

Research and Development Series 08/09

Quality Assurance of Northern Ireland Countryside Survey 2007 (NICS)



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The opinions expressed in this report do not necessarily reflect the current opinion or policy of the Northern Ireland Environment Agency.

From 1st July 2008, Environment and Heritage Service became Northern Ireland Environment Agency

1. Executive Summary

The report details an independent quality assurance exercise in relation to Northern Ireland Countryside Survey 2007 (NICS2007). The results demonstrated the reliability of Northern Ireland Countryside Survey (NICS) data and procedures. The report is based on four visits to the Province in 2007. These visits involved participation in the field training course, discussions with Environment and Heritage Service (EHS) and the University of Ulster (UU), as well as field checking of mapping procedures. The latter took place in representative sample squares in Antrim, the Mourne and Fermanagh using an agreed standard procedure. The objective was to make an independent report on reliability of the NICS methods and their application and to report any difficulties encountered. The main conclusions are:

1. Reversion from agricultural to semi-natural codes was noted and is an important issue in policy terms. In particular changes from fertile grassland to Fen meadow and Species-rich wet grassland. Field decisions rely on field judgment and UU will examine and validate all land cover changes to ensure that the results are consistent.
2. Use of aerial photographs has improved field mapping accuracy in some habitats and will result in minor changes to baseline figures. Net change statistics will not be significantly affected.
3. About 5% of boundaries had problems but these were usually minor and will not affect any of the main estimates.
4. In lowland squares with intensive agriculture no problems were met with labeling the fields. There was evidence seen of extensification.

2. Introduction

The present report relates to an independent check of the categories recorded during the field survey of Northern Ireland Countryside Survey (NICS). It is important to record that quality control, as carried out in GB Countryside Survey (CS), was not part of this work, but was performed throughout the field survey by Alan Cooper and

Tommy McCann (University of Ulster). Internal checks were made on the incoming data from field surveyors and field visits were also made. Because of the smaller scale of the survey and the lower number of staff involved in comparison with CS, the degree of supervision was inevitably higher and is likely to contribute to a consistent data base, although this is difficult to quantify.

This report is not as detailed as Bunce and Kershaw (1999). The approach used, enabled rare features to be picked up whereas the nine point grid previously used (Bunce and Kershaw 1999) provided quantitative data on only the major habitats. In discussion with Environment and Heritage Service (EHS), it was agreed that the procedure described below would provide the most useful results. The following visits were made to NI:

1. April 07. Attendance at field training course and discussions with University of Ulster (UU)
2. June 07. Further discussions with UU on methodology in conjunction with EHS. Quality assurance visits were made to three sample squares.
3. August 07. Visit to UU followed by eight field days, including one accompanied by EHS.
4. October 07. Debrief with EHS and UU on field visit results

3. Field Procedure

The decision was made to use the time available to visit as many squares as possible for the following reasons:

1. To cover as many habitats as possible
2. To include as wide a range of landscapes as possible
3. To cover as many observers as possible

The sample squares were selected at random within the constraints of traveling from the three centres involved, i.e. Coleraine, Hilltown (County Down) and Kesh (County Fermanagh), as well as including upland and lowland sites.

Each visit occupied half a day, which meant that the main access was from roads and tracks. However, some fields were examined individually in most squares. In all

such cases permission was obtained and given by local farmers. Whilst access only from roads can include bias, the small scale of NI landscapes and the 0.25km² sample unit means that in the present case this is not likely to be a problem. Summaries are given in Annex 1 for each of the squares visited and the issues encountered.

4. Specific Issues

1. Definition of species-rich wet grassland

The threshold for the colonisation of fertile grassland by wetland species indicating reversion to species-rich wet grassland needs to be set carefully. Detailed discussions were held with UU in the field in two squares where reversion was taking place with species such as *Lychnis flos-cuculi* invading. The key question was how many indicators were required before a field was considered to have changed class. UU would review the situation and validate all such changes.

2. Use of aerial photographs

The availability of aerial photographs as an aid to GPS field mapping has assisted with the definition of boundaries in upland continua and has improved the definition of boundaries. The resulting figures will therefore be more accurate but may involve minor changes in the baseline figures from the last survey. However these do not have policy implications and only reflect the increased accuracy of the survey.

