

Scientific Survey – Selection Criteria

Primary Selection Criteria

Extent (Size)

This can refer to either the overall extent of the site or habitat or the population size of the species in question. A large population is more viable than a small population. When selecting for particular species or species-groups, it is therefore important to concentrate on sites that have large populations. Similar considerations apply to site area. Other things being equal, a large site is of more value than a small site as large sites tend to have larger (and therefore more viable) populations of plants and animals. One of the major disadvantages of smaller sites is that they are more vulnerable to edge effects, such as fertiliser drift and invasion by ruderal species, and to catastrophic events such as fire.

Diversity

More diverse sites are generally valued more highly than less diverse sites. However, this is a criterion that requires careful application. Diversity can refer to a range of different features and can be measured in a variety of ways.

Habitat Diversity

The presence of other habitats or physical features increases diversity by providing a wider range of niches for plants and animals. In a woodland for example, this may include such features as clearings, waterfalls and gorges. For lowland raised bogs, internal soak systems and laggs provide additional habitat diversity and are scored as positive attributes.

Structural Diversity

This feature is most often considered in the context of woodland, where it can be measured by features such as mature trees, dead wood (of particular importance for fungi and invertebrates), regeneration, epiphytes and understory/scrub layer. Again, the number of niches increases as structural diversity increases. Other habitats may also have structural features that contribute to the overall diversity. The presence of hummocks, hollows and pools on a bog provides additional niches for plants and animals.

Plant Community Diversity

Within broad habitat types, there are finer divisions - communities - where the vegetation takes on an appearance and character based upon the presence of a group of particular plant species. The more communities present, the more diverse the site. As with species diversity, however, this needs qualification, as some additional communities may be indicative of degradation.

Species Diversity

This is one of the most commonly used measures of diversity. There are different types, varying from simple counts of species richness, using presence/absence data, to more complicated indices based on abundance. Species-richness clearly represents a direct measure of diversity but it can also be used as an indirect measure of undisturbed conditions, and hence naturalness.

All of the selection criteria need some qualification, but diversity in particular is a measure that needs to be used with caution. Some habitats and communities are inherently more species-rich than others; limestone grassland, for example, may have more than 40 plant species in a 2 x 2 m sample quadrat, while a quadrat of similar dimensions from a bog could have less than 10 species. It is therefore only used when comparing similar habitats or communities.

Furthermore, disturbance can often increase diversity by providing opportunities for colonisation by ruderal species (weeds). Only naturally-occurring species, associated with undisturbed examples of the habitat or community in question, are considered to contribute positively to scientific value.

Naturalness

Naturalness is generally related to continuity of development (and thus to age), or the maintenance of long established management practices. In Northern Ireland, there are no terrestrial habitats which can be said to be truly natural. The less modified an ecosystem is, the more it is valued. This is closely linked to the concept of non-recreatability.

Rarity

Although all habitats have been modified to some extent, the degree of naturalness - or lack of disturbance - is an important attribute in the comparative evaluation of sites within habitat types. Species can be thought of as natural as well as habitats and communities. Many woodland plants for example, Wood Anemone, Wood Sorrel and Primrose are slow colonisers of recently established woodlands so the presence of a number of such species is often a very good indicator of continuous woodland cover over a long period of time. The corollary of this is also true - i.e some species may be indicators of disturbance. Naturalness should therefore be integrated with other criteria when evaluating sites.

- A few individuals occur wherever the habitat occurs
- The habitat or species is widespread but locally infrequent
- The habitat or species are common but occurs in only a few localities

Each of these distributions may require rather different conservation measures. In some cases it may be necessary to declare ASSIs for particular species or habitats because they represent the only example(s) in Northern Ireland.

Secondary Selection Criteria

Fragility

Fragility can be interpreted in different ways for different ecosystems; a habitat or species can be fragile either as a result of its ecology or as a result of man-induced changes. Some habitats and species are at greater risk than others, either because their distribution is small and scattered or because they are particularly threatened by development.

Typicalness

It is important to ensure that the ASSI network does not include only those sites which are in some way unusual, nor exclude good examples of habitats and communities, simply because they do not have rare species. Ensuring that the ASSI network includes the full range of variation should relieve this problem.

Recorded History

The existence of a scientific record of long-standing can add to the value of an area. This is however, only likely to be relevant to a small number of sites.

Position in an Ecological/Geographical Unit

Mobile species such as birds and even some plants can move between sites, particularly if the distances involved are not great. Therefore, clusters of sites have the advantage of providing linkages to aid (re) colonisation. Recently more attention has been devoted to the issue of site connectivity using "wildlife corridors". Although it should be noted that these corridors can also provide a means for the migration of invasive aliens, on balance the advantages outweigh the disadvantages. Although the concept was originally put forward to stress the value of having closely associated sites, it is also worth considering the corollary of this. Sites which represent communities, habitats or species outside their normal range are often of particular interest for ecological study and may therefore be worth considering for ASSI status.

Potential Value

Some sites could, through appropriate management or natural change, eventually develop a significant nature conservation value. Potential value is normally considered only where all intact examples of a particular habitat or community that formerly occurred are now absent, but rehabilitation of damaged sites is feasible.

Intrinsic Appeal

Sites are selected for scientific reasons. However, the relative value that society places on different habitats and species can be an additional factor in the process. Site selection should reflect this to some degree. However, it is part of the scientist's function to suggest to society what those values should be.