



*Central and Eastern Europe*

**Darwin Initiative Project No: 162/10/008**

**Building Capacity in Wetland Biodiversity  
Conservation in Estonia, Latvia, Lithuania,  
Poland and Russia**

**Report of Workshop 5**

***Management Planning and Monitoring/Reporting***

Aviemore, Scotland, UK  
25 – 29 June 2003

## **Eurosite:**

Le réseau des organismes pour la gestion du patrimoine naturel européen  
The network of organizations managing Europe's natural heritage

Report No: 82



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### ***Acknowledgements***

Special thanks to Eddie Idle (Insh Consultancy), Mike Shepherd and Paul Brooks (Scottish Natural Heritage), Ken Shaw (RSPB), and Tim Bines (Parnassia Ltd) for making all the arrangements, Carl Mitchell and Pete Moore of RSPB (Insh Marshes NNR), Siobhan Egan (Site Condition Monitoring Officer) and Katherine Burdsall (Lowland Peatland Adviser) of Scottish Natural Heritage, Desmond Dugan and Stewart Taylor of RSPB (Abernethy Forest NNR). What about Carl Mitchell & Pete Moore

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### ***Congratulations***

Congratulations were offered by the participants to Darius Stoncius for gaining his PhD and to Valdimarts Slaukstins and Janis Kuze for gaining Master of Science degrees since the last meeting.



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# 1: Workshop Information

## 1.1: Workshop location, host and attendance information.

**Location:** Aviemore, Scotland.

**Date:** 25 -29 June 2003

**Hosts:** Scottish Natural Heritage and the Royal Society for the Protection of Birds.

Scottish Natural Heritage (SNH) is the government organisation working with Scotland's people to promote the care and improvement of the natural heritage of Scotland, its responsible enjoyment, its greater understanding and appreciation, and its sustainable use.

The Royal Society for the Protection of Birds (RSPB) works for a healthy environment rich in birds and wildlife. It depends on the support and generosity of others to make a difference. It works with bird and habitat conservation organisations in a global partnership called BirdLife International.

**Attendance:** There were 23 participants from 6 countries as follows – see Annex 1 for details of names and addresses.

Estonia (3)  
Latvia (3)  
Lithuania (3)  
Poland (3)  
Russia (4)  
United Kingdom (7)

## 2: Project Background

The overall project objective is to help key individuals from Poland, Russia and the Baltic States improve understanding and practical skills in the management of wetland habitats. The project is lead by a consortium of leading UK conservation organisations - , Scottish Natural Heritage, English Nature, the National Trust, RSPB, the Wildlife Trusts - and *EUROSITE*.

This is a report of the fifth UK workshop which was held in Aviemore, Scotland and considered monitoring and recording needs for the management of wetlands.

### 3. Workshop Activities: Management Planning & Monitoring/Recording.

#### Wednesday 25<sup>th</sup> June.

Welcome to attendees from the Baltic States and Russia by the UK team.

#### Thursday 26<sup>th</sup> June

##### Session 1: Review

The overall programme and the progress made to date were reviewed. All agreed that substantial progress had been made in gaining further understanding of the management planning structure, the processes available for stakeholder involvement and their application for protected area management.

In the preparation of a management plan there are three phases which need to be fully integrated. They are:

1. the form of the plan - its content and format. This was considered in the first year of the project.
2. the management of stakeholders – who are they and how they will be dealt with and what potential difference/benefit this will make. This was considered in the second year of the project.
3. the recording and monitoring information – what information at what level of detail is needed by whom and for what purpose. This third phase was the subject of this workshop. In order to explore these needs a programme of two field visits had been arranged followed by in door workshops.

##### Session 2: Field visit 1

Insh Marshes National Nature Reserve (NNR) - an RSPB reserve - was visited to explore management and monitoring issues. (see handout at Annex 2)

##### Introduction

Insh Marshes NNR is owned by the RSPB and we were met on site by Carl Mitchell (Site Manager) and Pete Moore (Estate Manager).

The reserve stretches for 837 hectares beside the River Spey between Kingussie and Kincaig. It is considered to be the most important area of natural floodplain wetland in Britain and its unspoilt character supports a diversity of birds, plants and invertebrates. The area is designated as a SSSI, SPA, SAC, Ramsar site and National Nature Reserve.

The reserve is of critical importance for wintering birds and supports 50% of the UK nesting population of Goldeneye (*Bucephala clangula*) and is also important for migratory spotted crane (*Porzana porzana*). The reserve

is open all year and visited by local people and school children as well as tourists who use the local hotels. The RSPB provide guided walks and facilities for group visits.

A management plan, which includes a monitoring programme, has been produced with the help of SNH - any conflicts in objectives during the plan development were resolved through discussion. A monitoring report is produced each year and is used to feed information back into the management plan so that adjustments can be made for the following year's management. The monitoring returns are also used to assist with longer term monitoring e.g. to establish any effects of climate change and other trends. For rare species there are additional specific monitoring plans within the overall management plan.

### **Monitoring**

There is still much to be learnt about the survey and monitoring requirements of this site. Above all there is need to be clear as to why a survey or monitoring is undertaken and how the data/information arising will be used. The frequency and scale of natural feature recording linked with the recording of management activity is regarded as critical. The bird, plant and insect species that have been selected as priorities for monitoring are regarded as indicators of the status of the site. Currently local experts are used to help provide a monitoring return and there is much sharing of information within RSPB and with the Scottish Wildlife Trust and SNH. The BTO WEBS counts are used nationally and internationally by feeding the information to Slimbridge and to Wetlands International in Wageningen. Feedback from the bird monitoring, mostly in the form of trend data, is obtained annually and is fed back into the management plan. The reserve plan is reviewed every two years using all the information available.

The monitoring information also enables comparisons and degree of fit with flyways and breeding passage bird movements and numbers across Europe to enable a start to be made on cause and effect for any observed changes.

There is no funding from government for monitoring and there is at present no government check on the status of Scotland's wildlife. About 10% of the Insh Marshes management budget is spent on monitoring. There is no predator control at Insh and the effect of predators such as crows was unclear and requires study.

### **Grazing**

The reserve - largely of peat based soils (40m deep in places) - is managed with six local graziers using cattle and sheep in controlled numbers within mobile electric fences from spring to autumn to keep the area free from trees and to maintain swards of an appropriate height. Three of the graziers are enthusiastic about the natural features of Insh Marshes and content with the grazing conditions whilst the other three graziers are ambivalent. Contracts are renewed each year for grazing and, within the contract, fertilizers are precluded, the type and density of stocking is specified. Grazing generally starts in May each year but is dependent on the conditions of the sward, degree of winter flooding etc. Grazing has not proved a problem with regard to the success of breeding waders.

## **Hydrology**

In the 1850s there was an attempt to drain the area with embankment of the river but breaches occurred frequently and the scheme was dropped. Now the flood plain floods naturally several times a year although remnants of the embankments are still present. The flooding which can make much of the site up to 2m underwater especially when spring snow melt is underway helps keep fertility levels high and serves to protect areas downstream from flooding by holding back water.

