

## ORVal Short Case Study: Number 3 National Trails: Worth maintaining? (Version 2.0)

Brett Day, University of Exeter  
Greg Smith, University of Exeter

### Introduction

The ORVal Tool is a web application (accessed at <https://www.leep.exeter.ac.uk/orval>) developed by the Land, Environment, Economics and Policy (LEEP) Institute at the University of Exeter with support from DEFRA (Day and Smith 2018).

ORVal's primary purpose is to help quantify the benefits that are derived from accessible outdoor recreation areas in England. Those outdoor recreation areas, or *greenspaces*, include an array of features such as beaches, parks, nature reserves and country paths.

This short case study uses ORVal to explore the visits and welfare values generated by the network of paths classified as National Trails across England and Wales.

paths with new routes created to complete the trails. The first trail the Pennine Way opened in 1965 and there are now 13 National Trails in England and 2 in Wales (Natural England 2015). The National Trails in England total 2,200 miles with further extensions currently being implemented by Natural England.

In this brief case study we begin by looking at one particular part of the National Trail network; the 630 miles of the South West Coast Path. Annual maintenance of that path costs around £725,000 (R Clark 2016, pers. Comm. 11 August). In this note we will use ORVal to estimate the welfare value derived from the South West Coast Path in order to assess whether that maintenance expenditure is money well spent. Subsequently we will use the tool to estimate the welfare value generated by the whole National Trail network.

### The Case Study

National trails are long distance walking, cycling and horse riding routes in England and Wales. The National Trails were created from existing lengths of public right of way and permissive

### ORVal's Value Estimates

The visits and welfare values reported by ORVal are estimates derived from a sophisticated *Recreation Demand Model* ([https://www.leep.exeter.ac.uk/orval/pdf-reports/ORValIII\\_Modelling\\_Report.pdf](https://www.leep.exeter.ac.uk/orval/pdf-reports/ORValIII_Modelling_Report.pdf)) (Day

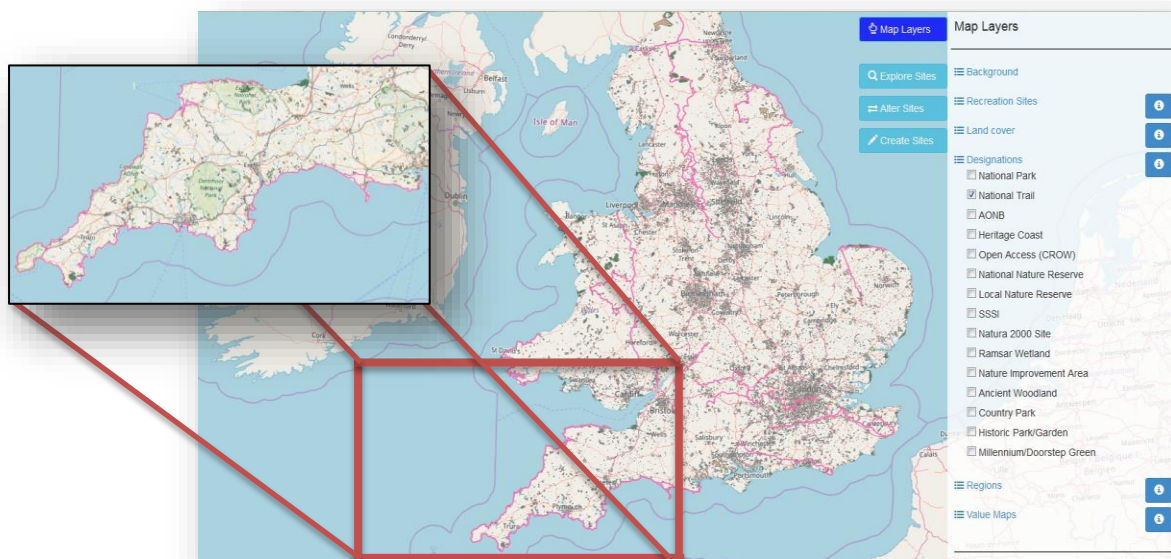


Figure 1: The national Trails of England and Wales

and Smith 2017). The model is estimated from a very large national dataset and establishes how visits and values tend to vary according to; (1) the size of a greenspace, (2) its land covers, (3) the proximity and socio-economic composition of nearby populations and (4) the availability of alternative sites. Note that the model does not capture the idiosyncrasies of individual greenspaces. Its predictions should be interpreted as indicating the visits and values that might be expected from an ‘average’ greenspace of that description in that location.

