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A GIS-based study of Wild Atlantic Way in the West of Ireland, its associated organisations and environmental impacts.

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Abstract Background

Coastal regions are heavily reliant on tourism in order to achieve socio-economic sustainability. However, tourism impacts both positively and negatively on many coastal destinations. The world's longest defined coastal route of 2600km, the Wild Atlantic Way (WAW), attracts tourists to the region of the West of Ireland after Fáilte Ireland began a promotional tourism drive in 2014. The association between WAW tourism and environmental impacts requires investigation. The West of Ireland is home to a range of areas protected by the Birds and Habitats Directives which aim to safeguard against potentially damaging developments, meaning the anthropogenic effects from tourists must be carefully managed to ensure the sustainability of the region and continued success of this large-scale branding exercise.

Aim

The objective of this research is to utilise GIS to develop a classification system to assess the vulnerability of sites promoted with the WAW. The sample size incorporates 105 sites scattered across Mayo, Sligo and Galway encompassing 869.5km of the trail.

Methods

A survey was distributed to ten environmental and tourism organisations in the region to understand the relationship between the WAW and the environment. Organisations were limited to six respondents each in order to prevent potential bias results. The matrix for assessing vulnerability was based on environmental impacts documented and the number of organisations concerned for each site.

Conclusion

This determined 43 sites were highly vulnerable, 55 sites were of medium vulnerability, 5 sites were of low vulnerability and 2 sites were of minimal vulnerability. As 67% (n=25) of survey respondents conclude there is little to no information available to tourists on the vulnerability of sites, the mapping of such important information is a productive expression of the raw data transformed into a comprehensible, user friendly map that can be quickly referred to upon arrival at each site.

Keywords: GIS, ArcGIS, Wild Atlantic Way, environmental impact, environmental science, eco-tourism.

1. Introduction

This study is based on the aspiration to understand more about the potential impacts of the WAW on the environment in the West of Ireland. The promotion of the WAW by Fáilte Ireland (2016) includes a number of discovery sites which are hotspots for visitors since it was launched in 2014. Discovery sites are defined by Fáilte Ireland (2015) as sites that offer an opportunity for an extended dwell time for visitors (see Figure 1). There was a 12% increase in overseas visitors in the first nine months of 2016 (Fáilte Ireland, 2016).

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When examining the environmental reports on the WAW for the context of this study, a common shortfall presented itself as no documentation covers all 475 sites (see Figure 1). Furthermore, this study investigates particularly environmentally vulnerable WAW sites; 61 of 105 study sites are within 500m of the trail and are susceptible to increased visitors. It is difficult to establish the overall environmental impact throughout the entire WAW as previous reports such as that by Crushell and colleagues (2015) investigate a limited number (between 5-10) sites per report.



Figure 1: Map outlining the distribution of the Wild Atlantic Way (WAW) discovery sites; the numbers indicate the number of WAW discovery sites per county.

Many WAW sites had existing environmental vulnerabilities due to designation under the Natura 2000 Network and are protected by environmental bodies. Therefore, when exposed to high traffic, quantified as 3.8 million overseas visitors by Fáilte Ireland (2016), it increases the likelihood for these sites to encounter environmental impacts. Hence, there was a need to investigate the capacity of the West of Ireland to assimilate this large-scale operation spanning years into the future in combination with, but also protecting, the existing environment. Hall and colleagues (2005) determined that projects of similar scale to the WAW have failed to foresee and protect against the long-term consequences for the environment. This highlights the effectiveness of utilising GIS; it allows for more extensive coverage of both parameters and sites, as opposed to field investigations which would be limited by time restraints.

Across the industry GIS is not being fully utilised as a tool in terms of the potential that exists for it in this field. This study uses ArcGIS, a commercial geographic information software for analysing geographic data. Huang and co-workers (2017) believe

technology plays a role in tourism, which presents the opportunity to use ArcGIS to explore tourisms environmental effects. As detailed by Jurovich (2018), ArcGIS is a software that enables the understanding of the current status of a geographical area and the strategic planning of one or more courses of action. It is a concern that there is not adequate environmental educational information at the sites (see Figure 12). For example, most organisations are unaware of biodiversity plans for a number of sites (see Figure 13). ArcGIS allows for the communication of results as the visual format is clear and understandable for inter-organisation conferring and for public users, with the vulnerability of the study sites summarised in Figure 18.

