Developing Leave No Trace Ireland Skills and Ethics for the Coastal Environment

Dogs Bay & Gurteen Bay, Roundstone, Connemara, Co. Galway.

Claggan Mountain Coastal Trail, Ballycroy National Park, Co. Mayo.

View of Croagh Patrick from Mulranny, Co. Mayo.

Keem Bay, Achill Island, Co. Mayo.

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Leave No Trace Ireland Guidelines for the Coastal Environment

Abstract

The coast provides a multitude of resources, and is home to many species of flora and fauna that are specially adapted to living in this harsh environment. It is also a popular destination for tourism and recreation. Over the last number of years, in part due to the success of schemes such as the Wild Atlantic Way, the number of visitors to the Irish coastline for outdoor recreation and tourism has dramatically increased. Increased visitation, provides many benefits, socially and economically, but has also had adverse impacts on the natural environment. The aim of this study was to consider the need for and create a Leave No Trace Ireland Skills and Ethics programme tailored to the coastal environment. This was achieved through both a desk study and field work. A literature review, including an examination of two case studies, and examination of best practices for outdoor recreation, in European countries, compared with Ireland's LNT programme, as well as consultation with a local community and Mulranny Environmental Group (MEG), comprised the research undertaken. One case study assessed the impacts of the designation of the Wild Atlantic Way in County Mayo, and the second, sought the opinions of the local community, in Mulranny village along the WAW, on the impacts of recreation on their coast. The survey was carried out in the months of July and August (2017), and the workshop in August (2017). The results show that coastal recreation is increasing in Ireland, particularly along its west coast, with impacts from recreation already evident. There is currently no information advising individuals and groups on best practices with respect to recreation along the coast, demonstrating the need for guidance to be established. The minimum impact practices of Leave No Trace, and public education and awareness, can help to significantly reduce environmental damage in the coastal zone and address the current lack of guidance available.

Acknowledgements

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1. Introduction

Throughout history coastlines have attracted human populations, with the coastal environment providing a variety of ecosystem goods and services. Coastal zones, as defined by the European Commission, are "*a strip of land and sea of varying width depending on the nature of the environment and management needs*". The health of the coastal environment is often dependent on adjoining catchments and land management practices, and is affected by both natural and man-made disasters (European Commission 2016a; Hardiman & Burgin 2010). Coastlines are host to many ecologically sensitive habitats and species, but due to the wealth of ecosystem goods and services the environment provides, the coastal zone is attractive for investment (European Commission 2016a). Most of the global population is concentrated along the coast or within 100km of it. Many key economic activities take place in the coastal zone such as marine transport, shipping of goods, fishing, recreation, tourism and offshore oil and gas drilling (United Nations 2015). Recreation and tourism are both significant economic and social activities in the coastal zone. Outdoor recreation, provides many benefits to human health and wellbeing as well as the economy (Wyles *et al*. 2014). However, it also can have a wide range of negative impacts on the environment (Hardiman & Burgin 2010; Kindermann & Gormally 2010). Due to the narrow nature of coastal zones, there is often conflict between activities and with the goal of conservation (European Commission 2016a). To help resolve this conflict, a holistic approach needs to be taken to achieve a balance between conservation and responsible outdoor recreational behaviour. Education and awareness programmes have been found to lead towards positive behavioural changes (Guo *et al*. 2017).

The overall focus of this paper is on coastal conservation and recreation in Ireland. To date, very little research has been carried out in Ireland in relation to the impacts of recreation on the coastal environment, and there are currently no codes of conduct or guidelines available to recreational users specifically for the coast. The aim of this study is to create a Leave No Trace Ireland Skills and Ethics programme tailored to the coastal environment. To achieve this, this study investigates (1) why the conservation of coastal environments is important, (2) what the impacts from recreation in the coastal zone are, (3) what legislation is in place for the conservation and recreation management of the coast, (4) what supports are in place for the legislation in Ireland and other countries, and (5) what this means at ground level by means of a case study. This thesis is structured as follows; Section 1 provides a review of the literature, exploring the above-mentioned points (1-4). Section 2 outlines the methodological approach

undertaken in this study. Section 3 presents the main findings. Section 4 provides a discussion of the main findings and Section 5 presents conclusions and puts forward recommendations.

1.1. Literature Review

1.1.1. Why Conserve the Coastal Environment?

The coastal environment comprises both land and sea elements, and is comprised of many different habitat types. These include sea cliffs, brackish waters, salt marshes, shingle and gravel banks, sand dune systems, coastal constructions, intertidal rock and sediment, subtidal rock and sediment, and the marine water body (Fossitt 2000). This zone and its many habitats, provide a wealth of ecosystem goods and services that society benefits from. These services include coastal protection, provision of food, scenic value, and recreational and amenity aspects (de Juan *et al.* 2015). Beaches, tidal wetlands, and rocky shores provide key services such as filtering of seawater and recycling nutrients as well as providing a critical habitat for invertebrates, birds, and other animals (Hardiman & Burgin 2010). Sand dune systems also form an important component of the coastal environment. In dune systems, vegetation, topography, and sedimentary processes are all interrelated (Nordstrom *et al.* 2012). Dunes provide important protection against severe weather events such as storms. They protect the land against the impact of high intensity waves and strong winds, preventing or delaying flooding and slowing erosional processes (Thompson & Schlacher 2008). Dune vegetation plays a critical role in trapping and stabilising dune sand, and preventing coastal erosion (Purvis *et al.* 2015). Beach and dune vegetation provide grazing land, recreational zones, and biodiversity, as well as aesthetic and spiritual benefits to human wellbeing (Hanley et al. 2014; Millennium Ecosystem Assessment 2005). These ecosystem services depend on biodiversity to function and to carry out ecosystem processes (Maseyk *et al.* 2016). The numerous species of coastal flora and fauna, are adapted to a stressful and harsh environmental gradient, giving them a high interest for nature conservation (Martins *et al.* 2017).

As a dynamic environment, the coastal zone is highly sensitive to human disturbance (Thompson & Schlacher 2008; Kindermann & Gormally 2013). These disturbances, greatly affect ecosystem service functioning (Thompson & Schlacher 2008). Human disturbances include shoreline armouring, infrastructural development, beach cleaning, beach nourishment, removal of dune vegetation, use of vehicles, trampling, camping, and other recreational activities (Thompson & Schlacher 2008).

Europe and its coastline are where human impacts have been greatest, with erosional processes and biodiversity loss being of key concern (European Commission 2016). Over the last five decades' coastal areas have undergone a significant amount of degradation (Martins *et al.* 2017). Some of the key drivers behind this degradation are changes in land use, pollution from urban and industrial areas, exploitation of aquatic ecosystem services, and recreation and tourism (Martins *et al.* 2017).

1.1.2. Outdoor Recreation and its Impacts

Outdoor recreation and tourism are substantial ecosystem services within Europe which have a high economic value, contributing considerably to the income and employment of many local communities (Schagner *et al.* 2017). The terms recreation and tourism are closely linked to one another. However, there are important distinctions to be made between them. Recreation is defined as an activity done for enjoyment when one is not working, while tourism is the business of providing services such as transport, places to stay, or entertainment for people who are on holiday (Oxford English Dictionary 2017; Cambridge Dictionary 2017). Hence tourism refers to those who have come to visit an area from elsewhere, while recreation is something carried out by tourists and local residents. Residents are important stakeholders for recreational areas due to their regular interaction with them (Newell & Canessa 2017).

Coastal and marine tourism are closely related as both incorporate land and sea elements, with many recreational activities taking place within both (Papageorgiou 2016). Within Ireland, tourism is one of the most important economic sectors. Tourism was responsible for earnings of €7.8 billion, in 2016, with overall employment in the sector estimated to be around 220,000 (DTTAS n.d.). Fáilte Ireland, the Irish National Tourism Development Authority, estimated coastal tourism in Ireland (excluding Dublin) to be worth €2 billion, providing 80,000 jobs in 2014 (Fáilte Ireland 2014a). The full economic value of coastal recreation is not entirely captured in the market, as many goods and services such as beach visits and storm protection provided by wetlands, are not paid for in monetary terms (Alves *et al.* 2017). Although the coast is a valuable resource, many recreational activities that visitors engage in are accessed without charge and so are not reflected in the market, making their economic value unclear (Alves *et al.* 2017). This in turn has implications for policy makers and land managers in determining the level of investment a coastal area should receive. Recreation is a social, economic, and ecological activity (Simon & Alagona 2009). The main issue surrounding coastal tourism and recreation is the conflict between the benefits it provides to the economic and social environment and its impact on the natural environment (UNEP 2009). It is only one

of the many forces causing ecological change. Climate change, air pollution, invasive species, disease, and poor management schemes have all contributed to the transformation of outdoor areas and the species present within them (Simon & Alagona 2009).

Land-grab and the demand for resources, have resulted in severe erosion and loss of valuable habitats and species, as well as altering the natural dynamics of ecosystems and offshore productivity. At the same time, recreation, and tourism, provide employment opportunities, increase revenue, help to improve infrastructure, and investment in environmental protection and education (UNEP 2009). People's marine awareness is seen to increase after visits to the coast as well as receiving benefits to personal wellbeing (Wyles *et al.* 2014). In terms of environmental protection, tourism and recreation can make significant contributions. Through financing biodiversity conservation, protected areas have an economic justification, providing an alternative form of work and income to residents of a community (UNEP 2009). It is important to consider resident and non-resident attachment to a recreational place, especially since residents will interact with a place regularly compared to non-residents.

Outdoor recreation is linked to people's desire to be near nature (Beery & Jönsson 2017). The nature of recreational activities, the locations in which they take place and the number of users, all impact on the environment and the animals which live there (Reilly *et al.* 2017). Most recreational activities are concentrated in the seaward sections of the beach while many of the important habitats are located landward (Kelly 2016). In Ireland, the coastline spans approximately 7,500 km in length (Marine Institute n.d.). Most the coastline remains rural, while other parts are host to urban centres such as Dublin and Galway city, showing uneven levels of use and impacts from humans. Seasonal variations, public holidays, and weekends, when compared to weekdays, all contribute to the fluctuations in the number of visitors to the coast (Reilly *et al.* 2017). Some activities are potentially more damaging to the environment than others. It is important that recreational users are aware of the effects they can have on the environment and how to minimise the effects through best practices.

Impacts from recreation include trampling of vegetation, either by foot or by vehicles, disturbances to wildlife (most notably nesting birds), light and noise pollution, littering, camping, nutrient loading from human waste (can be from lack of toilet facilities or from poor sewerage systems), the alteration of trophic dynamics from the introduction of food scraps, increased habitat fragmentation and the introduction of invasive species from tyres, footwear or the hulls of boats (Purvis *et al.* 2015; Thompson & Schlacher 2008; Hardiman & Burgin 2010). Wildlife disturbance can appear in many forms. Activities such as wildlife watching contributes to conservation efforts through data collection, employing local communities, and

increasing public awareness of environmental issues (Inman *et al.* 2016). However, there is emerging evidence of changes in animal behaviour linked to this pursuit (Inman *et al.* 2016). Disturbance of birds can affect their reproductive patterns and success, cause them to expend energy in fleeing from humans, reduce foraging time and induce high levels of stress. This disturbance can also lead to migrating birds selecting new undisturbed sites which can bring about increases in competition (Schlacher *et al*. 2013).

Littering and the leaving behind of food waste can also attract species that may not normally visit an area (Schlacher *et al*. 2013). Waste from humans, including lost fishing equipment, damages sea life as does uncontrolled recreational fishing, impacting on fish stocks, and putting pressure on vulnerable species (Riera *et al.* 2016). Human activities not only damage the coastal environment but can also have detrimental impacts on our experiences (Wyles *et al*. 2016). Littering, lack of rock pooling ethics and general disturbance have been found to have some of the greatest negative impacts on visitors to the coast (Wyles *et al*. 2014). Littered coastal environments have a lower restorative quality for visitors, were less liked and resulted in lower mood and restoration likelihood than natural, clean environments (Wyles *et al*. 2016). Public litter had the most negative impacts. It was associated with disrupting visitor's experiences and even been stated as a reason for people not to visit certain sites (Wyles *et al.* 2016).