Insh Marshes is a good example (oh no, not another “good example”) of a sustainable wetland in that the water levels are unmanaged and is a useful demonstration site for that purpose.

It soon became obvious to the RSPB after acquiring the site that a monitoring system for measuring the hydrology was required which reflected what was happening on site. Stirling University is carrying out hydrological studies and a series of dip wells and piezometers (measuring water ground pressure) have been installed across two management compartments in the site. Readings are taken manually every 2 weeks alongside a series of ditch water measurements across the whole site. For the two dip well compartments data is now available for four key parameters rainfall, evapotranspiration rate, water table height, lateral water movement – all over time and this data is contributing to a hydrological model for the whole site. It is planned to extend the detailed recording as it is yielding useful data.

No decisions have yet been made as a consequence of collecting this data but as the site is ‘natural’ the RSPB consider that no decisions need to be made – this is simply explanatory information describing the hydrology of the site.

There was considerable discussion by the group about the man made features on the site – ditches and river embankments – and whether these should be removed. They were considered by some participants to be intrusive man made features not fitting with the description of a natural site. However from the management point of view the RSPB consider that they do not interfere greatly with the natural flooding process and it would not be cost effective to remove the embankment and damaging to the biodiversity to remove the ditches.

## **Bird monitoring**

In spring time Peter and Carl spend 6 hours each morning checking on the waders and ensuring that conditions are okay for successful breeding. In this way they have gathered a detailed knowledge of what is where and when it is there. They are not aware of the breeding success – numbers of young birds successfully reared - but believe that numbers are staying about the same through their ringing programmes.

The question of whether this site is a sump or reservoir for birds and other species, and the function/context it has in the wider environment is important. The bird populations have been monitored for about 30 km along the Spey valley and the function of Insh Marshes considered – there were 800 pairs of waders at Insh compared with 2400 pairs outside the site on about 50 other sites. Insh was not the best site in terms of density. The RSPB is looking to ESA (Environmentally Sensitive Area – a government countryside management support) payments to ensure appropriate

management support of the areas along this corridor outside Insh Marshes so that the breeding successes on the site can extend out of the site.

### **River Spey**

The river Spey is itself an important biological resource with salmon (*Salmo salar*), lamprey (*Lampetra fluviatilis*), otter (*Lutra lutra*) and pearl mussel (*Margaritifera margaritifera*) present. It is 300m above sea level and is slow moving and meandering dropping only 2.5 metres over several kilometres. The RSPB maintain a separate monitoring programme for the river - nonbreeding and breeding birds (especially ducks) are recorded on one day a month, for mammals and emergent vegetation a simple inventory is maintained and the lamprey is recorded on a six year cycle.

## **Session 3: Review of field visit – observations and lessons to take home.**

### **3.1 Observations from the Darwin project team on the half day spent at Insh Marshes.**

- RSPB staff were open and hospitable.
- The key issues were identified well.
- Could usefully have used the large scale map that was available when explaining the site.
- Helpful to have the prepared handout.
- Much of the monitoring is very recent.
- There are gaps in the information.
- It was unclear whether the results from the experimental work were being fed back to site management.
- Not certain that there were effective linkages being made between grazing /birds etc. and monitoring.

### **3.2 Lessons for the Darwin project team arising from the visit to Insh Marshes National Nature Reserve to take home:**

- Select monitoring objectives carefully.
- Be clear what use will be made of the data.
- Do we really need it – if not why do it?
- Analyse cost benefits – need to be SMART.
- Good to have an external examination of monitoring.
- Involve volunteers but watch data quality and standards.
- Ensure effective feedback to site management.
- Timescales are important – may take a long time to find out – outside the planning timescales.
- Use ground and aerial photographs at key times as a monitoring tool.
- Monitoring is a never ending story with unclear costs.

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  - Objectivity welcome – opportunities for model development.
  - Gaps need to be identified and decisions made about filling them.
  - Dynamism in sites may affect targeting of monitoring.
- Need for rigour for upward challenge.
- Historic data can be invaluable.

## Session 4:

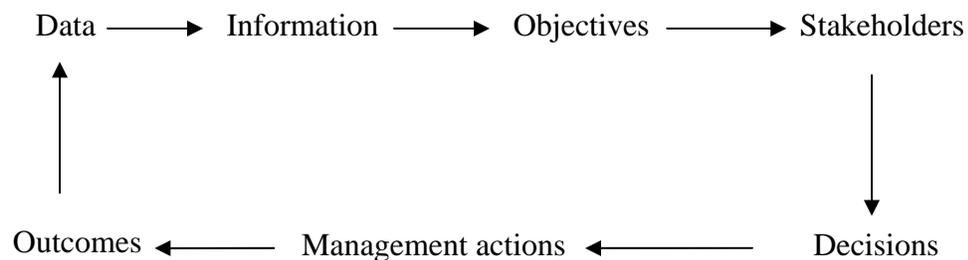
For any protected area:

- What questions do you need to ask about management?
- What information do you need to answer these questions?
- What must be done to obtain this information?

A short session reviewed these three questions and derived the following:

1. Is the management right i.e. delivering the objectives of the protected area?
2. Is it value for money?
3. Have targets been set and are they the right/best possible.
4. Can decisions be made as a consequence?
5. What is the decision making process?

As a consequence the process for using monitoring data and information, remembering to involve stakeholders prior to any decision can be shown as in Figure 3.1 below.



**Figure: 3.1** Showing the interaction of monitoring information on the management action in a protected area.

**The two key points from this are:**

- 1. that information is required to make the decision and not that the decision is made and then driven or supported by information!**
- 2. that data is not information!**

## Session 5: Completion of Log-frame for each country project.

This involved the:

- Identification of measurable indicators of success and ways of measuring them.
- Plenary presentations of work so far and feed-back.

Each country team worked with their UK facilitator to prepare a log-frame or equivalent using a common format. The following are the initial outputs presented at a plenary session – all countries found it hard to complete this exercise in the time available.

### 1. Estonia

<b>Goal</b> Sustainable Development of a coastal meadow protected area	<b>Measures</b> Maintenance of biodiversity	<b>Verification</b>
<b>Purpose</b> At least maintenance of communities and species	Favourable Conservation Status of habitats and species	
<b>Results(Outputs)</b>		
<b>Activities</b> Management	Inventories	

### 2. Latvia

<b>Goal</b> Implementation of national law on habitats.	<b>Measures</b>	<b>Verification</b> Annual report per site and for the country.
<b>Purpose</b> Heathland biodiversity.	Percentage of heath protected.	National data base and area of land covered by heath.
<b>Results (Outputs)</b> The area of heath in favourable conservation status.	Vitality of heathland % of species per metre % of <i>Calluna vulgaris</i> per metre.	Surveys/relevees and field work checks of the data.
<b>Activities</b> Burning and cutting.	Area burnt and cut per year.	Photographic checks.