The impact of tourism drives on vulnerable areas is not limited to Ireland as Toccolini and co-workers (2006) also used GIS in order to exhibit the tendency for tourism projects to venture through natural environments, such as the designated areas shown in Figure 16. Anthropogenic effects on this landscape are evident (Crushell *et al.*, 2015) and it is important to study how the promotion of such vulnerable ecosystems need to be managed to ensure the sustainability of the project. As the WAW is in its early stages, few publications explore the relationship between the project and the environment. There is potential for the WAW to continue in an environmentally sustainable way (see Figure 14), providing adequate measures are implemented. The linkages uncovered between tourism industry and the environment detailed by Jarvis and colleagues (2010) reinforce the need for the effects / severity to be investigated. This study focuses on the West of Ireland (see Figure 2) as a section of the of the WAW (see Figure 1). Figure 2 highlights the site distribution across Sligo (26), Mayo (54) and Galway. (25). The route intersects large towns including Sligo town, Ballina and Galway City.



Figure 2: Map illustrating the study area of the WAW in the context of the local towns across the region of interest to this study.

The aim of this research is:

• To utilise GIS to classify the environmental vulnerability of sites on the Wild Atlantic Way within the study area.

The objectives of this research are:

- To determine if the study sites are experiencing environmental impacts.
- To understand the relationship between the tourism drive and the environmental organisations.

- To identify levels of collaboration between the organisations working to protect these sites.
- To use ArcGIS analysis to convey the findings of the vulnerability matrix developed.

2. Methodology

Criteria for site selection

The study sites were limited to the Mayo, Sligo and Galway areas, as per Figure 3, based on the time constraints and because this subset was representative of the entire WAW. The selection focused on were as follows:

- Sites promoted as "Discovery Sites" along the WAW by Fáilte Ireland (2017b) and
- Sites designated as SAC/SPA complexes under the Natura 2000 network and
- Sites denoted as NHA under the Wildlife (Amendment) Act 2000 (NPWS 2017b).



Figure 3: Study area detail and location within Ireland.

The study area represents a portion of the Western Coastline, yet it is heavily populated region with a total of 105 WAW sites, 22% of the total number of WAW sites.

Compiling existing data

Pre-existing environmental reports (Crushell *et al.* 2015, and Smith and D'Arcy 2017) identify the environmental impacts experienced at these sites and number of sites within the remit of each organisation (see Figure 5). While conducting background research, 7 environmental impacts were identified at many sites. The number of environmental impacts for each site was enumerated and are illustrated in Figure 4. Threatened species is the most common environmental impact reported. Environmental data from 2014-2016 were used in this existing data set, as the promotion of the WAW began in 2014 and this study was conducted in 2017.



80 70 70 63 60 50 50 50 Count 34 40 30 30 21 20 10 0 Habitat Invasive Species Air Pollution Water Pollution Littering Threatened Interference to Disturbance Species Protected or Heritage Sites Environmental Impacts

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Figure 4: Graphical representation of the number of sites experiencing, and type of, environmental impact.

Relevant Organisations

Collating monitoring data and finalised reports determined each voluntary and State organisations involvement. These data combined yield a diverse source range and formed the raw data for this study. Fáilte Ireland (2015) identified its concern with the WAW sites through operational monitoring reports and via the WAW website. All sites are listed on the WAW website and as a result are regarded as falling under the remit of Fáilte Ireland. The datasets for various disciplines within the study area during the assessed period of 2014-2016 are published by the Department of Arts, Heritage and the Gaeltacht (2017). The Heritage Council's involvement with environmental projects is detailed by Biodiversity Ireland (2017). Datasets from the Marine Institute (2017), available on the Irish Spatial Data Exchange, identify its engagement with study sites. Protected sites monitored by the National Parks and Wildlife Service (NPWS) are available on a mapping feature via the NPWS (2017a) website; selection of a pinpoint on the map reveals site information. A report commissioned by the NPWS, written by Waters and Lawton (2011), is also available for species translocation projects, highlighting sites vulnerable to habitat disturbance. The EPA's (2017c) role in monitoring and reporting multiple parameters was outlined using the interactive mapping feature "My Local Environment". The involvement of local authorities, namely Mayo Co. Co., Sligo Co. Co. and Galway Co. Co. was presented through EPA (2017b) publications of environmental monitoring results. Further involvement of Mayo Co. Co. with other environmental impact of sites is identified through reports prepared for the council by Smith and D'Arcy (2017) and CAAS (2008). Two local Tourism offices in each county were identified from tourist information points available from Discover Ireland (2017). Input from local branches had to be limited as to ensure each organisation type had equal input. A network map, Figure 11, identifies organisations who work together on study sites.