The use of vehicles on sand dune systems represents one of the most damaging activities to biodiversity and dune stability. Damage from vehicles leads to significant reductions in vegetation cover and diversity, reducing the resilience against erosion and the quality of the habitats for invertebrates (Thompson & Schlacher 2008). The abundance and diversity of benthic invertebrates which are often a key food source for many bird species, can be substantially reduced from vehicles on beaches and dunes (Schlacher *et al*. 2017).

Trampling effects from walking is also highly damaging to the dune environment. High density tourist areas have been found to show no dune vegetation compared to the presence of vegetation in moderate density tourist areas (Perez-Maqueo 2017). This suggests that coastal vegetation has a tolerance level up to a point, but beyond that, vegetation no longer thrives. This indicates that low and medium density tourism, and indeed recreation can be compatible with the protection of beach and dune coastal vegetation (Perez-Maqueo 2017). Trampling of sand dune vegetation, either by foot or vehicles and the damage it causes, frequently appears in the literature. To help combat this issue, especially in more tourist developed areas, it has been suggested to put in place raised wooden paths or boardwalks that sit above the dune surface, providing some protection to the vegetation (Purvis *et al*. 2015; Munoz Valles *et al*.

2011). Accessibility to a site is important; places that have specific visitor sites with road and/or path access, are much more likely to be visited than sites that are more remote (Beery & Jönsson 2017). However, in the absence of management or access points, people will tend follow the easiest routes down to the beach, typically across sand dune systems, resulting in multiple paths. Beach paths reduce biodiversity and the frequency of the paths has the potential to greatly increase the likelihood of flooding on the interdune areas during very high tides and storm events, which causes erosion and increases soil salinity (Purvis *et al.* 2015).

Human expectations of beaches and the coastal environment, are complex and multidimensional (Schlacher *et al.* 2013). People exhibit a wide range of values and attitudes regarding the coast, with different levels of place attachment, not all of them being compatible with existing uses (Schlacher *et al.* 2013; Beery & Jönsson 2017). This can lead to conflict, for example, from different recreational activities taking place in the same area. Crowding can also contribute to both negative environmental and social impacts (Tratalos *et al.* 2013). This adds to the complexity when establishing legislation and management practices relating to the coastal environment. It is also why stakeholder involvement and best practice guidance is highly important.

1.1.3. Legislative Context for Coastal Environments

Legislation related to the conservation and recreation management of the coastal environment is at the international, European, and national levels (Figure 1). Internationally, the *United Nations Convention on the Law of the Sea* (UNCLOS), the *Regional Sea Conventions,* the *Aarhus Convention* and the *UN2030 Agenda for Sustainable Development*

International
- United Nations Convention on the Law of the Sea
- Aarhus Convention 1998
- United Nations 2030 Agenda for Sustainable Development

European
- Birds Directive 2009/147/EC
- Habitats Directive 92/43/EEC
- Integrated Coastal Zone Management programme
- Marine Strategy Framework Directive 2008/56/EC
- Maritime Spatial Planning Directive 2014/89/EU

National - Ireland
- Foreshore Act 1933
- Wildlife (Amendment) Act 2000
- Planning and Development (Amendment) Act 2010
- European Communities (Birds and Natural Habitats) Regulations 2011
- Maritime Area and Foreshore (Amendment) Bill 2013

Conservation and Recreation Management of the Coastal Environment
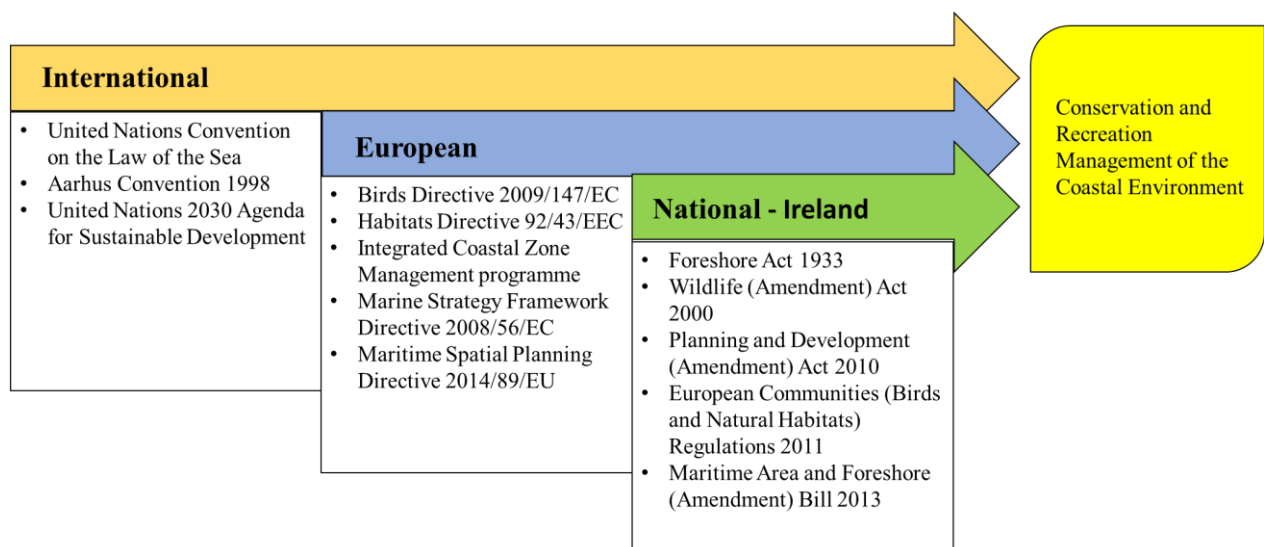
Figure 1: Legislation relating to the conservation and recreation management of the coastal environment at the international, European, and national levels.

provide the framework for European legislation (United Nations 2017). The core legislation, in Europe, involved in the protection of the coastal environment includes the *Birds Directive*, the *Habitats Directive*, *Marine Strategy Framework Directive,* and the *Directive on Maritime Spatial Planning*. There are also several other directives, conventions, protocols, and agendas supporting and complementing these main directives.

The *Birds Directive 2009/147/EC* and the *Habitats Directive 92/43/EEC* make up the Natura 2000 network. The aim of the Birds Directive is to protect all the 500 species of bird naturally occurring in the European Union (European Commission 2016b). Sites designated under the Birds Directive are known as Special Protection Areas (SPAs). Approximately one third of the European Union's wetlands are located on the coast, as well as more than thirty percent of the SPAs designated under the Birds Directive (European Commission 2016a). Under the Habitats Directive, key conservation areas for habitats and species are designated as Special Areas of Conservation (SACs). Eight of the forty priority habitats listed in the Habitats Directive are coastal (European Commission 2016). There have been numerous issues with the implementation of the Habitats Directive and with compliance by Member States (MS). In many MS, the Habitats Directive, has been heavily criticised and opposed for its top down approach and the lack of consultation with local landowners in the designation of SACs and in the implementation of management strategies (Kindermann & Gormally 2013). It is increasingly being recognised that top-down approaches to nature conservation are insufficient. Instead a mixture of top-down and bottom-up approaches are required, with stakeholder engagement a vital element for success. Codes of conduct, like Leave No Trace play a key role in this.

The *Marine Strategy Framework Directive 2008/56/EC* (MSFD) aims to achieve Good Environmental Status (GES) of the EU's marine waters by 2020 and to protect marine resources. It also provides a framework for the creation of a network of Marine Protected Areas (MPAs). The Directive on *Maritime Spatial Planning 2014/89/EU* (MSP) outlines that planning processes should consider land-sea interactions and follow an ecosystem-based approach, as outlined in the *Marine Strategy Framework Directive 2008/56/EC*.

In Ireland, the *Habitats and Birds Directives* are represented through the *European Communities (Birds and Natural Habitats) Regulations 2011* (NPWS n.d.). This compliments the *Wildlife (Amendment) Act 2000.* Ireland's maritime law includes the *Maritime Area and Foreshore (Amendment) Bill 2013*. The aim of the Bill is to integrate certain parts of the foreshore consent process (under the *Foreshore Act 1933*) with the existing on-land planning system which falls under the *Planning and Development (Amendment) Act 2010* (Irish

Maritime Development Office 2017). The *Planning and Development (Amendment) Act 2010,* provides the statutory basis for protecting Ireland's natural and architectural heritage (NPWS n.d.). The act also covers the preservation of public rights of way by local authorities (DoECLG 2013; DoHPCLG 2016). As evidenced in the legislation, there is a clear need for the conservation of coastal areas. Bottom-up approaches, greater stakeholder engagement and best practices will play a key role in the success of coastal conservation, as traditional top-down approaches alone have proven to be largely unsuccessful.

1.1.4. Managing Outdoor Recreation

In support of the legislation, many countries have provided codes of conduct or best practice guidelines for members of the public, on rights and responsibilities when taking part in outdoor recreation. Ireland, until 2006, did not have an official countryside code. In response to this, Leave No Trace Ireland was officially launched (Leave No Trace Ireland n.d.). Ireland's Leave No Trace (LNT) programme provides guidance on responsible outdoor recreation. Unlike other nations, all land in Ireland is in private or state ownership and there is no legal right of access to the Irish countryside (DoECLG 2013). It is landowners who permit access. In comparison, countries including the United Kingdom, Norway, Sweden, and Finland have either single or several pieces of legislation that grant access to the countryside.

The concept of LNT dates to the 1960's, where it was first developed in America, by the forestry service in response to increasing public land use and the subsequent development of the outdoor recreation industry (Simon & Alagona 2009; Leave No Trace 2012). In 1994 it became a non-profit organisation known as the Leave No Trace Center for Outdoor Ethics (Leave No Trace 2012). Today, in America, LNT is the official education and outreach policy for managing recreational use (Simon & Alagona 2009). From America, the concept of LNT has spread internationally. Active partners of LNT are found across thirty countries worldwide. LNT is based on seven core principles that aim to minimise the impacts from recreational activities (Simon & Alagona 2009). The seven principles are: 1. Plan Ahead and prepare; 2. Be Considerate of Others; 3. Respect Farm Animals and Wildlife; 4. Travel and Camp on Durable Ground; 5. Leave What You Find; 6. Dispose of Waste Properly; 7. Minimise the Effects of Fire.

There are common features relating to conservation management practices that appear in the different literature. Overall there is a consensus that stakeholder participation is key (Beery & Jönsson 2017; Kindermann & Gormally 2013; O'Mahony *et al*. 2009; Simon & Alagona 2009; Newell & Canessa 2017). Communication and education alone are not enough to be

successful in altering people's behaviours. It has been often found that people often know what are the correct things to do but that doesn't always mean they will do them. Vaigias *et al*. 2014, argue that knowledge, social expectation, and the ease of performing techniques need to all form part of communication and education, as mechanisms to increase environmentally responsible behaviour and in this instance LNT behaviours. It should be noted, that the Leave No Trace programme in Ireland is not widely known, when compared to the programmes or codes employed by other nations (Price 2016). This represents a significant problem that needs addressing. In the USA, LNT is present at visitor centres, on notice boards as well as having its own branded product range (Simon & Alagona 2009). However, in Ireland, many places of interest are largely underdeveloped, often with no facilities (Kindermann & Gormally 2013). One way to increase the LNT message, is to work alongside local authorities and communities, whereby the LNT principles are included on the signage and information that the local authority provides.

