

JOINT NATURE CONSERVATION COMMITTEE

**IMPROVING THE FLOW OF INFORMATION FROM SURVEILLANCE TO
SUPPORT ADVICE PROVISION**

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1. Introduction

- 1.1 The purpose of this paper is to propose ways of improving JNCC's ability to use the available surveillance information to:
- i. provide advice on progress towards conservation visions and objectives;
 - ii. identify the main pressures acting on the environment and identify the policy areas that can address them;
 - iii. provide evidence to support cases to change policies.
- 1.2 The paper is provided as part of implementing the 'draft strategy for surveillance reporting and research' considered by the Joint Committee at its March 2006 meeting (JNCC 06 D02). The origin of the paper is in response to a programme target set for the surveillance programme of JNCC. This target aimed to revise the flow of information from surveillance in order to meet the needs for advice provision. Our performance reporting had picked up a risk of delay, as the nature of the change needed was not yet clear. This paper sets out a proposal to remove this block on progress.
- 1.3 The proposal in this paper cuts across a number of JNCC's programmes. The main ones affected are Access to Information, Surveillance and Monitoring, Policy Relevant Information and Environmental Pressures. The proposal would be implemented by adjusting project activities in each one of these programmes.

2. The Challenge

- 2.1 Surveillance is currently undertaken as a suite of schemes, each sampling different components of biodiversity. Examples include sampling of a range of butterflies, widespread breeding birds, stock and change of broad habitats, and near-surface plankton of the North Atlantic/North Sea.

- 2.2 The draft Surveillance strategy advocates building on this approach, but evolving towards a coverage that balances representation of ecosystem function, broader taxonomic coverage, sensitivity to the likely pressures on the environment, and representation of reporting obligations from legal and policy commitments.
- 2.3 The challenge for surveillance information on supporting advice provision, is to organise the flow of information from the original sampling into summary analysis across schemes which supports conclusions that can be delivered to influence strategies and policies. There are many existing scheme-level, issue-specific and taxonomic products that use the data from schemes, but very few products that use the surveillance resource comprehensively to produce balanced and neutral advice.
- 2.4 This paper recommends recognising a four step process to help meet the challenge of improving the flow of surveillance information to influential advice, and suggests adjustments to current working practices for each step.

3. **Proposed improvements**

- 3.1 The process of creating advice from surveillance can be modelled as having four steps, namely:
- i. creating re-usable surveillance outputs;
 - ii. collation and synthesis to produce summaries of the state of biodiversity and geodiversity;
 - iii. analysis and interpretation;
 - iv. delivery of the implications for strategy and policy.
- 3.2 Each one these steps is examined below and an approach recommended for the future.

Creating re-usable surveillance outputs

- 3.3 A surveillance scheme annually or periodically produces a mass of sample data and a range of summary statistics that represent the primary detection effort of the scheme. For example, several schemes produce annual changes in relative population size and trends over different time periods for GB or UK.

- 3.4 These statistics are the starting point for the next steps in the flow, and it is critical that they are repeatable, transparently produced, and easily re-used so that they can be combined with other scheme outputs. To achieve these properties the recommended approach is for each scheme to:
- i. treat their statistics as a version-controlled data set combining the actual calculated status and trend variables, with clear confidence limits, and scheme-level conclusions on their reliability and meaning;
 - ii. ensure these are available for re-use as a published public domain source electronically, as well as through web and other publications targeted at particular scheme-related audiences.
- 3.5 As we understand the needs for evidence better, it is very likely that schemes can re-analyse their sample data, possibly in combination with other sources, to provide new statistics relevant to particular needs for evidence. The challenge here, given limited resources, is to build flexibility into the way surveillance is delivered through contracts and partnerships so that there is some capacity to do new analysis. A further challenge is to see if automation can allow new statistics to be added routinely to those we are already using, at marginal running costs.
- 3.6 Schemes are also a great source of expertise and data for interdisciplinary analysis where the analysis of the sample data in novel ways will have a role. Interdisciplinary analysis will become more of a priority as we move towards advising on sustainable development, and participating in modelling the outcomes of policy for a range of different societal goals, including conservation.
- 3.7 For this reason, we need to build on the best practice established for some surveillance, where the sample data is readily available (through the National Biodiversity Network where relevant) in a simple-to-use electronic form, with access only restricted where there is a genuine risk of damage to environment through use of the data.

Collation and synthesis

- 3.8 Collation and synthesis involves taking the scheme-level statistics and using them together to identify the status of biodiversity, and, from this, to determine whether the nature conservation vision and objectives are being met. An example would be getting a summary of what elements of biodiversity are in decline across schemes, so we can start to see the scale of the problem in halting the loss of biodiversity.

