ASSESSING LONG-TERM CHANGES IN VEGETATION

LUCY RIDDING
Quantifying long-term changes in vegetation

- Important for assessing drivers of change
- Archived biological records
- Comparable method and re-location
- Relatively little has been done on calcareous grassland

Photos: Peter Hawes
Terry Well’s Survey – 1970 and 1990

- Examine the floristic composition of chalk grassland overlying Celtic field systems
Parsonage Down

- National Nature Reserve (in 1973) - 276 ha
- Maintained by grazing – no fertilisers are used
- CG2 grassland (Festuca ovina - Avenula pratensis grassland)
Re-locating the transects

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**RCHM MAY 1970**

- TW's points
- P unit of estimated plough destruction
- Direction of over ploughing

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Nature scarp uncertain

FORMER CELTIC FIELDS OBLITERATED

Pencilled measurements made by TCE on 26 Aug. 1980 as an aid to locate transect

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NERC SCIENCE OF THE ENVIRONMENT
Re-locating the transects
Repeating the methods

- 4 transects
- 20 cm quadrats at 3ft intervals
- Species cover recorded using the DOMIN scale

<table>
<thead>
<tr>
<th>Transect</th>
<th>Length (ft)</th>
<th>No. of Quadrats</th>
<th>First Survey</th>
<th>Second Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>111</td>
<td>38</td>
<td>18/05/1970</td>
<td>20/08/1990</td>
</tr>
<tr>
<td>2</td>
<td>102</td>
<td>35</td>
<td>19/05/1970</td>
<td>21/08/1990</td>
</tr>
<tr>
<td>3</td>
<td>60</td>
<td>21</td>
<td>21/05/1970</td>
<td>21/08/1990</td>
</tr>
<tr>
<td>4</td>
<td>60</td>
<td>21</td>
<td>22/05/1970</td>
<td>22/08/1990</td>
</tr>
</tbody>
</table>
Soil analysis

### CHEMICAL DATA

<table>
<thead>
<tr>
<th>Soil Name</th>
<th>Ca [mg/100g]</th>
<th>Mg [mg/100g]</th>
<th>FeO-P [mg/100g]</th>
<th>P [%]</th>
<th>N [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>20S 0-5cm</td>
<td>610</td>
<td>11</td>
<td>2.2</td>
<td>0.14</td>
<td>0.39</td>
</tr>
<tr>
<td>20S 5-10cm</td>
<td>610</td>
<td>15</td>
<td>2.2</td>
<td>0.14</td>
<td>0.39</td>
</tr>
<tr>
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</tbody>
</table>

All results expressed on a dry weight basis.
<table>
<thead>
<tr>
<th>Species</th>
<th>Synonym</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zerna erecta</td>
<td>Bromopsis erecta</td>
</tr>
<tr>
<td>Helicotrochon pubescens</td>
<td>Avenula pubescens</td>
</tr>
<tr>
<td>Leontodon autumnal</td>
<td>Scorzoneroides autumnalis</td>
</tr>
</tbody>
</table>
Species richness

(Kruskal-Wallis $X^2 = 197.12$, df = 2, p < 0.001)

Neotinea ustulata
Anacamptis morio
Spiranthes spiralis
Euphrasia nemorosa
Coeloglossum viride
Positive indicator species for CG2

- **Cirsium acaule**
- **Linum catharticum**
- **Leontodon hispidus**
- **Lotus corniculatus**
- **Leucanthemum vulgare**
- **Filipendula vulgaris**

![Graph showing number of CG2 plant species over years](image)
Species composition

Bromopsis erecta
Cerastium fontanum
Lolium perenne
Ononis spinosa
Species traits - Plant height

(Kruskal-Wallis $X^2 = 176.82$, df= 2, p < 0.001)
Future work

• Explore further traits
• Environmental factors
• Soil results
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