

# Incorporating Biodiversity and Ecological Value into an Environmental Management System

*James Callow*

Industry is increasingly adopting environmental management systems (EMSs), particularly ISO 14001, for its sites and activities. This has led to a heightened confidence that these systems can play a key role in delivering changes and improvements to the environment in commercial settings. As yet however, there are no specific requirements to take account of either the biodiversity or ecology of company landholdings during the formulation of an EMS.

Since the definition of environment in the ISO 14001 standard (ISO, 1996) is:

'Surroundings in which an organisation operates, including...land, natural resources, flora, fauna, humans and their interrelation',

it is evident that these issues need to be addressed. To achieve this, companies require structured guidance setting out the actions they must take to formally incorporate biodiversity and ecological issues into their EMS.

This study provides both advice and guidance to enable companies to identify and quantify their impacts on the biodiversity and ecological value of their landholdings. It also sets out a framework for incorporating this information into an environmental management programme. It is designed not only to help them minimise any damage their operations may cause to their land, but also lays out clear guidance on steps that will help them, to protect and enhance, the biodiversity and ecological value of their landholdings within a cycle of continuous improvement.

## The Strategy

A questionnaire was designed to establish current practices in companies with environmental management systems and large landholdings. The major companies that responded included Powergen, Severn Trent Water, London-Luton Airport, the British Airports Authority (Heathrow), Glaxo-Wellcome and British Petroleum.

Their responses (see Box 1) were analysed to establish those practices which were proving particularly beneficial to the biodiversity and ecological value of landholdings. Their responses also identify areas where the company's approach has proved less effective. The knowledge gained was used to produce a format for a management system, incorporating the most effective ideas and further developing those areas in which the surveyed companies had not been particularly successful.

## Box 1 – Sample Questionnaire Response

Q. Do Severn Trent Water have a policy statement or plan relating to biodiversity and ecology issues in their EMS?

A. One of the four cornerstones of the Environmental Policy at Severn Trent Water is the promotion of biodiversity. In addition, Severn Trent Water's Environmental Objectives commits them to "enhance the environmental condition of our landholdings".

(Severn Trent Water Plc, 1998)

## Initial Evaluation

Once a company makes an initial commitment to preserving or improving the biodiversity and ecological value of the company land through its environmental policy it needs to assess the ecological value and biodiversity value of its landholdings. This **Initial Ecological Evaluation** will allow a company to collect information on species and habitats upon which its activities may impact. The company can achieve this either by relying on information from desktop studies and/or by initiating a field survey within its site boundaries in order to determine the habitats and species present.

In May 1998 Earthwatch identified several sources of information available to companies including:

'...local and national interested parties: local Wildlife Trusts... national bodies such as English Nature... or consultants.'

In addition suitable survey techniques such as Phase 1 Habitat Survey (JNCC, 1990), National Vegetation Classification botanical survey (Rodwell, 1992) and aerial photography can be used to assess the ecological value of an organisation's landholdings. Companies can also adopt methods to assess the biodiversity value of their landholdings such as indices of species richness and Geographical Information Systems that can identify and delineate biodiversity 'Hotspots'.

These techniques allow companies to locate and verify the numbers of species and habitat types that indicate the biodiversity and ecological value of their landholdings. Companies can then quantify, measure, and extract these values to provide a baseline against which future company activities on the land can be measured.

## Assessing Significant Impacts

The Institute of Environmental Assessment and Management, the Competent Body for EMAS in the UK, is of the view that biodiversity and ecological issues are often omitted from EMSs:

'...because conservation issues are not identified during an environmental review as being significantly affected by the organisations activities'.

(Baxter, 1998)

Therefore, to assist the company in identifying and measuring the potential impact of its operations on the environmental value of its land, a checklist was developed. The checklist aims to identify possible impacts (positive and negative) and to provide a means by which the **Magnitude Value** of these impacts can be scored. In order to achieve this, answers to the checklist questions are assessed subjectively using the scale presented in Box 2:

**Box 2 - Assessing the Magnitude of Company Impacts**

Magnitude of Impact	Magnitude Value
Major Positive Effect	+3
Moderate Positive Effect	+2
No Change	+1
Minor Negative	-1
Moderate Negative	-2
Major Negative	-3

Results from the checklist should enable a company to apply values to the magnitude of the impact which any one operation can have – the Magnitude Value. For example, the construction of a new oil refinery in a mangrove swamp would be a major negative impact and would be assigned a magnitude value of –3. However if the company is creating a wetland on improved grassland this would classify as a positive effect and as such would be awarded +3.

In order to assess the importance of any impact on company landholdings a study can be made based on the company's **Initial Ecological Evaluation**. A list can then be compiled of suitable biodiversity indicator species for that site. Weightings can be determined for the species by assessing their **Geographical Importance Status Value** (Box 3).