### **3. Lithuania**

<b>Goal</b> Maintain the species rich grassland biotope in Lithuania (and Europe).	<b>Measures</b>	<b>Verification</b>
<b>Purpose</b> Maintain rare grasslands in Lithuania.	Area of grassland maintained.	Field surveys.
<b>Results (Outputs)</b> Area not declining.	Species composition and hydrology does not change.	Natural hydrological regimes.
<b>Activities</b> Keeping traditional management.	Number of farmers involved in hay making.	Area used for hay.

### **4. Poland**

<b>Goal</b> Protect and enhance two international species – the corncrake and aquatic warbler.	<b>Measures</b> Increase in the European populations of these two birds.	<b>Verification</b> European census figures/returns for both these species.
<b>Purpose</b> Maintain and enhance the sites for these species.	An increase in the site to 20 corncrakes and 25 aquatic warblers.	Annual surveys of both species.
<b>Results</b> An increase in hay meadows to 200 ha and sedge beds to 140 ha.	Achievement of the increase in area.	Annual report.
<b>Activities</b> Active management such as cutting.	Partnership with farmers.	Voluntary effort.

### **5. Russia**

<b>Goal</b> An information base from which decisions can be made.	<b>Measures</b> 1. Quantity of wrong decisions. 2. % of right and wrong decisions.	<b>Verification</b>
<b>Purpose</b> Collect all available information.	1. No more information to collect. 2. Gaps identified.	

<b>Results(Outputs)</b> An improvement in decision making.	1. Success of fund raising. 2. Quality of the relation with stakeholders.	
<b>Activities</b> Assessment of information and plans for future monitoring.	1. An assessment of expert's qualifications. 2. Production of the future management plan.	

## Session 6: U.K. procedures for monitoring - a presentation by Scottish Natural Heritage (SNH).

This was presented by two speakers from SNH.

The first speaker was Siobhan Egan of SNH's Aviemore office. The presentation she gave is provided on the CD version of this report.

Siobhan is one of eleven officers in Scotland responsible for Site Condition Monitoring on Sites of Special Scientific Interest (SSSIs). The eleven staff work as a team securing common monitoring standards across Scotland i.e. ensuring consistency in standards of monitoring both geographically and across habitats and species. This is coordinated by a Site Condition Monitoring manager based in Edinburgh. SNH's annual budget for this work is £6 million for contract employment plus the permanent staff salaries.

In the East Highland area, where Siobhan is based, there are c. 100 SSSIs to assess many of these being SAC and/or SPA and/or Ramsar sites. An analysis of the sites and features in the East Highlands is given below.

<u>Designation</u>	<u>Number of sites</u>	<u>Number of features</u>
SSSI	66	280
SAC	24	227
SPA	20	141

Figure: 5.1 Protected area designations, the number of sites designated and the number of features present within each group of designated sites.

If the overlap and duplication between designations and features is taken into account there are 500 features that need monitoring in the East Highland region which is one of 11 regions in Scotland. The nature conservation features of East Highland region amount to 10% of all of Scotland's features in terms of type and extent. The features vary from single species e.g. dragonflies to complex habitats e.g. woodlands and grasslands. The programme is set up to enable reporting in six year cycles, the first of which finishes in 2004 – reporting in 2005. To date one third of the whole programme is currently complete. The contractors undertake some 50% of the work using common methodologies for a given set of features with predetermined criteria for each feature as to whether they are in favourable ecological condition. Taking fen/marsh/swamp as an example of a habitat grouping, 35% of features have been monitored in East Highland and 71% of

these were in favourable condition.

The second speaker was Dr Katharine Birdsall who is the lowland peatland adviser for SNH based in their Head Office in Edinburgh. Her presentation is provided on the CD version of the report as Annex 2.

Katharine provides advice across Scotland for all lowland peatland habitats which in Scotland are mostly raised bogs and fens. She advises on the assessment of the plant communities (*indirectly on animal communities through seeking the advice of species advisers*) they support, site selection for designation and the management and monitoring of these habitats. The advice includes consideration of hydrological issues. She is actively engaged in training staff in SNH as well as providing advice to them. Katharine is one of a number of scientific staff in the agencies who work together across the United Kingdom establishing common standards under the guidance of the Joint Nature Conservation Committee.

### **1. Why monitor?**

The UK site condition monitoring programme that Siobhan has described is a formal commitment to government and is undertaken using common standards across the UK devised under the common standards agreed with the JNCC. This need arises from the Environmental Protection Act (1990) and other EU legislation with the first formal report in 2005.

New guidance for wetlands is in preparation as the initial draft guidance that was prepared has proved inadequate for the comprehensive assessment of the diverse range of wetland habitats found in the UK .

### **2. Monitor what?**

The scale of the task in Scotland is huge with 425 fen/raised bog features over some 333 SSSIs. The total area and extent of these features is not currently known and wetlands have proved very complicated with regard to defining their qualities and extent. In the UK raised bogs and fens have been classified currently into ten discrete habitat types which are:

- |                        |                              |
|------------------------|------------------------------|
| 1. Raised bog          | 2. Floodplain fen            |
| 3. Springs and flushes | 4. Open water transition fen |
| 5. Wet woodland        | 6. Valley fen                |
| 7. Basin mire          | 8. Alkaline fens             |
| 9. Calcareous springs  | 10. Fen meadow               |

### **3. Dealing with wetland diversity**

Wetlands are diverse habitats and there are four key aspects to consider in any monitoring programme for them:

- water quality
- water quantity
- change through time
- size

A monitoring programme has been developed which focuses on plant communities as descriptors for combined influences and utilises the coding system described in the National Vegetation Classification (Rodwell 1991). These

vegetation units are used as indicators of good status – see Annex 3.

#### **4. How will monitoring of condition take place?**

Generic targets are devised for the following parameters which are recorded in the field for each of the NVC types:

- Extent of habitat
- Component wetlands and key vegetation types
- Habitat and vegetation structure
- Vegetation composition: positive indicators and negative indicators
- Indicators of local distinctiveness

There are, however, a number of outstanding issues which need to be resolved before the methodology is finalised. These include how to deal with:

- ‘fitting’ diverse wetland sites to the NVC classification.
- developing a methodology to deal with mosaics and transition habitats.
- water quality which is reflected as a surrogate factor by the quality of the vegetation.
- ensuring minimum standards are properly met across Scotland.
- development of a trigger mechanism for further more detailed monitoring following the first broad assessment.

#### **5. Next steps**

These include the issuing of new guidance to SNH staff supported by a training session, further refinement of the methodology in the light of experience. The operational constraints of undertaking such a large task on a routine basis needs continuous assessment and gaining the agreement of the agency chief scientists to any revised scheme is critical.

#### **Country comments and discussion.**

Following the presentations comment and discussion was invited and the following summarises this lively session.

**Question:** What time will you spend on monitoring each site?

**Answer:** A formula will apply because of the resource constraints – there will be an allowance of 1.5 days per site.

**Question:** Will there be a map of the site or what is the outcome/product?

**Answer:** The results will go into a data base which will be used for reporting to government. Area Teams then use this information for assessing favourable condition.