The coastal environment is host to a wide variety of habitat types, several of which are protected under the Habitats Directive. Human presence and expectations have a wide variety of impacts on the environment and the species of flora and fauna that live there. This in turn affects the ability of the environment to provide ecosystem goods and services, which we as humans rely upon. Through legislation and management practices, impacts can be mitigated against. Programmes, such as Leave No Trace, are vitally important in terms of engaging the public, creating awareness of biodiversity and conservation, and highlighting how individuals can help to protect the environment through simple practices, without taking away from recreational activities and outdoor experiences. The overarching aim of this study to produce a Leave No Trace Ireland Skills and Ethics programme for the coast. To achieve this aim, a comparison of Ireland's guidance for responsible outdoor recreation with other European countries has been carried out. A case study of the Wild Atlantic Way (WAW) in Ireland and the management of recreationists was also completed. Consultation with members of a coastal community and the Mulranny Environmental Group (MEG) took place, and the input received from this process was taken on board and incorporated into the skills and ethics programme.

2. Materials and Methods

This section outlines the methodology taken for this research. The aim of this study is to create a Leave No Trace Ireland Skills and Ethics programme for the coastal environment. Following a comprehensive literature review, the following objectives were set out:

➤ Assessment of the need for a tailored outdoor ethics programme for coastal areas through examination of two case studies:

  o Assessment of the impacts of the designation of the Wild Atlantic Way in County Mayo.

  o Survey of opinions of a local community in a village along the WAW on the impacts of recreation on their coast.

➤ Examination of best practices for outdoor recreation, in place in other European countries, and a comparison with Ireland's LNT programme.

➤ Consultation with the local community and Mulranny Environmental Group (MEG) on proposed solutions in relation to coastal recreation.

➤ Compilation of a Leave No Trace Ireland Skills and Ethics programme for the coastal environment.

2.1. Wild Atlantic Way Case Study

An Assessment of the need for a tailored outdoor ethics programme for coastal areas was conducted through examination of the Wild Atlantic Way (WAW) in County Mayo, as a case study. The WAW, is a coastal touring route located along the west coast of Ireland, with County Mayo situated in the north-west (Figure 2). The WAW in County Mayo was chosen as a case study as its location was accessible, and because the county is largely rural with a relatively low population (120,082 persons in 2016 (Central Statistics Office 2016a)). Oftentimes, popular recreational areas are also popular tourism destinations, for both domestic and overseas visitors. This is particularly the case along the coast and with

Figure 2: Map of the Wild Atlantic Way & outline of County Mayo (Fáilte Ireland 2015a).

the introduction of the WAW. The WAW extends over 2,500km of coastline, through nine coastal counties, from County Cork in the south to County Donegal in the north. It joins up several pre-existing routes with approximately 200 towns and villages located either along the route or adjacent to it (Fáilte Ireland 2015a). The WAW is presented through six geographic zones within which there are 161 candidate Discovery Points (viewing points and lay-bys), 15 Signature Discovery Points (iconic "must-see" sites) and 28 Embarkation Points to 26 off-shore islands.

For the case study, research was conducted through online searches, using the Google search engine. Key words used were Wild Atlantic Way, Fáilte Ireland, and environmental management of the WAW. Visitor numbers and information was obtained from Fáilte Irelands' tourism data. This data was analysed using Microsoft Excel to provide a comparison of domestic and overseas visitor numbers from 2011 to 2015 in Co. Mayo and a comparison of the numbers of visitors engaging in several outdoor activities from 2011 to 2015. To investigate what information is currently provided along the WAW, several of the Discovery Points in County Mayo were visited, photographs of the information provided at each site were taken and other features i.e. blue or green flag destinations and Leave No Trace information, were noted.

2.2. Mulranny Case Study

Opinions of residents of Mulranny, County Mayo, a coastal village situated on the WAW were sought through a questionnaire. The village has a population of 437 persons (Mulranny Community Futures 2016) and was chosen as a representative example of a small rural village along the WAW. Close to Mulranny village (approximately 2km), is the Dooghbeg WAW Discovery Point. It provides visitors with views across Clew Bay and the start of a coastal driving route, known as the Atlantic Drive.

The questionnaire survey took place in July and August (2017). Participants for the survey and workshop were representative stakeholders from the community, including members of the Mulranny Environmental Group (MEG). The MEG, based in Mulranny village Co. Mayo, is actively involved in coastal conservation, including activities such as beach clean-ups, habitat mapping and publishing of interpretative literature for local signs and maps, amongst other work.

The data collection tool used was an on-site questionnaire survey. The questionnaire comprised of a set of questions looking at outdoor recreation in the coastal environment and

awareness of LNT. A five-page questionnaire (see Appendix B) was compiled using both open and closed questions.

The questionnaire was made up of two sections. The first section comprised of basic questions that could be completed by any member of the Mulranny community. The second section had questions specifically for members of the MEG, as they pertained specifically to their coastal conservation activities. The researcher went through the questionnaire with most participants and was present for those participants that completed the questionnaire themselves. This allowed any questions that arose to be answered and to provide an overview of why the information was being collected. To prevent the survey from being too time consuming to complete, the initial questions were closed questions with tick boxes, asking stakeholders how much they agreed or disagreed with statements provided. These statements were scored on a seven point Likert scale. Demographic questions including age, gender and nationality were asked as well. The latter questions asked were open ended questions to assess people's opinions on issues faced in their community in relation to the coast and recreation. Questions specifically for the MEG asked for opinions on the MEG's role in coastal protection, who should be involved in the process of coastal protection and activities that the group is involved in. The survey took around 10 minutes to complete. Participants were not required to supply their names when taking part in the survey, ensuring anonymity. The results of the questionnaire survey were analysed using Microsoft Excel, where scores were converted to percentages.

A workshop was arranged by contacting members of the MEG via email to establish a time, date, and location. There were six attendees at the workshop, who were divided up into three groups of two. A full outline of the workshop can be found in Appendix C, Table 4. Within their groups, they were asked to identify what they thought the top three coastal recreation issues are in Mulranny. Each group presented their three issues. From the total nine issues, three were chosen as priority by voting. Each group was then asked to envisage potential future solutions to these issues. The workshop sought to put together an action plan assigning roles to the community, Leave No Trace, and the local authorities over the short, medium, and long term. The second half of the workshop allowed for MEG members to provide feedback on the draft skills and ethics document for the coast.

2.3. European Best Practices

Best Practices examples on outdoor recreation from across the European Union were sought for review. Several guideline documents from across the United Kingdom, as well as Norway, Sweden and Finland were obtained and reviewed. The guidelines from these countries were readily accessible and were available in English. They were found using the Google search engine. Key words used individually and in combination were best practice guidelines for coastal recreation, countryside code, right of public access, seashore code, coastal code and right to roam. To provide a comparison of the best practices of each country, a table was created using Microsoft Excel. Features that were compared between each country include the name of the guidance document, the best practices outlined within each, the legislation relating to the codes of conduct and the access rights of each country. Given the geographic location of these countries, particularly the United Kingdom, many measures that have been employed are applicable, and relevant to Ireland.

2.4. Leave No Trace Ireland Skills and Ethics

The skills and ethics programme for the coast is based on the seven principles of Leave No Trace. Guidance documents from across the United Kingdom, Norway, Sweden, and Finland were reviewed. Localised guidance documents for specific activities, from the United Kingdom, were also drawn upon. The specific activities include fishing, foraging, wildlife watching, wild camping, and seashore codes of conduct. The documents are linked to different organisations, regions, and groups across the United Kingdom. As mentioned above, a workshop with the MEG allowed members to provide feedback on the draft skills and ethics document. This included what they liked about the draft, what they felt was missing, and how it can be improved. All the above information contributed to the final draft of the skills and ethics document for the coast.

3. Results

This section will present the main findings of the study. The results will be provided as per the objectives outlined in the methodology.

3.1. Wild Atlantic Way Case Study

Along the WAW, many coastal sites now have visitor centres installed, parking facilities, large scale information and interpretive signage resulting from the marketing of the WAW (Fáilte Ireland 2014b). Figure 3 shows some of the signage that is present at a few of the Discovery Points in Co. Mayo.

Figure 3: Information and interpretive signage at present at WAW discovery points. The red circles are the Leave No Trace principles that are incorporated into the signage. Top left: Carrownisky Strand, Top right: Roonagh Pier, Bottom Left and Right: Old Head (Source: own photographs).

Co. Mayo has twelve Blue Flag beaches and six Green Coast beaches, of which six beaches are also WAW Discovery Points. The level of visitor information varies from site to site. Table 1 provides a comparison of which beaches are Blue Flag, Green Coast, Discovery Points, Signature Discovery Points (iconic "must-see" sites) and whether they have LNT information present.

Table 1: Comparison of beaches in Co. Mayo of those awarded Blue Flag, Green Coast, Discovery Points, and Signature Discovery Points on the Wild Atlantic Way and whether they display Leave No Trace information (Sources: Fáilte Ireland (n.d.a), An Taisce 2017a &2017b, EPA 2017).

Comparison of beaches in Co. Mayo awarded Blue Flag, Green Coast, those that are Discovery Points and Signature Discovery Points on the Wild Atlantic Way and whether they display Leave No Trace information					
Beach	**Blue Flag Beach**	**Green Coast Beach**	**Discovery Point**	**Signature Discovery Point**	**LNT Information Displayed**
Carrowmore	•				
Bertra *	•				
The Harbour, Clare Island	•		•		
Mulranny *	•				•
Dooega	•				
Keel	•		•		
Keem	•			•	
Dugort	•		•		
Golden Strand	•				
Mullaghroe	•				
Elly Bay	•		•		
Ross Beach, Killala	•				
Silver Strand		•	•		
Carrownisky *		•	•		
Termon		•			
Cross Belmullet		•			
Srah		•			
Portacloy		•			
Old Head *			•		•
Rinroe Beach					

* Beaches visited as part of the study.

The WAW was officially launched in 2014. The year of 2014 saw a 13% increase in the number of domestic visitors and a 16% increase of overseas visitors to Co. Mayo. While 2015 showed an increase of 14% in overseas visitors, particularly from main land Europe (19%) when compared to 2014 (Figure 4).
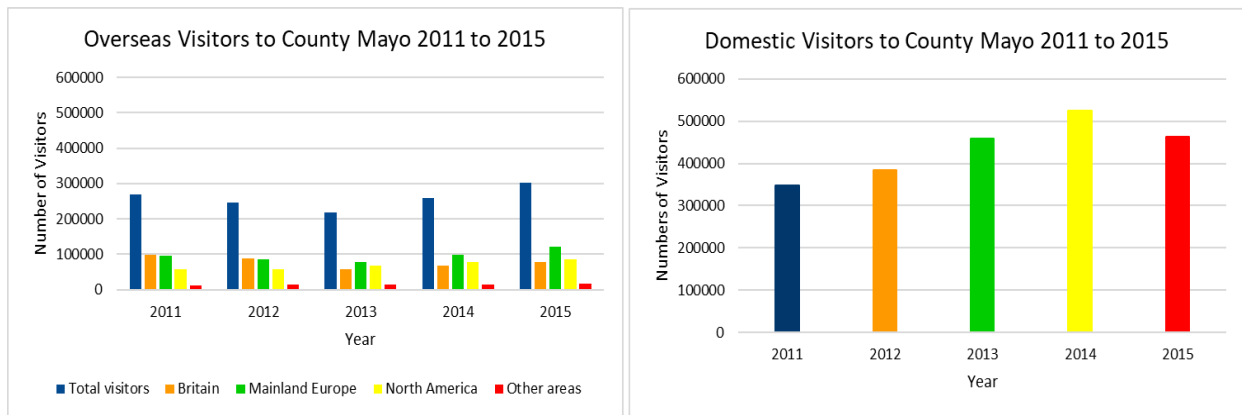
Figure 5: Bar graphs showing overseas and domestic visitor numbers to Co. Mayo from 2011 to 2015 (Fáilte Ireland Tourism facts and figures, Regional Tourism Performance 2011 to 2015).

