



COMMENTS ON THE DEFRA HEDGEROW SURVEY HANDBOOK (1st Edition)

SUMMARY

The procedure is ill-conceived and unsound. It is unworkable and could cause incidental damage to wildlife. The requirements are unclear and the methodology is woolly. The aims and expected results are incompatible in both local and national contexts. Its widespread implementation would be an expensive fiasco.

1. GENERAL

1.1. As a response to the House of Commons Committee's report on the Protection of Field Boundaries published in 1998, the Hedgerow Survey Handbook falls short. The Committee's conclusions included: "We believe that all types of traditional field boundary merit equal protection in law from unnecessary removal: this merit rests in their archaeological, historical, ecological and landscape value as well as their agricultural and territorial purpose. We feel that communicating the value of field boundaries to the general public and to those farmers and landowners responsible for their upkeep must form a central aim in the Government's policy on field boundaries." The Handbook mentions landscape and historical aspects among examples of survey objectives on p.3 but, apart from brief suggestions on p.11, these are absent from the text and are not included in the survey.

1.2. While claiming to be "applicable across the United Kingdom" it is obvious from the text that no proper provision has been made for regional types of hedges, some of which are dismissed, and those in the Glossary incorrectly described.

1.3. The data collected are principally qualitative and disorganised despite the intention to provide statistical accuracy. The only objective which the Handbook methodology can meet is to provide a description of some of the plant species in sections of ordinary hedgerow, and a little about its surroundings, which is limited by the time of year the survey is made, and the skill of and time available for the surveyor. No clear way is shown for the survey results to conform to the Hedgerows Regulations; and no indication is made as to whether the Handbook is to be put forward as an alternative. Methods of surveying are poorly defined and are capable of widely differing interpretations. There is no guide as to how the information is to be used. In no way can it, as hoped in the Preface, form "a comprehensive and accurate picture of the status of the hedgerow network across the country". The data are incomplete and are incapable of country-wide compilation and comparison.

1.4. Core issues such as the type of surveyor required, the type of survey required, and the results required in the form of comparable data are undecided, and are thrown open to individual

interpretation and to lax practice. Indecision and licence obtain throughout the Handbook, and result in actual absurdities such as the claim that surveyors competent in all the disciplines required maybe trained in "around one day". When later admission is made that this would not in fact be sufficient, the recommended solution is to slacken the programme or leave the survey unfinished (p 5, 6 and elsewhere). It is unrealistic to expect miscellaneous surveyors to produce efficient results from a survey designed to rely heavily on its initial collection on expertise in botany. In practice so few experts would be available that the majority of survey returns would either be inadequate or inaccurate, or both. While an Appendix "Legal Protection of Hedges" is included, few attempts have been made to link these or other legal requirements with the survey work.

1.5. In recommending April to October, with June to July as the preferred time to survey (p.13) it is evident that no regard has been given to the disturbance of the wildlife most active at this time of year. No mention is made of the illegality of disturbing or destroying nesting birds, nests, eggs or chicks, (not only rare species) if this could reasonably have been avoided, while advice is given (such as recording ground flora by placing quadrats at fixed measurements) which could lead to such birds as the whitethroat deserting or being exposed to predation. The taking of specimens is recommended, without pointing out that this should not be done without the landowner's permission.

1.6. A stated aim of the Handbook (Preface) is to produce "a clearly defined yet comprehensive system of data collection covering the setting of the hedge, associated features, its structure, and woody and ground flora components... a simple and efficient way of gathering standardised hedgerow data that are applicable across the United Kingdom." The system as proposed is neither clearly defined nor comprehensive and it is flawed in the collection of data relating to all these factors. By its own admission, it is not "simple and efficient", and the time and costs of operation have been underestimated. The extent and detail of each survey is allowed to vary according to the surveying skills available, and on the characteristics of the hedge. This will result in a wide and unknown range of accuracy in the data, invalidating any statistical comparison between hedge sites, either locally or nationally. This is unlikely to be resolved by the recommended 10% resurvey spot checks. These checks, liaison meetings, pilot surveys, the employment of flying specialists and other recommendations do not appear in the survey costings. The Handbook recommends three or more persons to produce a single survey, which is needlessly extravagant, as is the advised preparation time for each survey of at least nine months (p.5). This cannot be justified by the reasons put forward for it, or by the quality of data to be produced at the end of it. Much of this time would seem to be devoted to attempts to organise and "give credibility to" (p.5) what appears to be a basically disorganised scheme.