5. General Observations

Some small differences were noted in the recording of linear features compared with baseline but most of these were borderline cases and involved missing minor features. However, as Kershaw & Bunce (1999) have reported, the results are likely to be robust.

Throughout NI, but especially in the Mourne and Antrim, new houses are being built away from existing villages that would not be allowed by planning legislation in GB. This is certain to be reflected in the change statistics for urban areas, but may only involve a small area and not be immediately obvious. However, their visual impact is important locally even if their ecological effects are small because they are built mainly on fertile grasslands and fragmentation of existing semi-natural habitats is therefore minimal.

Throughout the field visits evidence was seen of release from the process of agricultural intensification. The question remains as to whether this process will be reflected in the change statistics produced from the present survey due to significant shifts from agricultural (A codes) to semi-natural (S codes). For example type A11 other agricultural grassland to S01 species-rich dry grassland is feasible since the last survey but type A11 to S02 species-rich wet grassland is problematic on this time scale. This latter trend was discussed in detail in three squares in Fermanagh and it was agreed that the issue would be addressed in specific situations to ensure that such shifts were consistent across the database. In some cases there could be clear thresholds but elsewhere it may be more arbitrary because of gradual gradients, and so it was agreed that careful evaluation of such situations should be made, with follow up visits if necessary, in critical cases especially if there was a major change in a series of parcels in a given square. A particular example in one square was a shift from type A11 to S 65 fen meadow. This was thought unlikely in the time scale and was probably an error in baseline.

Some squares showed evidence of polarisation with more or less abandoned parcels reverting and being colonised by trees whereas elsewhere in the square intensification was still taking place. This process is likely to be due to ownership differences with young farmers intensifying and retired farmers not selling on their land. This suggests a degree of instability at the present time which could change rapidly e.g. if the price of milk continues to follow the recent rises.

References

Bunce R.G.H. (1999). Report on the Northern Ireland Link Project of CS 2000.

Bunce R.G.H. & Kershaw D., (1999). Quality Assurance for NICS

Annex 1

Northern Ireland 0.25 Km² reports

The approach used enabled rare features to be picked up whereas the nine point grid previously used (Bunce and Kershaw 1999) provided quantitative data on only the major habitats.

ANTR 002

A steep square with a narrow foreshore and about 20% sea.

Some 95 % of square covered.

Aerial features: no problems.

Linear features: no problems.

WIDR 043

Lowland square dominated by fertile grassland but with small patches of semi-natural vegetation and scrub.

About 60% of square covered.

Aerial features: S29/37 (species-rich wet grassland) in 1998 became A11 (other agricultural grassland) but in the context of the surrounding parcels which were being colonised by *Ulex* it did not seem likely to have changed.

A33/A32 were now buildings - a good example of isolated new houses.

One patch of *Juncus effusus* in A24 looked large enough to be mapped and was recorded as S23 species-rich wet grassland in 1998.

Linear features: no problems.

WIDR 039

Lowland square with no semi-natural habitats.

About 40% of square covered.

Aerial features: S2 was S34 and had just been sprayed.

A part of A18 had been planted with an orchard but this did not seem to have been recorded.

L11 was now used by horses, raising the issue whether such parcels should be in agricultural use or included in rural buildings. Difficulties in assigning derelict agricultural buildings were also encountered in a Fermanagh square and could be resolved with the use of aerial photos.

Some codes were missing on the data sheets used probably because the data had not been validated yet.

Linear features: two boundaries did not match the data base because a wood fence and a hedge were missing.

ANTR 079

Unenclosed land mainly blanket bog.

About 50% covered.

Aerial features: Much increased detail in the map added because of GPS mapping and interpretation of the aerial photograph. Presumably the 2007 map will now be used as baseline as there is likely to have been no change in such a landscape since the last survey.

S2 was dry bog in 1998 and was now wet bog - recording error?

S26 mat grass was in a matrix of wet bog as recorded in 1998. A matter of interpretation depending as to whether it was included in a landscape unit.

The gradient from wet bog to dry bog and then to mat grass is clearly difficult but is likely to have been recorded consistently in Northern Ireland as Alan Cooper did most of the upland squares. He will also validate similar squares following a discussion of the present example.