To be clear, ORVal reports ‘welfare values’ conforming to the standard economic definition; value is a figure describing the monetary equivalent of the welfare enjoyed by individuals as a result of having access to a greenspace.<sup>i</sup> More specifically, welfare values for a particular greenspace are calculated for each adult (over 16) by using the model to predict how the welfare that they enjoy from outdoor recreation would change if they could no longer access that particular site. Importantly the model accounts for the fact that individuals will mitigate that welfare loss by choosing to visit other greenspaces instead. ORVal’s welfare values specifically account for this substitution behaviour.

In ORVal the predicted visits and welfare values (in 2016 prices) are reported as aggregates across the population of adults over the period of one year.

### ORVal: Finding National Trails

The ORVal interface is a navigable map which illustrates the location of existing greenspaces in

England and Wales. By default those greenspaces appear on the map, each one shaded using a colour-coding that roughly classifies the nature of the different recreation areas.

Since National Trails are not one of those broad classifications, they are not immediately identifiable on the map. As shown Figure 1, however, the ORVal map can be augmented by adding further layers. In this case, we have selected the *Map Layers* tab, then expanded the *Designations* list and finally selected the *National Trails* map layer. The National Trails are now visible as pink lines on the map.

### Paths in ORVal

Broadly speaking, paths in ORVal are defined as walkable routes that pass through greenspaces but confine visitors to defined routes of passage. Of course, paths join each other and a set of linked paths we describe as a path network. Path networks are shown on ORVal as red lines. You can see an illustration in the left hand panel of Figure 2 which shows a path network that includes part of the South West Coast Path near to Porthleven in Cornwall. Since path networks may be very extensive we assume that the recreation experience enjoyed by visiting a path network can be attributed to the point at which a visitor accesses that path network. The idea here is that by choosing an access point, visitors determine the landscapes that they will encounter when traversing a path network. As can be seen in Figure 2, path access points are shown as red circles on the ORVal map.

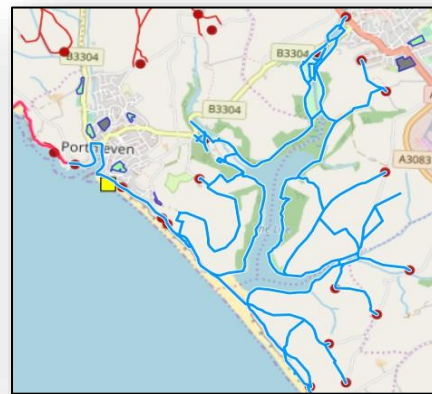
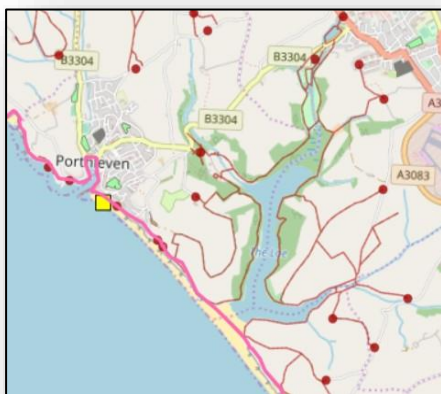


Figure 2: National Trails, Path Networks, & Path Access Points

In ORVal, National Trails constitute specific lengths of path networks. The right hand panel of Figure 2 illustrates this fact. In that panel, one set of connected paths constituting a path network are highlighted in blue. Notice how that path network includes a stretch of National Trail as well as the paths that lead to the coast path and those that surround the lake known as Loe Pool.

Accordingly, in this case study, we use ORVal to derive value and visit estimates for access points to path networks that lead to and include the South West Coastal path. Unfortunately, we cannot separately distinguish the value and visits associated with just those parts of path networks that are designated as National Trails.

### Valuing a single path or access point

In Figure 3, we have zoomed into the South West Coast path near to Dartmouth in Devon. Estimates of values and visits to a single access point can be accessed in ORVal by clicking on the *Explore Sites* tab, selecting the *Sites* button, and then clicking on that access point. The *Current Site Information* Panel appears to the left of the screen populated with information on an access point, including details of estimated levels of annual visitation, annual

welfare values, landcovers, designations and points of interest.