**Question:** Are the staff sufficiently skilled?

**Answer:** We have found that there is an issue of skill level in our Area Teams – we had assumed any scientist employed by SNH could undertake this work effectively but it is proving hard to establish a common minimal standard and there is a continuing need for expert support/advice.

**Question:** How can you find experts to help you with difficult matters e.g. Sphagna identification?

**Answer:** We need sufficient botanical skills for staff in SNH. Area staff may well

become specialists for given habitats for a team and this may mean specialist courses to help them gain the necessary skills.

**Question:** How do you recognize a feature?

**Answer:** From the citation (the formal description of the wildlife interest of the SSSI) usually, although we have found that some are not detailed enough to accurately describe all the important wetland features on the site and need reinterpreting before the site can be monitored.

**Question:** Why a six year cycle – how did you choose this?

**Answer:** It was specified by the Protection Act I referred to and is also needed for Compliance with the Natura 2000 reporting. The work may take more time the first time round as it is often laying down a baseline for each site.

**Question:** Whose responsibility is it to undertake all this work?

**Answer:** The Area Teams in each Country Agency, although some teams have opted to contract out some of the work.

**Question:** What decisions do you want to make and how does this information help make the decision?

**Answer:** It gives us the opportunity for the first time to find out what is right and what is wrong in terms of the “notified” features of interest for all SSSIs across Scotland. The next stage is to understand any problems in site condition so they can be resolved – part of doing that may involve further monitoring. By analysing the site condition problems, policy changes can be identified to help deliver favourable condition for SSSIs, SPAs and SACs.

Both speakers were thanked for their effective presentations and the open way in which they had answered (often difficult) questions. The group had found these talks stimulating and enjoyable and learnt much that could be applied in their respective countries.

## **Session 7: Review of the day.**

The purpose of the day had been to help with considering how to develop the monitoring/recording for protected areas. The group was asked to identify what they had liked about the day, what the lessons for them were and what could be improved

### **1. What had everyone liked about the day?**

- naturalness of the Insh marshes
- weather
- two last presentations
- discussion round the table
- information and discussion on the field trip
- recognition of the need for changing goals and possibilities
- comments made by the UK team especially about the danger of concentrating on targets and not considering the wider context.
- concept of an amber light ( cf. traffic lights) – a pause to enable information collection or consideration to be given as to whether to stop something or start something - was helpful.

## 2. Lessons from today included:

- Need to rethink carefully the site monitoring.
- Group was needed on this kind of topic.
- Concept of positive and negative indicators.
- Common problem of consistent methodologies.

## 3. What could we improve?

- A better room in which to work
- More disciplined field visits with five minute discussion then walk on as opposed to half an hour's discussion and then walking 100 metres.
- Need to keep moving and avoid self indulgent discussion.
- Need to be more objective about the purpose of each visit.

**Friday 27<sup>th</sup> June**

### **Session 1: Field visit 2**

Abernethy Forest National Nature Reserve (NNR) – an RSPB reserve -was visited in the morning to explore management and monitoring issues. (see handout at Annex 4).

Abernethy Forest NNR is owned by the RSPB and we were met on site at the Forest Lodge (listed building built in 1881) by Desmond Dugan (Site Manager) and Stewart Taylor (Warden). We were taken on an open trailer to a central viewing point to provide an informative background against which the Abernethy reserve was described.

#### **Stop 1 - introduction**

The reserve is large in Scottish terms extending over 13,713 hectares. The strategic objective is to conserve the scenic, biological and geological landscapes of Abernethy and demonstrate sustainable land management without compromising the contribution to the local economy. In short the aim of the RSPB's management is to safeguard the international site for its biological and geological features.

The area surrounding Abernethy National Nature Reserve (NNR) is rich in landscape and wildlife and includes a number of designated areas – Delwood and Cairngorm NNRs, two SSSIs, two SPAS, two SACs, an Environmentally Sensitive Area, a National Scenic Area (equivalent to an Area of Outstanding Natural Beauty in England) and a Ramsar convention site - all of which now lie within the Cairngorm National Park. Although dissected into separate blocks, covering a large area, the pinewoods of the Spey and Dee valleys in the central highlands represent part of a once continuous tract of forest. Pine woodland made up of Scots Pine (*Pinus sylvestris*) is the most local of all the major forest types of Britain, yet these examples are among the most extensive of all areas of native British woodland.

The pine woodland lies between 170 and 640 metres on coarse sandy and gravelly drift soils derived from granite with some schist material which are base deficient

and acidic. Topography varies from the pinewoods on steep rocky slopes through gorge woodlands to extensive areas on gentle slopes. This irregularity of glacial topography – the area was glaciated 10,000 years ago – gives marked variation in drainage with waterlogged hollows and channels amongst the morainic countryside similar in nature to the forest mires of Scandinavia. Although there is a general appearance of naturalness these pinewoods have been managed for commercial timber production for many years with a good deal of replanting. In Abernethy of the total of 4000 hectares of pine woodland some 50% has been planted in the last 100 years. One of the major programmes on the reserve is to remove the planted element and move these areas back to a seminatural condition. The remaining part of the reserve – outwith the pine woodland - is made up of 8/9000 hectares of open *Calluna vulgaris* heath with a higher arctic/ montane/ alpine zone.

The reserve supports some 3550 plants and animals, 242 are Red Data Book species and 350 are scarce nationally of which, 49 are BAP species with active programmes. Each year there are some ten new records – mainly invertebrate records - added to the reserve species lists.

There is one small farm in the reserve, a number of right holders, three families live on site permanently and there are two cottages occupied in summer. The reserve has 10 full time staff and 12 seasonal staff. There is a major contribution to the local economy through deer hunting and processing, timber extraction, visitors and tourism linked to Bed and Breakfast. Overall it is estimated that there are the equivalent of 80 full time employees reliant in some way on the Abernethy reserve and its products.

### **Pine regeneration.**

The RSPB acquired the site 14 years ago and has since then been seeking to allow the pine to expand to its natural range and remove the plantation elements. There is an agreed national strategy for Scots Pine regeneration between the Forestry Commission, SNH and RSPB. The main problem progressing this strategy has been the expansion of Red Deer (*Cervus elaphus*) which have trebled in numbers in the last 40 years with 150,000 individuals in 1960 and 400/500,000 now. The deer browse the pine seedlings especially in spring after a hard winter when young shoots are present and this severely restricts their growth. At Abernethy there are 800/1000 Red Deer living on site and to control the numbers there is a regular cull of 30/40% starting with females (hinds) and followed later in the season by males (stags). In the last year 444 Red Deer were culled yielding an income of £15000 at a cost of some £25,000.

There is a complex system of monitoring in place on a three to five year cycle for pine regeneration. This involves vegetation monitoring using transects and assessing the effects of Red Deer by using exclosures. The monitoring of browsing of Scots Pine indicates that 11% browsing of terminal leaders is a common level. Annual monitoring of height gain increments takes place and there is extensive use of ground (fixed point) and aerial photography. The monitoring work is funded by a mixture of Forestry Commission woodland grant scheme, EU Life funding and a BP/Scottish Forest Alliance which in total amounts to £50,000 per annum which pays for half of the monitoring programme.

