Establishing High Nature Value farming system indicators for Scotland

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European Evaluation Network for Rural Development
HNV Farming & Forestry Workshop, Edinburgh, 20 February 2012
• Recognised that habitats and landscapes of High Nature Value ARE intimately associated with farming practices

• Taking land out of agricultural production is not the answer for farmland biodiversity

RATHER

• it is essential to ensure type and intensity of farm management is appropriate
Nature Value and issues of scale on farmland

- Nature Value can occur at different scales:
  - Patch
  - Habitat
  - Field
  - Farm
  - Landscape

These are the scales which contain and constrain the management practices and so have direct effect on the Nature Value at the different scales.

But management of these will drive Nature Value. Hence the reason for a farming systems approach.
The term “HNV farming” dates from 1993. *Nature Conservation and New Directions in the CAP*

This and subsequent reports highlighted that the common characteristic of HNV farming was a *low intensity* use of:

- Livestock densities per ha
- Nutrient inputs (nitrogen)
- Biocides
HNV indicators

GUIDANCE DOCUMENT
The Application of the High Nature Value Impact Indicator
2007-2013
HNV farming systems are of HNV because:

- High proportion of semi-natural vegetation
- Lot of natural vegetation and features
- Constraints on type AND timing of management
- Constraints on grazing and cropping pressure
- Limits to number of animals and need to move these between pastures
Identification of whether or not HNV farming system

- Ecologist would/should be able to assess whether farm/forest HNVFFS or not if visited unit and assessed factors:

<table>
<thead>
<tr>
<th>FACTOR</th>
<th>INFORMATION OBTAINABLE IF VISIT FARM/FOREST?</th>
<th>INFORMATION AVAILABLE IF DON’T VISIT FARM/FOREST?</th>
</tr>
</thead>
<tbody>
<tr>
<td>The species occurring on the farm/forest</td>
<td>Feasible to obtain to some extent many more hidden than others, so in reality it is time-consuming to gain indication from a one-off visit without previous knowledge</td>
<td>Little or no information available for majority of farm/forests – only designated sites will have better info</td>
</tr>
</tbody>
</table>

So some sort of surrogates needed to allow prediction of HNV status to be obtained.
<table>
<thead>
<tr>
<th>The amount and type of habitats occurring on the farm/forest</th>
<th>Feasible to obtain provided that information is available at a detailed enough level re: the type of habitats (i.e. sub-categories of grass, crops etc)</th>
<th>No – current information too coarse and only focuses on managed farmland but potential to use IACS to help more?</th>
</tr>
</thead>
<tbody>
<tr>
<td>The condition of those habitats</td>
<td>Feasible to obtain in field if know what ideal condition – but time-consuming to obtain and needs to be qualified with some idea of how managed</td>
<td>No information available for majority of farm/So some sort of surrogates needed to allow prediction of HNV status to be obtained</td>
</tr>
<tr>
<td>The management practices</td>
<td>Feasible to obtain provided speak to the manager and obtain an indication of the intensity and timing of management on each habitat</td>
<td>No – but could potentially use surrogates considering issues such as LU/ha and nutrient input</td>
</tr>
</tbody>
</table>
Scottish approach

- Focussing on HNV livestock systems, since:
  - Expect potential HNV farming systems remaining in Scotland to be livestock-based
  - Feasible to construct surrogates for some HNV livestock system characteristics from the ‘farm level’ data collected annually
HNV characteristics

Farming intensity
Low density livestock / ha
Low use of Nitrogen / ha
Low use of biocides / ha

% of semi-natural land cover
Grass, scrub
Trees
Field margins
Water bodies

Diversity of land cover
Crops
Fallow
Grass, scrub
Trees
Water bodies
Identifying HNV

Surrogate: Proportion of Utilisable Agricultural Area consisting of rough grazing. Potentially HNV when rough grazing is > 70% UAA

Surrogate: Livestock Units per available forage ha. Potentially HNV when < 0.2 LU/ha on rough grazing and < 1.0 LU/ha on in-bye ground, i.e. < 0.44 LU/ha at ‘whole farm’ level where rough grazing is > 70% UAA
Scottish approach

• Use annually collected ‘farm’ level data as surrogates to help quantify ‘farms’ in Scotland potentially with HNV characteristics

• Not looking to map where *individual* ‘farms’ with such HNV characteristics occur

• Looking for robust, broad estimate of number and extent of such ‘farms’ at national/regional level
• HNV extent and broad distribution

• At national Scottish level - as required by EU for HNV indicators

• At SRDP Rural Priority Assessment Committee (RPAC) level – to provide broad regional assessment
Scottish approach