In Figure 3, we have selected a path access point on the South West Coast Path in Kingswear. As can be seen in the Figure, the ORVal model estimates the welfare value of that access point to be £173,630 per year.

Recall that an individual's welfare value is the monetary equivalent of the welfare loss that they would experience if that Green were no longer accessible. The £173,630 figure is the sum of those welfare values across everyone in the population and will be made up of some large values, probably for those who live close by, and some relatively smaller values, probably for those that live further away.

In Figure 3, you can also see that the model predicts that 64,367 adults will use that access point to get to the coastal path over the course of a year. Again it is worth understanding exactly how ORVal comes to this figure. The model works out the probability that each individual in England will take a trip to that particular access point on each day of the year. That probability tends to be relatively high for individuals living near and increasingly low for individuals living further away. The visitation figures reported in ORVal are the sums of those probabilities over all individuals over all days of the year.

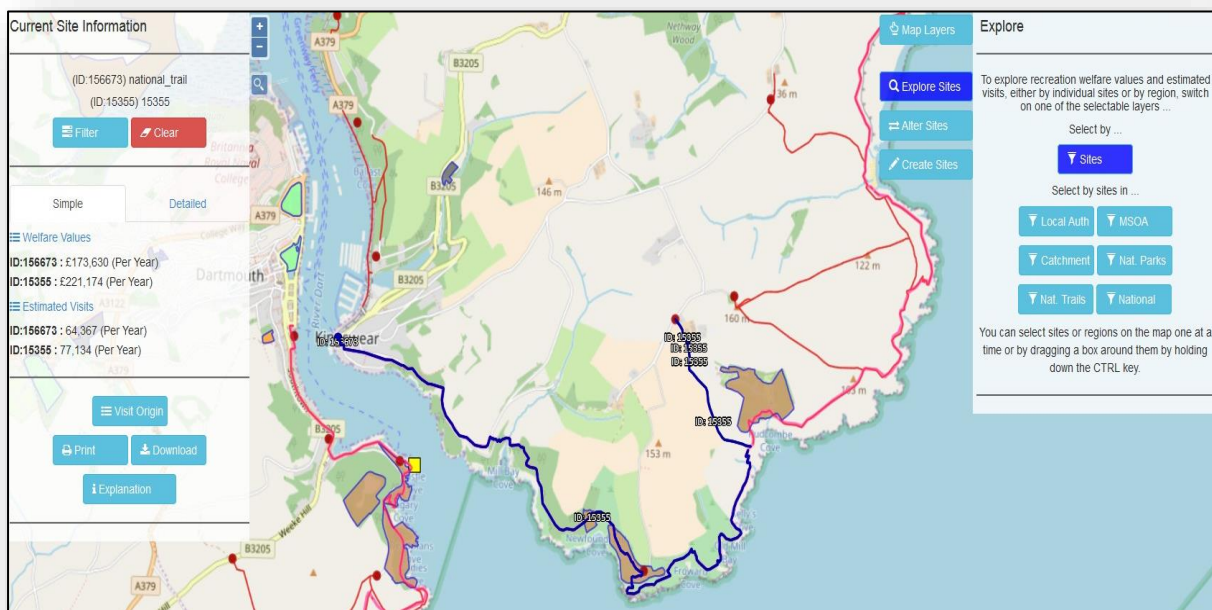


Figure 3: Values for a Path Access Point and Path Network on the South West Coast Path

## Valuing a Path Network

If you wanted to find out the values and visits to a particular path network, irrespective of where individuals accessed that network then ORVal can do that too. In Figure 3, we have also selected the path network itself that the Kingswear access point is part of. The tool shows estimates for that network of linked paths and access points; 77,134 predicted visits per year giving welfare value of £221,174. The fact that the values and visits for the whole path is only slightly higher than the Kingswear access point shows that the majority of visits to that path network access the path through Kingswear.

## Valuing National Trails – South West Coast Path

To find out whether the £725,000 spent on maintaining the South West Coast Path is a good investment, we need welfare values not just for one access point or one particular path network but for an entire National Trail.

Fortunately, ORVal provides a way to find out the values. Observe Figure 4, where rather than choosing to retrieve the value and visit estimates by individual *Sites* we have instead chosen to select by *National Trail*. In response, ORVal has loaded up a new selectable map layer showing the outlines of all the national trails in England and Wales. By clicking on the South West Coast Path as we have done in Figure 4, the *Current Site Information* panel is populated with details of the total values and visits.