The deer population has been estimated at Abernethy using dung counts along transects. A hand out with summary data for the period 2000 to 2003 was provided which derived deer population statistics for both Red Deer and Roe Deer (*Capreolus capreolus*) from dung counted along 147 25metre line transects

arranged in a systematic grid. (see Annex 5).

A hand out of the operational objectives for research was provided for the group which lists the various research projects that are underway on the reserve. (see Annex 6).

### **Plenary session.**

**Question:** What do the locals think of what you are doing here?

**Answer:** Initially I think there was resentment because of a change of ownership and management direction. The RSPB was seen as a green organisation but has slowly become accepted by the locals and is now recognized for the management that it is seeking to put in place. This has been helped in part as traditional pursuits in Scotland have been declining and ecotourism is coming to the fore. There are no restrictions on access or types of access to the reserve except for motorbike scrambling which is not permitted.

**Question:** How do you know that's what the locals think?

**Answer:** Through working with and alongside the locals who use the area. Also when we have a new management proposal we consult with them so that at the very least the locals understand what is intended even if, initially at least, they don't agree with what is proposed. We have had University College, London on contract carrying out an audit/assessment of what the local community view is of our management.

### **Stop 2 Scots Pine regeneration experimental area**

In this area – some 1500 metres from our first stop – the effects of the deer cull described in stop one is well shown with a dense heather field layer developed. It has been known for a long time that in pine woodland an open canopy with more light will provide a high heather (*Calluna vulgaris*) cover while less light will enable bilberry (*Vaccinium myrtillus*) to dominate. The rate of pine regeneration has also been reduced dramatically with little new recruitment and no one to two year old seedlings present. This is attributed to the dense bryophyte/heather cover linked to the lack of an underlying pine seed bed.

The Capercaillie (*Tetrao urogallus*) and Black Grouse (*Tetrao tetrix*) production on the reserve has been less than on 11 other shooting estates in Scotland which are managed for these species and where monitoring takes place. The Abernethy reserve should be at least as good as these estates with breeding better than just at maintenance levels. One explanation for this is that until recently the rainfall in June has been high (50mm) although this year it has been only 15mm. It is thought that the dense heather layer prevents wet chicks from drying out and this causes early mortality.

In order to help both pine regeneration and to boost bird production a small scale experiment has been set up using three different methods of controlling heather – fire/cattle grazing/cutting. We were shown a 50 metre square area that had been repeatedly cut. It was apparent that the opening of the *Calluna vulgaris* canopy had stimulated other shrub species – here bilberry – and that the mosaic created suits chick feeding better with open and closed areas providing feeding and sheltered areas as well as enabling pine seedlings to be more easily established in the more open shrub layer.

This autumn, following these simple field trials, it is planned to manage 300ha over the next ten years in a mixed regime of cutting and burning for the benefit of both pine regeneration and Capercaillie/Black Grouse production linked to the ongoing Red Deer cull. This proposal is presently waiting on the agreement of SNH to proceed.

A handout on the effects of deer browsing of Scots Pine regeneration is provided at Annex 7.

In summary the trials we were shown followed the sequence outlined in figure 6.1 below.

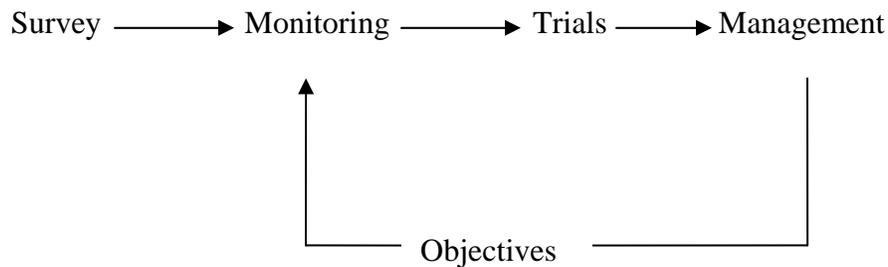


Figure 6.1 An interpretation of the way in which information is being used at Abernethy to determine management.

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### **Plenary session.**

The group was interested to know if more birds are produced successfully is Abernethy acting as a sump or reservoir – in other words is there a net ‘export’ of birds to other adjoining areas? It was made clear that the RSPB is not trying to farm Capercaillie here. They have the biggest population in Scotland - 20% of the Scottish population on the reserve – and need to at least maintain that population with a view to birds moving out of and settling naturally over a wider area than the reserve. This they hope will happen as the pine woodland regeneration programme extends. The Capercaillie and Black Grouse populations monitoring is on a five year programme. The RSPB hope in 20 years to have succeeded with the Capercaillie and enabled a sustainable population across Scotland. It is important to understand that the Capercaillie is one of a small group of birds which also includes Black Grouse, Cross Bill (*Loxia curvirostra*), Crested Tit (*Parus cristatus*), Golden eagle (*Aquila chrysaetus*), and Osprey (*Pandion haliaetus*) that are the equivalent of big game and people specifically want to see them. Currently there are 3000 visitors a year to view Capercaillie from a specific hide built for the purpose.

### **Stop 3 – Mon Dhuie**

We visited Mon Dhuie at the northern end of the reserve to view more woodland management with extensive cutting and replanting for pine woodland restoration. Extensive planting of conifers had taken place in the 1970s with the advent of heavy machinery able to drain extensive areas. To help reestablish Scots Pine in the reserve a European Life Project had been undertaken which enables felling of commercial blocks and appropriate reinstatement. The RSPB is aiming for 150 ha

to be continuous cover forestry within the reserve as a demonstration site although within this there may, over time, be some small areas cleared.

The first job on felling the timber was to remove it! Some 90 ha of Lodgepole Pine (*Pinus contorta* var. *latifolia*) was cut down and removed – this was not a commercial crop and was only achievable with the extra funding provided by the Life Project – the cost was £1.5/2000 per hectare. Where possible a harvester was used but in practice much was done by hand. Once removed there were two remaining problems – first the brash (branches) and second the drains put in either during the planting programme or when the site was used as a croft c.1887. The brash was left on site – originally it had been planned to clear it but the cost would have been too high and this activity was deleted from the project. It was found that it takes up to ten years for the brash to disappear and all that is then left of the original tree cover are the tree stumps which will also eventually rot and disappear.

The main drains through the site were plugged at intervals, creating a zip like pattern when seen from the air, by using a high-mac tractor plugging the drains with peat from the immediate area. We were shown a series of aerial photographs from 1947, 1967 and 2000 which showed the major changes on this part of the site very well and could be used for assessing progress and as an aid to communicating the programme.

The RSPB had worked hard to inform the local people and the local interests – initially there had been concern that with the tree removal and drain blocking there would be an increased risk to the local village of flooding. The biggest problem had been in the southern part of the site where the plugs in the ditches were recent and at the onset of rain fourteen collapsed leading to the flooding of agricultural land. To ensure this does not recur and to assure the local people pile dams had been added which provide for a higher water table at the lower part of the site and to date there has been no further problem.