2. SPECIFIC POINTS

2.1. Hedge definition.

The Concise OED defines hedge as a "fence of bushes or low trees, living or dead, or of turf, stone etc. Hedgerow, row of bushes forming hedge". Throughout the Handbook, starting with the Foreword, there is confused and ambiguous usage of the words "hedgerow" and "hedge". In most instances they are used interchangeably as if they have identical definitions, but this is not stated and there is no proper use of the term "field boundaries". Recourse to the Glossary of Terms and Definitions leads to more confusion: a hedgerow is defined as including an earth bank or wall if in association with a line of trees or shrubs. A hedge is not defined at all. A hedge bank is "an earth bank or mound relating to the hedge". An "established hedge" is a "hedgerow" over 5 years old. Similar confusion in other entries, eg a "gap" is only applied to a hedge, though the description only

applies to a hedgerow. If it is the authors' intention that the words are synonymous, then it should be made clear in the glossary, alternatively they should follow the OED definition.

2.2. **Indecision**

There is no clear indication or decision regarding the type of person required for surveying the hedges. The Preface declares "Designed for local groups and volunteer bodies, as well as the professional surveyor ..." showing at the start an attempt to get the best of both worlds which foredooms the exercise to later attempts to compromise. These indicate that in fact a surveyor expert in botany and well-versed in other disciplines would be needed. Throughout the document more of these become apparent as afterthoughts, not having been addressed at the start or even mentioned under "Training", for example p.24 "Some specialised knowledge is required" as to grassland, crops etc., and on p.24 and p.28, as to understanding of livestock and hedge maintenance, on p.31 as to judging the age and condition of trees, and on p.34 as to recognising mammalian evidence. Varying descriptions of surveyor requirements also appear on pp 2, 5, 6, 7 & 8. An attempt under "Training" (p.8) to justify the need for skilled surveyors is made, with the hopeful remark: "To ensure accuracy ... it may be possible to complete training in around one day depending on the amount of detail required and the experience of the surveyors." It is impossible that one day's training can turn out "competent botanists" capable of "ensured accuracy" in "field identification of ... critical vascular plants ie those in the Hedgerow Regulations[sic] ..." It would take a very competent botanist to identify some of these, eg wood false-brome, in the field, and even recognising species in the simpler lists would be beyond most people, certainly in the typical time (30 minutes) allowed for surveying. In a number of places it is tacitly admitted that the surveyors are unlikely to be able to cope. Examples:-

p.7. "An alternative approach is for hedgerow surveyors to omit "difficult" quadrats and/or a "flying" specialist team to survey subsequently."

p.9. "Where shortfalls are discovered, [in data collection on survey forms] further investigation may be required." No allowance seems to be made for the extra time and cost involved in "further investigation".

2.3. **Training** .

p.8. The time given to training is inadequate and unrealistic, and no specification is given as to suitable trainers. "Around one day" is proposed, during which presumably the trainee is expected to become proficient in the following, which are later demanded: identification of plants (600 species in the hedges according to p.1), identification of shrubs and trees and judgement as to their condition; knowledge of livestock, agricultural cropping and hedge maintenance; reading mammalian signs; understanding definition of survey terms; parametrical statistical analysis; map reading; surveying techniques; health and safety; and to be "familiar" with this Survey Handbook. Given the Handbook's undisciplined form, this requirement alone would take the three days that "around" one day might be assumed to mean, if "familiar with" is intended to convey understanding and recollection.

While such phrases as "Training is essential to cover ..." and "Special attention should be given to ..." may be taken as hopeful suggestions rather than requirements, the rest of the Handbook makes it plain that the surveyor needs a level of expertise far beyond the capabilities of "around a day's" training. No suggestion is made as to how this is expected to be overcome, except by skimping the survey details and omitting data, which malpractices are frequently allowed or advised. Important items such as legal requirements and simple field craft, ie how not to disturb the fragile summer ecology of the hedge, are omitted from training requirements altogether.

