heavy wet Oxford Clay. There is a remarkable amount of wild rose at the ride edges inside the wood. The flora is rather of coarser plants, including a good deal of Cirsium palustre in flower, some luxuriant patches of Orchis [Dactylorhiza] fuchsii adorn the marshy rides. Honeysuckle common. ... On the western margin of the wood is a wonderful high-scrub hedged green wet track or lane, which apparently belongs to Colonel Thomson, though the field hedge may be partly the farmer's affair (a friend of his). We saw perhaps a dozen black hairstreaks on the high blackthorn, mostly above 5-6 feet.

This would become Holly Wood SSSI, although not before an unfortunate incident affected the wonderful western margin as detailed below (Figure 6).

17 June 1961. We were horrified to find the scrub on the west side of the lane by the west margin being cut down, and then burned and roots machined out. The garrulous old man doing the cutting said the farmer was going to cut and lay his hedge also next winter. 2/3 of the job had been

done, and except for a few young oaks the west side of the lane there is just flat bare earth.

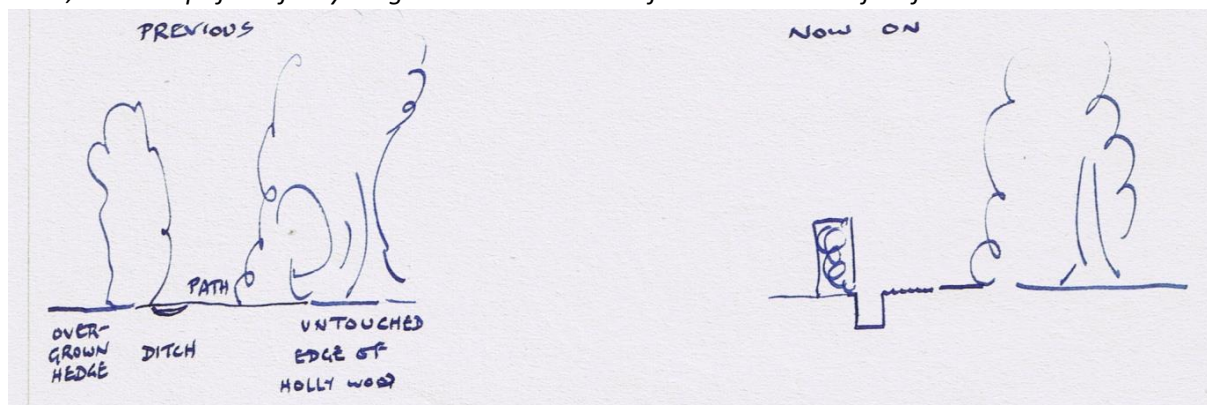


Figure 6 Elton's sketches are scattered through his diaries; here he illustrates the loss of the sheltering hedge at Holly Wood.

Thus there will no longer be protection for the black hairstreaks that live on the woodland edge blackthorn unless the hedge grows high again or the inner blackthorn is allowed to recover. But most has been removed except on extreme edge of ditch here and there ditch maintenance may cause same thing again.

At Cothill Fen Elton's visit occurred just in time to prevent serious damage to the fields close to the Ruskin Reserve and now part of the wider Special Area of Conservation (Figure 7).

*3 May 1950. Spent the day tracking down the owners of the bits of land around the Ruskin Reserve, and also walked over and made general vegetation notes on these small land units, which are summarised in a note to the Nature Conservancy. The field and wood unit numbers used are from the O.S. 1933 edition 25 in. map VI. 13..... 4 and 10 are rushy fields on peat, with what looks like *Juncus inflexus* and *subnodulosus*, that have had a mild burn and some grazing. I swept a large number of tiny grey (adult ♂ and ♀) spiders, with stripy markings, off these rushes. They were most abundant in parts of 4 ("Bessels Meadow").*

*Parsonage Moor (33) is a fantastic mosaic of peaty communities. I only note (1) that *Schoenus nigricans* is very common; it is a scarce fen species. Its full flowering height seems to be about 2 ft. or more. Now this year's flower spikes are a foot or less, so far. (2) that there was a patch of *Aquilegia* in flower bud growing out on the open moor, on or among *Molinia tussocks*! Clapham has noted the queer mixture of peat and limestone species on this moor.*

Another eventful interview. This was with Mr. Norman D'Arcy of the Manor House, who not only offered every possible help in keeping Cothill area as a nature reserve, but actually cancelled the drainage operations that were going to start on Bessels Meadow tomorrow!



Figure 7. (a) Parsonage Moor and (b) Bessels Meadow with rushes, still undrained (2016).

Surprisingly Elton was not that taken by Windsor Forest (Figure 8) despite his undoubted interest in dead wood as a habitat. He seems to have been expecting closed-canopy woodland for the National Nature Reserve, rather than considering the value of the veteran tree population as such.

6 May 1948. Drove over and met John Gilmore, Mr. E.H. Savill the Deputy Ranger, and his chief forestry assistant (who had worked in Glenbranter Forest), to try and choose a National Nature Reserve. Savill is the Deputy Ranger, in charge of some 20,000 acres of Crown Land here and has it in very efficient management. The conception of an NNR here was caused by some error of the NRIC [Nature Reserves Investigation Committee], for although there are many ancient stag oaks left in the Park and the Forest, there is no ancient oak wood at all. And the only oaks are ones planted about 1820, with beeches, – mostly all very poor, and rapidly being almost completely felled to make way for block plantings of conifers (e.g. spruce), beech and chestnut, the two latter partly with larch as a nurse crop.

