

# ECOSYSTEM SERVICE MODELLING

## RULE-BASE DEVELOPMENT – SUGGESTIONS FOR USER

### Contents

Recreation .....	2
CICES Ecosystem Service Typology .....	2
Recreation description .....	3
Factor 1a - Soil .....	3
Soil Types .....	3
Soil Systems .....	3
Factor 1b – Geology .....	3
Factor 2 – Habitat .....	4
Biophysical Properties of habitats .....	4
Other effects (How other data can be used as a proxy indicator) .....	4
Factor 3 – Landform .....	5
Factor 4 - How it is managed .....	6
Negative Management .....	6
Positive Management .....	6
References .....	7

Recreation				
CICES Ecosystem Service Typology				
Section	Division	Group	Class 1	Class 2
Cultural	Physical and intellectual interactions with biota, ecosystems, and land-/seascapes [environmental settings]	Physical and experiential interactions	Experiential use of plants, animals and land-/seascapes in different environmental settings	Physical use of land-/seascapes in different environmental settings

<b>Recreation description</b>	<p>Humans are an integral component of ecosystems and recreation has been defined as the use of natural and cultivated landscapes for pleasure (Broadhurst, 2001). Habitats provide opportunities and benefits for recreation, often described and incorporated within environmental settings (e.g. gardens, parks, woodlands, and the wider countryside).</p> <p>For instance, woodlands provide opportunities for cycling, walking, photography, horse riding and informal recreation. These 'settings' are places of interaction between people and nature and are fluid with no fixed boundaries. Recreation is often linked to those environmental settings which are valued due to there being a lot of activities available to undertake (e.g. local parks, woodlands or the coast). Factors which determine the level of use of these settings by people are on site access and how accessible different settings are to people. Those sites which are associated with a footpath, cycleway, road network and car park are more likely to be utilised (Natural England, 2009).</p> <p>Physical engagement with the natural environment shouldn't be totally separated from other forms of engagement with environmental settings. These include the views from windows, media and literature, the role of nearby urban green space, activities in the countryside (e.g. volunteering). Recreation can therefore overlap with both experiential and physical use of environmental settings.</p>
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<b>Factor 1a - Soil</b>	
<b>Soil Types</b>	The recreational use of land is not generally linked to soil type. Recreation can however, be limited on very wet and waterlogged soils, where this makes access difficult and can present a health and safety hazard.
<b>Mineral</b>	Generally suitable for recreational use
<b>Organo-Mineral</b>	Generally suitable for recreational use
<b>Organic</b>	Generally suitable for recreational use, but where waterlogged can present hazards.
<b>Soil Systems</b>	Not applicable
<b>Factor 1b – Geology</b>	
	<p>Underlying geology is often linked to recreational use of an area. Apart from being a driver of the topography, areas with outcropping rocks and hard rock formations, particularly when associated with open moorland areas, are perceived as being aesthetically attractive and attract recreational use. Similarly, coastlines of varying types, including hard rock cliffs and sandy bays and coves, are popular sites for recreation.</p> <p>Other effects of geology on recreational use include flooded former gravel pits, mining heritage sites and areas where fossils can be found.</p>

Factor 2 – Habitat		
<b>Biophysical Properties of habitats</b>		Habitat type is very much a determinant of recreational use and can be described as an environmental setting. Semi-natural habitats and designated sites are important for recreation associated with biodiversity. Areas of wild open upland landscapes (accessible under the Open Access legislation) are important for walkers, cyclists, climbers and other outdoor pursuits. Areas of woodland habitat are important for walkers and more quiet contemplative activities. Where habitats are close to centres of population then recreational use increases, often to the extent of over-use and subsequent degradation of the habitat (Cole, 1993).
<b>Below ground physical features</b>	<i>Root depths</i>	Habitats which are deep rooted such as Woodlands are favoured environmental settings, particularly in relation to recreation. Woodlands provide a variety of benefits such as, physical well-being and mental restoration through activities such walking, mountain biking and photography. The deep roots and associated large trees form terrain and surroundings preferable for these types of recreation.
<b>Below ground biological features</b>	<i>Species richness</i>	Not applicable for recreation
<b>Above ground physical features</b>	<i>Biomass/ Canopy Height</i>	This is a key attraction especially in woodlands, as tall, large trees create a more enclosed well developed woodland environment.
<b>Above ground biological features</b>	<i>Species Richness</i>	A key attraction across a range of habitats, defining the different habitats and the recreation likely to be present.
<b>Other effects (How other data can be used as a proxy indicator)</b>		<p>Vegetation type can be used to identify different environmental settings which can potentially provide recreation opportunities:</p> <ul style="list-style-type: none"> <li>• Environments considered natural are popular locations for recreation (Curry, 1994).</li> <li>• Habitat information, such as NVC, Phase 1 or Broad Habitats classification could be used to identify and visualise recreational function for cultural ecosystem services.</li> </ul> <p>Feature data can be incorporated into the analysis and be used to visualise the spatial spread of recreation opportunity:</p> <ul style="list-style-type: none"> <li>• Recreation features e.g. leisure centres, outdoor activity centres, horse-riding centres.</li> <li>• Parks and playing fields</li> <li>• Private gardens</li> <li>• Public gardens</li> <li>• Allotments</li> <li>• Rivers and standing water (e.g. lakes or lochs).</li> <li>• Cycle routes, walking trails, minor roads and tracks</li> <li>• Car parks (providing access to the environment)</li> <li>• Public transport stations and/or stops</li> </ul>