Environmental Impacts

Environmental impacts that may have been influenced positively or negatively (see Figure 8) by the WAW are detailed below;

Habitat Disturbance

Habitat disturbance for the context of this study is regarded as a short-term change in the conditions of an environment which impacts the biodiversity within an

ecosystem. Significant documentation within the area include: Irelands Environment: An Assessment. (Wall et. al., 2016), The Status of EU Protected Habitats and Species in Ireland Report by NPWS (2013) and EPA (2014) Biodiversity Action Plan 2014-2018.

Invasive and Threatened Species

This requires navigation of the National Biodiversity Data Centres (2017) yearly tracker webpage through selection of designation of species and year of interest from the drop-down menu. This presents the sightings and name of each species. Following species selection, trends can be identified at each location to determine whether plants and animal species are land or aquatic based (see Figure 17). Muir (2017) issues alerts of water based invasive species on behalf of Inland Fisheries Ireland.

Air Pollution

Data is collated by the EPA (2016, 2017a) under the Ambient Air Quality Network. This data is presented on an interactive map that allows for selection of air monitoring points. Monitoring is regularly undertaken in close proximity to numerous study sites.

Water Quality

For coastal sites water monitoring results undertaken by local authorities are available on an EPA managed website www.beaches.ie. Water quality monitoring data for the past 4 years is available by searching the site name. Further information was obtained on the EPA (2017c) geoportal site with interactive GIS mapping aspects for each site. Once the site is located, the water feature selection outlines water quality for rivers, lakes, coastal, transitional and groundwater at a given monitoring time.

Litter

Nationwide litter reports are electronically submitted to South Dublin City Council (2017). Reports, accompanied by location, are available online at www.fixyourstreet.ie. Litter reports outline the nature of litter abandoned at each site and the date it was observed.

Protected / Heritage sites

Sites protected under the Natura 2000 network are available in a map format from the NPWS (2017a). These sites are important as they are home to rare and / or threatened species and some rare natural habitats. Heritage sites are outlined under the national inventory of architectural heritage list (Galway County Council 2016, Department of Arts, Heritage and the Gaeltacht 2017). A dataset for protected structures in the Galway region is available on the Galway open data portal from Galway County Council (2016). Protected / heritage sites across the remaining counties was outlined on the WAW website by Fáilte Ireland (2016).

Developing a Survey

In order to understand the interest of the organisations in the WAW, a survey was distributed to environmental organisations who are considered experts on the levels of impacts reported since promotion of the WAW began and the protection measures in place. Tourism organisations were also included to acquire greater insight into visual

inspections and knowledge of local sites. The opinions of these organisations provided a good indication of how the WAW had proceeded thus far and the way in which the WAW will impact the environment in the future, provided there are no changes to the WAW. Organisations vary from national to local level in order to attain a representative sample (see Figure 6). This survey was provided through the use of *Google Forms* tool. The survey was developed and contained close ended questions as shown in Appendix I. The survey set a response rate of 70% in order to be considered a representative sample.

Development of classification system

A classification system was developed by the author using ArcGIS to establish the vulnerability of each site to the environmental impacts associated with the WAW (see Table 1). The hypothesis used in this matrix was based on the number of organisations that were mobilised to protect a site, compared against the number of environmental impacts reported at each site. Sites experiencing a high number of environmental impacts that fall under the remit of a number of organisations are considered to be high risk, and vice versa. Classifications levels defined as: Minimal, Low, Medium and High vulnerability. The survey was conducted to assess whether relevant individuals concur with the reported impact of the WAW. The matrix conveys the level of concern that environmental reports voice for each site.

		Number of organisations				
Number of environmental impacts		0	1-3	4-6	7-9	10
	0	Minimal	Minimal	Low	Medium	Medium
	1-3	Minimal	Low	Medium	Medium	High
	4-5	Low	Medium	High	High	High
	6-7	Medium	Medium	High	High	High

Table 1: Risk matrix developed to classify the sites vulnerability.

