

COMMON STANDARDS MONITORING INTRODUCTION TO THE GUIDANCE MANUAL

Contents

1	Introduction	3
2	The need for monitoring	3
3	What is monitoring?	3
4	Designations covered by common standards monitoring	4
4.1	UK sites as at 31 March 2003	4
4.2	Multiple Designations	4
5	The relationship between common standards monitoring and the Habitats/Birds Directives	4
5.1	The scope of conservation objectives	4
5.2	Favourable conservation status	4
6	Common standards for monitoring protected sites	5
6.1	Features to be monitored	5
6.2	Conservation objectives	6
6.3	Judging the condition of features	6
6.4	Recording threats and management measures	6
6.5	Monitoring cycle	7
6.6	Reporting arrangements	7
7	The relationship between monitoring and site management	7
8	Complex Sites / Reconciling potential conflicts between interest features	8
9	Selection of attributes for interest features	9
9.1	Basic principles	9
9.2	Range of attributes	9
9.3	Mandatory attributes	9
9.4	Flexibility	9
9.5	Discretionary attributes	10
10	Attributes for species interest features	10
10.1	Indirect measures	10
10.2	Direct measures	10
10.3	A balance of approaches	10
11	Setting targets	11
12	Ecosystem dynamics	12
12.1	Woodlands	12
12.2	Coastal	12
13	Habitat mosaics and transitions	13
13.1	Habitat mosaics	13
13.2	Transitions between habitats	13
14	Species assemblages	14
14.1	What is an assemblage ?	14
14.2	Scoring systems	14
14.3	Indicator species	15

15	The need for flexibility in preparing conservation objectives	15
15.1	Variation within the UK.....	15
15.2	High quality features	15
15.3	Species poor sites	15
15.4	Flexibility	16
15.5	Indicators of local distinctiveness	16
16	Judging condition: making the assessment.....	16
17	Assessing trends in condition	17
17.1	Habitats and earth heritage features	17
17.2	Species.....	18
17.3	Unfavourable Recovering	18
17.4	Favourable recovered	18
17.5	Partially Destroyed.....	18
17.6	Destroyed	19
18	Undertaking the monitoring - field methodology.....	19
18.1	Personnel	19
18.2	Structured walks	20
18.3	Sampling large features/sites.....	20
18.4	Timing/frequency of monitoring.....	20
19	Management measures and threats	20
19.1	Pressure – State – Response	20
19.2	Standardised threats	21
19.3	Management measures	21
20	Validation and quality control	22
20.1	Operational practice	22
20.2	Application of guidance and comparability of targets	22
20.3	Consistency of results.....	22
20.4	Reliability of Results.....	23
20.5	Quality of guidance	23
21	Contextual information.....	23
22	Reporting.....	23
22.1	Timetable.....	24
22.2	International reporting.....	24
22.3	ASSI / SSSI reporting	24
23	The generic guidance - history of development	25
23.1	Agency and JNCC Initiatives.....	25
23.2	UK Guidance.....	25
23.3	Principles.....	26
23.4	Co-ordination	26
24	Future development / refinement.....	26
24.1	Revision of guidance.....	26
24.2	Use outside statutory sites	26
25	Bibliography	27
26	Abbreviations and Acronyms	29

1 Introduction

This chapter provides an introduction to the guidance manual on the Common Standards Monitoring of designated sites adopted by the statutory nature conservation agencies. It covers the various concepts and terms, and provides the background to the guidance on setting conservation objectives, and assessing feature condition, covered in the later chapters of the manual.

The introduction reflects current thinking but this may develop further as our experience of site-based monitoring increases. Comments on issues which readers feel are not adequately explained would be welcome – please send them to James Williams, Biodiversity Information Service, JNCC, Monkstone House, City Road, Peterborough. PE1 1JY, or email james.williams@jncc.gov.uk.

2 The need for monitoring

One of the key responsibilities of the statutory nature conservation agencies in the UK is the identification and protection of a series of sites intended to conserve important wildlife and Earth science features. Such sites may be designated under

- National legislation (Sites of Special Scientific Interest (SSSIs) in Britain and Areas of Special Scientific Interest (ASSIs) in Northern Ireland),
- European Directives (Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)), or
- An international Convention (Ramsar sites).

Once sites have been designated, the country agencies work with owners/occupiers and others to protect and enhance their special features, for example by agreeing management plans and advising on development proposals.

Site-based conservation is a corner-stone of biodiversity and earth science conservation in the UK, and a substantial proportion of the agencies' resources is devoted to the selection, management and protection of statutory sites. Clearly, mechanisms are needed to assess how successful these activities have been in achieving nature conservation objectives, both on individual sites and across the site series as a whole. For example, on any particular site it is important to evaluate whether management measures have achieved the desired objectives, or whether new measures need to be put in place. At a broader level, assessment is required of the effectiveness of legislative and policy measures in contributing to biodiversity conservation on protected sites. Monitoring can provide the information necessary to undertake these assessments.

3 What is monitoring?

A useful definition of monitoring (and the one used in this document) is provided by Hellowell (1991), modified by Brown (2000):

Monitoring is an intermittent (regular or irregular) series of observations in time, carried out to show the extent of compliance with a formulated standard or degree of deviation from an expected norm.

In line with this definition, we need to define the state desired in terms of objectives or targets, and then undertake monitoring to assess whether these objectives are being met.

Monitoring, in the sense used here, is distinct from *surveillance*, which is repeated survey using a standard methodology undertaken to provide a series of observations over time. Surveillance can yield valuable information on trends in the state of biodiversity and Earth science, but does not by itself establish whether objectives or standards have been met. Information derived from surveillance may be used to inform judgements on the condition of features on sites.

4 Designations covered by common standards monitoring

While common standards monitoring was designed for SSSIs, ASSIs, cSACs, SPAs and Ramsar sites, in principle the approach could be applied to any defined area holding specific features of conservation interest (e.g. statutory voluntary nature reserves), although consideration of the level of targets set may be necessary.

4.1 UK sites as at 31 March 2003

Designation	Number of Sites	Area (ha)
Special Protection Areas	240	1,436,609
candidate Special Areas of Conservation	576	2,405,778
Ramsar	144	758,782
Sites of Special Scientific Interest (SSSI)	6,586	2,335,405
Areas of Special Scientific Interest (ASSI)	196	92,033
SSSI + ASSI	6,782	2,427,438

Protected sites vary enormously, both in extent and number of interest features. They range from enclosed fields of less than a hectare notified for a single rare species, to extensive tracts of unenclosed upland covering tens of thousands of hectares and containing over 20 different interest features.

4.2 Multiple Designations

Many areas of wildlife interest in the UK have multiple site designations. The relationship between them in terms of site boundaries and interest features is often complex. For example, all but a handful of candidate SACs and SPAs in the UK are underpinned by SSSI or ASSI designation, but the cSAC may be made up of a number of component SSSI/ASSIs. In addition, the SSSI/ASSIs may have been notified for a different suite of habitats and species. Almost all Ramsar sites are also Natura 2000 sites, but the interest features are not necessarily identical.

From a monitoring perspective, **an important principle is that data must be collected in such a way as to allow a separate assessment of each individual interest feature.**

5 The relationship between common standards monitoring and the Habitats/Birds Directives

The requirements of the Habitats Directive have implications for common standards monitoring, particularly in relation to the scope of conservation objectives and the concept of favourable conservation status. These issues are equally pertinent to the Birds Directive.

5.1 The scope of conservation objectives

In relation to common standards monitoring, the term 'conservation objective' has a clear definition: it defines the favourable condition of an interest feature in terms of a set of targets or target ranges. This is fundamental to site assessment and management, and also serves reporting purposes. Although the term 'conservation objective' is defined differently in other situations (for example, Article 6.3 of the Habitats Directive), for the purposes of Common Standards Monitoring the definition in section 6.2 of this document should be used.

5.2 Favourable conservation status

Favourable Conservation Status is defined in Articles 1e and 1i of the Habitats Directive. However, whilst the UK nature conservation agencies agree that the concept can be applied at a variety of levels, there is ongoing debate as to the degree to which favourable conservation status can be applied directly at the site level. However, key elements which contribute to the determination of Favourable Conservation Status can be applied to sites.

For habitats, the elements of Favourable Conservation Status which relate to extent, structure, function, and typical species are used to provide guidance on attributes and targets. For species, the elements of population dynamics, range, habitat extent and quality are important.

Important elements which define Favourable Conservation Status which need to be reflected in the assessment of feature condition, are the 'long-term maintenance' and 'foreseeable future' criteria incorporated in Articles 1e and 1i of the Habitats Directive. For a feature to be assessed as being in favourable condition, the ecological circumstances need to be such that there is a reasonable expectation that the feature will be maintained in that condition (ie not deteriorate) in the long- term.

