

Welsh seasonal habitat vulnerability mapping

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This paper presents a series of maps created using the methodology suggested in the report Welsh Seasonality Habitat Vulnerability Review. (Footprint Ecology / CCW 2010). The maps are intended to provide a tool for policy makers, planners and access managers highlighting areas of the countryside particularly sensitive to outdoor recreation; potentially guiding the location and provision of access infrastructure etc.

Aims

The key aims of this mapping project have been to try and:

1. Create a resource that looks at the recreational mechanisms that impact on the natural environment rather than identifying and pigeonholing specific types of recreation.
2. Introduce a temporal dimension to recreation planning in the form of the seasonality of vulnerability.
3. Separate the risk of impact (the sensitivity of the feature) from the likelihood of it happening (the amount/type of recreation occurring).

Method

Maps have been created to show the spatial distribution and degree of vulnerability of the natural environment to four main types of impact caused by recreation: damage, contamination, fire and disturbance. All terrestrial, freshwater and coastal habitats are included (excluding coastal habitats restricted to the sub-tidal and intertidal zones). Broad habitat types have largely been used, refined in some cases by use of National Vegetation Classification categories. The maps were developed using a 500m grid covering the entirety of Wales and containing 86,860 cells. Information from various spatial datasets was then summarised or extracted to allow comparative values to be allocated for each grid cell. The following maps were generated:

- **Damage:** A map for each season, plus an overall map for all seasons combined
- **Contamination:** One map for all seasons combined
- **Fire:** A map for each season, plus an overall map for all seasons combined
- **Disturbance:** A map for each season, plus an overall map for all seasons combined
- **All impacts combined:** A map for each season, plus an overall map for all seasons Combined

This resulted in a total of 21 maps. The steps used to generate these maps are set out below:

Damage

For the purpose of this project, damage refers to direct damage to vegetation through wear, loss of vegetation cover to expose bare soil and loss/damage of soil through erosion. Damage occurs as a result of footfall and abrasion from

wheels. Each grid cell was given a score to indicate relative vulnerability of the habitats present to damage. The score was then adjusted for any sensitive soils or high aspect slopes (above 20 degrees) present. Twenty-degrees was chosen based on the information in the literature review.

Contamination

Contamination refers to the impacts of nutrient enrichment, for example through dog fouling, and also littering. As with damage, each grid cell was given a score to indicate relative vulnerability of the habitats present to contamination. The expert-derived scores for contamination showed no variation with season, and therefore a single map was produced for contamination.

Fire

Fire refers to the impact of fires caused either deliberately by members of the public or accidentally (e.g. sparks from barbecues etc.). As for both damage and contamination, each grid cell was given a score to indicate relative vulnerability of the habitats present to fire. A further score was also given to the soil type found in each square. The seasonal variation was refined by historical Fire Severity records that indicate the likelihood of weather conditions that increase the risk of fire through the year.

Disturbance

Disturbance refers to impact on the behaviour or survival of an animal as a result of recreational activity. The method used focuses on mapping the presence/absence of relevant species at the relevant times of year. Lists of species were circulated to a range of species experts and comparative scores for the vulnerability of the species in a given season derived. Distribution data for these species were extracted from the dataset of protected species records provided by CCW.

All Impacts Combined

A set of maps was also produced that highlight the overall score of each impact type by summarising the scores calculated separately for each cell.

Testing

To ensure that the maps are correct and delivered in a way that suits their target audience, they are currently being piloted by the three Welsh National Park Authorities. The National Parks were selected as pilot areas as the Authorities operate at the optimum scale of recreation planning in terms of the predicted use of the maps. The feedback from these pilots will be used to:

1. Test the methodology by checking whether the maps correlate with observations and evidence gathered on the ground.
2. If changes are required; help define a framework