This gives one a real picture of English woodland of the future: blocks traversed by grassy rides, and a few local concessions to amenity. Here the woods were all poor in ground flora and bird life, but grey

squirrels said to be abundant: nest only in beech holes etc., not open nests in younger trees. I saw a pearl-bordered fritillary (presumably, from the date Argynnis euphrosyne?), and violets were among the few flowers.

There is a cattle/deer grid at one entrance to the Great Park, but not at the other, as they were told by the Ministry of Transport they were illegal (pre-war). Now the remaining deer are in a closed paddock. The woods and park are thoroughly kept, and I noticed a good many pheasants.



Figure 8. The sort of (a) parkland and (b) middle-aged forest at Windsor (2012) that failed to impress!

The forbidden forest – explorations at Wychwood

Elton was much more enthusiastic about another former Royal Forest, that at Wychwood in north Oxfordshire. Wychwood Forest has something of a reputation for being a very private place, but Elton clearly had an entrée and made regular visits (Figure 9).

22 July 1946 With E.W. Jones, walked all around the Forest to see if it deserved to be a National Nature Reserve. There are huge areas of solid Mercurialis or bracken carpet – a dull ground floor, yet with scattered other species like twayblade and violet. Its interest would be in dynamic changes in an obviously natural wood in which no forestry to speak of is or is likely to be practised.... The valley bottoms and partly the sides have a beautiful Brachypodium pinnatum grassland with associated sub-communities e.g. on shorter turf and scree ground. Rock rose, Orchis pyramidalis, cathartic flax, Gentiana amarella (in bud), Atropa belladonna, houndstongue, Carex spp, Briza, ragwort etc. Some marbled whites on the Brachypodium areas. Large numbers of silver-wash fritillaries ♂♂ (a few ♀) flying and settling on ragwort and tall thistle flowers.) I found a colony of Helix pomatia – 4 seen (1 kept) of which three were among grass tussocks under scrub and the other under a log. They are about as awe-inspiring as Sequoias to meet!



Figure 9. (a) Valley bottom grassland with fringing woodland at Wychwood (2012); (b) a Roman snail 'sailing about'; they are about 3-4 cm across (photographed in Estonia 2011).

17 November 1949. With Col. W. Manley of the Nature Conservancy, walked round the N.N.R. part in pouring rain. The autumn colours were terrific, plangent. Especially the golden tawny beeches, which blazed like fireworks. The maples also brilliantly yellow.

Saw the Planaria alpina at Cyder Well, where they were on gravelly sand and under stones in a small pool made by damming the tiny spring, which today was running in spate. Also at Worts Well (one brought home was Polycelis cornuta. For Cyder Well (cf. 24 October 1950) on the other head water. All dark coloured.

This was a significant record in that these are cold-water species and so unusual for this area.



Figure 10. Sampling the Cyder Well, Wychwood Forest, 1958.

20 April 1950. A long and exciting round in pouring rain, with Richard Miller, W.H. Pearsall, and Verona Conway, J.D. Ovington and G.N. Sale (the last three from the Nature Conservancy). Learned a lot of plant and soil ecology.

There is a fine lot of dead and dying wood about, markedly abundant in comparison with a few clear and "managed" patches in the Forest.... Glorious sights were flowering colonies of Lathraea squamaria covering as much as a square yard, seen along the main ride beside the Park (on wych elm, sycamore) and some were on the south plateau (on beech and hazel). In one quite large area, we stumbled on great societies of meadow saffron (Colchicum autumnale) whose strong strap-shaped leaves grew both in open bracken spots and in the more open-canopied woodland itself.

The most impressive feature of this wet day was the site of hundreds of Helix pomatia sailing about in full rig almost everywhere we walked, though of course quite patchily. But they were abroad both in the open limestone grass and in the rides in the heart of the woodland. Their main habitat is woodland edge or ride, where there is grass.

6 May 1950. This morning, in a rather monotonous interview with Beazley of Carter Jones the land agents, I got agreement in principle that the main part of Wychwood Forest will be treated as a nature reserve, though various details remain to be hammered out.

These 'details' included the interactions between game management and forest production. The Forest was a major source of employment, even if some of the practices jarred!

24 January 1952. At one spot in or near Evenden Copse, the rabbits had done heavy ring-barking of small elms. Spindle is held down by deer and rabbits. Grey squirrels had stripped various bark too. There are six keepers and six foresters at work, and I noticed more vermin hanging on trees than ever before.

13 April 1958. Some pheasants about in the wood, the valley and surrounding outer field. Also, some signs of keepers' work, including a keeper's tree with two fresh weasels and a jay. It seemed pointless to kill weasels in an area where (close by) oak is regenerating slightly; and tactless to exhibit a keeper's gibbet in a Nature Reserve, whether the species are official pests or not. (I find jays and weasels can, under the Management Agreement, be killed.)

10 March 1961. On the west slope above the upper valley of Evenden Bottom the gamekeepers have this year extensively underplanted with cotoneaster and snowberry!!