6 Common standards for monitoring protected sites

The Environmental Protection Act 1990 defines one of JNCC's special functions as to 'establish common standards throughout Great Britain for the monitoring of nature conservation ...'. In the context of protected sites, the development of common standards for monitoring provides two major benefits:

- It provides country agency staff with a reliable method with which to assess the conservation status of key interest features on their sites. This enables assessments made by different people at different times to be compared with some confidence and enables staff to identify changes taking place on their sites.
- Assessments from different sites can be aggregated to produce summary reports at a range of geographical scales. This can identify priorities for action at the local and national level. Such aggregation is essential if the UK is to report on the condition of designated sites across the UK, for example to meet the reporting requirements of EU Directives.

The establishment of common standards does not mean that monitoring has to be undertaken using prescriptive and rigidly-applied procedures. The approach needs to be sufficiently flexible to take into account natural geographical variation across the UK and to accommodate the varying requirements and operational practices of the country agencies. However, standards need to be sufficient to ensure that consistent judgements would be made by different staff.

A full copy of *A statement on common standards for monitoring designated sites* (JNCC 1998) can be found on the JNCC website (www.jncc.gov.uk). The common standards cover:

- Features to be monitored
- Conservation objectives
- Judging the condition of site features
- Recording threats and management measures
- Monitoring cycle
- Reporting arrangements

6.1 Features to be monitored

The features to be monitored are known as the **interest features** for which the site has been **notified or designated**. They include individual habitat types, species and Earth science features, and also complex features such as habitat mosaics and species assemblages. Each interest feature must be identified, monitored, assessed and reported on separately.

For international sites (SPA, candidate SAC, Ramsar), the notified (interest) features are those which have been submitted to the European Commission or Ramsar Bureau respectively on official data forms. A master list is held by JNCC within the International Designations Database.

For national sites, the interest feature is the feature which has been notified by the country agency in accordance with the SSSI/ASSSI selection guidelines (for biological features), or which is the interest feature specified in the Geological Conservation Review/Earth Science Conservation Review (for

earth science features). Features which have not been notified are not reported on under the common standards.

6.2 Conservation objectives

Conservation objectives* will be prepared for each interest feature on each site. These objectives contain **targets or target ranges** which should be met if the feature is to be judged to be in **favourable condition**. Each interest feature will have one or more measurable characteristics or **attributes** that together can be used to define favourable condition (see section 9). These attributes will either describe an aspect of the interest feature directly or be good indicators of its condition. The choice of target range in relation to favourable condition is critical. It is important to relate these to the feature under consideration, and to recognise which fluctuations in a population are normal and are not a cause for concern.

* Note that SNH refers to these as 'condition objectives'

6.3 Judging the condition of features

The following categories will be used to describe the condition of interest features:

- **Favourable - maintained.** An interest feature should be recorded as *maintained* when its conservation objectives were being met at the previous assessment, and are still being met.
- **Favourable - recovered.** An interest feature can be recorded as having *recovered* if it has regained favourable condition, having been recorded as unfavourable on the previous assessment.
- **Unfavourable - recovering.** An interest feature can be recorded as *recovering* after damage if it has begun to show, or is continuing to show, a trend towards favourable condition.
- **Unfavourable - no change.** An interest feature may be retained in a more-or-less steady state by repeated or continuing damage; it is unfavourable but neither declining or recovering. In rare cases, an interest feature might not be able to regain its original condition following a damaging activity, but a new stable state might be achieved.
- **Unfavourable - declining.** Decline is another possible consequence of a damaging activity. In this case, recovery is possible and may occur either spontaneously or if suitable management input is made.
- **Partially destroyed.** It is possible to destroy sections or areas of certain features or to destroy parts of sites with no hope of reinstatement because part of the feature itself, or the habitat or processes essential to support it, has been removed or irretrievably altered.
- **Destroyed.** The recording of a feature as destroyed will indicate the entire interest feature has been affected to such an extent that there is no hope of recovery, perhaps because its supporting habitat or processes have been removed or irretrievably altered.

6.4 Recording threats and management measures

An important part of monitoring is the potential for relating observed changes in the condition of the interest features to the reasons for such changes. As part of the monitoring process, the following should be recorded:

- **threats** occurring on, or near, the site which may be driving features into unfavourable condition or preventing them from achieving favourable condition; and

- **management measures** which may result in improvements to the condition of features or maintain features in favourable condition.

This information will be employed in the consideration of the causes of observed changes in feature condition and in guiding management action. However, it may not be possible to attribute cause and effect from the information gained during monitoring, in which case further investigation may be required.

6.5 Monitoring cycle

All interest features on all statutory sites will be assessed at least once within a six-year period. This corresponds to the six-year reporting cycle used for the EC Habitats Directive.

Each individual interest feature should be monitored ideally within the same year, and certainly within a three-year period. For a large site (e.g. in the uplands), it may not be possible to assess the whole of some features within one year, but the expectation is that the assessment must be completed within three years – this is to reduce the potential for the state of the feature to have changed between the start and end of the assessment.

The above remarks do not preclude more frequent monitoring if the ecological needs of the feature justify it and the common standards allow for such flexibility (for example, some of the species feature monitoring set out in the guidance is more frequent). For some species features, the guidance may recommend that an assessment be made on the basis of records collated over the six year monitoring cycle; where this is the case the assessment should be made at the end of the monitoring cycle.

6.6 Reporting arrangements

Information obtained from common standards monitoring will be used to prepare reports for a variety of purposes. For example, it should satisfy the requirement to report on the status of international site networks under the Habitats and Birds Directives and the Ramsar Convention. For the SSSI and ASSI series, information will be presented, at the UK level, using Biodiversity Action Plan broad habitat types, an agreed set of species categories, and categories appropriate to the Geological Conservation Review. A report of the results of Common Standards Monitoring (CSM) will be pulled together at least every six years. Once the first cycle has been completed, it is likely that annual reports will be produced, based on a rolling six year cycle.

7 The relationship between monitoring and site management

One of the principal reasons for undertaking site monitoring is to assess whether management practices have been effective or not. It follows that there must be a close link between management planning and monitoring. Sound conservation objectives can only be derived by considering the ecology of the habitats and species (at community, ecosystem and landscape scales) on the site and, where appropriate management is known, the range of management options available. Ideally, conservation objectives should be formulated within the context of a management plan which specifies the practical measures needed to achieve favourable condition for the range of interest features present on the site. This offers a mechanism for resolving any potential conflicts between different interest features (see sections 8 and 17).

Once monitoring has been completed and an assessment made of the condition of the feature, there should be a feedback loop to site management, taking into account the information gathered on potential threats and management measures. The monitoring assessment may trigger adjustments to site management practices, or possibly be used to direct more detailed investigation into the reasons for apparent problems. If condition monitoring is only undertaken once every six years as required under CSM, this cannot be relied upon as the sole mechanism for reviewing site management – it needs to be supplemented by compliance monitoring (to assess whether agreed management prescriptions are being followed), and possibly more frequent assessments on problematic or priority sites. Where the reasons for an unfavourable assessment are unclear, or the appropriate management response is unknown, there may be a need for further, more detailed survey, monitoring or research activities.

8 Complex Sites / Reconciling potential conflicts between interest features

Although some sites are designated for a single interest feature, many sites have more than one. Inevitably, the management requirements of each interest feature will not be the same. For example, on upland sites the ideal grazing regime for different habitats may vary considerably, ranging from moderately heavy grazing for grasslands, to light grazing for heathlands, to no grazing at all for tall-herb vegetation. Similarly, on lowland heathland sites the management required to maintain high-quality vegetation may be at odds with that needed to sustain populations of scarce reptiles or invertebrates.

These issues must be resolved during the preparation of conservation objectives. Ideally, this should be done by developing a management plan for the whole site, based on a sound knowledge of the site's ecology and the management constraints and opportunities. On some large sites, especially in the uplands, it may be possible to implement an ecosystem management approach.

It may be necessary to consider prioritisation of interest features, e.g. by placing greater emphasis on Natura 2000 or BAP interests. On larger sites it may be possible to accommodate different management treatments on different parts of the site. There may be benefits in taking a wider view of conservation priorities and adopting different approaches on different sites. For example, rather than trying to restore small areas of woodland on all upland sites within a particular region, it may be better to attempt woodland regeneration on an extensive scale on only one or two sites. Such an approach may deliver significant nature conservation benefits, but can only be achieved within the context of a regional/national strategy.

Of particular concern with respect to the integration of features are those situations which have for a variety of reasons been described as 'complex'. These fall into the following categories:

- Where there are many features on a single site. These may be independent ecologically.
- Where there is one feature, but it comprises a mix of habitats (for invertebrates the juxtaposition of microhabitats can be very important).
- Where the feature is very large.
- Where there are interacting features (i.e. a change in one feature will lead to a change in another).

In all these cases, care will need to be taken to ensure that the perceived complexity is appropriately addressed in the conservation objectives. This is best done by being explicit about decisions which have been taken – i.e. what is being assessed and why.

Principles to consider when dealing with features in these circumstances:

- Consider the priority of the individual features – which is the higher priority ?
- Favouring one feature over another must only take place if there is a detailed rationale and clear safeguards to ensure the coherence of the site and of the site network.
- Non-notified features should not be favoured over notified, qualifying ones.
- Consider the effects of features on each other – are they interlinked ecologically.
- Be explicit about the judgements being made for each feature and upon what they are based.
- Allow sufficient time for gathering information upon which the features will be assessed – large features may take more time.