ArcGIS mapping

The output of the combined data analysis are ArcGIS maps, which incorporate a number of tools to display the findings. Shapefiles were created under the IRENET (TM95) coordinate system. The data pertaining environmental impacts and organisations involved was inputted to *MS Access* and added to ArcGIS by generating an OLEDB connection and using the *Joins & Relates* tool. Hidden buffer zones were generated to illustrate the proximity of sites to the WAW trail. Sites that were close to the trail were expected to experience more visitors, with sites within 750m regarded as within walking distance (see Figure 15). Environmental impacts were selected individually as required using SQL statements to select by attributes. Similarly, sites within designated areas were highlighted using SQL statements to select by location. For presentation purposes the maps were edited to include a title, north arrow, scale bar, legend and background colour.

3. Results

Preliminary results

Surveys were distributed, and later completed by 33 respondents are involved with the study sites (see Figure 9), yielding a 79% of response rate and reliable data validity with regard to the attitude of organisations (see Figure 10). A table documenting the organisations surveyed and number of respondents is included as Appendix II.



Figure 5: Number of sites within the remit of each organisation.



Figure 6: Question outlining the distribution of organisation types responding to the survey.



Figure 7: Pie chart identifying if there is an increase in visitor footprints at the study sites.

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Figure 8: The way in which organisations believe the environment is impacted by the WAW.



Figure 9: Scale representing the closeness of the organisation's workings in the region of the Wild Atlantic Way.

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76%

40%

33%

Awareness of other organisations monitoring the same sites as your organisation

24% • No • Yes Occurances of working in collaboration with organisations or sharing data Always 27% Occassionally Never Interest in collaboration / sharing data



Figure 10: Assessment of attitudes towards organisations working together.



Figure 11: Collaboration map identifying the other organisations named by the survey respondents as collaborators.



Figure 12: The availability, and level, of educational information on the sensitivity of each site to users of the WAW.



Figure 13: Pie chart showing the awareness of existing biodiversity plans at the study sites.

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No 8 Yes 25 0 10 20 30 Number of respondents

Figure 14: The likelihood of these environments being sustained into the future with increased visitor footprints.

ArcGIS Results



Figure 15: Sites in close proximity to the trail that are most likely to encounter more tourists; determined using buffer zones.

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Figure 16: The number of sites overlapping with designated habitats in the region.



Figure 17: The spread of invasive species amongst the sites.

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Figure 18: An overlay of the classification system developed for the vulnerability of sites along the WAW over the data presented.

4. Discussion

Previous studies from Jarvis and colleagues (2010) examined the theme of tourism and its relationship with the environment and concluded that large scale tourism drives proceed at a fast pace to fulfil an economic need. However, Hsieh and Kung (2013) voice the concern that there can be ill regard for the environment as the connection between tourism and its environmental threat is highly underestimated. For this reason, the current study utilises historical environmental reports and a survey to assist in classifying the environmental vulnerability of sites to the WAW in the West of Ireland, this was conveyed using ArcGIS. The survey was used to uncover the viewpoint of all relevant organisations towards the WAW project.

Environmental impact of the WAW

The study investigated how many types of environmental parameters that tourists were likely to impact (see Figure 4). Mathew and Sreejesh (2017) found it important to investigate the environmental impacts with respect to tourism to ensure that the natural resources are preserved effectively and pollution minimised. By using ArcGIS to develop the matrix to assess site vulnerability, this research shows the study area is already home to fragile habitats and species. The use of desktop research, combined with GIS, allowed this study to extend on previous reports; examining 105 sites in total. The findings from this study agree with Crushell and co-workers (2015) who state that Fáilte Ireland must enhance visitor management and control. Waters and Lawton (2011), and Smith and D'Arcy (2017), state that the examination of a few key sites, as carried out by Fáilte Ireland, is not necessarily an accurate method of examining the WAW as a whole.

There are 61 sites within 500m of the trail and a further 5 sites are within 700m. This subtotal of 66 sites are very accessible for tourists to visit without deviating far from the route. The number of environmental impacts uncovered in this study verifies the requirement to investigate the environmental vulnerability across a wider representative portion of the WAW. Potential exists for organisations to work together to reduce the time, resources and capital costs to implement control and remediation measures where areas of concern overlap. For example, sites such as Ballycroy Bog in Mayo and Carrowmore Megalithic Cemetery in Co. Sligo experience a high number of visitors but

are closely managed by on-site visitor centres. Therefore, the information provided by site experts informs the users of vulnerabilities and thus, reduces the number of environmental impacts as visitors are mindful of the risks associated.