Linear features: restricted and no problems.

WIDR 165

Enclosed agricultural land with no semi-natural habitats.

About 90 % of square covered.

Aerial features: no problems.

Linear features: only minor differences in secondary codes.

After this square it was concluded that purely lowland squares have few problems.

WIDR 164

A lowland square with mainly agricultural land but with some woodland away from the section visited.

About 40% of square covered.

Aerial features: one field corner had been recorded as woodland in baseline but then in an agricultural unit in the current survey, although it clearly had not changed because of the age of the trees. Probably the guideline in such cases should be to assume the baseline to be correct but large changes may need verification.

Two parcels away from the road were dominated by *Senecio jacobaea* and could well have moved from A09 mixed species grassland to S01, providing an example of extensification.

Linear features: only minor problems in secondary codes, although some boundaries had to be carefully examined.

MOUR 046

A lowland square but adjacent to marginal upland.

About 60% of square covered.

Aerial features: no problems.

Linear features: one boundary had a ditch omitted but otherwise no problems.

MOUR 004

A square on the coast with a beach, some fields and a steep bank.

About 80% of the square covered.

Aerial features: W04 was not on the map and consisted of *Rubus*.

Linear features: a fence was missing in the records.

FERM 086

A lowland square in an exposed situation and with a steep wooded riverside present.

About 50% of square covered.

A4 orchard was derelict and related to buildings, including an abandoned garden. The aerial photo needs to be interpreted carefully to separate the bits of woodland around the derelict barns/sheds, old orchard and a relatively new bungalow. The guideline might be to include such marginal parcels in the urban class as they are not in rural use.

The proportions of grass species in the fields changed because of cutting but this is inevitable.

Linear features: no problems.

FERM 082

A lowland square with a steep limestone scarp.

About 50% of square covered.

Aerial features. This square demonstrated the need to validate the parcels that had shifted from A11 into S2 because some of indicators from species rich wet grassland and fen meadow were recolonising - the question being how many species and what cover is required? It is essential to ensure that such changes can be relied upon so that the agricultural sector can have confidence in the results. A11 and S2 overlap and because of the availability of seed in Fermanagh colonisation can take place whereas in GB the relict patches are not available.

Linear features: no problems although some ditches were borderline with small streams.

FERM 021

A square on the shore of Lough Erne including woodlands, fields being colonised by trees and water.

About 80% of square covered.

Aerial features: this square is very difficult because many fields are in transition to woodland. Some changes have been made with the use of aerial photos e.g. a large parcel adjacent to the Lough was missed in baseline. However, elsewhere in the square, on discussion with Alan Cooper, most changes are likely to be valid. Earlier air photos may help to confirm the observed changes.

Because of the extent of the likely changes it may be necessary to carry out some supplementary field checks - the principal is that all such unstable squares should be validated because they will have a major influence on the change statistics.

One parcel had changed from urban to semi-natural because out buildings had been cleared.

FERM 168

The square is dominated by forestry and otherwise has upland vegetation.

Only about 30% of the square was covered but most of the rest is forestry which can be seen from the aerial photo.

Aerial features: the main change is felling and the delineation of the forestry structure has been assisted by the aerial photos - especially mapping the open areas and rides in the forest.

One parcel was recorded as fen meadow in baseline and was changed to bog in 2007 - this change is impossible in the time scale and was therefore likely to be an error. It is therefore important to be conservative and in borderline cases with no ancillary evidence, to assume that change has not taken place.

D in baseline is now L4 due to re-interpretation.

FERM 187

This square was on the boundary between a limestone escarpment and a mix of agricultural grassland and semi-natural vegetation parcels, mainly wetland and woodland in about half the square.

Aerial features: no problem with the woodland units except that in the longer term, parcels that are scrubbing up will be converting to broadleaved woodland. The principal issue in the square was the gradient between A11 and S02. Detailed discussions were held between the author and UU and these have been reported in the discussions above.

Linear features: no problems were encountered except that wide ditches almost covered by vegetation could be confused with landscape - mapped as landscape as opposed to semi-natural vegetation mapped areas.

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