Local decisions will need to be taken on these principles if conflict is encountered. These will need to be justified in a national or at least regional context and signed off by an Area Manager or equivalent after consultation with relevant specialists.

9 Selection of attributes for interest features

9.1 Basic principles

Attributes are characteristics of an interest feature that describe its condition, either directly or indirectly. They can be regarded as indicators which allow judgements to be made about the condition of the interest feature. The selection of attributes in this guidance has been informed by two important principles:

- **All attributes must be measurable, so that targets can be set as part of the conservation objective for the feature.**
- **Attributes should describe the condition of the feature and not the factors which influence it – in general, management activities are not suitable attributes.** Thus in determining if a calcareous grassland is favourable or not, one of the attributes to be assessed may be sward height – this is what is being aimed at, not the mechanism by which it is achieved, which might be via grazing or by mowing.

9.2 Range of attributes

There are a wide range of suitable possible attributes. For example, habitat attributes may include extent, floristic composition, vegetation structure, and physical characteristics; species attributes may include population size, distribution, food availability, and habitat factors. Attributes for Earth science features may include the quality and extent of landforms/rock exposures and freedom from human induced influence in the case of active geomorphological sites.

For habitat interest features, floristic or vegetative attributes have generally been used as indicators of the condition of the habitat. However, the definitions of favourable condition for habitats are not based solely on maintaining suitable conditions for plant species. In some cases, the requirements of animal species have also been taken into account, and attributes have, where possible, been selected which convey information about the typical fauna associated with each habitat (e.g. structural features and fine-scale patterning of vegetation). (See 'Attributes for species interest features' in section 10).

9.3 Mandatory attributes

During the preparation of the guidance, care has been taken to select the minimum number of attributes which will allow reliable assessments of condition to be made. These form a core set of mandatory attributes which describe condition most economically, and are intended to be suitable for use across the UK. An assessment must be made of all of these attributes – each will contribute to the final evaluation of feature condition. The guidance adopts the term 'mandatory' to indicate these highest priority attributes.

As a general rule, attributes have been chosen which do not require expert knowledge, although staff will need training in their use. However, in some cases the use of attributes requiring additional (specialist) input is essential if a reliable and safe evaluation of feature condition is to be made (e.g. lower plants and some habitats such as cliffs and caves where specialised access skills may be needed). These situations are highlighted in the guidance.

9.4 Flexibility

However, some flexibility in the selection of attributes is acceptable (see also section 6). Some attributes may not be applicable to all examples of a particular interest feature. For example, encroachment of wetland species such as rushes is a management issue in some lowland grasslands, and in such situations the cover or frequency of wetland species is an important aspect of feature condition, and should be used as a mandatory attribute. However, in many dry grasslands use of such an attribute would be irrelevant. Another approach is illustrated by the selection of attributes for woodland habitats. Here, there are five broadly-defined categories of attribute (such as regeneration potential and tree and shrub composition) which should be incorporated within conservation objectives for all woodland features, but the selection of specific attributes within each of these categories is determined by site-specific conditions. Therefore, in some cases flexibility has been given in the

guidance to choose one or more of a number of alternative attributes. It should be stressed that once chosen, it is mandatory that they are assessed.

What is key, however, is that for any particular feature on an individual site, a clear set of attributes are identified which will be used to assess the feature each time it is monitored. An audit trail of decisions which have been taken is essential to document why this set of attributes is necessary in the circumstances which apply on this site. Note that it is NOT acceptable to assess the feature using totally different sets of attributes between cycles of assessment.

9.5 Discretionary attributes

In addition, in a few cases (e.g. in the Birds guidance), “discretionary” attributes have been identified. These lower priority attributes will not contribute towards assessments of condition but may inform site management. It is up to individual agencies to determine whether or not to collect more detail than the minimum required, as this is a matter of resources. In some sets of guidance, there may be discretion to choose between alternative attributes, or where attributes may only be relevant in certain circumstances – these may also be termed discretionary, but once a decision has been made that they are to be used on a particular site, for a certain feature, they should be regarded as mandatory.

10 Attributes for species interest features

Assessing favourable condition for species interest features could be by direct means (e.g. measures of species population size) or via indirect means (e.g. extent/condition of suitable habitat). These are complementary, and a balance (section 10.3) should be struck for any particular feature having due regard to both needs and practicalities.

10.1 Indirect measures

The use of direct measures is expected to be the norm, but for many species (especially cryptic and/or poorly known species, such as many invertebrates) it is very difficult to make reliable estimates of population size; in some cases (e.g. wood-boring beetles), population assessment may even destroy the species’ habitat. Even where quantitative assessments can be made (e.g. birds), populations may fluctuate widely on a seasonal, annual or longer-term basis; defining appropriate target/limit values may be problematic if the population dynamics of the species are unknown. Given that management for notable species is normally undertaken by managing the habitat, rather than directly managing the species, it is normally appropriate to include habitat attributes within conservation objectives for species interest features where the habitat needs of the species are known.

10.2 Direct measures

Notwithstanding the foregoing remarks, some direct measure of a species feature is clearly highly desirable, as over-reliance on habitat attributes could lead to misleading conclusions. The relationships between habitat condition/extent and associated species are often poorly-known. If condition assessment for species relied solely on habitat attributes it would be possible for the habitat to be in apparently favourable condition, but for the associated species to have declined to the point of extinction. Species may also be influenced by factors other than habitat condition/extent, e.g. disturbance, as in relation to bat roosts.

10.3 A balance of approaches

The solution is to use a combination of approaches, tailored to the particular interest feature. The following principles are advocated:

- In general, attributes for species interest features should include both assessments of habitat extent/quality and assessments of the species population where data exist through recording schemes, or can be easily and reliably obtained without significant costs or delays.
- Quantitative assessments of population size should only be used when:
 - i. the species population can be counted or measured reliably, e.g. most birds, some vascular plants, some invertebrates (butterflies and dragonflies); and

- ii. meaningful targets/limits can be set which take population fluctuations into account; and
 - iii. assessment methods avoid significant additional costs, time, or generating a need for higher competencies of local staff.
- Where quantitative assessments cannot be used, conservation objectives should generally incorporate species presence/absence, i.e. for a species feature to be in favourable condition the species should usually be recorded at least once during a 6-year reporting cycle.
 - Some habitat attributes should be used, provided the habitat requirements of the species are broadly known – if necessary, further work should be undertaken to establish this.

There will be a gradient in the balance of attributes from groups where the habitat attributes will predominate and where presence/absence of the species may be the most that can be expected to be monitored, through to groups where species population data will predominate and where only major changes of habitat may be worth recording. Most species interest features are likely to lie between these two extreme positions and, for these, population data and habitat attributes will both be important. When assembling evidence of feature condition, the use of relevant 'contextual' information on species populations, collected through existing recording schemes or specially commissioned surveillance schemes outwith CSM methods should always be considered.

For certain species, disturbance or predation are major factors affecting populations, and conservation objectives should include attributes relating to minimising these factors. There is obviously a cross-over here to the management plan for the site.

11 Setting targets

For each interest feature, favourable condition will be defined by setting broad targets for each attribute. As a general guide, favourable condition will reflect the state of an interest feature at the time of its selection but with the proviso that the ecological or other processes supporting the feature should be such as to enable it to maintain its condition over time. In practice, the site condition at the time of selection may not be known, or be inappropriate, in which case the guidance provided in this manual, adjusted to meet the particular circumstances of the site as determined by best judgement, can be used to determine favourable condition.

Targets should be set to ensure that habitats and species populations are maintained in a condition which is likely to be sustained over the foreseeable future, in line with the principles of favourable conservation status (see section 5.2). For example, a wetland feature that requires a certain water level regime to maintain it, will not be considered as being in favourable condition if the water level requirements are not being met, irrespective of whether the plant and/or animal community targets were met at the time of monitoring. This is because it is entirely foreseeable that these attributes will not be maintained over time. In this example, the target for the water regime will be set at the level to be reached to maintain the wetland feature (i.e. possibly different from what it was at the date of site selection).

However, targets should not (for common standards monitoring purposes) be set at levels which seek to achieve substantial improvements to the feature beyond that needed to maintain its biological or earth science interest at the time of selection. In certain exceptional circumstances, where the feature was selected with the specific view to improving it to a better state (e.g. degraded raised bogs), the biological targets for favourable condition can be set significantly higher than was their condition at the time of selection. This is, however, an exceptional circumstance and not to be applied generally.

Targets for species and habitat features must reflect ecological variation and, where relevant, local distinctiveness; in many cases they will be determined by site-specific factors (see section 16). However, guidance on setting appropriate target values has been provided wherever possible, e.g. by specifying a range of values within which site-specific targets should lie.

For geological sites *that are being preserved*, a target of no reduction in quality or quantity of the features of interest is generally applicable. Targets set for any particular interest feature may also need to take into account the conservation objectives of other features on the site (see sections 8 and 16).