Organisational influence on the impact of the WAW

Failure to successfully implement environmental strategies can be attributed to the scarcity of information shared amongst both environmental and tourism organisations (see Figure 10), which limits the organisations ability to protect sites and the sites affiliated characteristics. Karlsson and coworkers (2017) note that public bodies need to actively engage in inter-organisational information sharing in order to achieve higher productivity, more informed decision making will produce informative reports of higher quality. This is reflected in this research with almost 40% (n=13) of organisations admitting to never working together. Though the vast majority (88%, n=29) expressed an interest in favour of working together towards a more integrated industry, with enhanced collaboration (see Figure 10). Currently, ten organisations are identified as influential in this space (Figure 5), yet the findings of this study suggest that they are not progressive enough to make a significant difference. Furthermore, the inadequacy of Ireland's environmental protection appears to be developing an unfavourable pattern as the European Court of Justice (ECJ) have made judgements against Ireland on two occasions in 2009 for the careless and inadequate transposition of Natura 2000 legislation.

Environmental concern surrounding tourism

Figure 16 highlights the proliferation of designated habitats along the Western Coastline resulting in many sites being within, or in close proximity to, designated areas such as SAC, SPA or NHA. 24 of the study sites are within designated areas. 49% (n=16) of organisations surveyed agree that the increase in visitors is certainly as a result of the WAW promotion and marketing drive (see Figure 7), with a further 45% (n=15) noticing an increase in visitor footprint at some sites. The WAW project was developed and driven from a coherent marketing perspective. Organisations are aware that there is little to no information available for users at many sites (see Figure 12) which calls for this documentation to be developed. Summertime, when most tourists tend to visit according to Stefănica and Butnaru (2015), is a vulnerable season for habitat disturbance in particular as most flora and fauna are in full bloom and the young animals that were born in springtime are beginning to gain independence. 30% (n=10) of respondents state that the impact of the WAW is positive in Figure 8. However, a limitation of this figure is that the background of the respondent may cause bias answers.

GIS as an environmental education tool

Data published by the organisations was transformed into qualitative data as the sites were classified based on vulnerability and displayed using ArcGIS. This study presented the opportunity to use ArcGIS to develop a user-friendly map that informed users of the susceptibility of each site to tourism related impacts (see Figure 18). A mechanism that is often overlooked in Ireland to combat environmental effects is environmental education. Only 8 respondents consider information to be adequately provided across all sites, as indicated in Figure 12.

Studies by Varela-Candamio and coworkers (2018) explored the importance of environmental education in determining eco-friendly behaviour and observed that environmental education is one of the most powerful methods to encourage people to incorporate pro-environmental choices into modern life. This supports resources such as

those developed in this study; easy to understand maps (such as Figure 18) allow for simple determination of each sites classification as tourists explore the WAW route. The mapping of such important information is a productive expression of the raw data transformed into a comprehensible, user friendly map that can be quickly referred to upon arrival at each site. The relevance of this classification map must be considered in the context of how the increased traffic associated with the WAW is a dramatic turnaround for the rural areas portrayed (see Figure 2). Honohan (2016) and Murphy and Scott (2014) noted that Irish national development came to almost a complete standstill from 2007-2010, and this impacted all industries across the region due to the economic recession. Subsequent exposure of the vulnerable Irish environment to dramatic and rapid changes brought by a large-scale tourism drive that followed this economic rescission is a potentially dangerous approach that could result in vulnerable environments not being able to facilitate or cope with. This classification developed shows that most sites range from medium to high vulnerability.

Furthermore, the spread of invasive and threatened species across the region using GIS is quite stark (see Figure 17). Interestingly, there are 20 more sites experiencing threatened species in comparison to those experiencing invasive species. In principle, the number of sites reporting threatened species, invasive species and habitat disturbance should be similar. The presence of invasive species at a site threatens the biodiversity of an area as the weaker species cannot compete for adequate water and resources and in turn there is a disturbance to the habitat that once existed. The relationship is strong between invasive species and habitat disturbance with both parameters effecting 50 sites. However, there are 70 sites reporting threatened species (see Figure 4). ArcGIS was very effective in detailing this discrepancy, with some of this discrepancy influenced, potentially, by the high traffic at these sites resulting in human interference. Figure 13 conveys that the awareness of biodiversity plans is low, with the 80-100% slice not being represented on the chart.