2.4. **Inconsistency.**

The words "depending on" in the quotation above from "Training" indicate another major weakness. The Handbook having claimed in the Preface to be "a simple and efficient way of gathering standardised hedgerow data that are applicable across the United Kingdom" and "can be used to build up nationally comparable datasets" (Preface) thereafter propounds a scheme that admits so many variable factors as to be neither simple, efficient nor standardised, and would be seriously defective in comparative analysis. There appears to be no agreed standard in the method. These basic uncertainties and vague instructions that would lead to non-standardised results appear on pages 3, 5, 6, 8, 11, 13, 15, 16, 17, 18, 26, 28, 30, 31, 32, 33, 34 and 38. Example: p.6. "You will need to decide whether the survey is to be undertaken by professional or volunteer surveyors ... Professionals are recommended where a strict programme is required." This inbuilt inconsistency appears, often in conjunction with the words "may", "where possible", "depending on", "you will need to decide", &c, on many issues including such basics as sampling. See p.16: "Before undertaking a sample survey, you will need to decide on the sampling unit to be used and the sampling strategy." Allowing individual surveyors or survey supervisors to "decide" these issues can only lead to chaotic data. To "establish statistical comparisons" would be, to say the least, complicated by allowing so many differences in sampling strategies and allowing "each survey... to be considered individually in relation to ... the degree of accuracy required." (Required by whom, or what?). The sampling strategy, "degree of accuracy" and other policies (p16) are debated but nowhere clearly stated. It is not clear whether the phrase "the degree of accuracy required" means that inaccurate data are acceptable, or whether "accuracy" should read "detail". In either case variation will jeopardise the usefulness of the data.

Further examples of these built-in inconsistencies appear on:

p.24. "Ideally you should examine both sides of the hedge but this may not be practical [sic]".

p.24. "In some cases the land use on the far side of the hedge ... is not visible, in which case this column should be left blank."

p.30. "Where possible identification should be to a species level..."

p.30. "The list may need to be adapted ..."

p.32. "You may have decided to omit this part of the survey ..." (Note: If surveyors are to choose whether or not to complete the survey, - example given, woody species only for dormouse survey - not only would this lessen the value and integrity of the data overall, but it could mean many relevant facts remain uncounted that might have been revealed by effectively comparative data.)

p.33. "They [the species listed] may need to be adapted..." and "the exact position of the quadrats may vary...it may not be possible to make a full record... These compromises result sometimes in a questionable statement eg p.16. "Depending on the overall objectives and an adequate sample size, a full survey will not give substantially more information than a statistically selected sample." p.30 "Such data recorded along a 30m length can assist in dating the hedge and determine whether a hedgerow is defined as species-rich ..." In relation to plants, the colony distribution of many hedgerow species casts doubt on such statements. Two fixed quadrats 2m x 1m as recommended on p.33 cannot adequately define diversity. Colonies in hedges can be very local and static, also quantitatively unequal ie masses of one plant such as red campion, but many other species in small quantities and well dispersed. The theory that numbers of species can "assist in dating" has been shown to be fallacious in many circumstances. Statements qualified by "Depending on" give a surface veneer to inadequate research, but do not encourage confidence in the scheme.

To be "a very useful tool in building up a detailed knowledge base..." (p.1), the survey must deliver accurate and consistent data, or be worse than useless, not only in perhaps being believed to be detailed and accurate when it is not, but in blocking the way to a proper survey mechanism being

installed. "The overall objectives" are another subject discussed but not clearly stated, and allowed to vary at whim: "Unfortunately, each survey has to be considered individually in relation to its specific objectives and the degree of accuracy required" (p.16). This statement itself indicates that no standard survey method is required to be carried out, and contradicts the claim as to " gathering standardised hedgerow data" made in the Preface.

p38. "Details should include additions or any variations from the standard survey method described in this publication" is another statement which itself indicates that no standard survey method is described or required to be carried out.

2.5. Interference.

On p.57 the statement is made: "where hedgerow surveys are being undertaken it is very important not to disturb such species." It is not merely "very important", it is illegal to disturb Schedule One species. Neither is it mentioned that it is illegal to destroy any nesting bird, its nest, eggs or chicks unless able to prove unawareness of their presence, or that the destruction could not have been reasonably avoided. This puts the Handbook's advice to survey hedges in the bird breeding season on to a 'sticky wicket', as it is known beforehand that nesting birds and other wildlife are certain to be present in both canopy and ground flora.