12 Ecosystem dynamics

Targets should take into account ecosystem dynamics, e.g. successional changes on sand dunes and localised loss of woodland areas due to natural processes. However, it is acknowledged that it may sometimes be difficult to distinguish between such 'natural' changes and changes caused by human induced factors. The key to dealing with natural change is to be clear about what is important about the site. In order to illustrate this, two examples, for woodlands and coastal features are given below.

12.1 Woodlands

For some woodland features of interest, natural change could be as damaging as direct human intervention. If a site is important for butterflies associated with open space, 'natural change' that leads to the glades scrubbing up will put the butterfly feature in unfavourable condition. In another site important lichens might occur on just six specific veteran trees: if wind blow uproots the trees (leaving them lichen-side down) the lichen feature becomes unfavourable.

Where the interest feature is more general, for example the semi-natural woodland community the impact of 'natural change' may be viewed more benignly. A shift in the relative abundance of vernal flowers or in the relative dominance of oak versus other site native trees may be acceptable, or at most slight changes in management may be recommended to off-set it, without the need to alter the overall condition assessment.

A third situation is in sites where our aim is to develop as near-natural a woodland state as we can under the prevailing conditions. Since we do not know what 'near-natural' actually is in 'state' terms we must judge success by the degree to which natural processes operate. Almost any composition / structure is acceptable. Natural change is positively welcomed as a sign of success. Thus if the wood blows down (as many did in the 1987 storm) this is not an undesirable event and does not make the woodland feature unfavourable.

12.2 Coastal

A key element of the scientific interest of coastal habitats such as sand dunes, soft cliffs or salt marshes is the presence of active coastal processes, which influence the development of a range of natural successional stages. Many of the coastal habitats which are Annex I features are directly related to the interaction between natural processes and vegetation, this is reflected in titles such as 'shifting dunes with *Ammophila arenaria*', 'annual vegetation of driftlines' and '*Salicornia* and other annuals colonising mud and sand'. Coastal habitats are often of interest themselves for active geomorphological processes.

Moreover, all coastlines are naturally dynamic. Despite the many modifications to the coast, these natural processes continue and are important in determining the overall condition of habitat features. Understanding how the features of a site adjust in response to these processes poses a particular challenge for conservation. A functional coastal ecosystem must have the capacity to change, and designated sites must be considered in a wider context.

While, for many coastal habitats, dynamic change is a natural and necessary process, it is also often what human activities are intended to reduce or prevent. Activities such as mechanical beach cleaning, building of structures (e.g. groyne or even offshore breakwaters), or land reclamation can affect natural processes or prevent a coastal system from responding to natural events. In other cases, activities elsewhere in a coastal cell may not even be on the site which is being assessed - which can lead to difficulties in judging what factors (natural or human induced) are causing change.

In many cases, it is the absence of artificial structures or operations that indicate that natural processes are able to operate. The presence of structures or operations that are clearly having a detrimental effect on the feature through the interruption of natural processes should, therefore, be recorded, as these will indicate that natural processes are restricted in some way. Whilst this goes against the

guidance in section 9.1, it is difficult to provide hard and fast rules for all situations. In the circumstances described in this section, recording structures or operations would seem to be sensible, assuming the feature being assessed is a dynamic process, and the coastline is a manifestation of that process. If the feature is assessed as unfavourable, and there are no obvious reasons why, it may be necessary to look beyond the site for the factors which are influencing the feature.

A change from one habitat type to another as part of a normal succession would not inevitably result in a verdict of unfavourable condition. This will be a matter of setting target ranges appropriately to take account of coastal dynamics. In some very mobile systems, the feature could even migrate beyond the site boundary. In addition, the effects of climate change may cause some habitats to migrate landwards. If this is recorded during assessment, the site boundary may need to be amended and the site re-notified.

Notwithstanding the foregoing remarks, natural coastal process events can be damaging to interest features. For example, a breach in a barrier bank could damage or destroy a coastal lagoon and its component plant and animal communities, with little chance of these being restored in the foreseeable future. The condition of the lagoon feature clearly then becomes unfavourable. We should not conclude that a feature is in favourable condition simply because it is the end result of coastal dynamics. Changes due to coastal dynamics and natural succession should be considered alongside the state of the feature when assessing condition.

13 Habitat mosaics and transitions

13.1 Habitat mosaics

The SSSI selection guidelines allow habitat mosaics to be identified as interest features in their own right. The component habitats may, or may not, be individually qualifying SSSI features. In practice, with the exception of upland SSSIs, it appears that very few sites have been notified specifically for their habitat mosaics.

Where a habitat mosaic is a notified interest feature, it is expected that a conservation objective will be drawn up for the mosaic as a whole. This could include various attributes which reflect:

- i. the overall extent of the mosaic (targets should generally be set to avoid any loss of area);
- ii. the diversity of component habitats of the specific mosaic (the range of semi-natural habitats should usually be at least maintained at current levels);
- iii. the extent of selected component habitats, where these are felt to be of particular importance (taking into account the dynamic nature of many mosaics, and also any targets for management-controlled habitat expansion/reduction);

These attributes could all be assessed from vegetation maps or aerial photographs.

One or more components of the mosaic will often be notified interest features in their own right, and, in these circumstances, attributes should be selected and targets set using the relevant habitat guidance. Even where component habitats are not individually qualifying features, it may still be appropriate to select a restricted number of additional habitat condition attributes, over and above those listed previously. This will need to be judged on a case by case basis, balancing the desire for simplicity against the need to collect sufficient information to judge the overall condition of the mosaic. On large and diverse upland sites it would usually be pointless to undertake detailed monitoring of component habitats such as acid grassland which are of limited conservation value. But for smaller mosaics (e.g. comprising two habitats, neither of which are extensive enough to qualify individually) some measure of quality of the separate habitats may be essential to reach an informed decision regarding the condition of the mosaic feature.

13.2 Transitions between habitats

Vegetation types are not always sharply delimited from each other and different forms of vegetation may grade into one another in response to environmental gradients, and there may be quite extensive transition zones. Transitions between habitats are often of interest in their own right; their importance

is explicitly acknowledged in the SSSI selection guidelines, and, in some cases, transitions contribute to the reasons for site designation. Habitat transitions and stands of intermediate character may also be important factors in the context of SAC designation.

Where transition zones are limited in extent but are of significant conservation interest, they should be incorporated within the site's conservation objectives. This can generally be done by including the transition as one of the 'indicators of local distinctiveness' (see section 15.5) chosen to reflect locally distinctive elements of the site. Targets could then be set for the location, extent and composition of the transition, as appropriate.

Transitions between habitats may be relatively extensive, and sometimes entire stands of vegetation may be intermediate in character. In such cases, it is possible that use of the generic habitat guidance would result in an inappropriate choice of attributes and targets. For example, a stand of vegetation may be transitional between lowland heathland and acid grassland. This does not necessarily lessen its conservation value, but rigid application of the monitoring guidance for either lowland heathland or acid grassland may lead to a judgement that it is in unfavourable condition when it is actually favourable. In these circumstances it is recommended that an integrated set of attributes and targets is chosen, based on both sets of guidance, and taking into consideration the salient characteristics of the vegetation. Advice from specialists will be required to ensure that appropriate targets are chosen.

14 Species assemblages

14.1 What is an assemblage ?

ASSIs/SSSIs, SPAs and Ramsar sites may each be notified because of the presence of important assemblages of species. This might seem straightforward, but in the context of species features two situations can be envisaged:

1. A colony of different species all occurring / living together, where the total number of individuals is the key aspect of the interest on the site (e.g. more than 20,000 seabirds on a SPA site).
2. A number of characteristic species which together form the feature and usually share similar ecological or habitat requirements (e.g. the co-occurrence of woodland or upland bird species, or heathland invertebrates).

The term 'assemblage' can also be used in a third, functional, way; when there are a number of features which co-exist, yet are individually notified (i.e. they are features in their own right). While it may be possible to assess them using the same or very similar attributes, these species must be assessed as individual features independently of any assemblage of which they may also form a part (e.g. under scenario 1).

14.2 Scoring systems

For some taxonomic groups, the selection of SSSIs for species assemblages is based on a simple scoring system with clearly-defined thresholds for sites considered to be of SSSI quality (e.g. vascular plants, breeding birds, amphibians and dragonflies). Quantitative thresholds are also used to identify SPAs and Ramsar sites for waterfowl assemblages, and SPAs for seabird assemblages. In other cases (e.g. most invertebrate assemblages), SSSI selection guidelines are less clearly defined.

There are several possible approaches to monitoring species assemblages. Where there are quantitative selection thresholds an acceptable approach might be to evaluate the assemblage against the selection criteria. For example, by recording presence/absence of the constituent species and comparing the scores with the SSSI selection guidelines and/or the assessment at the time of notification. However, it needs to be recognised that not all species may be recorded during one site visit, while the original selection of the feature may have been made after several visits using a compilation of data. It may be sensible, therefore, to set a favourable condition threshold which takes account of such circumstances. Recording relative abundance of the components of the assemblage on a scale of common to rare, could provide additional information for subsequent comparisons.

