

GUIDANCE NOTE TWO
FLORA MONITORING ON THE GWENT LEVELS SITES OF SPECIAL SCIENTIFIC
INTEREST
COUNTRYSIDE COUNCIL FOR WALES
DRAFT - SEPTEMBER 1996

INTRODUCTION

The Gwent Levels SSSI was notified for the plant and invertebrate communities associated with the reens and ditches. This interest is potentially adversely affected by any physical developments and CCW require effective monitoring programmes to assess these impacts. This is the second in a series of guidance notes on survey and monitoring on the Gwent Levels SSSI; it details the requirements for an effective programme of botanical monitoring to achieve the following aims:

- 1 to identify any impacts of the development on the botanical interest of the SSSI;
- 2 to establish baseline data for flora prior to work commencing on site. Monitoring points upstream or outside the area of works can provide control points during construction;
- 3 to identify reens/ditches with interesting species/communities for translocation to new reens;
- 4 to monitor the flora of the reens at the agreed points annually during construction at the agreed time of year;
- 5 to monitor recovery of the flora from any adverse impacts;
- 6 to monitor the development of the botanical interest at sites created as part of any mitigation measures.

1. SAMPLING STATIONS

Sufficient sampling stations are required to adequately represent the variation in ditch management, land use and seral stage. The baseline survey should be undertaken prior to construction starting. The number of stations and their position would be dependent on the nature and design of the development project that the programme is designed to monitor. The stations should cover all the potential impacts of a development on the special interest of the SSSI. A number of stations either upstream or off the site are recommended to act as control points.

In addition, sample stations should cover the following four categories of reens and ditches:

- A unaffected by the development (control sites);
- B within the development area, but to remain as reens/ditches and retain the nature conservation interest;
- C to be infilled or diverted as a result of the development (for baseline assessment and identification of suitable sources of material for translocation;)

D to be created as mitigation reens/ditches

We recommend the use of sampling stations used by previous surveys/monitoring programmes. To evaluate the range of habitats on site and to decide on suitable locations for sample points, a complete walkover survey of the study area is recommended. A map should be compiled identifying the following features:

- Environment Agency waterways, IDB main reens and minor field ditches;
- reens/ditches with open water;
- reens/ditches dominated *Phragmites* or other emergent vegetation;
- location of hedgerows and mature trees;
- other field boundaries, e.g. walls, fences;
- land use, e.g. arable, grassland, buildings.

To enable sample stations to be relocated for the duration of the monitoring programme, we recommend that they are clearly identifiable, using marker posts, photographs and physical features unaffected by the development as references. In addition, we recommend plan and cross section sketches at each station are compiled to aid the recording of physical features of the reen and the precise relocation of the site. An example from Gibbs (1991) is attached.

2. TIMING

Flora sampling can be undertaken between mid May and the end of July, although the optimum period is between late June and early July.

3. SAMPLING METHODOLOGY

The recommended methodology largely follows that used by Winder *et al.* (1991).

A 20m section of each sample station should be measured and marked. The following parameters should be recorded at each station:

- water depth;
- turbidity (on a 1-5 scale; 1= clear, 5=turbid);
- water flow and direction;
- ditch width;
- bank alignment, depth and slope;
- nature of bank vegetation (ie, bare/ short herbs/ monocots and herbs/mixed vegetation including hedges and trees);
- adjacent land use;
- presence/absence of ;
 - fencing;
 - stock trampling;
 - stock grazing;
 - hedging;
 - hedge height;

% shade from woody vegetation (trees and hedges, not due to emergent vegetation such as Phragmites);
ditch and bank management;
% vegetation cover from submerged , floating, emergent and bank species.

Plant species on the bank and in the reed should be recorded. Aquatic species should be sampled using a drag rake and rope. Numerous dips at each station are required to provide a full assessment of the submerged vegetation.

Bankside/ Emergent / Floating/ Submerged species should be identified separately, with their abundance estimated using the DAFOR scale (Dominant/ Abundant/ Frequent/ Occasional/ Rare).

An example data sheet used by Winder *et al.* (1991) is attached.

4. IDENTIFICATION

Identification should be to species levels for all plants and should be made on site wherever possible. However, it is recognised that a number of plants are difficult to identify unless they are in flower/ fruit or floating leaves are present, e.g *Callitriche spp.* If plants prove difficult to identify in the field, samples should be taken for later determination. Unidentified/difficult samples should be pressed and identified/confirmed by an independent botanist.

Potamogeton is a critical genus to identify correctly. Relatively small characteristics identify species of varying rarity. Other important but potentially difficult genera to identify include:

Carex;
Callitriche;
Oenanthe;
Ranunculus;
Chara.

Nomenclature should follow Stace (1991) or Clapham, Tutin and Moore (1989).
Nomenclature for Charophytes (stoneworts) should follow Moore (1986).

Useful identification guides are referenced in the bibliography.

5. SAMPLE STORAGE

Voucher specimens/unidentified material should be pressed for future reference or for identification/confirmation.

6. REPORTING

Results should be presented in an annual report and include:

The full data set - species and abundance of plants recorded at each station;
comparison of results with relevant previous surveys;
comparison of results with previous results of the monitoring programme;

conservation status of plants recorded.
evaluation of the success of reed protection measures and mitigation areas;
recommendations - for alteration of construction/operational methods and for further monitoring.

BIBLIOGRAPHY

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CCW Gwent Levels Bibliography