The full extent of this project is unknown – it could go on for years and yields re wildlife value. So far the RSPB have worked in the most damaged areas and have monitored vegetation and measured water levels using dip wells. Standing water at the surface and the presence of *sphagna* are the two measures that are used as indicators of success in meeting the objective. The speed at which the bogs could recover at least to this standard was a surprise. In the longer term it is expected that there will be some pine /birch cover over the reinstated bog. This part of the reserve was not originally part of the SSSI/SAC but as the project progressed the features developed sufficient quality for the area to be designated.

Biological recording and monitoring using volunteers was described by Stewart Taylor. The RSPB use experienced professionals for the rare plant and animal groups to ensure accuracy but are more willing to accept new records for common species especially when the species is well known and easily identifiable.

Professionals are sent specimens when these are available to confirm an initial identification and over the years RSPB have built up effective relations with a number of professionals, largely in universities, which enables this.

The RSPB aim is to develop a habitat mosaic over the reserve in which all species can find a place but, although the reserve is large in UK terms, with 700 known species it is not easy. For example over time the red throated diver (*Gavia stellata*) may not be present on the reserve since its specialized habitat could disappear. As there is a sufficiently high population elsewhere in Scotland this is not a concern to the RSPB.

### **Plenary session.**

The group was interested to know what process was gone through prior to undertaking management changes on the reserve. It was explained that this is a two year process which starts in the local community/villages. At these meetings the RSPB's management is explained – what the RSPB is thinking of doing and why. The RSPB work with SNH/FC and the local community to develop a set of objectives and policies e.g. conserve the Capercaillie, conserve bogs. From that there then develops a monitoring programme e.g. count Red Deer, count the Capercaillie. When sufficient information has been collected then 'what we are thinking of doing' changes into 'what we would like to do' and consultation starts again. Major changes in management are introduced about every five years subject to the process outlined. Because of the size of the place and the number of consultations required the management has to be selective so for instance at Abernethy the RSPB do not do a great deal with a wide range of birds but concentrate on selected important species and look to ensure their future. If other species benefit as a consequence that is a bonus.

### **Stop 4 Garten Wood**

This was one of the first blocks of land that the RSPB acquired at Abernethy. It was not as good a quality of Scots Pine woodland as other parts of the area which were acquired later. Basically Garten Wood is a wet woodland area on the valley floor - one of a series of oligotrophic valley mires in glacial channels. It has a complex hydrology with mire, poor fen and rich fen present. The site was originally drained in 1972 and following acquisition it was made wetter by blocking up drainage ditches by hand. This work has been undertaken on an ongoing basis across the whole site and some of the dams that were first installed 15 years ago now need replacement. In addition to primary dams a series of secondary dams were also added to hold further water back lower down the system. The objective was to recreate wet areas adjoining existing bog areas to make more of a wet wood land fen mosaic. The system has responded well and grown considerably forming a wetland mosaic. As a result of this management some species have been boosted in number notably *Coenagrion hastulatum* (Northern Damselfly - which is rare in the UK - confined to a few eastern Scottish sites) whilst Golden eye (*Bucephala clangula*) which used to breed here is now moving away.

## **Session 3**

### **Review of the day.**

On returning to the hotel the field visit was reviewed – results & lessons - by briefly looking at what was liked and what lessons could be taken home.

## **1. What had everyone liked about the day?**

- Large site owned by an NGO
- Tractor and trailer transport
- Experienced, knowledgeable and determined guides
- Clear focus
- Relevant data collection
- Do something with data
- Management was flexible and adjusting to circumstances
- Bigger picture in place
- Stakeholder co-operation
- Truthful/honest and realistic discussion

## **2. Lessons from today that we take home included:**

- Refine the monitoring requirements – no need to do everything but be selective.
- Use key species as indicators – select key species which are indicators.
- Make the monitoring specific to the site problem/issue.
- More natural - less monitoring?
- Cautious/careful about goals/intentions.
- Robust monitoring data which is reputable.
- Other effects e.g. of a management activity elsewhere.
- Monitoring use for reporting especially financial, management and for locals.
- Natural process results – analysis - have a choice of objectives.
- Timescales in planning.
- Use what works.
- Avoid too much monitoring – science versus feel.
- Culture influences objectives.
- Think globally, act locally.

**Sat.28<sup>th</sup> June**

**Session 1:**

Group work on monitoring was undertaken working in country groups with the UK partner. The intention was to concentrate on appropriate monitoring programmes to assist participants with their management plans on their return home.

Presentation of work achieved by each country was followed with suggestions on how to progress further and what might help.

**1. Poland**

A monitoring programme was considered for Czannocin spelling check! – a 400 ha coastal wetland site on the Baltic in Poland with aquatic warbler and corncrake as the key species. The overall objective is to increase the numbers of these two bird species. A simple key habitat map would be drawn up and the items in the table monitored.

<b>What</b>	<b>How</b>	<b>Who</b>	<b>Use of data</b>	<b>Cost</b>	<b>Quality of data</b>
Water level	Network of sample points.	Students Master degree	Manipulation of water levels	Low equivalent to the cost for a student for 30 days a year	+/- 1 cm.
Cut and grazed area & quality.	Field survey annually	Staff	Control of contractors	Three days per year	+/- 0.01ha
Habitats	Field survey every five years.	Not decided yet	Evaluation of objectives and correction of plan assumptions.	10 days	90% of accuracy
Bird population No. of aquatic waders No. of Corncrakes	Annually.	RSPB and volunteers	Evaluation of objectives and correction of plan assumptions plus presentation for sponsors.	5 days	+/- 0

The workshop participants liked this plan as it was clear, simple and achievable.

## **Suggestions/comments and ideas that might help:**

### 1. Why don't you use aerial photographs?

These would be useful to have but they are not taken frequently enough by the State and we therefore need to take special sets.

### 2. Consider the context of the site

A plan for the whole estuary exists and we are aware of areas with potential for these two species

### 3. What about water quality issues

We need to have some water first and then worry about quality of water after that.

### 4. Continuity of monitoring is a key issue to ensure data quality and availability.

5. Is the data quality okay - suggest you could check as you proceed and that an overview of quality is needed

6. Would you always have RSPB staff there – no we need to train up staff whilst they are there

7. What use is the information – water levels immediate usage and the remainder would be used over several years.

## **2. Russia**

The Russian team looked at the development of a generic programme for any Russian protected area and did so by asking simple questions.

### **1. Why monitor?**

To:

1. Have the information required for site management.
2. Enable the current position to be understood from historic data.
3. Measure changes after management activity.
4. Provide confidence to the organization and funding support.
5. Provide for sustainable development

### **2. What should be monitored?**

Two key aspects – biodiversity and the local economy:

1. For biodiversity – which should at least stay the same - there is the need initially for a simple inventory which assesses the quantity and density of species.

A subset of key species should be selected to help with monitoring. Also for the area of habitats initially a simple map based system is required as an inventory of what is where and from that key habitats and factors selected which measure habitat condition.