10 May 1961. In Wychwood Forest we walked from the north gate to Cyder Well, and via Newhill Ponds to Newhill Plain and back up "Evenden Valley". Cuckoos and nightingales were singing, the latter in thick scrub of woodland edge. On a keeper's gibbet were jays, magpie, grey squirrel, weasel, stoat. Great preparations for pheasant pens on the north-west corner of the grassy Newhill Lane, not far from where the great beech avenue debouches.

We drove through the Park, which has hundreds of magnificent oaks, sycamores, beeches etc., well-spaced, and with fallow deer on the grass. A great lime avenue runs at an angle to an even greater beech one. We walked round Newhill Plain and by the upper three ponds. Max Nicholson saw a goshawk (*Accipiter gentilis*) flying over with wood pigeons, but I missed seeing this.

11 November 1961. Max Nicholson and I visited the owner Mr. Oliver Watney. He agreed in principle (a) to control scrub and Turkey oaks on Newhill Plain slopes, or allow Nature Conservancy to organise it (b) to abolish keepers' gibbets (c) to consider keeping broad-leaved forest on the non-reserve slope of Five Ash Bottom (d) that there is unity of purpose about keeping the Forest "as it is", though this implies some encouragement of selective natural regeneration $\pm$ planting (not conifers or exotics) – he wants oak, not ash particularly.

22 July 1962. Drove, with Lord Hurcomb, to join a party of 16 Nature Conservancy staff and committee members, which assembled by Waterman's Lodge Gate and walked through the Forest out on to Newhill Plain, and thence down to the Lower Newhill Pond, and back via Cyder Well and Evenden Valley. Among the party were Max Nicholson, Professor Roy Clapham, Lord Hurcomb, Colonel Ian Grant (of Rothiemurchus) and Professor Pearsall.

Slopes of Newhill Plain. The transformation here is complete (for the moment). Italian workmen of the estate have this spring cut down and burned all the Turkey oak and hawthorn thickets and most of the obvious young scattered thorns. These are starting to sprout again in places, and Miss Laptain proposes to get the stumps painted individually with herbicide. The immediate effect is a large area of limestone meadow with scattered large yellow ant-hills; and owing to an accidental fire started by the workmen that was almost only surface burn, and the long drought, the meadow was thin and low. We noticed flowers of squinancy wort (*Asperula cynanchica*), salad burnet, quaking grass, etc. Did not see any *Hippocrepis*.

17 October 1962. Five Oak Copse has been heavily thinned but otherwise is left natural, and will be quite pleasant. From here to Hawksnest Copse (in the Nature Reserve), noticed seedlings of common maple, also of Norway maple which is frequent in this area. Everywhere in the whole forest one sees very small ashes waiting to grow, but seldom over 1 ft. Here we met two Nature Conservancy men making a nylon-net fence to exclude deer from a large clear plot in which some planting will be done. This is the fourth to be set up. The men were Murray and Keir, from Ovington's unit at Monks Wood.

Overall Elton was pleased with his efforts to make the site a National Nature Reserve as he reflected on a visit in 1956.

25 June 1956. Went to the Nature Reserve, with Tom Huxley and Kitty Paviour-Smith. We met the Conservancy's part-time warden, an elderly country gentleman who lives at Ramsden. He was wearing a green and yellow arm band, was amiable, and asked me whether I was an artist and if this was my first visit. In a way, a historic event for me. I had been steadily working on Government committees to promote a Conservancy since 1945, with a previous more episodic experience on the committee of the British Ecological Society, and before that of interesting John Dower in the biological scientific aspects of the National Park movement. I also had the fun of doing the basic reconnaissance of Wychwood, and opening the Conservancy's negotiations with the owner's agent.

And here it was – an unblemished square mile of historic scrubby hunting forest, with about 45 Habitat Components, watched over by the representative of the Lord President of the Privy Council (Mr. Daish of Ramsden), and being roamed over by a nicely behaved party of girls from Wychwood School, Oxford and three ecologists, not to speak of a feral population of fallow deer, whose paths down the dog's mercury under the trees increase yearly. Today with the canopy either very fresh or still half out (oak and ash) it was looking more like a forest than most places left in Britain.

The NNR agreement at the time represented the best defence against the changes in forestry and farming practice that were going on elsewhere, notably at Bernwood Forest.

Changing forestry practice at Bernwood Forest

Elton and colleagues were interested in the Bernwood Forest area as a site for the black hairstreak, but also for invertebrates more generally.

14 July 1945. Drove to Hell Coppice past Stanton St. John, and visited fields just across the road from the wood. This is an oat-field with a rough grassy-thorny corner and margin between it and the road hedge.... This sunny, flowery Eden was full of butterflies: Satyrus galathea, Maniola jurtina and tithonus, Aphantopus hyperanthus, Pieris brassicae. These are nearly all grass feeders. No blues, small coppers, or orange-tips seen.

9 June 1951. Went out [to Hell Coppice]... to see if the black hairstreak was still there; in particular to look if it was on 10 acres that the Forestry Commission want to acquire. This part was still untouched, very thick oak-ash-hazel wood full of flowering anemone, when the family and I visited it in April 1949. All timber had been ripped out since, leaving a very untidy mess of brash and broken scrub, with only small trees scattered among high Deschampsia cespitosa, bramble, hazel etc. [Nevertheless] the whole place swarms with a variety of exciting and beautiful insects, and was of a holly-bush hot-humid-alive atmosphere. The very neglect of the wood's state made this millrace of life seem more for force and complexity.