Accordingly, ORVal estimates that 15,988,883 visits are made to South West Coast Path each year (as day trips by resident English adults) generating welfare value that amounts to £41,815,886.

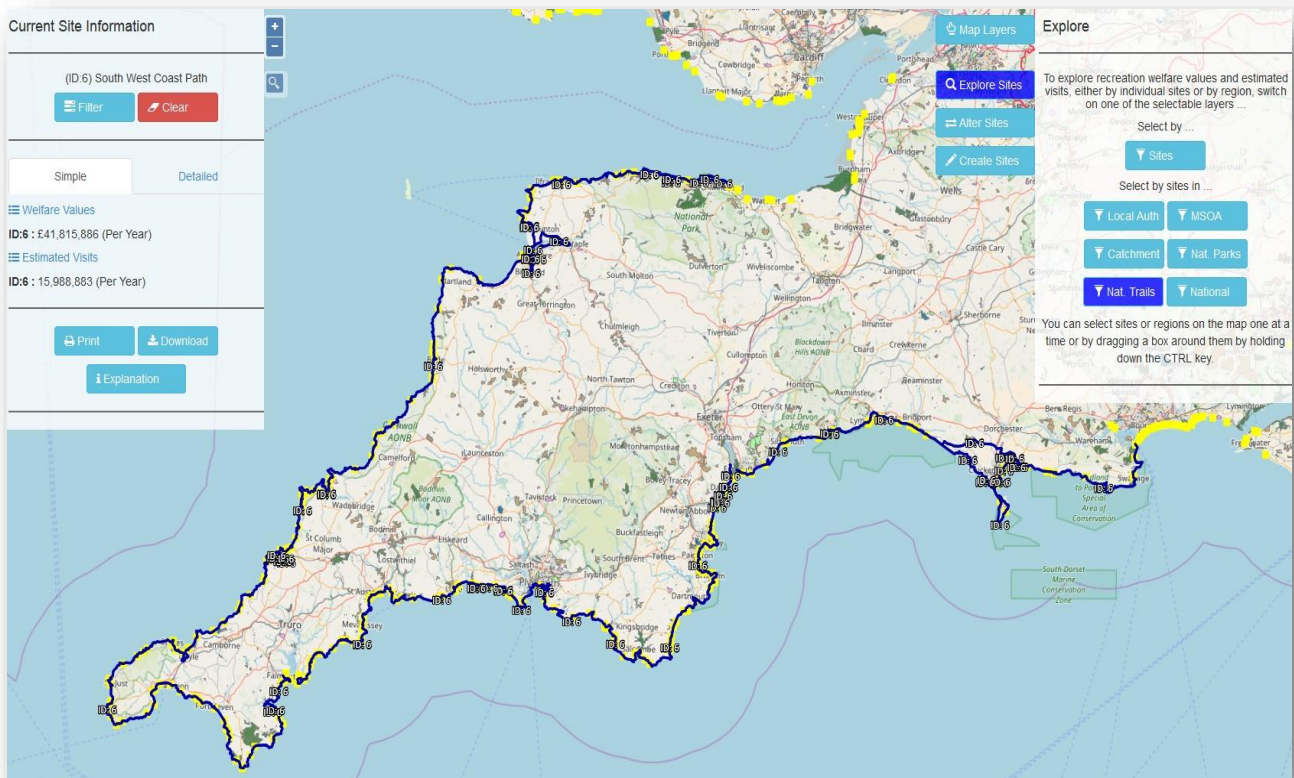


Figure 4: The Value of the South West Coast Path

## Valuing the South West Coast Path for a Local Authority

Rather than choosing to retrieve the value and visit estimates of the whole National Trail some users may want to isolate the values generated by The South West Coast Path in a particular local authority area. By selecting the Local Authority region in the Explore menu ORVal loads a new selectable map layer showing the outlines of Local Authorities in England and Wales. By clicking on a Local Authority that contains the South West Coast Path as we have done in Figure 5, the *Current Site Information* panel is populated with details of the total values and visits generated by all the greenspaces (parks, paths and beaches) falling within the boundaries of that regions.

To isolate the values generated by The South West Coast Path in a particular local authority area we need to use ORVal’s filter feature which allows us to pick out data just for those sites in the selected region that meet some user-defined criteria.