Figures available for activities in Mayo are presented in Figure 5. For both overseas and domestic visitors, hiking and cross country walking were the most popular activities visitors engaged in. The year 2015 saw a 7% increase for overseas visitors participating in this activity compared to 2014 and domestic visitors a 4% increase. Activity figures for domestic and overseas visitors at the county level are limited. To provide a comparison between domestic and overseas visitors there is only data on the activities outlined in Figure 5. There is more data on activities of domestic visitors and there is no data on resident participation. There is also no information in relation to visitor's awareness of Leave No Trace Ireland or best practices for outdoor recreation.
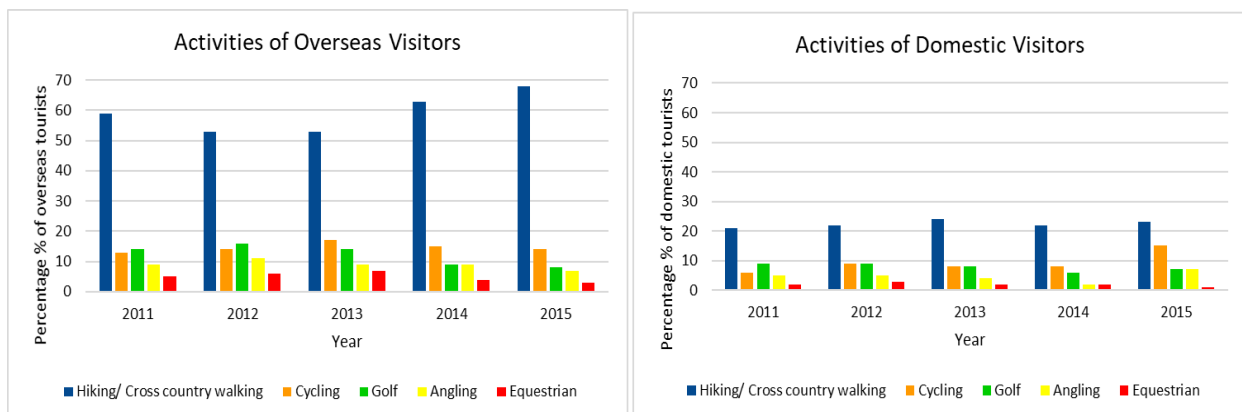

Figure 4: A comparison of overseas and domestic visitors in Co. Mayo and their participation in five outdoor activities from 2011 to 2015 (Fáilte Ireland Tourism facts and figures, Regional Tourism Performance 2011 to 2015).

3.2. Mulranny Case Study

This project collected 18 completed surveys looking at outdoor recreation in the coastal environment and awareness of Leave No Trace Ireland in Mulranny. The survey was divided into two sections. The first section dealt with general questions and the second section was specifically for members of the MEG. Of these 18 responses, 5 were from members of the

16

MEG and the remaining 13 responses were from residents of the community. Figure 6 displays the overall age profile of the participants of the survey. Most of the participants were female (73%) and Irish (73%). Other nationalities included British (11%), Dutch (11%) and Irish-American (5%). Each of the members of the MEG had heard of the LNT programme. For
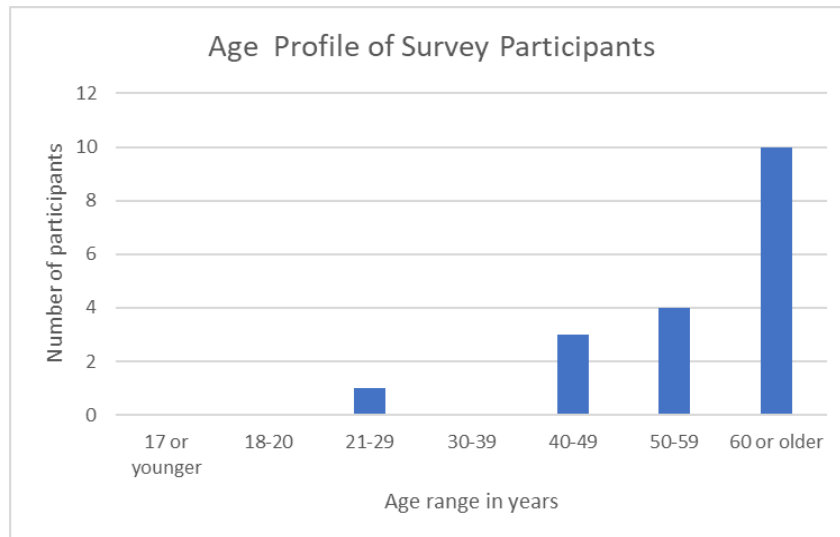

Figure 6: Age profile of survey participants. From question 1.

residents of the community, 54% had heard of the programme. Word of mouth was predominantly how participants were aware of LNT, followed by publications and events attended. 88% of all participants believe that LNT is not widely known across Ireland. In terms of knowledge of LNT, for members of MEG this ranged from moderate to in-depth knowledge whilst residents of the community ranged from basic to knowledgeable (Figure 7).

A series of statements were presented to participants of which they were required to mark one answer across a seven-point scale. Figures 8 to 10, show the responses from all the
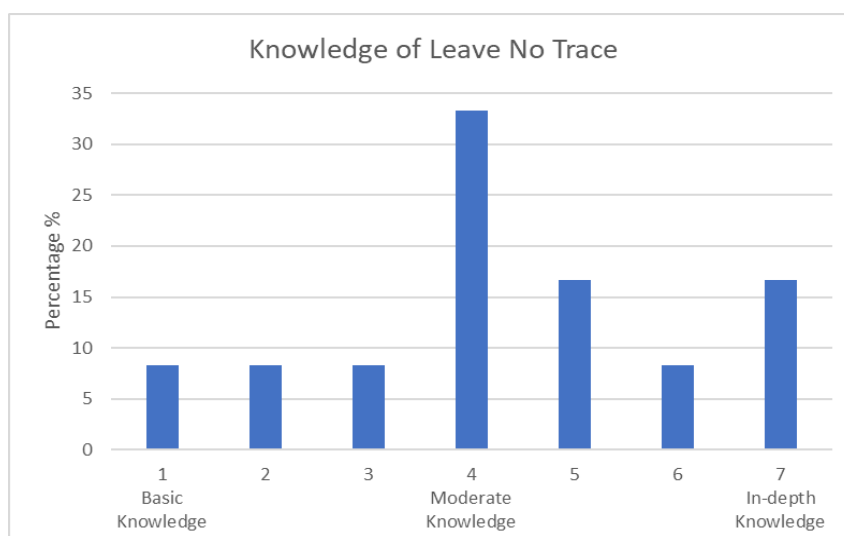

Figure 7: Participants knowledge of Leave No Trace, ranging from basic to in-depth. Question 6.

participants for each question. Figure 11 displays the results of a question that required participants to rank responses on a five-point scale, from 1 to 5.

Figure 8 shows that 61% of participants agree with the statement that residents have a higher responsibility towards the coastal environment than tourists or visitors and 33% disagreed with this statement. Of those in agreeance, 33% somewhat agreed, 17% strongly agreed and 11% agreed. Of those who disagreed, 22% strongly disagreed.
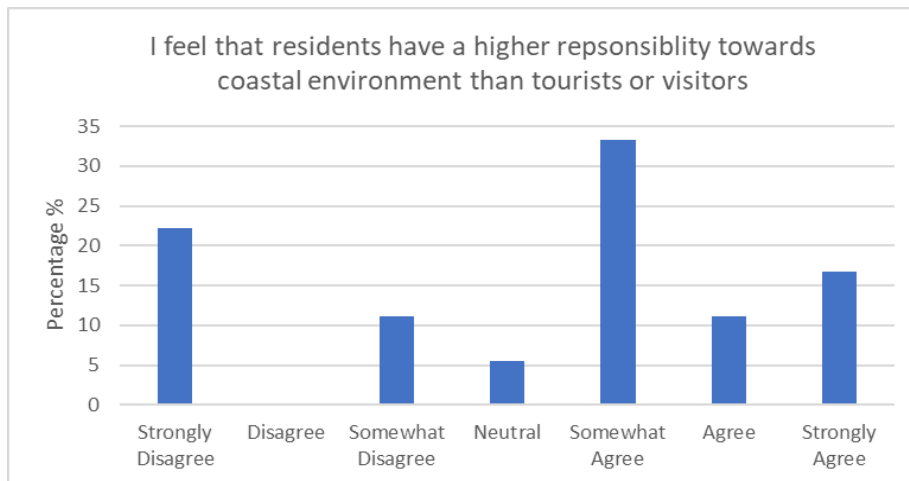
Figure 8: Shows the proportion of participants that agree or disagree with respect to the statement, that "residents have a higher responsibility towards the coastal environment than tourists or visitors". Question 8.

Figure 9 shows that 28% of participants agree that people are largely aware of the impacts they have on the coastal environment, with 67% disagreeing with this statement. 11% strongly disagreed, 33% disagreed and 22% somewhat disagreed.
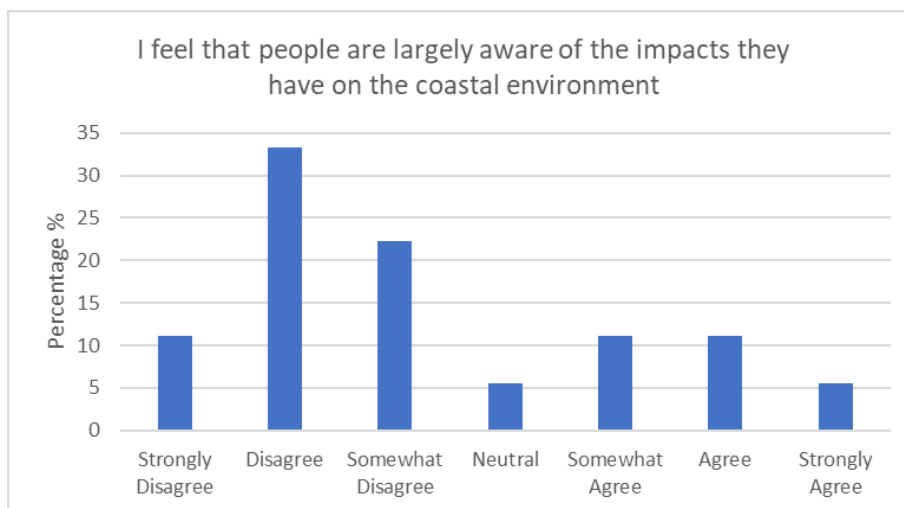
Figure 9: Shows the proportion of participants that agree or disagree with respect to the statement, "people are largely aware of the impacts they have on the coastal environment". Question 9.

Figure 10 shows that 78% of participants feel that if people are made more aware of the impacts recreation has on the environment, that they are more likely to be respectful and mindful of their actions. 6% of participants somewhat disagreed with this statement and 16% remained neutral.
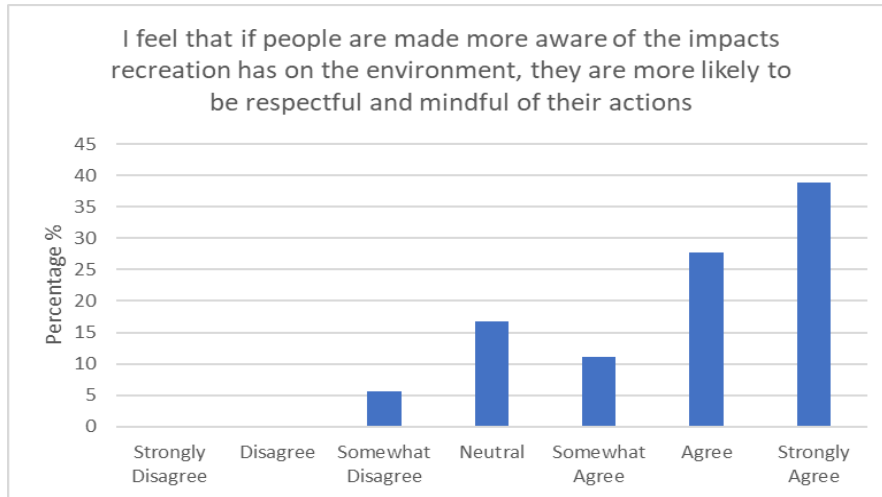

Figure 10: Shows the proportion of participants that agree or disagree with respect to the statement, "I feel that if people are made more aware of the impacts recreation has on the environment, they are more likely to respectful and mindful of their actions". Question 10.