9 July 1951. Between us we saw: abundant meadow browns, 1 speckled wood, 1 ringlet, abundant marbled whites, large whites, 1 red admiral, frequent white admirals, silver-washed fritillary, 1 black hairstreak, large skippers, grizzled skipper. ...With the purple emperor last week this makes 12 species. Over half the British butterflies have been recorded from Hell Coppice.

29 June 1954. [Waterperry Wood] Insect and spider life were at top pressure and complexity, and whatever future smashing of the habitat takes place, one can still feel that this place is far richer than Wytham or even Bagley. It gives extraordinary natural history value.

The woods had been extensively felled during the Second World War and were about to be transformed further, following acquisition by the Forestry Commission. Elton and colleagues were particularly concerned about maintaining blackthorn and glades in suitable condition for the black hairstreak focussed on Waterperry Wood.

24 July 1954. Walked down the Centre Ride with Mr. D. Grant, the Forestry Commission's District Officer, a very intelligent and friendly Scot. This was perhaps as a good deal as one would be likely to have from any Forestry Commission official, when trying to hybridise conservation of early and mid-seral stages with the hard-shelled timber-growing policy of the Commission. The situation comes down to this: they have agreed to leave about 10 acres (<0.1% of Bernwood Forest) as "glade" units: to be sited where the Conservancy wishes within the west half of Waterperry Wood. This has, I think, been done (1) to meet a scientific case for faunal richness (2) to be quit of pressure from the Nature Conservancy. Since the present silviculture will seek to crowd out all lower seral stages and keep them crowded out (since forests are cut before ecological maturity and natural glade formation will be usually prevented), the only conservation advantages we shall get in this area (and pari passu in others) are:

- *The 10 acres, to be managed as we ask.*
- *Any natural wood that it happens to pay them to keep e.g. the birch at the top – for 20 years or so.*
- *Any future natural regeneration that they think will pay or can be made to agree not to pay.*
- *The results of any mistakes they make so that some trees do not grow well – quite likely here!*
- *Rich canopy fauna on oak-birch and (-aspen)-spruce.*

One effect of this is that the scenario of woodland around our glades will be outside our control. It may very likely be oak-spruce – and some of the "spruce nurse" is cut at 60 years.

Despite some initial problems, the glades were established and later entries deal with their marking out and the management needed to keep them open (Figure 11).

26 April 1955. G. Sale from the Conservancy, and D. Grant (with a research officer, G.D. Miller) of the Forestry Commission met me to settle the muddle that has arisen about this "Joint Reserve" – caused by poor intercommunication, too rigid silvicultural method, and the sabotage of Compartments 33, 34, 40, 41, 43, 39 for a huge experimental destruction of hazel coppice, already planned and partly begun. We were offered the rest of the wood as consolation (omitting areas in Comp. 37 & 38 already cleared). As it happens, we get by this settlement a larger proportion of more naturally managed forest, and rather little of the spruce-nursed oak (which now occupies the whole of a large desert clearance in Hell Coppice).

2 January 1956. ... Glades 3 and 4 are on a small path in Comp. 30 that will have to be kept open as it is not a Comp. ride. Glade 3 is already partly open scrub, and the main part forms a triangle so.

There is a very good mixture of scrub species, including dogwood and willow. The ground is wet clay, and pools form in the paths which sometimes last long enough for woodland mosquitoes to breed. Tagged: 4 willow clumps, 4 dogwood, 1 blackthorn, 1 rose. There is also birch, hazel and oak. Glade 4. Needs no treatment. There is an open space of more than an acre, on the Corallian rubble limestone that here survives over the clay. The badger

town is extensive and mounded with the subterranean works. Wide cover of strong bramble and rosebay willow-herb. In spring there is the finest show of primroses in the wood, also bluebells.

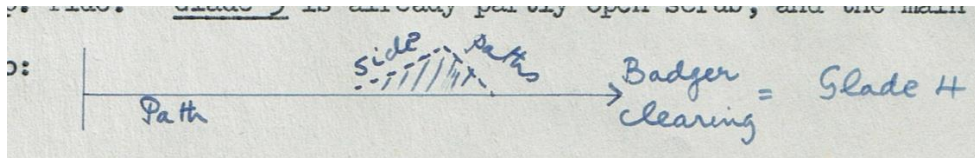


Figure 11. (a) Elton's illustration of glade; (b) Marcus Goddard looking for black hairstreak in a glade in 1958; (c) blackthorn at the edge of Shabbington Woods in 2015.

Meanwhile across the road (and county boundary) in Shabbington Woods there were plans for further glades, but this was to be compromised by the forestry work that was underway.

19 July 1958. Went with Marcus Goddard to look at two black hairstreak/blackthorn sites which need planning further.... I have not got exact details of the forestry plans, but general observation suggests that some fairly solid blocks of deciduous or mixed wood other than the Waterperry Wood "Reserve" are not being clear-felled but accepted for thinning management; while some very large areas, e.g. in Shabbington and Waterperry Woods, have been almost completely erased, and replanted with spruce-oak etc. The end result will probably be the same – a very shady dense and ecologically dull oak forest of rather even age that will again be largely felled.