**Box 3 – Geographical Importance Status Values**

- **Nationally Important:** A species or habitat that is rare and/or has a restricted distribution in Britain (e.g. a grey partridge). (3)
- **Regionally Important:** A species or habitat that is rare or has a restricted distribution in the county (e.g. a short-eared owl). (2)
- **Locally Important:** A species or habitat that is rare and/or has a restricted distribution in the district/borough (e.g. a meadow brown butterfly). (1)

Subsequently the abundance of each biodiversity indicator species can be assessed to determine their **On-Site Status Value** (Box 4):

**Box 4 – Determination of On-Site Status Value for Grey Partridges**

Number of Grey Partridge Pairs	On Site Status Value
1 to 2 Pairs	1
3 to 4 Pairs	2
> 5 Pairs	3

The overall **Impact Importance Weighting** for each biodiversity indicator species can then be calculated by multiplying the **Geographical Importance Status Value** by their **On-Site Status Value**. For example if five pairs of grey partridges were recorded at the surveyed site the calculation would be (Box 5):

**Box 5 - Example of an Impact Importance Weighting Calculation for Grey Partridges**

Geographical Importance Status Value (From Box 3)	3
On-Site Status Value (From Box 4)	3
Overall Impact Importance Weighting	9

A matrix is then used to collate and interpret this information multiplying the **Impact Importance Weighting** by the **Magnitude Value** for each identified impact. This helps the company to realise the overall significance of their ecological impact or to evaluate the relative impact of any one specific operation (Box 6). The assessment matrix is used to focus attention towards operations that affect either the ecological or biodiversity value on site. This will help to ensure that where significant impacts to site ecology and biodiversity are occurring, the activities causing the impacts are brought within the EMS.

**Planning**

At this point a landholdings strategy can be developed by setting biodiversity and ecological objectives and targets – these aim to conserve or enhance species and ecosystem biodiversity through management actions. The objectives, targets and actions for landholdings will be guided by the significant impacts identified in the matrix and by information on threatened habitats and species provided by sources such as local Biodiversity Action Plans. Ideally, ecological targets should be quantified, with set dates on which they should be met.

Overall, the objectives, targets and actions will ensure that there is no threat to, or loss of, native species, populations and ecosystems in the short term and will enhance ecological and biodiversity value in the long term.

**Monitoring**

Biodiversity and ecological value issues have traditionally been seen in qualitative rather than quantitative terms. This has presented difficulties due to the requirement for quantifiable elements in an EMS in order to assess the success of management interventions. However, a system for monitoring the biodiversity and ecological value of company landholdings can be developed using the selected ecological indicators used in the assessment matrix. Changes in indicator values can be used to measure performance and help companies obtain the information they need to manage their land assets more effectively. The aims of the system should be to:

- ❖ Address the company goals on biodiversity and ecological value;
- ❖ Show performance trends in this area;
- ❖ Provide information that can be used directly to improve performance.

Environmental consultants can be used to develop a list of quantitative performance indicators for an individual company and establish targets for each specific indicator. Once baselines for each indicator have been established, continuous improvement can be achieved by incorporating the monitoring information into an EMS review, thus moving the system forward.

**Benchmarking**

Companies should be encouraged to seek motivation and guidance from 'mentor companies' who are considered to be leading the way in integrating biodiversity and ecology issues into EMS. This process, known as 'benchmarking', has two main purposes:

- ❖ It motivates companies to become more committed to the active management and positive stewardship of their landholdings;
- ❖ A company can see how it compares with leading organisations whose performance it wishes to emulate.

Benchmarking offers an attractive path to improvement of the biodiversity value of company landholdings through the adoption of practices already proven to be effective. The higher-performing company also benefits by passing on innovations or techniques, which will result in reportable success.

**Box 6 - Overall Significance Assessment Matrix**

**Impact Identification Questions - Site management**

1. Does the Company regularly apply herbicide to its grassland ? (-3)
2. Does the Company leave a buffer strip around its grassland ? (-3)

		Biodiversity Indicator Species				
Impact Questions	Magnitude	Grey Partridge	Short-Eared Owl	Meadow Brown Butterfly	Etc	Overall Significance
Site Management		Impact Importance Weighting				
		9	6	4	Etc	
1	-3	-27	-18	-12	...	-57
2	+2	+18	+12	+8	...	+38
Etc	...	...	...	...	...	...
	<b>Total</b>	<b>-9</b>	<b>-6</b>	<b>-4</b>	<b>-19</b>	

**Conclusion**

A significant number of companies possess a large amount of land surrounding their offices and other business sites. In practice though, ecology, biodiversity and land management issues are often a poor relation compared to other issues such as waste and energy, for companies implementing environmental management systems. However, there is considerable interest in changing this pattern. Ecological issues that are significantly affected by the organisations activities can be identified using checklist and matrix methodology. In addition, there is no reason why quantitative performance indicators and benchmarks for biodiversity and ecology should not be incorporated within an EMS. This study provides a framework for fusing the biodiversity and ecology of company landholdings into an environmental management system and aims to further the message that ecology and biodiversity should be an integral, rather than a peripheral element of EMS.

**James Calow, M.Sc.**

Environmental Consultant,  
Middlemarch Environmental Ltd.,  
Stoneleigh Deer Park, Stareton,  
Kenilworth, Warwickshire CV8 2LY.

**Dr Philip Fermor**

Consultancy Manager  
Middlemarch Environmental Ltd

**Stephen Carter, M.Sc., MIEEM.**

Principal Ecologist  
Middlemarch Environmental Ltd

**Dr Mark Bateman**

Lecturer in Environmental Sciences,  
Coventry University, Priory Street,  
Coventry, CV1 5FB.

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