Figure 11 shows that all participants agree that programmes such as Leave No Trace are important in encouraging responsible outdoor recreation. 67% strongly agreed with this statement, 22% agreed and 11% somewhat agreed.
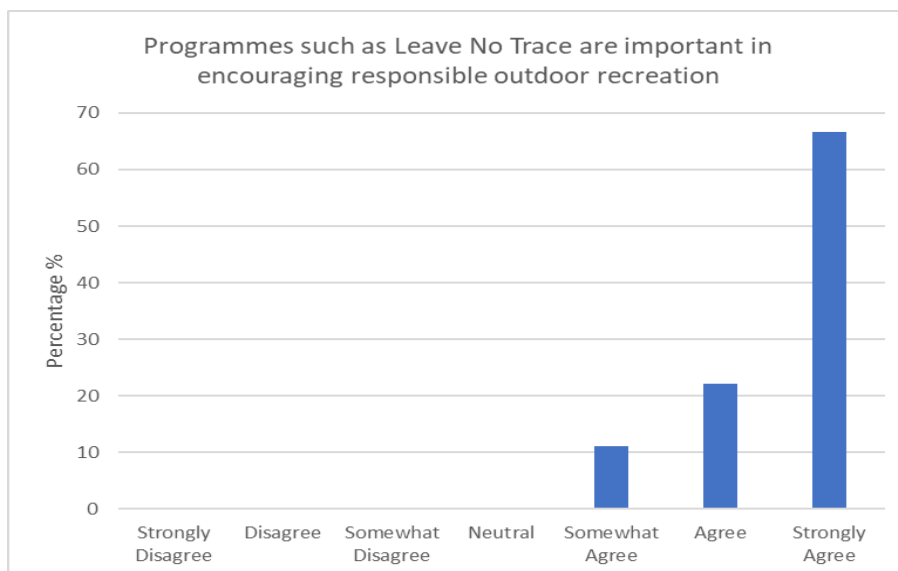

Figure 11: Shows the proportion of participants that agree or disagree with respect to the statement, "programmes such as LNT are important in encouraging responsible outdoor recreation". Question 11.

Figure 12 shows that 41% of participants feel that the Irish population has the greatest level of responsibility towards the coastal environment, followed by local communities at 35%. 47% feel that local communities are mostly responsible and 29% believe it is the government. Tourism businesses (41%) and the Irish population (35%) are considered moderately responsible. Tourists (35%), tourism businesses (24%) and the government (24%) are considered somewhat less responsible, with tourists (59%) and the government (24%) considered as the least responsible.
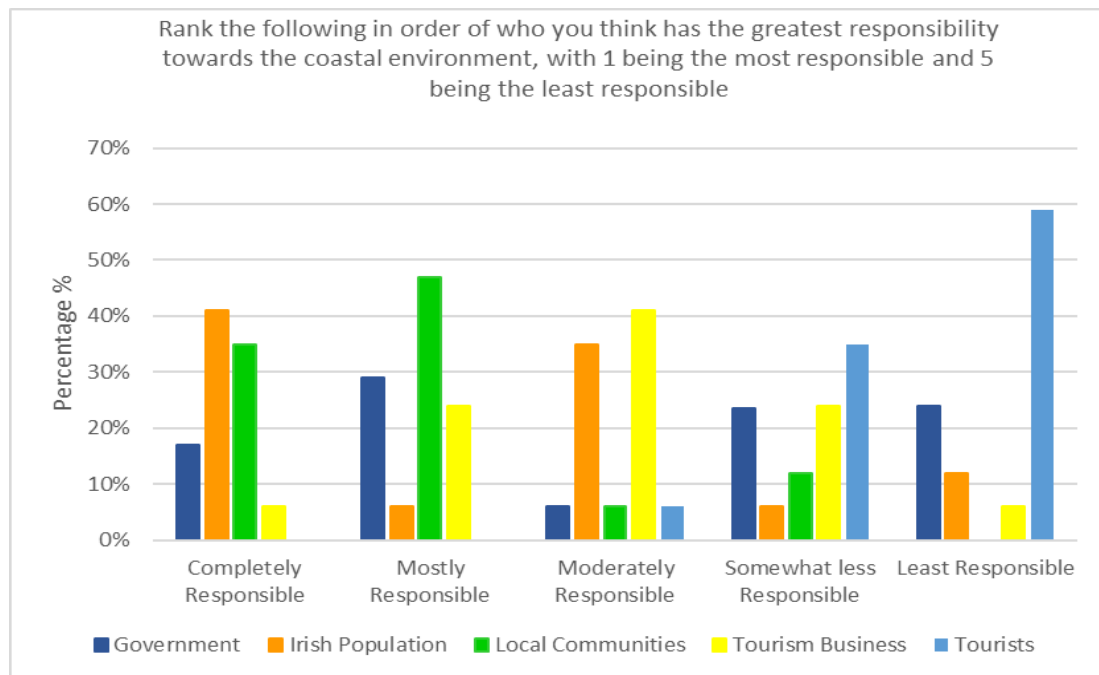

Figure 12: Provides an overview of who participants believe to have the greatest responsibility towards the coastal environment and those that have the least amount of responsibility. Question 12.

The main issues that were highlighted in the survey include litter (72%), erosion (22%), off-road vehicles (17%), camp fires (11%), overgrazing (6%), trampling of vegetation (6%) and signage (22%). In the case of signage, 11% of participants felt that there is too much signage present in Mulranny village, namely relating to commercial advertising aimed at tourists. Another 11%, felt there is a lack of signage, namely relating to educational information on the local environment and special conservation areas. In terms of steps or changes participants would like to see take place to help conserve the coast, the top themes include better education which includes programmes and the use of signs for protected areas (44%), a reduction in litter (33%), greater support from the local authorities and government agencies (22%), greater involvement of schools and school aged children (17%), management plans at national and county level to be established (11%), a reduction in excessive signage (11%) and to continue the use of soft engineering measures to mitigate against erosion (6%). The key suggestions that

were put forward on how people can behave responsibly in the outdoors included taking their litter home (67%), following regulations posted on signs (22%), walking instead of using vehicles to go off-road (17%), respecting boundaries and conservation areas (17%), not having camp fires (6%), taking photos instead of materials (6%), and keeping dogs on their leads (6%).

Section 2 of the survey focused on members of the MEG. MEG is involved in several activities in relation to the coast. These include beach clean-ups, seaweed foraging events, guided coastal walks, talks during events such as heritage week, soft engineering methods to mitigate against coastal erosion, which includes sand fencing and marram grass planting, publications, habitat mapping and running of an environmental centre. The MEG sees its role regarding coastal protection as one of leading by example (40%), raising awareness of environmental issues (40%), promoting and participating in soft engineering measures (20%), influencing policy (20%), and collaborating with other groups that have a shared interest (20%). In terms of management approaches found to be effective these include leading by example through beach clean-ups (80%), soft engineering measures (60%), awareness projects and workshops, including publications (60%), maintaining the relationship with local authorities (40%), and collaborating with other organisations (20%). The responses for who should be involved in the process of coastal protection include the local authorities (100%), An Taisce (Irish National Trust) (60%), local development companies (40%), Fáilte Ireland (40%), government departments (40%), tidy towns (20%), tourism businesses (20%), and fisheries (20%). In terms of responsibility, the community (60%), the state (40%), and local authority (40%) were common to the responses given. However, who should be responsible for what, was not clear. One participant highlighted the necessity of a strategy or management plan whereby roles are clearly defined across the different stakeholders that ought to be involved, going beyond the local community but for county level.

A workshop was held with MEG in August (2017). Each group was asked to identify what they thought the top three coastal recreation issues are in Mulranny. An initial 9 issues were put forward. The issues identified included litter, lack of integrated management, off-road vehicles, too many commercial signs, a lack of educational signage, camp fires, and the sale of ice-cream by the beach. Of the initial 9 issues put forward, 3 overlapped and were amalgamated. These included too many commercial signs, litter, and a lack of educational signage. Of the remaining issues, three were chosen as priority, by voting. This lead to the issue of commercial signage being voted as a type of litter and so was placed under this heading. The final three issues selected were litter, a lack of integrated management and off-road vehicles. Each group was then asked to envisage potential future solutions to these issues (Table 2). Due

to time constraints, an action plan which sought to assign roles to the community, Leave No Trace and the local authorities over the short, medium, and long term was not completed.

Table 2: Potential solutions to the present-day issues faced in Mulranny from the MEG as part of the workshop.

Present		5-10 years time
Issues		**Solutions**
Litter	Allocation of €500 per annum to MEG to go towards beach clean-ups including the administration and logistics of organising clean-ups	Central collection point for litter
	Prompt collection by the local authorities after clean-ups	Regular collections
		Ban non-biodegradable plastics
Lack of integrated management		Countrywide programme for coastal preservation
		National education programmes
		Wardens
		Beach champions
		Involvement of An Taisce, Department of Environment, Tidy Towns, MEG etc.
Off-road vehicles damaging environment		Barriers to prevent vehicle access to sensitive areas
		Good signage: Leave No Trace signage, signs indicating where to park
		Remote parking
		Provision of a central area for notices
		Ban on all political signs around the village

3.3. European Best Practices

Looking at guidance that is provided in other European countries, Table 3 provides a comparison between Ireland's LNT programme and the programmes employed by the United Kingdom (England and Wales, Isle of Man, Scotland, and Northern Ireland), Norway, Sweden, and Finland. In Ireland, three pieces of legislation were found governing outdoor recreation, two were found for England and Wales and one for Scotland, Northern Ireland, and Norway. For the Isle of Man, it was unclear what legislation pertained to outdoor recreation. In Sweden, the right of public access is guaranteed under the Swedish constitution, with several pieces of legislation stating what is permissible and what is not. Finland also has no single piece of

legislation for outdoor recreation but several. Although the codes of each country are categorised differently, all share common themes. These include respecting others/showing consideration, protecting the environment, and being prepared and taking responsibility. Each country except for Ireland, has the right to roam or the right of public access to land for recreation, subject to certain conditions.

Table 3: Comparison of European countries and their respective codes of conduct relating to outdoor recreation.