14.3 *Indicator species*

An alternative approach is to use indicator species to assess the condition of the whole assemblage. Suitable indicators would typically include species characteristic of a range of different micro-habitats, and, if possible, conspicuous species that could be recorded by a non-specialist. Both approaches should usually be complemented by setting target values for habitat attributes which relate to the features required for the maintenance of the assemblage.

15 **The need for flexibility in preparing conservation objectives**

15.1 *Variation within the UK*

Favourable condition for a particular habitat, species or earth science feature cannot be defined in exactly the same way on every site. We cannot use the same suite of tightly-defined attributes and associated target values in every circumstance, as this would ignore the considerable ecological/natural variation across the UK in response to climate, geology and other variables. For example, the typical species of blanket bog in Dartmoor differ from those in the Flow Country. In addition to broad-scale ecological variation determined by factors such as climate, there is also considerable site-specific variation reflecting local factors.

Frequently, 'local distinctiveness' or broader scale variation makes a significant contribution to what is 'special' about a particular site. For example, the selection of SACs in the UK has been influenced by the requirement to represent the range of ecological variation shown by each Annex I habitat and Annex II species (McLeod *et al.* 2002). Similarly, when selecting SSSIs, it is often the presence of a locally uncommon species or interesting spatial patterning of vegetation that leads one site to be chosen ahead of others. It is, therefore, essential that conservation objectives incorporate site-specific characteristics and geographically-related variation when this is appropriate to the feature.

15.2 *High quality features*

A flexible approach to preparing conservation objectives is also needed for other reasons. For example, if target values for a particular attribute are set at a uniform level on all sites, there may be some sites containing high-quality features which are significantly above this threshold. It would not be acceptable to allow these features to decline significantly while still reporting them as being in favourable condition. In such cases, targets will need to be raised to more appropriate levels so that monitoring can act as a trigger for action to avoid deterioration to a lowest common denominator level.

Targets may also need to be modified to take account of management conflicts between different features (see section 8). In practice, the *perceived* problem of potential conflicts between interest features may be larger than the reality. This is not to dismiss the problem, but to urge those setting conservation objectives to consider the needs of different features in the round.

However, the need to accommodate important ecological variation within conservation objectives must be balanced by the requirement to maintain a consistent approach which allows data from different sites to be aggregated. The UK guidance has been drafted with this in mind. The most important principle here is that variation must be considered within the context of the ecology of each interest feature. Locally distinctive characteristics of biological sites determined by unusual geology should certainly be reflected in the conservation objectives for the features on that site.

15.3 *Species poor sites*

Some sites are naturally species poor. For example, on some heathland sites it is very difficult to find more than one grass and one forb. In these cases, conservation objectives will have to set target values that are lower than in the standard guidance. It would be illogical to require more species present than is naturally the case, but equally it would be inappropriate to reduce the generic target for the habitat because of a few sites. This is likely to be the exception rather than the rule, and if lower targets are set, they should be checked with a relevant specialist and an audit trail of the decisions made.

15.4 Flexibility

Some attributes have been defined at a broad level. For example, many habitats have an attribute for the frequency of 'typical' species. Representative lists of appropriate species are usually provided, but the selection of species on any particular site will need to reflect site-specific characteristics.

There is considerable discretion in setting targets for most attributes. For many attributes, guidance is provided on the range of values which would generally be considered acceptable for a feature to be in favourable condition. The target which will be used on any particular site will usually be a subset within this range, and will be determined by site-specific issues. Quality control to check that the guidance is being properly applied will however be necessary to ensure that we do have a common standard.

15.5 Indicators of local distinctiveness

Local variation can also be addressed by including additional attributes ('indicators of local distinctiveness') which describe important site-specific facets of the interest feature. The choice of suitable site-specific attributes is extremely wide. The following are likely to be particularly useful:

- i. the presence of notable fauna and flora, e.g. local rarities and distinctive species assemblages (in addition to species and assemblages which are notified features in their own right);
- ii. spatial patterning of vegetation, including transition zones and habitat mosaics;
- iii. distinctive structural and physical characteristics (e.g. patches of bare ground important for invertebrates, ponds and streams, veteran trees).

This approach is recommended for habitat and Earth science features, but will be of limited application for species features. Note that this approach is only advocated where it helps to determine the quality of the notified feature on a citation. It must not be used as an excuse for making assessments of features that are not notified (see section 6.1).

16 Judging condition: making the assessment

Once the monitoring evidence has been collected, a **judgement** about the condition of the interest feature must be made. This judgement should be reached by reviewing all relevant evidence critically.

An interest feature is expected to meet all high priority ('mandatory') attributes for it to be considered to be in favourable condition. Rarely, exceptions might be made to this rule: this must always be documented. A special situation might arise over the next few years as Common Standards Monitoring is 'bedded down'; that an interest feature may appear to have 'failed' because the original selection of attributes and targets was wrong. If this is the case, the targets *must* be adjusted *before* a decision is made on the assessment of the feature. Agency quality assurance processes should ensure that the guidance is followed, and exceptions documented.

It might be felt by staff that the failure is due to a short-term management problem which has already been addressed. Even if this is the case, if the feature fails the target values set it must be assessed as unfavourable to ensure that corrective action is followed through. Remember that an assessment is the state of the feature at a particular point in time.

Alternatively, the monitoring results may provide a misleading picture of the condition of the feature, perhaps because monitoring was focused on an unrepresentative part of the site or was undertaken at the wrong time of year. This should be noted for future action, and it may be that a local decision is taken to repeat the monitoring, but if the target values for the attributes are not met, applying the precautionary approach, the feature must be considered unfavourable. Any case such as this should be flagged for quality assurance.

Even if a feature is judged to be in favourable condition, there may be concerns that it is declining in quality or that the management is in some way inappropriate. This is an indication that the target or limits set were wrong and should be flagged for quality assurance. It may also trigger more detailed/frequent monitoring, or scientific investigation.

An important point to remember is that condition assessment is not a completely scientific exercise. In the end it relies on making judgements based on the best available evidence. The reasoning leading up to the final decision should be carefully recorded as part of an audit trail (see also setting targets in section 11 and changes from guidance to take account of local circumstances in section 15).

Where information is aggregated together from different parts of a large site, a clear explanation should be placed on file of the process used. This will help with future assessments (by when the member of staff involved may have moved on or left the organisation), and also clarifies any questions which may be asked during quality control or quality assurance processes.

17 Assessing trends in condition

The critical distinction to be made when judging the condition of interest features on statutory sites is between favourable and unfavourable condition. However, the framework of condition categories agreed as part of common standards monitoring includes sub-categories relating to trends in feature condition. If a feature is assessed as being in unfavourable condition, it is important to be able to judge whether it is recovering, stable, or declining. This is critical to informing decisions about the management of sites.

17.1 Habitats and earth heritage features

For the 'unfavourable - recovering', 'unfavourable - no change' and 'unfavourable - declining' categories, the basis for assessment is the availability of evidence which demonstrates a trend. This evidence will often be that obtained by comparing the attribute targets with baseline information or by information obtained on a previous monitoring occasion. However, evidence can also be obtained by inference. For example, information on recent and current grazing levels and their impact on the condition of heathland vegetation may be provided by the structure of heather and other dwarf shrubs, including the presence of distinctive growth forms and the proportion of grazed shoots. In woodlands, the growth of seedlings/saplings will provide an indication of grazing levels and the potential for woodland regeneration. Evidence of recent removal of non-native trees indicates the composition attribute target may be improving. Wherever possible, attributes of this type have been included in the habitat guidance, but suitable attributes are not available for all management factors.

Finally, knowledge of the management regime and other factors affecting the site (e.g. air pollution) can also contribute to judgements about whether a feature is likely to be recovering or declining. For example, if an area of degraded blanket bog (in unfavourable condition) is being grazed heavily and regularly burnt, it is fairly safe to assume that its condition will not be improving. However, this approach relies on being confident that particular management treatments will lead to certain changes in condition, rather than directly assessing any changes.

Assessing condition in the 'recovering', 'no change' and 'declining' sub-categories at the time of the first assessment, can be achieved using the evidence referred to above.

In subsequent six year cycles, trends in condition could be assessed in various ways:

- changes in the number of attributes 'failing';
- trends in the number of samples 'failing';
- trends in the values of attributes;
- changes in the area of the habitat/extent of landform/rock exposure in favourable/unfavourable condition.

Different habitats have different response times - it may be possible to restore some grassland vegetation within a few years, but blanket bog may take decades - and the ecology of a feature needs to be taken into account when judging condition. The rate of progress from unfavourable to favourable condition will also be determined by management. For example, on upland heathland the complete removal of livestock will probably lead to favourable condition being attained much more rapidly than if more modest stock reductions are put in place. The end-point will be the same, but the rate of progress will be markedly different.

Ultimately, it is for the person carrying out the assessment to examine the evidence and formulate a view based upon it. They then need to record their reasons for their view. If the evidence appears dubious or weak as regards any trend, an assessment of *no change* is to be preferred.

17.2 *Species*

Species present particular problems, including the often poorly understood relationships between species populations and their habitat, and the difficulty in interpreting quantitative population measurements given the widely fluctuating population dynamics of many species. For many species, it may be impossible to use population attributes to determine the sub-categories in any meaningful way, and other evidence will have to be considered when assessing trends for these. For example, it may be possible to infer recovery from improvements in one or more of the habitat attributes. Where possible, the guidance for species features will give advice on how to evaluate trends.