Meanwhile there are some good rides and edge-formations in the first category, and hundreds of acres of open planted land with (only very temporary) field-type vegetation, some but not all of which has affinities with the more sheltered ride and glade vegetation. But the first thing to go by the board in both kinds of forestry is high thick blackthorn, unless specifically protected and excepted. It is clear that (on the Commission's land at any rate) the black hairstreak might die out unless an adequate series of refuges can be kept going.

At present this plan seems to be achieving its object; yet Sites 2 and 3 were ranked by Goddard as second in importance to the "Peninsula" (Site 1) and yet have been cut. We obviously cannot afford to let this happen again. All sites ought to be marked properly on the ground and not just on a map, for the guidance of the constantly changing forestry staff.

Matters got worse as pressures built on the Forestry Commission to make its operations more economic.

14 June 1961. Waterperry Wood, Oxon. Some hand hormone-spraying [2,4,5-T] has killed a number of birch etc. on part of it and these look ugly, though the effect is not much different from selective felling. Ungley says the glades are all right. Some spruce was planted on one bit of non-glade, by mistake, but some of these went wrong by hormone drip off the higher trees!

York's Wood, Bucks. Visited Blackthorn Site No. 10, which seems quite healthy. But No. 12 has suffered badly from aerial hormone spray last year. Although the low-cut blackthorn escaped as it was covered to protect it, some of the older, and all the birch and hazel in the rest of this small patch are dead or half dead. The whole wood around here looks awful.

29 June 1963. In heavy rain, with vegetation dripping, went out to see the blackthorn reserves, with Marcus Goddard, D.C. Ungley (the Nature Conservancy Warden-Naturalist), P. Martin, C.A. Elbourn. We were mainly on and in the edges of Shabbington, York and Oakley Woods. Saw Reserves 10, 12, 2, 3, 9, 13. The woods are a shocking sight after hormone-killing of the trees. Gaunt dead trunks by the thousand, a moss carpet below with large new Holcus tussocks scattered, and 1-2 ft. spruces. No butterflies: rain stopped play.

The spraying out of oak was fortunately soon abandoned and Elton would live to see some recovery and proper recognition of this site. In the 1981 it was made an SSSI primarily for its invertebrate interest. Following another change in forestry policy (1985) the Forestry Commission started to thin out the conifers and recover the oak crops that they had been trying to eliminate in the 1960s (Figure 12). Much of the flora has survived and the woods are now promoted as a place to go for butterfly walks.



Figure 12 (a) 'Mirkwood ' a view of Shabbington Woods from the 1980s; (b) former oak-spruce mixtures after conifer removal (2015).

Rabbit decline and its consequences

Rabbits had been one of the agricultural pests that Elton and his Bureau of Animal Population had worked in during the war, so he was well tuned-in to their influence.

13 June 1948. Blenheim Park. The grassland has abundant Cynoglossum officinale in flower – it evidently is avoided by the cattle and rabbits. On the rabbit grazed shorter turf are little societies of a small pink Geranium (? molle) and hop trefoil and a small Myosotis in flower.

26 September 1948. Wychwood Forest Rabbits seemed very active in the wood – damage to limestone grassland and to spindle; and some seen everywhere.

21 December 1949. Aston Rowant. There is about a mile of chalk grass slope, real chalk grass grazed by sheep, from Beacon to Bald Hill. The sheep are a piebald brown and dirty white, woolly close coats, sharp short curved horns – possibly Soay. They looked UnEnglish, at any rate not modern and stream-lined. But the grass is true Festuca, no bedevilment by Bromus erectus or Brachypodium. In places was rock-rose; many a yellow ant-hills. Scattered are banks and odd corners with large junipers and other scrub and small trees. But only on Beacon is there a large-scale scrub sere. All this stretch would be very good reserve. It would have to be run by helping the farmer (of ? Hill Farm below) to keep the sheep on and by maintaining some of the great rabbit warrens, that scar the hillside.

30 January 1950. Wychwood Forest We went up to the Plateau Drifted area at Stag's Plain, where the soil is almost all solid gravel of travelled and partly striated pebbles, mostly quartzite. There is quite a wide area of rabbit-grazed "siliceous" fine grassland, composed of Aira [Deschampsia] flexuosa etc., with Calluna and with patches of gorse.

17 June 1951. Kingston Wood, Aston Rowant. There is a great box thicket on one part of the wood margin. In the shelter between this and the Lower Shaw wood of beeches beneath, the turf seemed full of insect life. Rock rose was in flower, and other smaller flowers like thyme, squinancywort, cathartic flax, speedwell and a small pale lilac spiked veronica, salad burnet, a small quaking grass. Fine grass (only a few bits allowed by rabbits to flower) and moss make up a dense mat in the best parts, with the small herbs equally abundant in it. I kept one flowering grass. A few gentian plants were growing in the part shelter of the lower edge of the box thicket.

22 January 1952. Wychwood Forest. Great abundance of rabbits noted. Corpses all over and c. 30 seen during one night drive from Leafield to Ranger's Lodge and back. Complete and very fresh ring barking of compact group of elms in Churchill Copse. Head Keeper (Mr. Wiltshire, Ranger's Lodge) attributed this to trapping of vermin.