It is not implied anywhere in the Handbook that there is a moral obligation to minimise disturbance of the wildlife even when not protected by law. No guidelines are given in the Handbook to ensure that wildlife and vegetation are not destroyed, and a number of instructions are given that are likely to ensure that they are, eg: that surveying should preferentially be carried out in June or July, the most active and vulnerable time for wildlife; that at least two people should be employed along the hedge; that quadrats should be placed in the flora; that metal plates should be placed in the hedge as permanent markers. Presumably the June/July advice is given to aid those surveyors who can't recognise a plant unless it is in full bloom. This again points to the inadvisability of devising a survey method that tries to pretend it can get accurate detailed information on plant and tree species from unskilled surveyors. This practice could be disastrous for nesting birds, mammals and insects, eggs and larvae. Two or more people surveying canopy and ground flora in a hedge in the season of lush growth can hardly avoid leaving it badly trampled. With the instructions given, considerable damage could be done, for example in pushing a way into the hedge to measure an internal ditch or to measure an overgrown one at this time of year. Placing quadrats physically into hedgebottoms and investigating flora at a predetermined place is another procedure likely to disturb or even destroy wildlife and leave a broken-down scar in the floral growth. Note that the illustrations showing the way to place quadrats indicate closely trimmed grass and are therefore purely theoretical. Leaving metal marker plates is quite unnecessary, given the site details required from the point of view of future visits (p.22, 35). When undertaking surveys there must be no avoidable physical interference whatsoever with the hedge or its surroundings, or of vegetation in ground flora or shrub and tree component. During the summer is the wrong time to survey hedges other than one side of those with a footpath or road running alongside. As the method in this document is calling for an experienced botanist, there is no excuse to survey in summer, as the winter evidence will give him sufficient data to the level of knowledge likely to be collected by this survey.

2.6. Omissions.

The most serious omissions are those pertaining to landscape and history, given in para.1 of the Preface as a part of the value of hedges. Conspicuity is specially relevant. Scant attention is paid to these important factors beyond a few suggestions as to map sources &c on p.11. The survey makes no attempt to identify hedges of particular historic or landscape value. No attempt has been made to link the survey properly with the Hedgerows Regulations criteria of historic importance.

A serious omission from this survey are the dry-stone walls. Note that in some counties, stone walls

are called hedges, and that many are very ancient and support a species-rich flora and fauna of their own.

Instructions often omit clarification, as in the following examples:-

p.24. Trees are defined as "those with a clear stem, or twice the height of the hedge." It should be indicated whether, in the case of trees growing on a hedgebank, the measurement of the "height of the hedge" is from ground level or from the hedgebank top. The definition of trees as being with a clear stem disallows coppiced trees, and the height of the hedge should have no bearing on tree definition.

p.30. The list of woody species in part 4 is not helpful and there is no explanation why this differs from the list of woody species in Sch 3 of the Regulations (p.60). Neither is it explained, beyond a vague "for those who want to check" why the woodland species in Sch 2 are listed, as these differ from the ground flora listed in the survey and are not otherwise mentioned. No reason is given for specifying different species of one plant and not another, eg three wild rose species, but only one gorse or oak. If three roses are specified, why not more? There are over a score of native wild rose species. This lack of conformity results in spurious accuracy. The surveyor is expected to know the differences in rose, elm and willow, but not in oak, lime, alder, gorse or privet. Further confusion is added by stating that "where possible identification should be to a species level". Using a recommended species list means that a number of other species are likely to remain unrecorded as the surveyor, in the time available, naturally looks for those specified. As the given lists poorly represent a hedge's flora in many parts of the country, this is likely to result in a seeming sameness and the under-recording of richer hedges, even though a continuation sheet is provided.

p.48. Citing dangerous animals in fields; a boar, a cow with calf, a mare with foal, and a group of two or more horses, none of which are mentioned, are all more likely to be a real danger than bullocks. It is symptomatic of the poor understanding of the countryside which runs through this Handbook, that these very real potential dangers from livestock are not mentioned in a Health and Safety list which otherwise goes to almost ludicrous extremes, eg an anti-bracken mask (without indicating when or where this is advisable).

