

Modelling tourism in the National Parks of Wales

Natural Resources Wales is the largest Welsh Government Sponsored Body - employing 1,900 staff across Wales with a budget of £180 million. We were formed in April 2013, largely taking over the functions of the Countryside Council for Wales, Forestry Commission Wales and the Environment Agency in Wales, as well as certain Welsh Government functions.

We manage many sites across Wales ranging from hugely popular walking and MTB trails to more special and sensitive national nature reserves and vast swathes of forestry. We manage around 7% of the total land area of Wales (predominantly the Welsh Governments forest estate) , but we also work with many other landowners and partners such as National Parks, Local Authorities, Wildlife Trusts, NGO's and a variety of other private landowners / open access designations.

Managing users, and user behaviour in the countryside has always been an issue, but it's been recently exacerbated by Covid-19 which alongside stretched public resources, has highlighted the tensions between local residents and visitor needs (inverse relationship during the pandemic). This alongside increased constraints of operational work (social distancing, travel rules etc) has meant we are constantly having to react to issues and do not have the luxury of being able to step back from the firefighting and take a more coordinated approach to site and user management.

The question posed to the study group is to formulate a mathematical model of the way that people (typically tourists) use and behave in a National Park.

Some guidance for formulating this model is given below:

1. Most users will have a point of origin and a destination in mind, however, NRW has very little, if any influence over those decisions or the levers that influence/prevent them. Once initiated we are often then on the back foot in trying to manage multiple users, conflicting needs, and against a back drop of decreasing resources in real terms.
2. It is not just volume or totality of users either, we do not know precisely (or it may not even exist) what the limit in terms of each site capacity might be (somewhat dependant on which users arrive and what they intend to do). Anti-social behaviours can of course just be volume related, but sometimes that is not always the case e.g. the odd toilet break in the outdoors is ok, but 1000+ users and we have a problem... One person's quiet country walk is another users high octane adventure, with lockdown easing across much of the UK, this pressure and trend is set to increase.
3. Not all users have the same expectations/needs or desires, often what is known at a broad population scale, fails to generalise at a local site level. Many of the levers and drivers are outside our control.

We have done a lot of work on the behavioural insights and site monitoring and management side of things, but what we have not been able to do, is to develop heuristics/rules of thumb that will help us generalise and abstract rules for what are the relationships between the variables, and what if any models can be applied to human behaviour.

Some questions we would want answered by the mathematical model developed in the study group are.

1. How do we better redistribute pressures or resources.
2. Where is best to intervene to disrupt bad behaviours (we've provided a spreadsheet of anti-social behaviours and some case study material to help highlight these issues)
3. How do we mitigate/balance risks of negative experiences of users against negative effects on sites?
4. What do we not know, what are we missing from the picture?

We have shared as much content as possible with the study group, but are flexible in loosely defining the domain as we don't expect any easy/clear answers, but assistance with further exploring the problem space is most welcomed