17.3 *Unfavourable Recovering*

The generality of the foregoing remarks apply to undertaking the assessment of feature condition in relation to the *Unfavourable Recovering* category. At first assessment a view will be formed after considering the available direct and indirect evidence to determine whether the feature is, in fact, recovering. Where management has been put in place to address all the factors preventing the feature from returning to favourable condition, and in the best judgement of the assessor such a return will occur in due course, the feature should be assessed as falling in the *unfavourable recovering* category, notwithstanding that full recovery may take several years. However, a distinction is made here between management leading to full recovery and that which is limited to some improvements. For recovery, remedial measures should have been taken to address all failing attributes; recovery will not occur if only some of the attributes have been addressed. While the latter will lead to improvement, it will not lead to favourable condition being attained, and features in this condition should be assessed as falling in the *unfavourable no change* category.

17.4 *Favourable recovered*

As soon as the favourable condition threshold is exceeded, the state changes from *unfavourable recovering* to *favourable recovered*. Common Standards Monitoring should not be expected to determine if the management is correct, merely point out if the condition of a feature on a site is as we wish it to be. Although it is undesirable for a feature to fluctuate between favourable and unfavourable conditions, what this may mean is that the management of the site/feature is failing the feature in some way.

17.5 *Partially Destroyed*

It is not unusual for the condition of a feature within a protected area to vary between different parts of the site. This might have been the case at designation or have happened subsequently. If the condition of part of a feature is considered to be, for whatever reason, beyond restoration, it will cease to be a target for future management actions and is consequently not usefully monitored from that point onwards.

The *partially destroyed* condition should then be applied to that part of the feature and that part will be excluded from future condition assessment. Such an assessment would need to be accompanied by corresponding changes to any variables in attributes or targets (e.g. extent) within the conservation objectives for the remainder of the feature. The *partially destroyed* category can apply to all types of features. For habitats, it may apply because of permanent habitat loss within the site. A species example might be permanent loss of part of a population because of factors acting outside of the site such as climate change. Within the Earth sciences, the category might apply to loss of part of a mineral or fossil feature.

Use of the *partially destroyed* category is important in order that destroyed parts of a feature on a site do not mask and detract from the condition of remaining viable feature components. Without this category one could envisage a situation where the destruction of part of a feature resulted in permanently unfavourable condition of that feature and, therefore, removed incentives to manage the remainder.

There are some practical issues that need to be resolved in handling and reporting use of this category:

- It is important that the extent of a *partially destroyed* feature is reported even though it would not be subject to monitoring. This means that *partially destroyed* features will be reported as two separate elements (including when the first assessment at which the feature is discovered to be damaged), one a constant partially destroyed element, and the second the condition of the remainder of the feature (which might be any of the favourable or unfavourable states).
- It is important that *partially destroyed* is not applied to unfavourable components of a feature simply to avoid long and intensive management programmes. Where possible, guidance for features will use attributes and targets capable of determining the issue of whether a feature is partially destroyed.

17.6 Destroyed

The same principles apply to the use of the *destroyed* condition category, except that it relates to an entire feature. If a feature is considered to be, for whatever reason, beyond restoration, then it should be reported as having been *destroyed*. In this instance, the practical implication is that no management will take place to restore the feature and, if this is the sole feature on a site, the site will cease to be monitored.

There are obvious scenarios in which a feature, or part of it, has been destroyed beyond restoration, such as due to complete loss of habitat from erosion, excavation or permanent covering (e.g. roads). In such cases, not only will the feature itself change, but the processes that are essential to support it will have been irretrievably lost. This applies equally to habitat and species features.

When a feature, or part of it, has been destroyed, but the underlying processes that supported it remain viable, then it may be possible to restore it. In this circumstance, the feature cannot be considered truly destroyed as it is likely to re-establish and so it should be regarded as unfavourable. Examples might include: the loss of a plant species due to herbicide application, loss of trees from wind-throw, loss of a bird species due to disturbance events, loss of an amphibian due to a pollution event, etc. However, there are limits to the kind of management that could be undertaken to restore a feature and if a feature is unlikely to re-establish then generally it should be considered destroyed. Careful consideration will need to be given to which state to use when the impact on the feature comes from beyond the site boundary. The work necessary to enable restoration or re-establishment to take place may be difficult or long term; this should not be an excuse to use the destroyed categories; these should only be used when the feature cannot be restored.

It is recommended that all cases where a feature is considered to be either *partially destroyed* or *destroyed* should be reviewed by the relevant advisory staff to ensure consistency in these assessments.

18 Undertaking the monitoring - field methodology

18.1 Personnel

The number of sites and interest features covered by the common standards monitoring programme is very substantial. To be operationally practical, the monitoring must utilise rapid and simple assessment techniques wherever possible. The CSM approach is not intended to yield results to which a 95% confidence interval can be assigned, but is intended to '*facilitate quick and simple judgements*' (JNCC 1998).

Another important principle is that '*the bulk of the monitoring effort is likely to be undertaken by local conservation officers in the course of their day to day duties*' (JNCC 1998) who will not usually have specialist knowledge of plant and animal identification, monitoring techniques, etc, although necessary training will be provided. Evaluation of the condition of certain interest features may require the use of specialist techniques (e.g. assessment of water quality for freshwater features) or experts in particular taxonomic groups (e.g. many lower plants and invertebrates). In such cases, the monitoring may need to be contracted out, or may utilise information supplied by other organisations. However,

it is expected that the final judgement about the condition of the feature will be made by country agency staff.

18.2 Structured walks

For many of the guidance sections, the basic method for undertaking the assessment is to undertake a structured walk around the site. This is more than a random shuffle through the habitats present, but rather should be planned to look at the major variations present in habitat structure. In addition, at a number of stops (defined in individual guidance sections) it is expected that notes will be made on the attributes being assessed. This is not to imply that the targets for each attribute must all be met at all of the stops, but rather to ensure that the assessment made is based upon the whole of the feature rather than initial and final impressions.

18.3 Sampling large features/sites

For large sites, which it is not possible to visit in their entirety within a single fieldwork session, more planning will be required. It is possible that only a sample of the site can be visited. If this is the case, advice from agency monitoring specialists should be sought at the planning stage. The sample visited should be sufficiently large that a fair assessment of the feature(s) present can be made. In effect the question to ask is ‘do we have confidence that the assessment made is a fair reflection of the state of the whole of the feature on the site?’ It is likely that for very large or multi-feature sites multiple visits will be needed. In this case, care must be taken to ensure that the final judgement of the condition of each feature takes account of all the information gathered. It may be helpful to remember that if it is not possible to assess the whole of a feature within a single field season (the preferred scenario), a feature must be completely assessed within three years (except where presence/absence over the whole six year cycle is an attribute for species – see section 6.5).

18.4 Timing/frequency of monitoring

For assessments to be ecologically meaningful, they must be undertaken at the right time of year. This may mean that multiple site visits are required to assess different features on the same site. The individual guidance sections include information on when field data should be collected. It is also important to recognise that relevant information can also be collected as part of other visits to sites – for example as part of a regular liaison visit a number of plant species might be noted as present. This information could be very helpful when undertaking the assessment for the feature in question, especially if it is a uncommon species which is difficult to locate on a year-on year basis.

When collecting data it is important to note the dates of field visit(s), (as opposed to the of making an assessment or of entry of information onto a corporate computer system) as these will be useful in quality assurance of the assessment.

19 Management measures and threats

19.1 Pressure – State – Response

Linking recording and reporting management measures to the condition assessments which form the core of Common Standards Monitoring enables Agencies to identify whether management and activities on or adjacent to sites are neutral, advantageous or deleterious for a particular feature on a specific site. Comparisons between sites are useful to decide whether it is necessary to alter site management or influence / control particular threats, in order to change the state of a feature from unfavourable to favourable. These will be facilitated by knowledge of what is working well elsewhere in the site network.

The consideration of what threats and management measures are occurring on or adjacent to sites is an application of the pressure, state, response (PSR) model. Threats are considered to be negative pressures which may be driving features into unfavourable condition. Condition assessments made under the common standards model are the state of features at a given point in time. Management measures are considered to be the responses put in place to mitigate threats or ensure that state remains in a favourable condition. It is expected that the assessment of threats and management measures will

be at least in part a field based exercise, undertaken in parallel with the collection of data to make the common standards condition assessment.

19.2 Standardised threats

Threats are therefore those things which are driving a feature into unfavourable state. Threats should be recorded for each feature. Local needs for information may be more detailed, but any information collected should be summarised for reporting purposes into the categories below.