	Country	Code	Guidance	Legislation	Access Rights	Source
	Ireland	*Leave No Trace*	Plan ahead and prepare	Occupiers Liability Act 1995	All land is state owned or private. There is no legal right of access to the countryside.	http://www.leavenotraceireland.org/
			Be considerate of others			
			Respect farm animals and wildlife	Roads Act 1993		
			Travel and camp on durable surfaces	Planning and Development (Amendment) Acts 2010		
			Leave what you find			
			Dispose of waste properly			
			Minimise the effects of fire			
United Kingdom	**England & Wales**	*Countryside Code*	Respect other people - consider local community & leave gates as you find them & follow paths	Countryside and Rights of Way Act 2000	Right to access some land for leisure. Can use right to roam on open access land inlcuding mountains, moors, heaths, downs, common land and some coastal paths.	https://www.gov.uk/government/publications/the-countryside-code/the-countryside-code
			Protect the natural environment - leave no trace of your visit and take your litter home & keep dogs under control	Marine and Coastal Access Act 2009		
			Enjoy the outdoors - plan ahead and be prepared, follow advice and local signs			
	Isle of Man	*Isle of Man Coastal Code*	Personal safety			https://www.gov.im/categories/home-and-neighbourhood/emergency-services/coastguard/isle-of-man-coastal-code/
			Respect for coastal wildlife			
			Coastline considerations			
			Use of fast craft and jet ski's			
			Dog walking code			
			Horse riding code			
	Scotland	*Scottish Outdoor Access Code "freedom to roam"*	Respect the interests of other people	Land Reform (Scotland) Act 2003	Have the right to be on most land and inland water for recreation.	http://www.outdooraccess-scotland.com/
			Care for the environment			
			Take responsibility for your own actions			
	Northern Ireland	*The Countryside Code*	Respect the people who live and work in the countryside	Access to the Countryside (Northern Ireland) Order 1983	Public have right of way to open country which includes mountain, moor, heath, hill, woodland, cliff, foreshore, marsh, bog or waterway.	https://www.nidirect.gov.uk/articles/countryside-code
			Know where you are allowed to go			
			Keep to paths across farmland			
			Use gates and stiles to cross fences, hedges and walls			
			Leave gates as you find them			
			Do not interfere with livestock, machinery and crops			
			Keep dogs under control			
			Protect wildlife, plants and trees			
			Keep all water sources clean			
			Take your litter home			
			Guard against all risk of fire			
			Make no unnecessary noise			
			Respect other recreational users			
			Take special care on country roads			
			Consider your personal safety			

Country	Code	Guidance	Legislation	Access Rights	Source
Sweden	*Allemansrätten - Right of Public Access*	Show consideration, don't disturb, don't destroy Activities permitted and information include camping, cycling, dog walking, hiking and skiing, horse riding, hunting and fishing, lighting fires, mountain climbing, organised outdoor recreation, picking flowers, berries, mushrooms etc., private roads, protected areas, swimming, boating and driving on ice.	Guaranteed under Swedish constitution. Various laws set limits on what is allowed. E.g. Swedish Environmental Code 1999	The right to roam applies to nearly everywhere in the countryside, inlcuding crossing private land.	http://www.swedishepa.se/Environmental-objectives-and-cooperation/Swedish-environmental-work/Work-areas/This-is-the-Right-of-Public-Access/
Norway	*Allmannsretten - Right to Roam*	Show respect for nature, animals and local inhabitants Be considerate and thoughtful Activities permitted include free movement on foot and on skis, resting and overnight camping, riding and cycling on trails and roads, swimming, canoeing, rowing, sailing, picking berries, mushrooms and wildflowers, fishing without a licence for salt water species, hiking and skiing	Outdoor Recreation Act 1957	The right to roam applies to open countryside.	https://www.visitnorway.com/plan-your-trip/travel-tips-a-z/right-of-access/
Finland	*Jokamiehenoikeus - Everyman's Right*	Permitted activities inlcude walking, skiiing ,cycling, camping, picking wild berries, mushrooms and flowers, fishing with a rod and line, boating, swimming, bathing in inland waters and the sea, walking, skiing or driving or fishing on frozen lakes, rivers and the sea. Restrictions - you may not disturb people or damage property, disturb reindeer, game, breeding birds, let pets of their leads, damage trees, collect moss, lichen or fallen trees from other people's property, light an open campfire without permission, disturb people's privacy by camping too near them or making noise, drive motor vehicles off road without permission of landowner, hunt without permits, fish with nets, traps or a reel and lure without permits.	Defined across several pieces of legislation on different issues rather than a single law	Applies to the open countryside and everyone living or staying in Finland. Using an area based on everyman's right is not affected by land ownership.	http://www.nationalparks.fi/hikinginfinland/rightsandregulations

3.4. Leave No Trace Skills and Ethics

A Leave No Trace Skills and Ethics programme was co-created with MEG, with input from members of the Mulranny community. The feedback on the draft skills and ethics document was very positive, with suggestions for a pocket sized or flyer version to be produced, and for the document to be circulated and discussed amongst various groups. The document can be found in Appendix A.

4. Discussion

This study has created a Leave No Trace Ireland Skills and Ethics programme for the coast (Appendix A). These best practices are the result of the objectives of this study; a literature review, case study of the WAW, a comparison of Ireland's LNT programme with best practices of other European countries, and input from MEG, on issues observed and proposed solutions to coastal recreation.

Coastal zones are complex environments that are made even more complex due to the presence of humans and human activity. To assist in the management of coastal areas and for the creation of policy decisions, a good understanding of the characteristics of recreational users and their values are needed (Alves *et al.* 2017). It is important to consider political arguments that may be for or against certain management practices and that residents of an area play a particularly significant role in this. A variety of factors influences beach use, such as demographics, ethnicity, opportunities for activities, and education etc., with many different user types (Schlacher *et al*. 2013). People exhibit many different attitudes and values regarding the coast, with different levels of attachment. This influences behaviour and cognition and features both social and physical dimensions of specific places (Beery & Jönsson 2017 from Scannell & Gifford 2010). Communities may value human presence on the coast, and so the concept of a coastal place can include developments that support recreation, business, and other forms of social interaction within a certain threshold (Newell & Canessa 2017; Thompson 2007). Some users of the coast hold an ecological viewpoint, where they recognise the dynamic and complex relationship between land and sea elements and the responsibility of humans to protect the integrity of coastal ecosystems (Newell & Canessa 2017; Thompson 2007). To others the coast may hold a spiritual and/or religious significance, without human development present. These are just some examples of how the coastal environment may be viewed by different users, with viewpoints often overlapping to varying degrees, adding to the complexity of what the coast means to people and how it should be managed.

4.1. Discussion of the Wild Atlantic Way Case Study

Coastal recreation in Ireland is closely linked with the tourism industry. The WAW was created to help boost tourism in the west of Ireland, with tourism revenue in the WAW programme area worth €2 billion to the economy in 2015 (Fáilte Ireland 2015a). Whilst valuable to the economy and society it is also having a negative impact on the environment.

The impact at present is small, reversible, and constrained to a few sites, but with continued increases in visitors and the concentration of numbers, during certain times of the year, these negative impacts will only increase in severity and number. The value that is derived from increased visitor numbers often overshadows the degradation of our natural resources.

The west coast of Ireland is predominantly rural, with the counties of Mayo, Donegal and Sligo seeing a decline in population over the last five years, compared the rest of the country, where the population has increased (Central Statistics Office 2016b). Schemes like the WAW are viewed in a positive light since they attract people and income to a sparsely populated region. As a coastal nation, 1.9 million persons reside within 5km of the coast in Ireland, representing 40% of the total population. Of these, 40,468 were found to live less than 100 metres to the nearest coastline (Central Statistics Office 2016a). It is vitally important that residents and visitors alike are aware of potential impacts they can have on the environment and how everyone can help to minimise them whilst continuing to enjoy the coastal experience.

The Environmental Surveying and Monitoring Strategy which accompanies the WAW Operational Programme 2015-2019 notes, that sites where there are low levels of site management are more likely to suffer environmental effects than those with higher levels of management. It also found that visitors stayed for longer at sites that had activities and trails or looped walks compared to those without. Fáilte Ireland have incorporated a series of points that take visitors off the main WAW route to encourage dispersal and for people to explore more out of the way locations. A large proportion of the WAW is also designated, to protect its ecological, scenic, historical, and cultural sensitivity (Fáilte Ireland 2015b). Tourism presents an opportunity to raise awareness of habitats and species amongst visitors and locals, which can serve to modify behaviour towards these environments and in some cases, raise money to assist with their protection (Fáilte Ireland 2015a).

The most popular activities that people engaged in along the WAW, included leaving existing trails or marked paths; walking, running, and cycling on paths, marked trails or hard surfaces, and on grass and vegetation, resting, reading, picnicking, sightseeing, painting and taking photographs (Fáilte Ireland 2016). From these activities, the main effects observed were desire lines or tracks visible outside of existing trails or marked paths, and on grass and leafy vegetation, general littering and some dumping, temporary disturbance of fauna, and trampling of herbaceous vegetation as well as removal of materials such as stones (Fáilte Ireland 2015b). Visitors were seen to go to cliff edges, increasing levels of naturally occurring erosion as well as posing a health and safety issue. However, it was found that most visitors to sites stayed within designated areas and were very careful to respect the natural environment. Results show

that if interpretative material/signs are present, approximately one third of visitors will take the time to read them (Fáilte Ireland 2015b). Within Co. Mayo, overseas visitors are found to participate more in heritage and cultural attractions, while domestic visitors spend more time partaking in activities such as hill walking, water sports, golf, and cycling (Mayo County Council 2015). Cars are the main mode of transport used to access the Discovery Points followed by people travelling on foot or by bus (Fáilte Ireland 2016). Most sites have experienced low to medium levels of impact from increases in visitor numbers whereby no significant long term impacts are thought to occur. However, that is not to say that these sites do not need to be managed. The marketing of the WAW has seen an increase in visitor numbers to coastal areas with locations being managed to varying degrees and with different levels of infrastructure in place. There are plans for continued development of the WAW and the facilities that are available to visitors, which will have implications for the environment.

Looking at County Mayo, there is some overlap of Blue Flag beaches, Green Coast beaches and WAW Discovery Points. Considering the sites that were visited for this study, the content of interpretative signage, where present, varies significantly from location to location. Only two coastal locations, Old Head and Mulranny, and a second inland location, Croagh Patrick view, listed as WAW Discovery Points, were found to display the LNT principles. None of the Discovery Points, explored as part of this study, provided ecosystem or species information, instead this information was provided at Blue Flag beaches. The WAW signage itself gives a historical and cultural context to the site and is often accompanied by information on nearby trails, greenways and blueways. Local authority information provided tends to be on safety and species information, if it is present. Overall, in the case of Co. Mayo, there appears to be little management in place for many of the Discovery Points. While many sites have been improved with upgraded facilities and signage, there are others where this is minimal and there appears to be a lack of consistency of information provided. This inconsistency of information and in some cases lack of, highlights how important a coastal skills and ethic programme is. Without adequate information, there is no guidance as to what is good practice and what is bad practice regarding recreation.

The results from the questionnaire also demonstrate the need for a skills and ethics programme for the coast. Of the residents of the Mulranny community, outside of the MEG, only 54% had heard of the LNT programme and 88% of all participants felt that LNT is not widely known across Ireland. Furthermore, 67% felt that people are not aware of the impacts they have on the environment and 78% felt that if people are made more aware of recreational impacts they are more likely to be respectful and mindful of their actions. There was full

agreement that programmes like LNT play an important role in encouraging responsible outdoor recreation. In terms of who has the greatest responsibility towards the coastal environment, the there was a mixed response. Participants seemed to be in agreeance that tourists have much less responsibility compared to the government, local communities, the Irish population, and tourism businesses. Despite each of these groups being deemed as having varying levels of responsibility, there is currently no information advising people and groups of what are best practices and what impacts different activities have on the environment. From both the questionnaire and the workshop, there were issues that were brought up several times. The most notable include litter, erosion, off-road vehicles, camp fires, too much commercial signage and too little educational signage. These issues raised shows that there are problems arising from recreation along the coast, with many people unaware of the impacts they have on the environment, and how they can help to protect the coast, once again stressing the need for a coastal skills and ethics programme. Leave No Trace can play a key role in helping to bring about the changes participants would like to see, through the provision of best practice guidance on how to reduce environmental impacts.

4.2. Discussion of the Mulranny Case Study

The workshop held with the MEG helped to build upon the information that had been gathered as part of the survey. Here, the three main issues that were selected, litter, the lack of integrated management, and off-road vehicles, were also raised in the survey, as well as the difficulty in assigning roles and responsibility to different stakeholders. It highlights need of an appropriate management strategy that is currently absent not just at a county level but at a national level. A management plan with clearly defined roles established at a local and county level is much needed to safeguard the Irish coastline and lend support to stakeholders already engaged in forms of coastal management. It will concentrate efforts allowing for progression to be clearly seen that can be comparable with other counties. The Leave No Trace skills and ethics for the coast can play an important role in this not only through the provision of best practice guidance but through its many partnerships with various organisations and agencies. One of the proposed solutions identified in the workshop included Leave No Trace messages to be included on signage, showing that there is not only a need but also a desire for coastal skills and ethics to be in place, and that Leave No Trace Ireland can fulfil this role.