22 May 1952. Watlington Hill. This shoulder of open down with clumps of hawthorn and other scrub here and there, is a National Trust property. The turf, where not abraded to the flinty chalk, is very bare and does not seem highly flowered just now. We saw cinnabar moths, dingy and grizzled skippers, small heaths and one large white. A small flowering whitebeam had many visiting insects on the flowers; Bombus, Empis, small flies and beetles. This hill is presumably kept to chalk grass by trampling and a few rabbits: no sheep. There is no invasion of Brachypodium.

7 October 1953. Blenheim Park. There are many rabbits in this decaying mediaeval forest, elder is the only shrub, and no young oaks anywhere except a few that must have been specially reared.

Then myxamotosis arrived and concerns shifted to the consequences of reduced grazing pressure.

13 October 1954. Wychwood Forest. Several dead myxo, two dying, also several quite alive rabbits. Southern says the disease started in Wychwood about August.

26 April 1955. Myxomatosis has swept over most of Bernwood Forest, especially the northern part; but Waterperry Wood has escaped – he [a forest workman] has seen no diseased rabbits, and there are and always have been a good many living there.

25 May 1956. [Wychwood Forest]The complete absence of rabbits since myxo has made Five Ash Bottom grass slopes and this 'quarry' more shaggy with grass, but so far the superficial changes are not very great..... The grass slopes below Newhill Plain most urgently require a management plan to deal with (a) self-sown young turkey oaks (b) self-sown young hawthorns (c) thickening of vegetation in absence of rabbits. One thinks e.g. of the chalk-hill blue butterfly, dependent upon Hippocrepis, and in one of its nearest stations to Oxford.

24 June 1956. Kingston Wood, Aston Rowant. The chalk grass shows obvious effects of the disappearance of rabbits, of which there are no signs at all. Although the nice turf flowers like squinancy wort, Veronica officinalis and others, salad burnet, wild thyme, rock rose, small forget-me-not and so on are still flowering there in some quantity, and the turf when examined is full of leaves of other species as well; there has been quite undoubtedly a thickening of the grassy turf at the expense of the flowers, especially rock rose at the easterly end just beyond the radar station.



Figure 13 In the absence of rabbits chalk grassland at Aston Rowant is maintained by sheep grazing; but with increased need for scrub clearance at many sites as at Watlington Hill.

Other species gains and losses

Various of the species commented on are less common now than then: turtle doves at Ashford Bridge (1951), Bernwood Forest (1954), Cassington Pits (1958); nightingale at Wychwood (1961); and Stone curlews at Swyncombe Down (1958, 1959); yellow wagtails (Abingdon Sewage Works, Cassington Pits, late 1950s). The references for partridges are to the native grey species: the red-legged species being considered something unusual when seen. Native crayfish are noted as present in various rivers and streams.

On the other hand collared doves (Islip, 1963,1964) and muntjac (Wychwood Forest 1963) were then newcomers to the region. Buzzards, though seen at Waterperry (1959), Wychwood (1949,1957) and Cassington Pits (1958) were less common (and not recorded at all in the entries for Wytham Woods over the same period) and we have also gained little egret and red kite.

Grey squirrels were already well established but there were still some attempts at their control.

11 November 1961. [Mr Watney at Wychwood Forest] gave some bag records of grey squirrels (whole estate), c. 3260 since May 1961! This after a poking out campaign in spring. I did not mention probability of a good many surviving in old park tree holes; but told him evidence from M.A.F.F. research on wide movements of this species and reinvasions.

Elton also found, one suspects somewhat to his embarrassment, that he was the cause of the local spread of a North American species!

16 April 1946. Today I was astounded to find a population of a new and strange shrimp, an Amphipod, living in the tiny 4-5 ft. square concrete pond in the Baden-Powell's garden on Hinksey Hill. This pond was started by me in 1937, and I have kept a casual check on its fauna every year since. Consulted with George Crawford and Malcolm Spooner, who both confirmed Eucrangonyx gracilis (Smith).

I have since (May) found populations of this shrimp in the stock ponds of the Department of Zoology, which explains the occurrence at Stone End, because I took a piece of yellow water lily from the stock ponds and planted it in the Stone End pond in 1937. P.A. Trotman has known of "strange Gammarus" in these ponds for several years. All sorts of stuff is put into them from time to time.

Discussion

These are diaries: what was recorded depended entirely on the author's feelings and interests on a particular day. In these he was not constrained by the protocols and language associated with scientific papers and was as alive to the aesthetics of the sites as to their scientific merits. After one visit to Wychwood (8 June 1961) he comments 'Managed to put across the beauty as well as the ecological character to these Conservancy people', while a stopover at Nettlebed Woods leads to the comment 'the comparative paucity of species, the unbalance of animal numbers, and the beauty of the wood, are things for reflection! Charm without variety!!'.

We do not know what he might have seen, but decided not to record, so in that sense the entries are partial. Nevertheless, they provide a fascinating glimpse of a time and activities that were critical to the future of the English countryside. Agricultural improvements, which had been promoted as a matter of necessity during the War, were intensified and had major impacts on the distribution of habitats and species as meadows were ploughed, hedges cleared and wetland drained – the fields at

Cothill were just saved in time. The drive to increase forest production, as illustrated by what went on at Bernwood, was repeated by the Forestry Commission and on private estates across the country.