Categories agreed for reporting purposes:

- Agricultural operations (e.g. ploughing, fertiliser, pesticides)
- Burning
- Development carried out under planning permission (including roads, Acts of Parliament etc)
- Dumping / spreading / storage of materials (e.g. spoil deposition or large bale silage)
- Earth Science feature obscured / removed (e.g. fossil collecting) / modified (e.g. cave entrances)
- Flood defence or Coastal defence works
- Forestry (including neglect such as lack of coppicing)
- Game or fisheries management (e.g. introduction of stock at too high a level, over-zealous cutting of river banks, bait digging)
- Invasive species (including bracken or scrub)
- Lack of remedial management (e.g. stopping-up drains, scrub cutting, erecting deer fences)
- Over-grazing (including deer browsing)
- Recreation / disturbance (including scrambling, off road vehicle use, recreation pressure, disturbance of fauna etc)
- Statutory Undertaker (i.e. works carried out by a statutory body which is not required to seek planning permission, including military operations)
- Under-grazing
- Water management (including drainage, dredging or alterations to the water table. Could be too much water or too little)
- Water quality (including silt, water pollution (direct or diffuse), run-off, nutrient enrichment, eutrophication etc)
- Other (specify: note that this should only be used for threats which do not fit within the schema; it is expected that the schema will be reviewed and, if necessary, revised on a regular basis).

19.3 Management measures

Management Measures are those things which are helping to achieve favourable condition, either by maintaining the state, or by encouraging recovery from unfavourable condition. The measures should be recorded for each feature. If the management of the feature is successful, the features should be either favourable or unfavourable recovering. If the features are unfavourable no change or declining, or worse, partly destroyed, it implies that the threats on the site are not being mitigated or managed effectively. This should be a trigger for review of the measures in place, or the exact prescription(s) agreed under a particular incentive or scheme.

Reporting management measures on sites:

	Which management measures are in place?
Management agreement / scheme /	
Conservation agency grant	
Enforcement of Site Management prescriptions (e.g. through nature conservation order)	
Woodland grant scheme	
Agri-environment schemes e.g. Tir Gofal, ESA, Countryside Stewardship	
Planning condition or agreement	
Other grant (e.g. HLF, LIFE)	
Inheritance Tax / Capital Tax Exemption	
No formal agreement, but management sympathetic (incl. consents)	
Other (please specify)	

20 Validation and quality control

JNCC and the Agencies are developing together a quality control and quality assurance programme which will address the issues below and make it clear who needs to do what at each stage. The text within this section is intended to give an outline of the sorts of quality assurance that will need to be put in place, rather than provide detail of work actually being carried out.

20.1 Operational practice

Country agencies need to be sure that operational practices are communicated to operational staff, understood and adhered to. The role also needs to ensure that conservation objectives for the site are used in undertaking the practical monitoring.

20.2 Application of guidance and comparability of targets

This task can be achieved by ensuring conservation objectives comply with the guidance issued. Together the UK guidance informs the writing of conservation objectives which set targets and apply standards. Country Agencies need to ensure that guidance to set conservation objectives has been issued, understood and used consistently. A key component of this role is also to ensure that the guidance has been used to create comparable targets for the same feature on different sites, taking into account the necessity for some site specific variation.

The specialist groups charged with the development of UK guidance need to ensure that targets are comparable between countries. Put simply, are England, Scotland, Wales and Northern Ireland setting targets for a feature at different levels of condition?

There is a third role to ensure that targets are sufficiently comparable across different groups of feature. Are we aiming for a more favourable condition for lowland grassland than for woodland? This is effectively undertaking quality assurance across the UK guidance setting groups. This will be a role for JNCC.

20.3 Consistency of results

A quality assurance process should aim to measure inter-observer variability. A number of the groups developing guidance tested the methodology in terms of inter-observer variability, with generally favourable results. Country Agencies can usefully continue to measure and reduce inter-observer variability.

There is another task to check if different Country Agency interpretations of UK guidance cause inter-observer variability between the countries. Do SNH, CCW, EHS-NI and EN operational staff make different condition assessments for the same site? A test of this will probably be undertaken during the refinement of guidance. Differences might be caused through divergent operational practices or by divergent use of UK guidance in setting conservation objectives.

20.4 Reliability of Results

Country Agencies need to test whether the results they produce really reflect the condition of the feature on the site. English Nature intend to do this through a validation network that will check results on a few sites through more rigorous monitoring.

20.5 Quality of guidance

UK guidance needs to be assessed against the results of the other quality assurance activities and improved appropriately. This will require input from all involved in the CSM process.

21 Contextual information

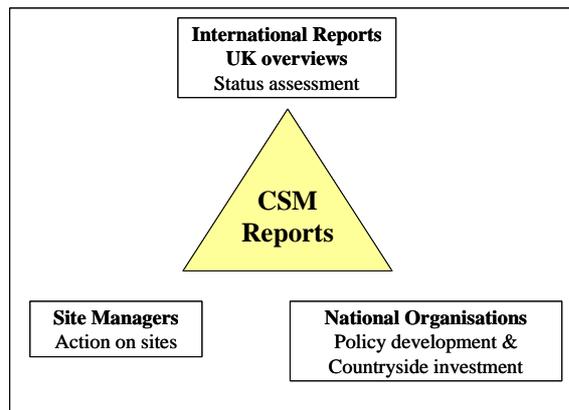
The interpretation of condition assessments made using common standards monitoring approaches will often require access to contextual data. This enables the monitoring assessments to be viewed in a broader geographical or temporal perspective (e.g. by comparing results for a particular feature with trends in the wider environment in the UK or beyond). Contextual information may be collected by the conservation agencies or may be provided by the activities of other institutions.

National biodiversity surveillance programmes, such as Countryside Survey 2000, the Wetland Bird Survey (WeBS) and the BSBI and Butterfly Monitoring Schemes, provide information on the status of biodiversity across the UK, and allow site-based information to be considered in a wider context. Other useful sources of information may include data on air pollution levels, models of the potential impacts of climate change, and data on trends in pesticide use, fertiliser application, etc.

On some sites, long-term surveillance programmes have been established, e.g. permanent quadrats or transects which are recorded at regular intervals. These will yield site-specific information on trends, which will support interpretation of common standards monitoring assessments.

In addition, the information referred to in this section may be the source of data required to ascertain whether target levels for attributes have been met, or whether species are present on a particular site.

22 Reporting



Reports may be used for three purposes.

- At the local level to help site managers assess their management and put the features on their sites in context with other sites which have that feature.
- At the national level to review policy implementation and resource allocation, and
- At the UK or international level to provide information for international reporting, and for broader policy review.

22.1 Timetable

Following a pilot year in 1998, implementation of Common Standards Monitoring commenced in April 1999. The first 6-year cycle will therefore be complete at the end of March 2005. Following this, JNCC plans to collate data together to assess the progress made, lessons learnt, and state of the site networks.

22.2 International reporting

It is expected that Common Standards Monitoring data will be used to help meet the UK's international reporting obligations. Common Standards Monitoring assessments are relevant to reports on the condition of habitats and species covered by the Habitats Directive, the Birds Directive, the Ramsar Convention and the UK BAP, using appropriate reporting categories. It is, therefore, important that the features which occur on each designation (e.g. cSAC, SPA, Ramsar) can be identified separately so that reports can be created on the features which occur on any one of the designations (e.g. all features on Ramsar sites).

The reporting cycles for the Conventions and Directives vary from 3-6 years, so it is likely that results will be aggregated from the most recent assessment made for each relevant feature on the appropriate sites. It is also likely that reports will need to be aggregated for individual features (e.g. for Habitats Directive Annex I habitats and Annex II species) in order to feed into assessments of their conservation status.

22.3 ASSI / SSSI reporting

Data derived from Common Standards Monitoring can be collated in various ways for reporting purposes. It is anticipated that the results of Common Standards Monitoring will be used to:

- assess performance against national SSSI targets;
- identify priorities for resource allocation or investment;
- identify threats to feature or site integrity which require action at a site or policy level;
- and review the effectiveness of site management practices.

It may also be necessary to aggregate information on features to produce site-based reports.

The reporting categories used for reporting on SSSIs and ASSIs at a UK level are listed in the table below. For habitats, the reporting categories are Biodiversity Action Plan (BAP) broad habitats. The relationship between BAP broad habitats and other habitat classifications is given in Jackson (2000). Individual country agencies may wish to report in more detail than these categories for their own purposes.

Habitat categories	Species categories	Earth science categories
Broad-leaved, mixed and yew woodland	Vascular plants	Stratigraphy
Coniferous woodland	Non-vascular plants	Structural and metamorphic geology
Boundary and linear features ¹	Mammals	Igneous petrology
Arable and horticultural ¹	Reptiles	Mineralogy
Improved grassland ¹	Amphibians	Palaeontology
Neutral grassland	Fish	Quaternary geology and geomorphology
Calcareous grassland	Birds - aggregations of breeding birds	Geomorphology
Acid grassland	Birds - assemblages of breeding birds	
Bracken ¹	Birds - aggregations of non-breeding birds	
Dwarf shrub heath	Butterflies	
Fen, marsh and swamp	Dragonflies	
Bogs	Other invertebrates	
Standing open water and canals		
Rivers and streams		
Montane habitats		
Inland rock		
Built up areas and gardens ¹		
Supralittoral rock		
Supralittoral sediment		
Littoral rock		
Littoral sediment		
Inshore sublittoral rock		
Inshore sublittoral sediment		
Offshore shelf rock		
Offshore shelf sediment		
Continental shelf slope		
Oceanic seas		

23 The generic guidance - history of development

23.1 Agency and JNCC Initiatives

Since 1998, a substantial body of work has been undertaken to refine some of the concepts set out in *A statement on common standards for monitoring designated sites* and to add the supporting detail necessary to translate the published statement into a working system for site monitoring. This work is included among the references at the end of the chapter.