4.3. Discussion of European Best Practices

Table 3 provides a comparison of Ireland's LNT programme with practices that are in place in other European countries. It looks at the name of the code of conduct in place, the guidance that it provides, the legislation that relates to the code and the right of access for each country. Across the United Kingdom, each of the programmes have much the same elements as the LNT Ireland programme. The same can also be said for Norway, Sweden, and Finland. The main themes which are found across all the best practices include, respecting others, protecting the environment, being prepared, and taking responsibility. There are differences in how the information is presented and categorised but overall, many topics overlap. A key difference is the right of access governing each country. Residents and visitors to the United Kingdom enjoy access to most land unlike Ireland where there is no right to land access. The programmes of Norway, Sweden, and Finland are very alike, which is unsurprising as each of these countries have a long-established history of the right to roam or public access to lands for recreation. The guidance of these countries goes into detail on which activities are permissible and those that are not. The LNT skills and ethics for the coast were designed following the seven principles of LNT, incorporating various elements of each of the guidance documents, from the countries examined, that are applicable and relevant to the Irish coastline. The seven principles incorporate the themes found across the other guidance documents. While each of these countries have best practices for outdoor recreation, not one has guidance exclusively for the coast, except the Isle of Man. The creation of a LNT Ireland skills and ethics programme for the coast addresses the current absence of such a document, not just within Ireland.

4.4. The Importance of Skills and Ethics Programmes like Leave No Trace

Skills and ethics programmes hold an important position in raising awareness and educating the public. Broadly speaking there has been a failure to communicate the importance and relevance of biodiversity to society. Management for biodiversity and conservation purposes should represent land that is not set aside as in protection from people but places of protection inclusive of people (Beery & Jönsson 2017). This allows for human engagement and experience of biodiversity alongside recreational pursuits (Beery & Jönsson 2017). The wealth of legislation surrounding coastal protection at the international, European, and national levels, the current negative impacts felt in coastal communities, and the lack of awareness of recreational impacts all stress the need for best practice guidance for the coast. Programmes such as LNT aim to build awareness, appreciation, and respect for natural and cultural heritage.

In doing so, it is hoped that all recreational users feel encouraged to help maintain the natural environment for the benefit of ecosystems and for future generations (Leave No Trace 2008). Furthermore, the minimum impact practices of LNT are simple and easy to follow and do not detract from the overall outdoor experience. The creation of a LNT skills and ethics programme for the coast fills the present lack of such a programme. It is hoped that the information provided within the document will educate, inform, and empower all readers on the impacts that the coastal zone faces, how small changes in behaviour can help protect many aspects of the environment, free of charge, and with low levels of effort. The document is designed around the seven principles of LNT, following the existing layout of other LNT publications. This allows for consistency in the presentation of information, not just within Ireland but across other countries that have employed the LNT programme. It is hoped that the coastal skills and ethics programme will act as a lead for other countries who do not have such guidance in place.

Effective coastal management requires an integrated approach which recognises that coasts consist of ocean-land environments that interact with ecological, social, economic, and cultural dimensions (Newell & Canessa 2017). Managers of protected areas are tasked with both providing opportunities for outdoor recreation as well as protecting natural resources. Trying to balance the many benefits of outdoor recreation, on both human health and the economy, whilst helping to influence support for land and wildlife conservation, is a key challenge which needs to be addressed by robust management practices (Reilly *et al.* 2017). An integrated approach needs to be formed and adopted, that should not be limited to nature conservation of protected areas, but be extended and achieved for all habitat types. Programmes such as LNT play a vital role in this, as they help to engage the public in participating in good outdoor practices that benefit recreationists and the environment.

5. Conclusion

Coastal zones are complex and dynamic environments from which we derive many benefits. They involve both land and sea elements, are places of human settlement, home to many species of specially adapted flora and fauna, provide a variety of ecosystem goods and services, and are ecologically sensitive. Some of the key services provided, include habitat provision, protection against severe weather events, stabilisation of sediment, biodiversity, aesthetic and recreational benefits. This makes the coastal zone highly important in terms of conservation.

Recreation is linked to people's desire to be near nature, and it provides immense economic and social benefits but often at the cost of the environment (Beery & Jönsson 2017). Impacts on the environment from recreational activities include trampling of vegetation by vehicles and by foot, disturbances to wildlife, light and noise pollution, littering, nutrient loading, habitat fragmentation and the introduction of invasive species (Purvis *et al.* 2015; Thompson & Schlacher 2008; Hardiman & Burgin 2010). Legislation at the international, European, and national levels acknowledge the importance of the coastal environment, and provide the framework for conservation efforts. Several European countries have in place best practices for outdoor recreation, in support of the legislation, the majority of which are not tailored to the coastal zone. Within Ireland, schemes such as the WAW have seen an increase in visitor numbers to the coast over the last number of years, especially to rural areas. Whilst beneficial to the economy and society, impacts on the environment have resulted. Whilst the impacts at present are small and reversible, continued increases in visitor numbers will only result in more severe, lasting impacts. Litter, erosion, and off-road vehicles have been highlighted as some of the main issues, with the Leave No Trace Ireland skills and ethics programme seen to play an important role in encouraging responsible outdoor recreation. The co-creation of the Leave No Trace Ireland Skills and Ethics programme for the Coast, as part of this study, is a first step towards raising awareness of best practices to be used in this unique environment. It is hoped that the message of Leave No Trace Ireland will continue to spread, helping to inform and guide outdoor recreationists on minimum impact practices.

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7. Appendix A

Leave No Trace Skills and Ethics programme for the Coast.

COAST

Leave No Trace Ireland Skills and Ethics

Rachel Shawe

MSc Sustainable Resource Management: Policy and Practice

Supervised by Dr. Gesche Kindermann

August 2017

What is Leave No Trace?

Leave No Trace is an Outdoor Ethics and Education Programme designed to promote and inspire responsible outdoor recreation through education, research, and partnerships.

As increasing numbers of people seek the beauty and exhilaration of outdoor travel and recreation by the coast, our collective mark on the coastal environment and its natural processes increases. Techniques designed to minimise the environmental and social impacts along the coast are incorporated in and promoted by the national Leave No Trace education programme as the following seven principles:

Principles of Leave No Trace

1. Plan Ahead and Prepare

2.Be Considerate of Others

3. Respect Farm Animal and Wildlife

4. Travel and Camp on Durable Ground

5. Leave What You Find

6. Dispose of Waste Properly

7. Minimise the Effects of Fire

Practising a Leave No Trace ethic is very simple – make it hard for others to see or hear you and LEAVE NO TRACE of your visit.

Chris Hill 2017

Why Leave No Trace by the Coast?

Ireland has approximately 7,500 km of rugged and spectacular coastline. This unique zone, made up of both land and sea, includes some of the most varied and best loved scenery; towering sea cliffs, rocky shores, rockpools, beaches, sand dunes, salt marshes, coves, and bays as well as some of our most fascinating wildlife. The coast has been a place of human settlement throughout history, providing us with a wealth of benefits; from food, shipping of goods, protection against storms, provision of habitats, to recreation, aesthetic benefits and wellbeing. The value of the coast is different for everyone. It offers a diverse range of habitats for us to enjoy and a multitude of water and land based activities. This dynamic environment is at the forefront of rapidly changing weather patterns, subject to battering by wind and sea, and driving rain and fog. Equally it can transform into a clear, calm, and tranquil setting. It is these interactions that have shaped and continue to shape the Irish coastline. This dynamic environment, offers us a new and unique experience each time we visit.

Fearghus Foyle 2016

Our reasons for using the coast are as diverse as our values. We enjoy the coastal zone for physical pursuits and activity, to provide us with an immersive experience, to socialise with other visitors, for cultural experiences or often, a combination of interactions. Exploring new seascapes steeped in history and culture and participating in sports and coastal events, give many of us a sense of satisfaction. These experiences broaden our minds and provide a connection to a place, giving a sense of freedom from everyday stresses and bring us closer to nature. We enjoy exploring the coast on foot, on bike, by kayak, boat, and horseback. In Ireland, we are fortunate to have the outstanding natural beauty of our coast and its largely unspoilt nature. The Irish coast gives us cliff top walks, long expanses of beach and dune, sea-swept bog land, and dramatic views. We engage in activities such as reading, picnicking, sightseeing, painting, and photography. As well as more active pursuits, including sailing, diving, surfing, fishing, sea kayaking, and pony trekking. Engaging in outdoor recreation, significantly improves our physical and mental health, and overall sense of wellbeing, leaving us feeling refreshed and revitalised from everyday stresses.

The remarkable diversity and quality of the Irish coastline is one of Ireland's most important natural resources. It is also the focus of two of the biggest growth industries, recreation, and tourism. Our experiences are personally satisfying but they can have a negative impact on the environments we visit and the animals we observe. It is inevitable

Eamonn McCarthy 2012

that the numbers of visitors to the Irish coast will increase, putting additional pressure on our natural resources from recreational use. Despite its stark appearance, the coastal zone is fragile and sensitive to human disturbance and activity, with biodiversity loss and erosional processes

being of key concern. Many coastal habitats in Ireland are protected under EU and Irish law, yet despite this, the status of most habitats, are considered as inadequate or bad rather than favourable. Coastal wildlife and plants that have adapted to this harsh and energetic landscape, are under threat from human activity. Certain environments and species are more sensitive to human presence than others. Our presence can disturb many species of animal, leaving them feeling stressed which can affect their feeding and reproductive patterns. We can also unintentionally trample many plant and animal species present within vegetated areas such as sand dunes, crushing borrows or eggs, and along rocky shores, damage shelled creatures. Displaced wildlife, erosion, disturbance of livestock, litter, trampled vegetation, and polluted waters are just some of the results linked directly to recreational activities and human presence. It is essential that we endeavour to maintain our coastal heritage in its original state. Public education and awareness of minimal impact skills, through the Leave No Trace Skills and Ethics programme, are needed to prevent considerable damage in the future. Educated local communities can minimise their day-to-day impacts. Visitors will learn to reduce their cumulative impacts so as not to diminish the integrity of what is a significant part of our natural and cultural heritage, whilst continuing to enjoy the many recreational activities offered by the coast.

At the heart of Leave No Trace are seven principles for reducing the damage caused by outdoor activities. They are based on an abiding respect for nature, culture, and people. Leave No Trace depends more on attitude and awareness than on rules and regulations. Minimum impact travel and outdoor recreation practices must be flexible and tempered by judgement and experience. Techniques are continually evolving and improving. The general rule is to consider the variables of each area in terms of culture, wildlife, vegetation, soil, climate, and usage that it receives. Then, use this information to determine which recommended practices to apply. This code explains how you can best enjoy the coast and its wildlife, without causing harm. The original Leave No Trace Ireland Skills and Ethics programme is applicable for many situations and contains additional information. This edition of the Leave No Trace Ireland Skills and Ethics series has been adapted for the coast and compliments the original document. The practices in this booklet are appropriate for all coastal locations in Ireland. By following the code, and showing it to other people, you can help ensure that this wonderful part of Irish heritage survives for all of us to appreciate in years to come.

Plan Ahead and Prepare

Before visiting the coast take time to learn about the coastal area you will be visiting. Find out about sensitive bird and animal populations, and weather conditions. Check with local authorities, tourism offices, community groups or local clubs specific to your activity. Beaches are subject to byelaws which can differ from county to county. Information can usually be found on the local authority website and sometimes signage is in place at the location itself. However, there are many locations where there is no signage, making it important to check other sources before your visit, so you are aware of what is permitted in the area you are visiting. Information can be found through the Environmental Protection Agency (EPA).

There are many locations that are protected under the EU Habitats and Birds Directives, which together make up the Natura 2000 network. Within the Natura 2000 network, Special Areas of Conservation (SACs) afford certain habitats and species protection and Special Protection Areas (SPAs) provide protection to bird species. These sites are considered important conservation areas on a European as well as an Irish level. For example, machair, is one of the rarest types of sand dune system in Europe, occurring only on the western coasts of Scotland and northwest Ireland. Protection of species include the bottlenose dolphin, harbour porpoise, common seal, and grey seal, to name a few. In national parks, nature reserves, Natura 2000 sites or other protected areas, special rules apply. Some activities require permits but these are often for specific locations. For example, a permit is required for groups of more than ten people camping within a National Park. There are also regulations regarding the disturbance of wildlife, rare and protected species, and in relation to hunting. There are still many activities that can be enjoyed without the need for permits. Further information can be found through the National Parks and Wildlife Service. Check this information before you go and heed any information posted at the sites.