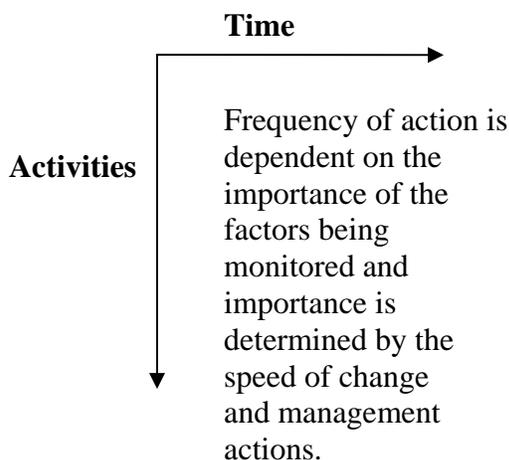
2. For the local economy - this was not worked up in the time available the group concentrating on biodiversity aspects.

### **3. Who should do it?**

Our staff, volunteers and state agencies.

### **4. When should it be done?**

There is need to prepare a plan based on:



### **5. How should it be done?**

A system is needed for data collection, processing , presentation and storage on a routine process basis.

### **6. What is the cost?**

This can be expressed as who pays for what and what do they get for their money?

The key players here are the government, NGOs and grant giving bodies.

### **7. So what is the benefit?**

More efficient and effective management

### **Suggestions/comments and ideas that might help:**

1. This is excellent in theory but needs an action plan specific to each site to get action. It is important to move from this generalized picture to real examples. You could also consider starting at the other (site) end where you do something practical. It is important to have both the framework and the action as the theory may be changed by the practice.

2. There is need to involve stakeholders. They have not been too involved in monitoring – we could involve school children and hunters (e.g. moose numbers). It was suggested that volunteers who are better prepared need to be used and perhaps those involved with the local economy.

3. What have you done in the last few years for practical monitoring?  
We have tried to collect what we can (data/information) to an appropriate standard and we need staff to do this which we are trying to recruit. We have

specialists from outside protected areas who visit but they are not organized yet into a system. There is as always a big difference between what we would like to do, must do and can do.

4. Can you simplify this plan and at the next stage include the local economy. Yes, indicators could include simple measures to show what is happening – number of tourists, level of funds in the area etc. The local government is collecting such information and we can use this existing data.

### 3. Estonia

The Estonian team had considered the monitoring needs of Haademeeste – a coastal meadow system. This is one of ten Life Project areas each with their own monitoring programme and all part funded by government. .

Who	What (standards/quality)	Cost	Review	Process
Government ↓ Scientific institutions or NGOs ↓ Individual contractors	Size/area?  200 ha out of 500 ha.  Representative habitats  Mapping territories of all breeding waders mapped and this repeated every 3 years. Waders are being used as indicators  2 counts in May and June  by skilled surveyors	6 man days  - admin - fieldwork - reporting + Transport + Accommodation  Minimal costs of £150 per annum	3 years cycle fits the existing reporting schedule	Data/analysis/reports ↓ Site manager ↓ Negotiation with landowners ↓ Management Actions  National context  Data → ↓ Government

#### Suggestions/comments and ideas that might help:

1. Is monitoring feeding management fast enough?  
In fact annual information/feedback is also used in the management 'community'.
2. What will the government do with the information?  
They may consider changing policies – in the UK it's the other way round with a target driven approach saying this is what we want you to do.
3. Indicators have been talked about – indicators of what?

Why do you need to do them all maybe there is a surrogate you could use.

#### 4. Latvia

The Adazi military training area was taken as the example for Latvia. This is a coastal dune area with military training and at times heavy recreational pressure both of which lead to erosion. Tree invasion is an additional problem on the more stable areas.

Key species of the area are elk, red and roe deer which are not adequately monitored at the present time. The military hunting club provides some information but this is not

enough to establish whether the level of hunting is appropriate and what is happening to these populations. In addition the sand plain and heathland supports *Bufo calamita* populations.

In the training area there are two small oligotrophic lakes (40ha) which form a Natura 2000 site with the communities included in the Latvian Fund for Nature protected habitat lists. The Latvian Environment Agency has developed a process for biodiversity monitoring.

When the reserve is not in military use it is open for public access. At the present time there is no assessment of the numbers using the reserve and the amount of trampling/erosion. Also there is need to review the options for visitor regulation in the light of any impact.

The following table was presented as the outline monitoring plan:

<u>Feature and Activity</u>	<u>Frequency</u>
<ul style="list-style-type: none"> <li>➤ Monitoring of military activities               <ul style="list-style-type: none"> <li>- On heath (Military base</li> <li>- On dunes management</li> <li>- In forest MBM)</li> </ul> </li> </ul>	annually
<ul style="list-style-type: none"> <li>➤ Heath               <ul style="list-style-type: none"> <li>- covered area (aerial photographs, MBM, LFN)</li> <li>- quality of vegetation (density &amp; vitality species composition, LFN)</li> </ul> </li> </ul>	every 5 years
<ul style="list-style-type: none"> <li>➤ Dunes               <ul style="list-style-type: none"> <li>- pattern (destroyed &amp; recovered area, aerial photographs, MBM, LFN)</li> <li>- vegetation pattern (transects, LFN)</li> </ul> </li> </ul>	every 5 years
<ul style="list-style-type: none"> <li>➤ Natural grazers               <ul style="list-style-type: none"> <li>- species/ numbers (droppings, hunting pressures, LFN, State Forest Service)</li> </ul> </li> </ul>	annually

➤		
➤		
➤		
➤	Lake reserve	
	- water quality (state monitoring programme, Latvian Environment Agency)	annually
	-water plant communities (LFN)	every 3 years
➤	Recreation pressure	constantly
	- number of visitors (MBM)	
➤	Bufo calamita	
	- Distribution and numbers (LFN)	annually

### Suggestions/comments and ideas that might help:

1. Why do you plan to measure water quality?  
Because of the recreational pressure on the lakes and the pollution that is caused.
2. Bufo calamita is difficult to count – is it a good indicator?  
Yes, we think it is a good indicator of the mosaic of open/vegetated habitats. It was selected as it is a biodiversity target species and this is the area with the biggest population in Latvia.
3. The key species may be indicators of little help in identifying what is going on so you may need to think of other ways of monitoring such as aerial photographs.
4. Checking breeding numbers not individuals may give you a simple view of what is happening.
5. How do you estimate military activity in open areas? There may be need to think of other measures such fires/tank days etc.
6. You may need to find an index of who can do what where.
7. Cause and effect are difficult to establish i.e. it may be easy to show what is happening but much harder to prove what is causing the effect.

## 5. Lithuania

A plan was worked up for a small (6ha) meadow site in a National Park in Lithuania where it is hoped to achieve stable production/biodiversity to contribute to the Natura 2000 series. A simple and cheap plan is needed for ecological monitoring in the National Park.

Why do we need to monitor?

The value of meadows is assumed to come from their past management and therefore we look to monitor activities relating to traditional management.