However, as this work developed it became apparent that there was a danger of differences in approach evolving, and that this could lead to inconsistency in assessment and reporting across the UK. For this reason, it was decided to develop UK-wide guidance.

23.2 UK Guidance

As a result of the need to develop UK-wide guidance a major project was initiated in 2000, with fourteen specialist groups comprising staff from the country agencies and JNCC given the following tasks:

- to prepare UK guidance on the setting of conservation objectives which define favourable condition for interest features on designated sites. Guidance should include the selection of attributes for assessing feature condition and (where possible) appropriate target values;

¹ These habitats are only rarely identified as interest features on statutory conservation sites; no monitoring guidance has been produced, and in the few cases where they are listed as interest features conservation objectives will be drawn up on a site-by-site basis.

- to provide guidance on how to assess feature condition against the conservation objectives following monitoring;
- to suggest suitable field methods for the monitoring of feature condition.

23.3 Principles

Several principles were established for the preparation of the UK guidance:

- it must comply with *A Statement on common standards for monitoring designated sites*;
- it should, so far as possible, build on and refine the previous developmental work carried out by the country agencies;
- it should acknowledge the ecological/geographical variation of features across the UK, and should accommodate, the different practices adopted by the various country agencies, for the practical monitoring of features on sites;
- it should accommodate the natural variation inherent in habitat features;
- it should be field-tested prior to being finalised;
- due consideration should be given to the skills and expertise levels it is reasonable to expect of operational staff undertaking monitoring and condition assessments;
- the preparation of guidance should include quality assurance / a reality check using experienced local staff and specialists to ensure that the guidance is fully appropriate and that assessments can be reliable and consistent.

23.4 Co-ordination

The work of the specialist groups has been co-ordinated by JNCC to ensure that a consistent approach is adopted across all interest features and that liaison between groups is undertaken where necessary. The newly-established Inter-Agency Monitoring Group (IAMG) maintained an overview of progress and provided fora for discussion of cross-cutting issues.

The preparation of guidance by each group has been a lengthy and iterative process, incorporating review by specialists, feedback from field testing, and quality assurance by JNCC. Evolving thinking on issues such as local distinctiveness and species monitoring is being incorporated into the guidance. Guidance was accepted for dissemination when it had been considered and endorsed by the Chief Scientists' Group.

24 Future development / refinement

24.1 Revision of guidance

It is anticipated that the guidance manual will be published and updated electronically on the JNCC website (www.jncc.gov.uk). The guidance to be published in 2003/4 will be revised and updated in the light of feedback from those using it, both statutory and non-statutory organisations.

24.2 Use outside statutory sites

Common standards monitoring guidance has not been developed for use on non statutory sites, or as part of a monitoring programme of the wider countryside. Nevertheless, similar programmes are being considered, as the concept of rapid assessment against an objective is equally valid in these scenarios.

25 Bibliography

- Brown A. 2000. *Habitat monitoring for conservation management and reporting. 3: Technical guide*. CCW: Bangor.
- Davies J, Baxter J, Bradley M, Connor D, Khan J, Murray E, Sanderson W, Turnbull C, Vincent M. 2001. *Marine monitoring handbook*. JNCC: Peterborough.
- Davies SM, Yost L (eds). 1998. *Conservation objectives: Guidelines for identifying the attributes of interest features under the EC Habitats Directive and Wild Birds Directive*. JNCC: Peterborough.
- Ellis NV, (1998, revised 2000). *Monitoring the condition of Earth science sites. A framework and guidelines for Earth science SSSIs and ASSIs*. Joint Nature Conservation Committee. Peterborough.
- Ellis NV, Bowen DQ, Campbell S, Knill JL, McKirdy AP, Prosser CD, Vincent MA, Wilson RCL. 1996. *An introduction to the Geological Conservation Review*. Geological Conservation Review Series No. 1. JNCC: Peterborough.
- English Nature. 1999a. *National specialist guidance for conservation objectives. Volume 1. Annex I habitats and earth heritage features*. English Nature: Peterborough.
- English Nature. 1999b. *National specialist guidance for conservation objectives. Volume 2. Species for SACs and SPAs*. English Nature: Peterborough.
- Environment and Heritage Service. 1999. *Guidelines for the selection of Biological ASSIs in Northern Ireland*. Environment and Heritage Service: Belfast.
- European Commission. 2000. *Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*. Office for Official Publications of the European Communities: Luxembourg.
- Hellawell JM. 1991. *Development of a rationale for monitoring*. In: B Goldsmith (ed) *Monitoring for conservation and ecology* (pp 1-14). London: Chapman & Hall.
- Hurford C, Perry K. 2001. *Habitat monitoring for conservation management and reporting. 1: Case studies*. CCW: Bangor.
- Hurford C, Jones MR, Brown A. 2001. *Habitat monitoring for conservation management and reporting. 2: Field methods*. CCW: Bangor.
- Jackson, DL. 2000. *Guidance on the interpretation of the Biodiversity Broad Habitat Classification (terrestrial and freshwater types): Definitions and the relationship with other habitat classifications*. JNCC report no. 307. JNCC: Peterborough.
- Jerram R, Drewitt A, Backshall J. 2001. *Information note 1: Assessing vegetation condition in the English uplands*. In Backshall, J. Manley, J. and Rebane, M. (eds.) 2001. *The Upland Management Handbook*. English Nature, Peterborough.
- JNCC. 1992. *Guidelines for selection of biological SSSIs: non-vascular plants*. JNCC: Peterborough.
- JNCC. 1994. *Guidelines for selection of biological SSSIs: bogs*. JNCC: Peterborough.
- JNCC. 1996. *Guidelines for selection of biological SSSIs: inter-tidal marine habitats and saline lagoons*. JNCC: Peterborough.
- JNCC. 1998. *A statement on common standards monitoring*. JNCC: Peterborough.
- JNCC. 1999. *The Birds Directive: selection guidelines for Special Protection Areas*. JNCC, Peterborough.

- Kirby, K, Solly, L. 2000. *Assessing the condition of woodland SSSIs in England*. British Wildlife. June 2000 pp.305-311.
- McLeod, CR, Yeo, M, Brown, AE, Burn, AJ, Hopkins, JJ, Way, SF (eds.). 2002. *The Habitats Directive: Selection of Special Areas of Conservation in the UK*. 2nd edn. Joint Nature Conservation Committee: Peterborough. www.jncc.gov.uk/SACselection.
- Nature Conservancy Council. 1989. *Guidelines for selection of biological SSSIs*. NCC: Peterborough.
- Ramsar Convention Bureau. 2000. *Ramsar handbooks for the wise use of wetlands. Handbook 7. Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance of the Convention on Wetlands*. Ramsar Convention Bureau: Gland, Switzerland.
- Robertson HJ, Jefferson RG. 2000. *Monitoring the condition of lowland grassland SSSIs. I. English Nature's rapid assessment method*. English Nature Research Reports No. 315.
- Rowell, TA. 1993. *Common Standards for Monitoring SSSIs*. Executive Summary, Report volume 1, volume 2. Contract report to Joint Nature Conservation Committee, Peterborough.
- Smith, I. 2002. Conservation objectives help note 1: Guidance on Conservation Objectives, Executive Summaries and Index. Version 3.2. English Nature, Peterborough.
- SNH. 2000. *Site condition monitoring guidance folder*.
- Stroud, DA, Chambers, D, Cook, S, Buxton, N, Fraser, B, Clement, P, Lewis, P, McLean, I, Baker, H, Whitehead, S (eds.). 2001. *The UK SPA network: its scope and content. Volume 1: Rationale for the selection of sites*. Joint Nature Conservation Committee: Peterborough.

26 Abbreviations and Acronyms

ASSI	Area of Special Scientific Interest
BAP	Biodiversity Action Plan
BSBI	Botanical Society of the British Isles
CA	Country Agencies (CCW,EN, EHS, SNH)
CBD	Convention on Biological Diversity
CCW	Countryside Council for Wales
cSAC	candidate Special Area for Conservation
CSM	Common Standards Monitoring
EC	European Commission
EHS	Environment and Heritage Service
EN	English Nature
FCS	Favourable Conservation Status
GB	Great Britain (i.e. England, Scotland & Wales only)
HAP	Habitat Action Plan
JNCC	Joint Nature Conservation Committee
NBN	National Biodiversity Network
NCC	Nature Conservancy Council
NGO	Non-Governmental Organisation
NI	Northern Ireland
NNR	National Nature Reserve
SAC	Special Area of Conservation
SAP	Species Action Plan
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
UK	United Kingdom (i.e. England, Scotland, Wales and Northern Ireland)
UK BAP	United Kingdom's Biodiversity Action Plan