The use of buffer zones as a means of displaying the proximity of the sites to the WAW with 61 sites falling within 500m of the trail (see Figure 15). Based on this proximity mapping, and subsequent increased footprint of visitors, it would be reasonable to conclude that the changes noted in the spread of invasive species, and increased threated species, is tourist related.

5. Conclusions

Small countries, which are rich in natural landscapes and cultural assets, often rely on tourism to sustain the economy. The WAW has created a significant increase in visitors to the West of Ireland. In this study, historical data provided context for this study, and were compiled from ten organisations who have responsibility for the WAW sites. ArcGIS was utilised as an effective method of evaluating the number of WAW sites experiencing environmental impacts as a result of increased visitors. Following multidimensional data analysis, it is concluded that the increase in visitors at these WAW sites has an impact on the environment. Furthermore, there is a lack of collaboration between the organisations in regard to joining expertise and resources to protect the environment. The development of a vulnerability classification system, supported by ArcGIS software, identified 43 sites that were highly vulnerable, 55 sites that were considered medium vulnerability, 5 sites that were of low vulnerability and 2 sites that were regarded to be of minimal vulnerability. Such a classification system can outline the vulnerability of each environment for WAW users, contributing towards developing base-line information which could be used for education and further measurement and monitoring purposes.

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6. Recommendations

One of the primary limitations of this study was the reliance on the publicly available, self-reported, publications from organisations as opposed to complete reliance on primary data obtained by the researcher through independent monitoring. In future development of this research, it is recommended to establish a national organisation to carry out monitoring of all 475 sites associated with the WAW over a one year period, followed by analysis of sites vulnerability, to incorporate seasonal variations. Subsequently, mitigation measures should be holistically, and sustainably, developed. This study recognises environmental education as an effective means of decreasing the environmental impacts at the study sites caused by tourists. The use of GIS for this study can contribute to the knowledge provided to individuals in all sectors with a view to better understanding of complex issues. It is recommended that GIS is used as a tool on further ecotourism projects, as it effectively enhances environmental knowledge which will allow for better decision-making in relation to sustainable tourism management.

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Appendix I

Survey for a GIS-based study of the environmental impact of the Wild Atlantic Way in the West of Ireland.

*Required

Email address *

What type of organisation do you represent? *

- o National environmental organisation
- o Regional environmental organisation
- National tourism organisation
- o Regional tourism organisation

How closely are your workings with the regions that intersects the Wild Atlantic Way? Answer based on a scale of 1 (low) - 5 (high). *

You have been provided with a list of "Sites of Interest" alongside this survey, have you witnessed an increased visitor footprint as a result of the promotion of the Wild Atlantic Way to these sites? *

- Yes, Certainly
- Yes, at some sites
- o Unsure
- o No, other factors largely account for the increased footprint at these sites

How do you believe these environments are affected by the Wild Atlantic Way? *

- o Positively
- o Not affected
- Negatively

Do you think that these environments can be sustained into the future with this increased visitor footprint according to your monitoring? *

- o Yes
- o No

Are you aware of other organisations monitoring the same sites as your organisation?*

- o Yes
- o No

If you answered yes to the previous question, Please specify the other organisations involved?

Do you work in collaboration with these organisations or share data? *

- o Always
- o Occasionally
- o Never

Would your organisation consider working in collaboration with other parties in future?*

- Yes, we are interested
- No, this is of no benefit to us

Are you aware of existing biodiversity plans at these sites? *

• 80-100% of sites

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- $\circ~~60\text{--}80\%$ of sites
- \circ 40-60% of sites
- \circ 20-40% of sites
- $\circ \quad 0\text{-}20\% \text{ of sites}$

In your opinion, is educational information about the sensitivity of these sites readily available to its users when they visit? *

- Yes, very informative
- Little information provided on site
- No information provided

Appendix II

Survey Respondents per organization

Organisation	Number of Respondents	Percentage of Overall Respondents	
EPA	3	9%	
Mayo Co. Co.	4	12%	
Sligo Co. Co.	3	9%	
Galway Co. Co.	3	9%	
NPWS	2	6%	
Heritage Council	2	6%	
Local Tourism Offices	6	18%	
Government	4	12%	
Departments	4		
Fáilte Ireland	4	12%	
Marine Institute	2	6%	