Other omissions:-

The timing for survey work in Table 3.2 (p14) omits extra work that is recommended in the text. There is no indication whether a short time is due to lack of survey matter or to carelessness in collection of data; or conversely, a long time due to richness of matter or to inefficiency or ignorance on the part of the surveyor.

In the Glossary (p43) arable cereal crops should include triticale and maize, and root crops include kale. These are too important to be put under Other.

The standard of maintenance of the hedgebank should be recorded (p26) using the published Countryside Agency 6-point scale.

The definition of clipped vs. mechanically cut and unclipped is not clear. There is no explanation of the difference between flailed, trimmed, cut (p.28 etc). This is very important as, while a flail is devastating for most species in a hedge, the reciprocating scythe or "finger-bar" cutter still used in some areas, preserves most of the invertebrates and seed stocks. The type of trimmer used in maintenance has a direct effect on the hedge's remaining diversity.

p.28. The stockproofness refers to the majority of livestock without further definition. Is this the majority of breeds nationally or locally or is it the majority of species?

2.7. Contradictions.

p.33. "The survey should record the ground flora influenced by the hedge rather than by the

adjoining land use." This contradicts the instruction on the form "record all ground flora", and is another unclear and unrealistic suggestion. Does it mean that any flora within the quadrat that is influenced by the field use, albeit growing in the hedge bottom or on the hedgebank, should be omitted? How are the one-day trainees to know the difference, when the list given on the survey form itself includes a number of plants, eg perennial rye grass, timothy, white and red clover, nettle, cleavers &c, which are almost certain to be "influenced by the adjoining land use"?

Another unclear instruction on p.33 is "Species such as ivy may form components of both" (ground flora and vertical component) but no indication is given, either here or on p.63, as to whether such should be recorded twice.

2.8. Access

In describing the problems of access, no mention is made of the data bias that refusal by the more commercial farmers is likely to make, as compared with their perhaps more easy-going neighbours who are likely to have richer hedges. p.15 "The occupier may want to accompany the surveyors, and wherever possible this should be granted." The Handbook does not explain under what circumstances this might be not possible, and in fact it cannot be refused. This kind of attitude and advice does nothing to smooth relations between townsman and countryman. The Handbook's recommendation that the NFU or landowner should be contacted "to let them know that the survey is going ahead" betrays an arrogance towards the occupier and the land itself that is reflected in other parts of the Handbook.

2.9. Data management

Under data analysis (p.37) it is stated that "the survey data should enable estimates to be calculated of the extent, nature and character of hedgerows in the survey area". This does not accord with "across the United Kingdom" (Preface). The claim that "comparisons may be made between the characteristics of hedges within different landscape character areas" is unlikely to be substantiated by the actual data collected, and the addition "or sampling strata" is obscure. On p.16 this is stated as "subdividing or 'stratifying' the hedgerow sample into smaller similar areas." Again this seems concerned with local, not country-wide, data comparisons, rather than tackling inherent hedge merit allowing for regional differences of field boundaries.

It seems that the only countrywide data will be the numbers and (perhaps) Domin status of some of the trees and shrubby species, within those hedges that include these, and such of the associated features as are included. The centralisation and distribution (p.37) of the data is likely to be confusing because of the lack of discipline in the survey methodology. Sources of grant aid are likely to require more comprehensive, comparable and reliable evidence that this Handbook's systems can supply.

2.10. Glossary

p.43. Incorrect definition of Bank, stone-faced. In fact the illustration on p.26 purporting to be a lynchet is a stone-faced bank. Regional types such as Cornish hedge are not stone-faced earth banks, but of stone construction, with rab infilling. The stone is not "to support the woody component of the hedge." Woody growth is ancillary to the stone structure and in many cases is absent. The Welsh term for a stone-faced bank, cloddiau, is defined as being similar to a Devon-bank. This is misleading because, apart from a Devon Bank not being defined in the Glossary, the latter is typically faced with turf and not stone.

Definition of lynchet is very poor. Should read "bank formed by build-up of soil on upper side of hedge during historical time". Definition of wall equally inept.

Jargon (eg "disaggregated" p.16, "forbs", p.33, 34) should not be used in a document said to be "in a

user-friendly form" (p.2), especially if not defined in the Glossary.