In Figure 5 we have invoked the *Filter Dialogue Panel* by pressing the *Filter* button in the *Current Site Information* panel. We then expanded the *Designation* list to restrict our search to paths with the *National Trail* designation. Pressing on the *Filter* button at the bottom of the dialogue panel brings up another window that summarises the restrictions we are applying to the data:

### Advanced Filter

You narrowed your results to sites of:

**Type:**  
Path

Allotment, Beach, Cemetery, Country park, Golf, Nature, Park, Woods

**Designations:**  
National Trail

Ancient Wood, AONB, Country Park, Open(CROW), FC Woodland, Greens, Heritage Coast, Historic, Local N Reserve, Natura 2000, Nature (NIA), National N Reserve, National Park, National Trust, Ramsar, SSSI, No Designation

**Land covers:**

Managed Grass, Sports Pitch, Formal Garden, Agriculture, Allotment, Cemetery, Woods, Wood Pasture, Natural Grass, Moors/Heath, Fen Marsh, Saltmarsh, Coastal, River/Canal, Lake/Reservoir, Seaside, Estuary

+ Show Results

The values and visits for all paths within the selected regions that have the designation *National Trail* are sent to the *Current Site Information* panel by pressing the *Show Results* button.

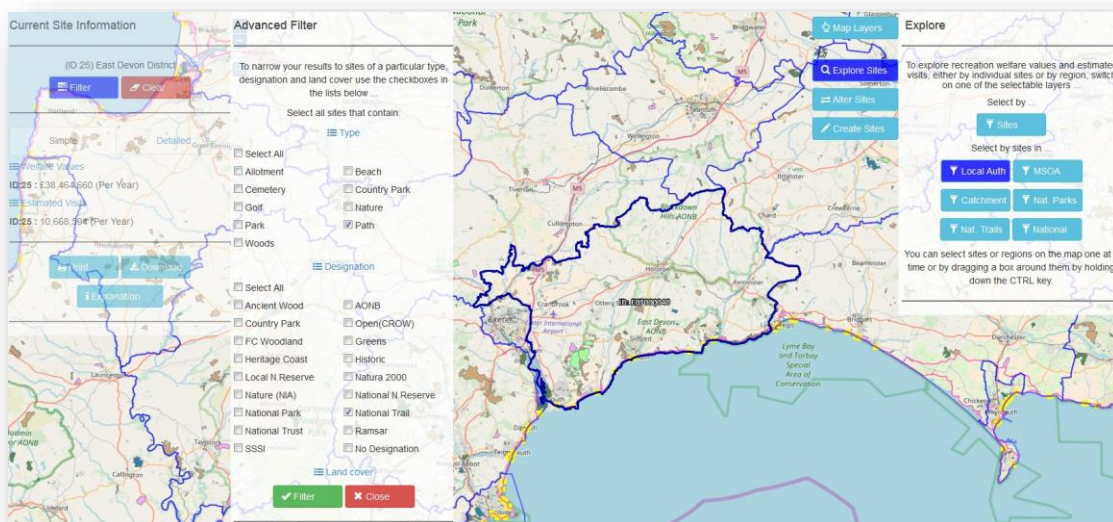


Figure 5: The Value of the South West Coast Path in a Local Authority

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## South West Coast Path: A Good Investment?

To answer our first case study question. The maintenance costs for the South West Coast Path of around £725,000 per year enable visits that generate welfare values some 58 times greater than the cost in magnitude.

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## All National Trails?

With ORVal it is also possible to estimate the total welfare value over all 15 National Trails in England and Wales. ORVal estimates that the total welfare of all National Trails in England and Wales is some £226 million per year.

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<sup>i</sup> In economics this welfare value is often called an 'economic value' or a 'willingness to pay'.

## References

Day, B. H., and G. Smith (2017). The ORVal Recreation Demand Model: Extension Project, Land, Environment, Economics and Policy (LEEP) Institute, Business School, University of Exeter.

Day, B. H., and G. Smith (2018). Outdoor Recreation Valuation (ORVal) User Guide: Version 2.0, Land, Environment, Economics and Policy (LEEP) Institute, Business School, University of Exeter.

Natural England (2015). National Trails annual report: 2013 to 2014  
<https://www.gov.uk/government/publications/national-trails-annual-report>.