Joint Nature Conservation Committee

The UK Terrestrial Biodiversity Surveillance Strategy

Key Principles for the Surveillance Strategy

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Key Principles for the Surveillance Strategy

Working out requirements

1. **Check how the needs of one driver relate to others.**
   A sequence of events should be followed when deciding on surveillance requirements. First it is necessary to define the specific requirement, and from this decide on appropriate questions that need to be answered. At this stage compare the requirements of other drivers and see if they are asking the same sort of questions.

2. **Check how much the requirements can be met from existing research or surveillance schemes.**
   It may be that evidence already exists to answer the questions being asked, or an existing scheme can be slightly altered to provide the evidence required.

3. **Decide on best way of gathering evidence – research or surveillance schemes or a combination**
   If the evidence needed does not already exist, it should be decided if a research project, a surveillance scheme, or a combination of both would be best suited to provide this evidence.

Surveillance Design

1. **Design for meeting multiple requirements.**
   When designing sampling solutions for a requirement, can it be designed it in a way that enables other requirements to be met as well, with little extra effort? The temporal and spatial design of the proposed surveillance should be considered. For example, when visiting a river site to record indicators of otter presence, it may be little extra effort to extend the survey to include signs of other riparian mammals. If a scheme were being designed to detect the impact of woodland condition on dormice, then could the woodland condition data also be used to answer other questions? Key to enabling datasets to be used to meet multiple requirements is ensuring that they are made readily available in public domains, for example via the National Biodiversity Network, and that metadata on the dataset is completed (for example, when was it recorded, by whom, what is the quality of the data…)

2. **Choose the optimum scale for meeting requirements.**
   Choose the most cost-effective option that will provide the evidence required, taking into account the scales of any other relevant sampling that is already taking place. For example, if broad-scale sampling is already in place showing trends in population status of a species, could a small scale research project be sufficient to determine a causal relationship between a pressure and population level?

3. **When there are opportunities to add to or modify sampling, consider if your proposals add to the representation of biodiversity covered by surveillance schemes.**
   Current schemes only sample a small percentage of biodiversity. It is obviously not possible to sample all species and all parameters of all habitats, but it is hoped that

what is sampled will be a good indicator of biodiversity in general, sensitive to the main factors driving change in the environment, and easy to interpret. To get a wide representation of biodiversity in what we sample, we should aim to sample species/habitats from as many functional niches in the environment as possible. There is often no point sampling something that occupies the same niche as something else that is already being sampled. For example, if an insect that relies on a certain plant is shown to be declining due to decline of its host plant, it would not be cost-effective to sample a second insect that relies on that plant, as we could assume that it was following a similar trend. As another example, if a river survey were regularly carried out, indicating good water quality, healthy populations of river invertebrates, fish, and riverside vegetation, then it may not be worthwhile commissioning a separate survey of riparian mammals, as it is very likely that their populations will be doing well due to a healthy habitat.

When deciding how to expand sampling, investigation should be carried out into both the strengths and weaknesses of the representativeness of current sampling and the ecology of the species and habitats being proposed to be sampled. It is useful if there is one easy to sample species that is representative (or an indicator) of many others. It may also be that a non-biological measurement could be a suitable indicator of biodiversity. For example, if research has already established a clear link between a pressure and an aspect of biodiversity loss, then a measurement of the pressure could be an indicator for the state of biodiversity. The PASIR (Pressure-Activity-State-Impact-Response) system works along these principles; by establishing relationships between the different stages it is not always necessary to sample them individually.

4. **Balance representative and risk-based sampling.**
Often it is useful to use a risk-based approach to decide on the frequency of sampling required (see Risk-based approach paper). This enables resources to be used more efficiently by reducing the sampling frequency for low risk species and habitats, and for those where there is no management response identified. However, it must be balanced with the requirement for a framework of large-scale sensitive time period recording which gives us a broad overview of population and habitat trends and status (Objective 1). For example, some species on Annexes of the Habitats Directive, are rare and localised (e.g. the Large blue butterfly and Southern damselfly), would not be appropriate for inclusion in the framework of species recorded under Objective 1 of the strategy, and should have their sampling regime determined using the risk-based approach. This balance of representative and risk-based sampling should also be achieved within sampling of a particular species or habitat. For example, if we know the overall status and pressures affecting chalk grassland from representative statistical sampling of that habitat, then sampling of a particular chalk grassland site need only be occasional, taking into account risk to that site, and the value of sampling in influencing local management.