In the table below: RP = Regional park  
IB = Institute of Botany

Who	When	Costs	Data processing	Data use
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### 1. Meadow management

1.1 Timing – is the meadow being cut?

RP	1/year before set date	1 person day + travel	RP	RP
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1.2 Area of meadow being managed

RP	1/year in September	1 person day +travel +computer +aerial photos	RP	RP,IB
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### 2. Evaluation of community status

2.1 Indicator species (presence/absence; %) - thinking of five species to report on and these would be useful and encouraging for farmers to have information about too.

RP	1/ 2 years before hay making	1 person day +travel	RP	RP,IB
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2.2 Community status (species composition and comparison)

IB	1/ 5 years	1 person day consultation and training 2 person days field work 2 person days for report + travel +accommodation	IB	ME RP
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### 3. Environmental factors (precipitation)

MS report	1/year	None	IB	IB
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#### Suggestions/comments and ideas that might help:

1. Indicators need to be both typical and sensitive to change.
2. Following the training that has been given there is need for ongoing checks that recording quality is consistent.
3. A small site and 15 days seems a lot to achieve simple monitoring? The figures are not additive – many of the activities identified would be combined and undertaken in one day.

### Environmental Education in the Ugra National Park.

Following the presentations and plenary session reviewed a presentation was made by Ivan Mizin of a talk prepared by Natalya Shpilenok on Environmental Education in the Ugra National Park.

This is summarised below:

### **1. Goals of ecological (environmental) education are to:**

- inform the local community and stakeholders about aims and mission of National Parks
- support the idea of nature and culture heritage conservation with assistance of local community
- promote the prestige of the National Park
- form (to develop) an ecological consciousness of natives and visitors of National Park.

### **2. Traditional methods of environmental education at Ugra National Park include:**

- Collaboration with the press and media
- Publishing of booklets, leaflets and the 'Ugra' newspaper  
Making of exhibitions and contests (for school children) e.g. painting competitions.
- Organisation of workshops and round tables with journalists, school teachers, landowners, local communities, school children etc
- Provision of training assistance for teachers
- Common work with local libraries, folk museums and church
- Organisation of summer environmental camps for school children and teachers
- Participation in 'March for Parks' and 'Eurpoark days'(every year
- Arrangement of ecological trails for four different groups of visitors
- Creation of a network of visitor centres in the National Park

### **3. The main stakeholders of Ugra National Park are:**

- Local community
- Holiday visitors/summer residents
- Visitors (tourists)
- Land owners
- Local authorities
- Churches and monasteries
- Regional authority
- Ministry for Natural Resources

### **4. The main land uses and major economic activities at the territory of Ugra National Park are:**

- All kinds of tourism
- Recreation
- Agriculture (animal and arable farming)
- Forestry within the framework set by the legislation
- Fisheries
- Glass production (since 1912) in the southern part of the Biosphere reserve

## **5. Facilities for environmental education and public awareness activities:**

- Specialists on ecological education – there are 9 environmental education officers
- Six ecological trails
- Three equipped visitor centres and ecomuseums

## **6. Regional and Local Authorities**

- Informal meetings with Governor and Heads of District administrations
- Involvement with March for Parks and other kinds of important activities/actions
- Work with the Council on Ugra National Park Problems under the Governor of Kaluga Oblast
- Exhibitions for nature conservation problems and nature protected areas
- Acquaintance with all publishing products
- Round table meetings about national park problems

## **7. Local community**

- Providing information about the national park to local press.
- Workshops and meetings
- Organising ‘Days of Ugra Park’
- Visitor centre usage
- Summer ecological camps for school children and teachers
- Arrangement of thematic exhibitions in folk museums and libraries

## **8. Churches and monasteries**

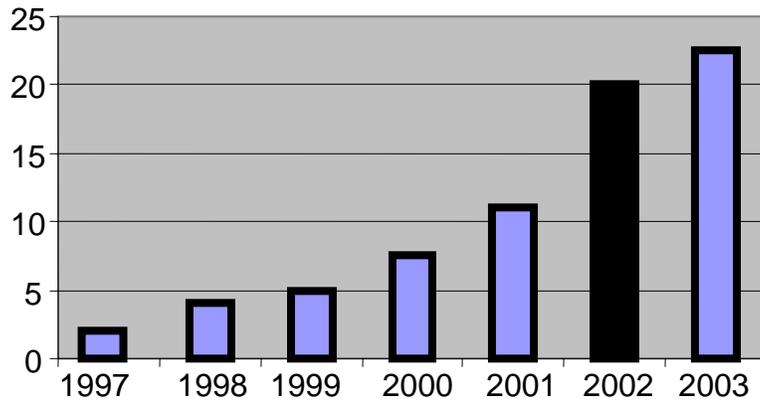
- Common conservation and restoration of ancient churches
- Providing volunteers for clearing of ruins
- Common fundraising and project preparation

## **9. Tourists and holiday visitors**

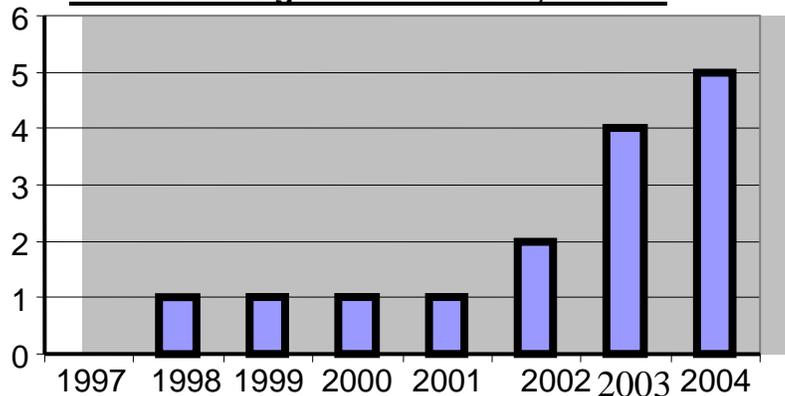
- Opportunities for having rest (picnics, week-ends)
- Ecological trails and excursions with guides
- Internet site about Ugra National Park
- Network of visitor centres through which some 1500 visitors pass

## **10. Some results of environmental education in Ugra National Park**

**Number of Exhibitions between 1997 and 2003  
in Ugra National Park, Russia.**



**The number of visitor centres open between 1997  
and 2004 in Ugra National Park, Russia.**



**Comments:**

1. The raising of environmental consciousness raises very big questions. What would you advise us to do? Two main things – first share information and don't work alone, and second organise committees with the local stakeholders so that the rationale for any activity is clear.
2. In Russia we are starting to develop environmental education and consider that there is a need for understanding at different scales and levels – there is a global as well as local education need. We need to understand the levels of information required and be careful to develop the understanding appropriately. We have found it difficult to devise measures of success and indicators for it.

## **Session 2:**

### **Domestics and next action**

- Country visits and next workshop.

The UK participants should endeavour to visit their partner countries to follow up the action developed at this workshop before April 2004.

It was agreed, following a kind offer by the Latvian representatives that the next - and last – workshop of this Darwin project would be in Latvia in the first week of May 2004 based mainly in Jumilla.

**TJB August 2003**

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