The modern conservation movement was getting underway; SSSIs and NNRs such as Weston Fen and Aston Rowant were being notified on the basis of visits by experts such as Elton. County wildlife trusts such as BBOWT were being established. However, the influence of the conservation sector was still very small, compared, for example, with that of the Ministry of Agriculture. There was little in the legislation, in the days before the 1981 Wildlife and Countryside Act, that could be used to stop habitats being damaged by general land-use practices.

There were no computers, no internet, and little in the way of remote sensing, apart from the occasional aerial photograph. Surveys had to be done by scanning the landscape with binoculars and physically walking the ground, avoiding former bombing areas, etc. There was no email: queries about species or habitats were resolved through a network of correspondents in a way that would have been familiar to Charles Darwin a century earlier.

Elton was very concerned with the need to build up detailed accounts of what species occurred where and developed an elaborate system of edge-punched record cards to record what was found at Wytham (Elton 1966). Since then we, have through the work of many naturalists, amateur and professional, built up a much more comprehensive picture of the wildlife of the three counties, stored in numerous computer databases and record centres. Let us hope that they will provide future researchers with all they need to know about what our countryside and landscapes were like in the early 21st century.

There is however still likely to be value in the more informal accounts such as are represented by Elton's diaries; there is colour and immediacy in the comments that is difficult to get from a spreadsheet entry. Not many people keep detailed diaries any more but perhaps ecologists in 50 years-time will be trawling social media such as Facebook in search of similar first-hand accounts of the three counties.

Acknowledgements

The Elton diary material is made available by permission of his family, the Department of Zoology (successors to the Bureau of Animal Population) and Oxford Museum of Natural History. It was transferred to the Oxford Research Archive, through the work of Professor Caroline Pond who 'read-in' the entire oeuvre. The project was organised and funded through the efforts of Nigel Fisher (Conservator, Wytham Woods) and Darren Mann (Oxford Museum of Natural History). Copyright for the modern photographs rests with the author; the black and white prints are produced courtesy of the Department of Zoology, Oxford.

References

- Crowcroft, P. 1991 *Elton's ecologists: a history of the Bureau of Animal Population*, University of Chicago Press.
- Elton, C. S. 1942-1965 *Elton Archive: notes on the Wytham Area 1942-1965* [Online]. Available: <http://ora.ox.ac.uk/objects/uuid:89c5e479-6003-45ba-bd78-8a8a12858bf1>.
- Elton, C. S. 1966 *The pattern of animal communities*. Chapman & Hall, London.
- Kirby, K. J. 2016a Charles Elton and Wytham Woods. *British Wildlife*, 27: 256-263.
- Kirby, K. J. 2016b. The transition of Wytham Woods from a working estate to unique research site (1943-1965). *Landscape History*, 37: 79-92

Kirby, K.J. 2017. One man and his log: Charles Elton's pioneering studies of dead wood at Wytham Woods. *Quarterly Journal of Forestry* (in press).

Appendix 1. Species mentioned in this article. In the diaries as a whole probably over a thousand species (mostly invertebrates) are listed.

Scientific name	English Name
Plants	
<i>Acer campestre</i>	Field maple
<i>Acer platanoides</i>	Norway maple
<i>Aira [Deschampsia] flexuosa</i>	Wavy hair-grass
<i>Aquilegia vulgaris</i>	Columbine
<i>Arrhenatherum elatius</i>	False oat-grass
<i>Asperula cynanchica</i>	Squinancywort
<i>Atropa belladonna</i>	Deadly nightshade
<i>Betula</i> spp.	Birch
<i>Brachypodium pinnatum</i>	False brome
<i>Briza</i> spp	Quaking grass
<i>Bromus erectus [Bromopsis erecta]</i>	Upright brome
<i>Buxus sempervirens</i>	Box
<i>Callitriche</i> spp	Water starwort
<i>Calluna vulgaris</i>	Heather
<i>Carex</i> spp	Sedges
<i>Chamerion angustifolium</i>	Rosebay willow-herb
<i>Clematis vitalba</i>	Old man's beard
<i>Colchicum autumnale</i>	Meadow saffron
<i>Conopodium majus</i>	Pig-nut
<i>Cornus sanguinea</i>	Dogwood
<i>Corylus avellana</i>	Hazel
<i>Cynoglossum officinale</i>	Hound's-tongue
<i>Dactylis glomerata</i>	Cocksfoot
<i>Deschampsia cespitosa</i>	Tufted hair-grass
<i>Euonymus europaeus</i>	Spindle
<i>Festuca</i> spp.	Fescue
<i>Gagea lutea</i>	Yellow star-of-Bethlehem
<i>Gentiana [Gentianella] amarella</i>	Autumn gentian
<i>Geranium molle</i>	Doves-foot cranes-bill
<i>Glyceria</i> spp	Flote-grass
<i>Helianthemum nummularium</i>	Rock rose
<i>Heracleum sphondylium</i>	Hogweed
<i>Hippocrepis comosa</i>	Horseshoe vetch
<i>Holcus mollis</i>	Creeping soft-grass
<i>Hyacinthoides non-scripta</i>	Bluebell
<i>Juncus inflexus</i>	Hard rush