- 3.9 This is a clear JNCC role, and work to implement it has made a good start but is still in its infancy. A collation of statistics has been completed and is available as a public domain source in its own right. Initial synthesis has produced summaries of overall decline/increase across the available surveillance results, and associated species decline by broad habitats. Both products were part of the 'Nature Barometer' launched in June this year and presented to the Joint Committee.
- 3.10 The recommended approach to improving this step is to:
- i. make the collation process repeatable, and establish the best way of incorporating and processing results from different surveillance approaches, for example; representing periodic change measurements with annual indices in a comparable manner;
 - ii. use a wider range of supporting facts about species and habitats, e.g.: native status/migratory status, scheme level identification of the causes of trends, distribution type/density, and ecology, to help identify patterns in the collated statistics that would give the first cut synthesis of state of biodiversity and where the problems, which policy needs to address, lie;
 - iii. creating, from this synthesis, simple summary products that give a clear picture of state, with conclusions drawn based on the underlying contributing data. The products as they are established will need to be periodically updated as statistics are refreshed, and as JNCC gets feedback from their use in reporting. An example product would be how the proportions of species which are stable, declining, and increasing are changing, and whether the elements of biodiversity that contribute to declines, have any associations e.g.: by distribution type, habitat association etc;
 - iv. synthesis provides JNCC with a way of rapidly putting some evidence behind a specific request for advice in relation to particular policies, e.g.: the trends in species with a significant proportion of their distributions in high wind energy areas.

Analysis and interpretation

- 3.11 Analysis and interpretation is needed to link the synthesis of the state of the environment to conclusions on the most likely causes of any problems identified, and then to make recommendations on what level and type of action is needed to address them.
- 3.12 In some cases this may be simple. The problems may have well established causes and the options for taking action are clear. For example direct exploitation of species, if it is unsustainable, can be addressed through legal instruments, regulation and managing demand.

- 3.13 Otherwise, analysis and interpretation could be run at the level of major thematic research projects establishing causality and looking at the social/economic ways of dealing with the drivers, or it could be done very quickly by concluding from expert opinion.
- 3.14 To make progress the improvements recommended for this step are:
- i. to analyse the problems identified from synthesis to establish the most likely causes, using the available evidence from research, and environmental monitoring;
 - ii. to scale the effort to allow a reasonable chance of making best use of the available evidence, but stopping short of major new investigative work, this is effectively a time cap, allowing us enough time to add evidence to improve the final, expert opinion-based conclusions;
 - iii. to implement this approach we need better knowledge of environmental and socio-economic monitoring, so that it is possible to look for broad correlation between other changes in the environment, and the synthesis picture of biodiversity. The first steps to do this have been taken by engaging with the Environmental Research Funders Forum (ERFF) review of environmental monitoring which has created an overview of monitoring activity and is proposing a co-ordination mechanism. The UK Marine Monitoring and Assessment Strategy is contributing the marine component of the ERFF review;
 - iv. JNCC also needs to develop practical ways of gaining a rapid overview of research findings given we have limited resources to conduct research or to commission comprehensive reviews, for example, through supporting centres of 'evidence-based conservation' which maintain reviews of scientific literature on key issues.

Delivery

- 3.15 It would be very easy to produce and improve a synthesis picture of the environment incrementally, and then add analysis and conclusions, and prepare a body of information available in publications, electronic and paper, that have no impact.
- 3.16 The key to delivery is using the information to help provide evidence in the advice we give. We also need to scale the effort we put into analysis and interpretation so that we do more when our initial advice is not influential, and where further evidence would make it harder to refute or ignore.
- 3.17 The recommended improvements in this step are:
- i. use the synthesis of the state of the environment to provide advice on the progress of conservation strategies, e.g. the country biodiversity strategies, and re-use the information in our reporting internationally;

- ii. use the synthesis and rapid assessment of the pressures (direct drivers) affecting the state of the environment as a tool for helping decide the priorities for advice, building on the work presented to Committee at the pressures workshop;
- iii. within JNCC's chosen priority areas for advice, conduct a review of which policy and other mechanisms need to be influenced, and the likelihood that influence will be achieved using the current levels of evidence. If more evidence is needed then this would give a priority for more in depth analysis and interpretation, and would provide a theme to focus this work in JNCC.

4. **Next steps**

- 4.1 Subject to the Joint Committee's endorsement of the approach outlined above, JNCC will realign its relevant Programmes to implement it (e.g. by requiring surveillance scheme outputs to be aligned to this approach where we support these schemes financially or contractually).