	<p>To understand the value of different environmental settings, access to these habitats or features needs to be assessed. There are different ways to access environmental settings, particularly for recreation, e.g. virtual (TV and Media); visual (views from houses, offices etc) and physical (walking, cycling, driving).</p> <ul style="list-style-type: none"> <li>• The physical access to the settings can be explored by looking at the remoteness of the setting from urban settlements or how accessible the site is by the utilisation of different networks.</li> <li>• Settings which provide unique recreation opportunities are often physically remote from urban populations. This can mean that access to recreation can often be highly differentiated and constrained (Curry, 1994).</li> </ul> <p>Recreational values will differ between demographic and social groups. For instance, demographic groups which are time rich but cash poor and those who are time poor and cash rich. Those whom are time rich but cash poor may value their formal and/or informal spaces closer to their home for recreation more than settings which they cannot access easily (Priskin, 2003).</p>
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<b>Factor 3 – Landform</b>	
	<p>Topography has a number of impacts on recreational use:</p> <ul style="list-style-type: none"> <li>• Mountains, linked to open spaces and wildness, are particularly attractive areas for recreation and are linked to holiday destinations and outdoor activities.</li> <li>• Undulating countryside attracts a different range of recreational use, often more linked to families and day trips.</li> <li>• Coastal areas are particularly attractive for a range of recreational uses.</li> <li>• In all cases certain areas provide 'honeypot' locations where recreational use is often concentrated, and other areas which are more remote or difficult to access are much less used.</li> </ul>

<b>Factor 4 - How it is managed</b>	
<b>Negative Management</b>	<p>Areas where recreational use is forbidden include:</p> <ul style="list-style-type: none"> <li>• Military installations and training grounds, often located in some of the most beautiful parts of the UK (such as Salisbury Plain and Sennybridge). This is largely on health and safety grounds (<a href="http://www.Gov.uk">www.Gov.uk</a>).</li> </ul> <p>Areas where recreational use is discouraged include:</p> <ul style="list-style-type: none"> <li>• Highly intensive areas of agricultural production, where access is limited to designated footpaths, which may often be obscured and hidden by the food production process.</li> <li>• Some older areas of intensive conifer plantation where the proximity of tree planting restricts any access until thinning and felling occurs.</li> <li>• Some grouse moors discourage recreational use during the shooting season and some deer moors in Scotland restrict access through the use of high deer fences with limited access gates.</li> <li>• Closer to urban areas all open spaces have been assessed for accessibility under local planning regulations and efforts made to improve accessibility to a wide range of users, both able and less-able bodied.</li> </ul>
<b>Positive Management</b>	<p>Positive management includes:</p> <ul style="list-style-type: none"> <li>• The traditional designation of footpaths, cycle paths and bridle paths has always formed a key network for people to access the countryside for recreational use (Bryant, 2012). Additions to this network such as Sustrans cycle routes, long-distance footpaths and the all-Wales coastal path have expanded and improved this network.</li> <li>• The designation of areas as National Parks, AONBs and Heritage Coasts has recognised the importance of recreation to the public in the UK (Butler and Boyd, 2000)</li> <li>• The designation of 'Open Access' onto all heaths and moors and woods in public ownership has had a massive impact on recreational use and has extended the area used widely.</li> <li>• Many local authorities have greatly improved access and recreational potential of land they control for less-able bodied users including wheelchair users and partially sighted people.</li> <li>• Restricting access to prevent degradation of sensitive important sites (Eagles and McCool, 2002).</li> </ul>

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