<i>Juncus subnodulosus</i>	Blunt-flowered rush
<i>Juniper communis</i>	Juniper
<i>Lathraea squamaria</i>	Toothwort
<i>Leontodon hispidus</i>	Rough hawkbit
<i>Linaria repens</i>	Pale toadflax
<i>Linum catharticum</i>	Cathartic [Fairy] flax
<i>Lolium perenne</i>	Perennial rye-grass
<i>Lonicera periclymenum</i>	Honeysuckle
<i>Mercurialis perennis</i>	Dog's mercury
<i>Molinia caerulea</i>	Purple moor-grass
<i>Myosotis</i> spp.	Forget-me-not
<i>Neottia ovata</i>	Twayblade
<i>Orchis [Anacamptis] pyramidalis</i>	Pyramidal orchid
<i>Orchis [Dactylorhiza] fuchsii</i>	Common spotted orchid
<i>Pastinaca sativa</i>	Wild parsnip
<i>Picea</i> spp.	Spruce
<i>Pimpinella saxifraga</i>	Burnet saxifrage
<i>Plantago media</i>	Hoary plantain
<i>Primula vulgaris</i>	Primrose
<i>Prunus spinosa</i>	Blackthorn
<i>Quercus cerris</i>	Turkey oak
<i>Rosa</i> spp	Dog-rose
<i>Rubus fruticosus</i>	Bramble
<i>Sambucus nigra</i>	Elder
<i>Sanquisorba minor</i>	Salad burnet
<i>Scabiosa columbaria</i>	Small scabious
<i>Schoenus nigricans</i>	Black bog-rush
<i>Senecio jacobea</i>	Common ragwort
<i>Sorbus aria</i>	Whitebeam
<i>Symphoricarpos albus</i>	Snowberry
<i>Thymus polytrichus</i>	thyme
<i>Trifolium campestre</i>	Hop trefoil
<i>Typha latifolia</i>	Bulrush
<i>Ulex europaeus</i>	Gorse
<i>Ulmus</i> spp.	Elms
<i>Veronica</i> spp.	Speedwell
Butterflies and moths	
<i>Aglais urticae</i>	Small tortoiseshell
<i>Apatura iris</i>	Purple emperor
<i>Aphantopus hyperanthus</i>	Ringlet
<i>Argynnis euphrosyne</i>	Pearl-bordered fritillary
<i>Argynnis paphia</i>	Silver-wash fritillary
<i>Coenonympha pamphilus</i>	Small heath

<i>Erynnis targes</i>	Dingy skipper
<i>Euchloe [Anthocaris] cardamines</i>	Orange tip
<i>Ladoga camilla</i>	White admiral
<i>Lycaena phlaeas</i>	Small copper
<i>Lysander coridon</i>	Chalkhill blue
<i>Maniola [Pyronia] tithonus</i>	Hedge brown
<i>Maniola jurtina</i>	Meadow brown
<i>Ochlodes venatus</i>	Large skipper
<i>Pararge aegeria</i>	Speckled wood
<i>Pieris brassicae</i>	Large white
<i>Pieris rapae</i>	Small white
<i>Polyommatus icarus</i>	Common blue
<i>Pyrgus malvae</i>	Grizzled skipper
<i>Satyrus [Melanargia] galathea</i>	Marbled white
<i>Strymonidia pruni</i>	Black hairstreak
<i>Tortrix</i> spp.	Leaf-roller moths
<i>Tyria jacobaeae</i>	Cinnabar moth
<i>Vanessa atalanta</i>	Red admiral

Birds

<i>Vanellus vanellus</i>	Lapwing
<i>Garrulus glandarius</i>	Jay
<i>Pica pica</i>	Magpie
<i>Cuculus canorus</i>	Cuckoo
<i>Accipiter gentilis</i>	Goshawk
<i>Luscinia megarhychos</i>	Nightingale
<i>Columba palumbus</i>	Woodpigeon
<i>Streptopelia turtur</i>	Turtle dove
<i>Perdix perdix</i>	Partridge
<i>Burhinus oedicephalus</i>	Stone curlew
<i>Alectoris rufa</i>	red-legged partridge
<i>Motacilla flava</i>	yellow wagtail

Mammals

<i>Microtus agrestis</i>	Field vole
<i>Myotis daubentonii</i>	Daubenton's bat
<i>Meles meles</i>	Badger
<i>Sciurus carolinensis</i>	Grey squirrel
<i>Mustela nivalis</i>	Weasel
<i>Mustela erminea</i>	Stoat
<i>Dama dama</i>	Fallow deer
<i>Oryctolagus cuniculus</i>	Rabbit

Other species

<i>Austropotamobius pallipes</i>	White-clawed crayfish
<i>Bombus spp.</i>	Bee
<i>Empis spp.</i>	Fly
<i>Eucrangonyx gracilis</i>	An amphipod
<i>Helix pomatia</i>	Roman snail
<i>Lasius flavus</i>	Yellow ant
<i>Planaria alpina</i>	Flatworm
<i>Platycnemis pennipes</i>	White-legged damselfly
<i>Polycelis cornuta</i>	Flatworm