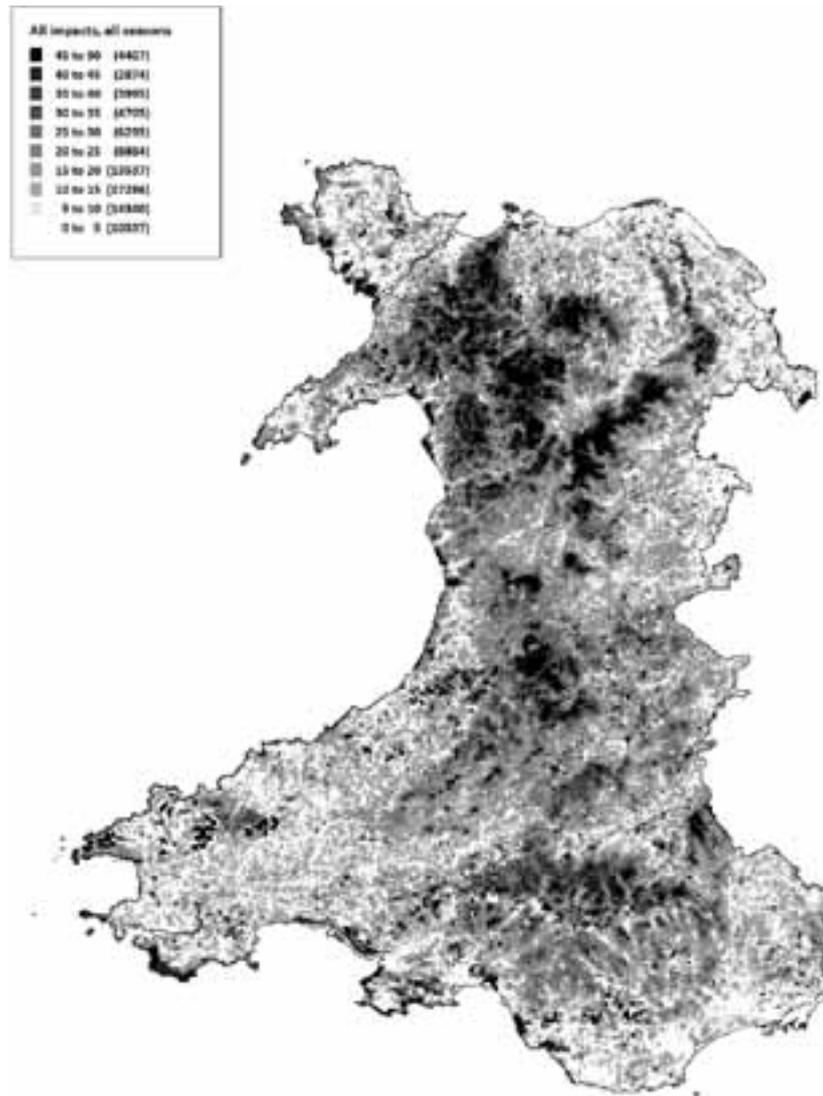


Figure 1. Wales Seasonal Habitat Vulnerability Map – All Impacts, All Seasons

through which to make them.

3. Explore the most appropriate format for the end product.

Early feedback on the maps has outlined possible refinements to the data used and considerations about the practical applications of the maps.

Conclusion

The future use of the maps will depend on the results of the testing. However, early responses to the project have been positive. Some issues have been flagged up about the scale the maps are effective at. It is clear that the maps, in their current form, can not be used at a micro level. It is also clear

that the maps, in their current form, cannot be overlaid. The maps need to be reviewed independently of each other, therefore, whatever interface is chosen to host the maps will have to be able to deliver this.

Having said that; very positive dialog has begun with Wales Activity Mapping (www.walesactivitymapping.org.uk) about using their website as an interface for the maps. They hold spatial data about participation rates in outdoor recreation that could, in theory, be used in combination with the vulnerability maps to give an array of useful information to landscape and recreation planners and help maximise the use of the natural environment in Wales whilst protecting it for the future.

Liley D., Lake, S., Underhill-Day, J., Sharp, J., White, J., Hoskin, R. & Cruickshanks, K. (2010). Welsh Seasonality Habitat Vulnerability Review. Footprint Ecology / CCW.

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