Sentences such as:"This can be checked by calculating the standard error in relation to an acceptable degree of precision of the sample for the smallest subset of data being considered" (p.17) cannot be said to be "user friendly" in a handbook intended for the general public. There is not even a definition of "standard error" in the Glossary.

2.11. Field Handbooks

p.39. A number of the books suggested are unsuitable for use as field handbooks, eg Hubbard's Grasses, Smith's Moss Flora &c. The idea of an unskilled hedge surveyor using such books as these for identification in the field, especially within the estimated half-hour, is ludicrous; quite apart from the fact that the latter book at least is very expensive. The three books on mosses and liverworts are in any case extraneous, as the Handbook states on p.33: "Bryophytes present should be grouped and recorded as one." Although Stace is currently the acknowledged authority on nomenclature, this is a laboratory handbook. Keble Martin is still the best field handbook for accurate amateur identification of plants. Correction of outdated nomenclature can be built into the database software. Any identification that cannot be carried out in the field by the amateur using a simple illustrated (not botanist's) field book, and without recourse to the microscope, is beyond the scope of a survey such as this, in terms of expertise, time and cost.

No handbook for trees is given, though identification of these constitutes the main plank of this survey.

2.12. Absurdities.

p.7. " Unless believed to be rare or specially protected, unknown specimens can be collected ...". If the specimens are unknown, how does the collector know he is not picking a protected species?

p.26. Survey form "Other features: Ditch/stream. Width at base, wet, dry." Surely the width at the top of the ditch is intended? There would be difficulties involved in measuring the width of the bottom of a ditch when full of water or under a mass of summer growth.

2.13. Poor proof-reading.

There are errors of grammar or spelling. These include major headings as on p.37 and p.58 . Errors include many such as: coordinating (p.5), trialing (p.47), for if (p.47). Obvious failures to follow routine spell-checking procedure, or to read proofs carefully (although a particularly embarrassing misprint in the consultative paper (p.47) has been corrected) do nothing to increase respect for the production, nor does the mis-spelling throughout of well-known words such as lynchet or co-operation. Careless wording and ambiguities also appear eg p.1 para 1, "Over 600 plant species, 1500 insects etc." and p.48 "Avoid startling animals and livestock".

There are errors in diagrams and layout: (p.27) no indication which side of the road is the "earth half-bank in Devon". p.28: a) clipped and b) mechanically cut. (Both are mechanically cut, with only a difference in extent and frequency). p.29 Picture of "severe [sic] mechanically cut hedge" should read "severely damaged by sheep," as this, not the trimming has been the cause. "Lynchett" [sic] (p.27) should read "stone-faced bank".

3. RECOMMENDATIONS.

3.1. The procedures in the Handbook should be re-designed for use by persons without any specialised knowledge, to indicate which hedges warrant detailed expert survey.

3.2. The re-designed survey methodology should be quick and easy, so that, for example, a land occupier or a local government officer can survey a hedge in importance terms, nearly as quickly as

it takes to walk its length. Volunteers should be able to carry out the survey without special training, on any day within the year, irrespective of season and without physical interference with the hedge. The methodology must be suitable for all field boundaries, including stone walls, in all parts of Britain so that cross-comparisons are easy and valid. It should identify hedges in order of significance, showing in plain numbers the relative importance of history, landscape and biodiversity of each hedge surveyed. It can be achieved by simple questions on a single A4 sheet, and be easily collated by computer software. It should not rely on a separate crib sheet, on individual judgement, or on repeat visits to the hedge. This broad-based methodology would indicate where valuable hedges merit the investigations of a skilled naturalist, archaeologist or landscape specialist to record the detail. The Handbook is thought by many to be very far from realising these essential requirements.

3.3. In the real world, decisions have to be made on financial priorities, and nation-wide hedge survey techniques should produce results which enable a large amount of widely different hedges to be ranked in order of importance, so that the best ones get preferred treatment. What is needed is numerical data that will decide which hedge in which county will get cash for its care/improvement. The ecological data should be linked with the hedges' landscape qualities and their historical significance, so that a hedge, say, deficient in landscape but strong in wildlife can be measured, numerically, against a hedge deficient in wildlife but strong in history. To have these three factors measured separately by different people is not cost-effective; they must be done by one person without special skills, inexpensively, and the resulting data must be compatible on a country-wide basis. Any data that is not relevant to this aim is superfluous.