• SAF-IACS: collected March each year from c. 22,000 farm businesses

• June Census: collected June each year from c. 52,000 farm holdings

• Using SAF-IACS to give a more accurate ‘split’ of businesses into categories investigated, and June census to indicate farm holding types most likely to occur within those categories
Scottish approach

• In each case, looking to separate out ‘farms’:
  • Initially into FOUR rough grazing categories (None, < 30% UAA, 30-70% UAA, > 70% UAA)
  • Then within each rough grazing category into FIVE sub-categories of livestock grazing density at ‘farm’ level’ (No livestock, < 0.2 LU/ha, 0.2-0.5 LU/ha, 0.5-1.0 LU/ha, > 1.0 LU/ha)
### Scottish approach

<table>
<thead>
<tr>
<th>ALL ROBUST TYPES. Excludes sheep stock holdings that have no area in sole occupation. Source: Scottish Government RERAD RAPID Statistics(Agriculture)</th>
<th>Rough Grazing &lt;30% UAA</th>
<th>No livestock</th>
<th>Those with LU/forage ha less than 0.5</th>
<th>Those with LU/forage ha 0.5 - 1.0</th>
<th>Those with LU/forage ha &gt; 1.0</th>
<th>Sub-total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holdings</td>
<td>52,034</td>
<td>29,817</td>
<td>19,172</td>
<td>1,067</td>
<td>1,346</td>
<td>3,018</td>
</tr>
<tr>
<td>Total</td>
<td>% of ALL holdings</td>
<td>100.0</td>
<td>57.30</td>
<td>36.85</td>
<td>2.05</td>
<td>2.59</td>
</tr>
<tr>
<td>Area (ha)</td>
<td>5165393.26</td>
<td>824355.39</td>
<td>339687.14</td>
<td>62333.37</td>
<td>35657.41</td>
<td>68237.36</td>
</tr>
<tr>
<td>UUA (%)</td>
<td>100.0</td>
<td>15.96</td>
<td>6.58</td>
<td>1.21</td>
<td>0.69</td>
<td>1.32</td>
</tr>
<tr>
<td>Mean</td>
<td>99.27</td>
<td>17.72</td>
<td>58.42</td>
<td>26.49</td>
<td>33.81</td>
<td>51.25</td>
</tr>
<tr>
<td>Max</td>
<td>38644.37</td>
<td>3560.00</td>
<td>10114.59</td>
<td>817.28</td>
<td>1001.64</td>
<td>1133.40</td>
</tr>
<tr>
<td>Min</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.30</td>
<td>0.20</td>
<td>0.01</td>
</tr>
<tr>
<td>Rough grazing (ha)</td>
<td>61.84</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
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<td>Max</td>
<td>38644.37</td>
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</tr>
<tr>
<td>Min</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Grass under 5 years (ha)</td>
<td>7.99</td>
<td>2.51</td>
<td>3.25</td>
<td>3.24</td>
<td>6.43</td>
<td>13.53</td>
</tr>
<tr>
<td>Max</td>
<td>1400.00</td>
<td>1400.00</td>
<td>119.12</td>
<td>146.91</td>
<td>203.78</td>
<td>251.42</td>
</tr>
<tr>
<td>Min</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Grass 5 years or over (ha)</td>
<td>18.17</td>
<td>7.80</td>
<td>49.21</td>
<td>19.57</td>
<td>21.54</td>
<td>22.21</td>
</tr>
<tr>
<td>Max</td>
<td>10114.59</td>
<td>3560.00</td>
<td>10114.59</td>
<td>817.28</td>
<td>751.01</td>
<td>511.70</td>
</tr>
<tr>
<td>Min</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Sheep Livestock Units</td>
<td>10.15</td>
<td>0.00</td>
<td>7.52</td>
<td>4.94</td>
<td>9.85</td>
<td>12.69</td>
</tr>
<tr>
<td>Max</td>
<td>1022.85</td>
<td>0.00</td>
<td>460.20</td>
<td>339.00</td>
<td>267.30</td>
<td>401.70</td>
</tr>
<tr>
<td>Min</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Cattle Livestock Units</td>
<td>24.74</td>
<td>0.00</td>
<td>4.61</td>
<td>3.02</td>
<td>11.33</td>
<td>75.08</td>
</tr>
<tr>
<td>Max</td>
<td>2493.00</td>
<td>0.00</td>
<td>582.00</td>
<td>187.00</td>
<td>388.00</td>
<td>1591.00</td>
</tr>
<tr>
<td>Min</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Livestock Units per forage ha</td>
<td>0.96</td>
<td>0.00</td>
<td>0.10</td>
<td>0.35</td>
<td>0.74</td>
<td>4.94</td>
</tr>
<tr>
<td>Max</td>
<td>1893.16</td>
<td>0.00</td>
<td>0.20</td>
<td>0.50</td>
<td>1.00</td>
<td>1893.16</td>
</tr>
<tr>
<td>Min</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.20</td>
<td>0.50</td>
<td>1.00</td>
</tr>
<tr>
<td>Sum of mean RG + Grass &lt; 5 + Graz &gt; 5 (%)</td>
<td>88.00</td>
<td>10.31</td>
<td>52.46</td>
<td>22.81</td>
<td>27.97</td>
<td>35.74</td>
</tr>
<tr>
<td>Mean for UAA (%)</td>
<td>88.65</td>
<td>58.18</td>
<td>89.80</td>
<td>86.11</td>
<td>82.73</td>
<td>69.74</td>
</tr>
</tbody>
</table>
Annual agricultural statistics:

- All c. 52,000 farm holdings assigned to one of TEN Robust Types (Cereals, General Cropping, Horticulture, Pigs, Poultry, Mixed, Dairy, Cattle & Sheep (LFA), Cattle & Sheep (Lowland), Other)
- Focussed on holding characteristics within each of these ten robust types
- Cattle & Sheep (LFA) main Type with HNV characteristics
**Cattle & Sheep (LFA)**

Excludes sheep stock clubs that have no area in sole occupation. Source: Scottish Government RERAD REAS Statistics (Agriculture)

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Sub-total</th>
<th>No livestock</th>
<th>Those with LU/forage ha less than 0.5</th>
<th>Those with LU/forage ha more than 0.5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Holdings</strong></td>
<td>14,024</td>
<td>3,150</td>
<td>64</td>
<td>1,129</td>
<td>1,066</td>
</tr>
<tr>
<td><strong>% of ALL holdings</strong></td>
<td>26.95</td>
<td>6.05</td>
<td>0.12</td>
<td>2.17</td>
<td>2.05</td>
</tr>
<tr>
<td><strong>Area (ha)</strong></td>
<td>2,656,817.57</td>
<td>1,854,896.36</td>
<td>18,411.12</td>
<td>1,375,871.71</td>
<td>400,491.05</td>
</tr>
<tr>
<td><strong>% of ALL UAA</strong></td>
<td>51.43</td>
<td>35.91</td>
<td>0.36</td>
<td>26.64</td>
<td>7.75</td>
</tr>
</tbody>
</table>

**Rough Grazing >70% UAA**

507,750 ha of common grazings added to HNV estimate – no data on these in agricultural statistics but majority, if not all, still managed.
2,284,000 ha (40% of UAA) estimated to be under HNV farming systems in 2009

Decline from 44% in 2007 and 43% in 2008
Identifying HNV in Scotland

2,284,000 ha (40% of UAA) estimated to be under HNV farming systems in 2009

Decline from 44% in 2007 and 43% in 2008
Identifying HNV in Scotland

- Highland: 40%
- Argyll: 12%
- Tayside: 10%
- Western Isles: 10%
- Northern Isles: 5%
- Borders: 5%
- Dumfries & Galloway: 5%
- Forth: 5%
- Clyde Valley: 2%
- Ayrshire: 2%
- Grampian & Moray: 4%
Identifying HNV in Scotland

**Percentage of UAA under HNV**

- >70
- 55-69
- 40-64
- 25-39
- <24

**High Nature Value Farmland by RPAC region**

Version 1. 5 August 2010

Rules Base:

UAA from SIACS 2007 plus some MasterMap polygons
Type 1: data from LULC03
Type 2: defined as where two out of three of the following criteria are met:
   a) top quartile of the structural mosaic
   b) 2 or more of the 5 species groups present in a 1km square
   c) Livestock density of <4.1 LKha
Type 3: SACs, GPAs and Biological DODs from 2007

**Legend**

- Type 1 and 2 HNV
- Type 1 and Type 3 HNV
- Type 1 HNV
- Type 2 HNV
- Type 2 and Type 3 HNV
- Type 3 HNV
- Type 1 and 2 and 3 HNV

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HNV farming Baseline Indicators for SRDP

**Headline Indicators**

% of UAA (including common grazings) estimated as HNV farming: 40% in 2009
Total area estimated as HNV farming (ha): 2,284,000 in 2009

**Supporting Indicators**

Total UAA (ha) (including common grazings): 5,676,000 in 2009
Total number of holdings: 52,000 in 2009
% change in UAA (ha) on previous year: -3% in 2009
% change in estimated HNV (ha) on previous year: -9% in 2009
% of UAA which is Common Grazing: 9% in 2009
Identifying HNV farming in Scotland


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An HNV Farming System Policy Briefing can be found at:
http://www.sac.ac.uk/ruralpolicycentre