Check local signage for byelaws and other safety information. Many of our activities along the coast involve going into the sea, with safety an important consideration. Heed signs and information, and be aware of potential hazards. Find out about, and follow the regulations governing recreational use of waterways and slipways. They are designed to minimise conflicts between users and protect everyone's health and safety.

The coastal zone is host to variety of environments. These include beaches, sand dunes, rocky shores, salt marshes and sea cliffs to name but a few. Each environment is unique with its own dynamics and characteristics. When exploring along the coast it is easy to become caught up in the scenery and your activity, so when travelling alone by the sea, make sure to let others know your planned route and what time you intend to return. Always

Eamonn McCarthy 2012

check the tide times before heading out along coastal walks as some areas of the coastline can be cut off by incoming tides. Make sure to carry a pocket copy of the tide tables. Tide tables can be found online (further information is provided at the end of the document). For water based activities such as sea kayaking, be sure to have the tide times, nautical charts and topographic maps for the areas in which you are travelling. Nautical charts illustrate known hazards in the water (e.g. currents and partially submerged rocks).

Be aware that some rocks and slopes may be slippery due to algae and seaweed, so tread carefully and have appropriate footwear. Try to keep away from soft sand and mud as it is easy to become to stuck. If you are going to swim, make sure you stay close to the beach and be aware of rip currents that may be present. Knowledge of currents is also important for fishing recreational boating activities. For boating, it allows people to safely dock and undock their boats, manoeuvre them in confined waterways and safely navigate coastal waters.

Cliffs are a remarkable and awe inspiring site, yet are also unstable and potentially dangerous. They provide a very specialised habitat for plants and animals that live on them and are home

to many sea bird species. Some bird species remain along the cliff face and forage at sea whilst others species come up onto the top of the cliff for foraging. Be mindful of their presence and of breeding and foraging sites. Please do not throw or push anything over the edge of cliffs. As well as being dangerous it can increase the rate of cliff erosion and

Chris Hill 2014

kill or disturb wildlife. When traversing along the coast next to sea cliffs be aware that rocks can come loose and fall down the cliff face. Some locations will have signage in place indicating where this is occurring but many locations will not. Be aware of local hazards and conditions. Wear appropriate gear relative to your activity.

Prepare for extreme weather, hazards, and emergencies. Remember that the weather can change very rapidly by the sea and visibility can often be reduced. Many of Ireland's coastal locations, especially along the west coast, are backed by mountains which affects the weather patterns of an area. Make sure you come prepared with the right gear. There are still many locations where there is no phone signal. Pack a whistle and fluorescent vest. Always carry a good map, compass (know how to use it) and plenty of food, water for a hot drink and warm clothing. Be prepared to have get yourself out of difficult situations. Plan meals to ensure you have adequate food for your activity.

If camping near the coast, find an appropriate campsite above the high tide level. Be mindful though that in many locations camping by the coast may be prohibited except at designated campsites, bring a camp stove and fuel, a pot, and matches.

Take Responsibility

Ireland, as a coastal nation, is bounded by the North Atlantic Ocean to the west, the Irish sea to the East, the Celtic sea to the south and the inner seas off the west coast of Scotland to the north. Being surrounded by all this water means that Irish weather changes every day, which can be dangerous as it is easy to get disorientated or lost in bad weather or poor visibility. Getting lost has important implications for you, the people who attempt to rescue you and the environment. Remember that it is not just your personal safety that is put at risk. With the rapidly changing weather patterns, both you and your rescuers are at a greater risk should you become lost along the coast or at sea, and need to be rescued. Take responsibility for your own safety by practising self-awareness, caution, and good judgement. Significant impacts to the environment can result from rescue operations that involve vehicles or large parties of people. Minimise risk by planning a trip that matches your skills and expectations. Know your limits. Tell someone your plans either by email, a phone call, or a detailed SMS message and make sure to let them know once you have returned too. This way if something does go wrong, emergency services can assist you, as they'll know where you were going. Do not rely on being

rescued by others, instead be prepared to rescue yourself from tough situations. Be a competent navigator. Always carry a map and know where you are at all times. Do not build cairns or deface rocks or vegetation to mark your way, and avoid flagging. If flagging is absolutely necessary, be sure to remove it before leaving the area.

Be Considerate of Others

All land in Ireland is either privately owned or owned by the state and there is no legal right of access to the Irish countryside. The foreshore, however, is accessible by the public. Landowners in Ireland have a long tradition of providing reasonable access for people to enjoy outdoor pursuits. Most landowners do not object to people crossing their land, but appreciate being asked. For those who do not want to permit access, please respect their wishes and consider alternative routes to the shore.

When travelling by vehicle, important considerations include to not block public access or rights of way and use to official car parks where possible. Often the land next to the foreshore is working land and in rural areas it is common to see livestock present. It is important to remember that farmers, wildlife rangers and land managers work throughout the week and may need access. Please don't drive on beaches, machair or fixed dunes as it damages both plants and animals living there.

Taking boats in and out of the water and anchoring them can damage the plants and animals which live and grow on the bottom and edges of waterways. Use existing boat ramps or established launching sites and moorings where available.

If you see livestock being moved or herded, be patient. Yield, by pulling in to the side of road and allow them to pass. They are often only travelling a short distance. Occasionally you may come across livestock along the beach. In this case give them a wide clearance and be careful not to scare them.

Consider other visitors to the outdoors. Many people come to the sea to relax and take in the scenery. Your group size will vary depending on whether you are with friends, family, or an organised group. Large groups can make others feel crowded and impact on the experience of other people. Even large groups should choose to mimic the style of small groups. Respect the quality and enjoyment of other peoples' experience as well. Try to keep the noise level down

as much as possible, especially at night. Excessive noise will disturb other visitors as well as the wildlife. Let nature's sounds prevail. Make room for others. If hiking along cliff top trails, horse riding or biking, pass with care and wait patiently for them to pass.

Make sure to be aware of local dog byelaws. Dogs may be prohibited from some beaches or areas. Clean up after your dog to help keep the beach clean for other coastal users.

Follow local horse riding byelaws.

Gardiner Mitchell 2014

Respect Farm Animals and Wildlife

Ireland's wildlife is fascinating and varied. Those by the coast have found special ways of living in their environment. Wildlife that lives along the seashore have had to adapt to continuously changing conditions that include tidal action, exposure, and predation. Some have developed shells for protection, but many others use rocks, seaweed, and the sand to provide cover. Shelled wildlife share the beach with sea birds, marine mammals, and us. Wildlife faces many threats from loss and fragmentation of habitats, invasive species, pollution, disease, and over-exploitation. Wildlife disturbance can appear in many forms and animals will respond to people in different ways. Some animal species become habituated to the presence of people, whereby they will continue with their normal behaviours. However, this does not happen for all animals. Human disturbance can affect reproductive patterns, cause animals to use energy in fleeing from people, reduce their foraging time and result in high levels of stress. Other animals may seek out interactions with people for opportunities of food. Our food is unsuitable for wild animals as it can make them ill, affect their foraging behaviour and ultimately lead to a dependence on human food. These changes in behaviour affect both marine and land animals. When encountering wildlife, whether on sea or on land, your aim should be to minimise any disturbance that you might cause to wild animals and the habitats in which they live. The more you understand about a species, the more considerate you can be of the animals' needs.

When on the foreshore, minimise damage to rock pools by carefully replacing any upturned rocks. Take particular care to avoid damage to soft tissue animals in sea caves / low light areas.

Rocks and seaweed provide important cover for many marine animals that are found in rockpools. Removing rocks and/or seaweed exposes them to predators such as sea birds and damages their environment.

Seals are present along the Irish coastline. They spend a large proportion of their time in the open sea, but come ashore to pup, moult, and rest. Some species of seal breed on wave exposed rocky coasts or on sand or shingle beaches at the foot of cliffs. Other species prefer more sheltered waters. Seals are naturally curious animals, sometimes slipping into the water to come and have a closer look. Susceptibility to disturbance is site specific. You should always be alert to signs of stress before individuals start to move away or show aggression. When hauled out along the coast, seals may be disturbed by being closely approached from the sea or land.

Many birds are used to the presence of humans but as more people venture out along the coast and to more isolated locations, birds may be subject to higher levels of disturbance. This applies in particular to breeding sites which can be found on cliffs, within sand dunes, in burrows or on the ground, either hidden in vegetation or in the open. Different species breed at different times of the year. Different times of day such as late afternoon and early evening can be sensitive times in terms of disturbance for seabird colonies. Be aware of bird species present within an area and of known breeding locations. Keep a look out for signs of breeding activity so that these areas can be avoided.

In Ireland, many farm animals are present on land with access to the beach. When travelling across land that has livestock present try to pass a quietly as possible. Avoid sudden movements and do not surround or stress livestock. Pets, such as dogs should always be kept on their lead, away from livestock. Make sure to leave gates as you found them – open or closed, where present. Avoid feeding livestock as human food is detrimental to their health. If you see any animals in difficulty or damage to property, contact the land manager or owner. Livestock, such as sheep, will run from dogs and humans. In certain circumstances this can result in them jumping from a cliff face or running into the sea to escape.

Arthur Ward 2011

Many coastal areas are not fenced. This does not mean that these areas should be driven on or pets allowed to roam freely. Please do not use beaches or dunes for off-road vehicles. Livestock may be present in addition to wildlife. Driving on sand dunes and beaches is one of the most damaging activities to biodiversity and habitats. It results in increased erosion which destabilises sand dunes, leading to an increased likelihood of flooding, and reduces the ability of the dune system to provide protection against storm weather. It also reduces vegetation cover and diversity, diminishing habitat quality for invertebrates and other animals. Driving leaves behind visible track marks which others are likely to follow. Not only are these track marks unsightly but as use continues, widen, and deepen, increasing the degradation of the environment. Please use designated car parks to park your vehicle or other durable areas that do not block access. If you do drive onto a beach, remember incoming tides can quickly close off exit points. Boating, fishing, and other water-based activities can damage shorelines and wetlands. Always choose durable sites to launch, anchor and dock your boat, and avoid tide pools, coral reefs, and sites rich in wildlife. Lifting your boat rather than dragging it will save impacting any surface.

Fishing

Fishing is a popular pursuit that many people enjoy. Ireland's native marine life is rich and varied. To help sustain life in our seas, take only what you need and stay within legal limits. Observe size, season, and number restrictions. Release your catch unharmed if you don't need

it for food. If gathering your own bait, take only what you need and turn back all the rocks you have moved. Make sure your fishing gear is in good condition and used only in suitable conditions to reduce the likelihood of accidentally losing it. Tangled fishing line needs to be taken with you and disposed of properly. Information on fishing in Ireland can be found through fishing or angler's associations and through the Marine Institute.

Eamonn McCarthy 2012

Enda Rowan 2016

Wildlife Watching

You can see many animals at their best when they are behaving naturally. To help minimise disturbance when watching wildlife follow the advice below.

- To avoid disturbance at the coast, where present, please pay attention to signs that help you to minimise your impact.

- Aim to watch wildlife unseen so be cautious and quiet, avoiding sudden movements. Sudden movements scare wildlife and give you away.

- Keep a look out for wildlife and use binoculars to get a better view. Do not get too close and make sure to turn off your camera flash.

- Assess the situation, try to anticipate where the animal might go and what might frighten them to help you decide how to avoid disturbing them. Make any approach steady, predictable, and non-direct.

Chris Hill 2014

- Be careful where you are putting your feet to avoid crushing burrows, eggs, animals, and damaging plants and the habitats that the animals depend upon.

- Look for signs that wildlife has spotted you and be prepared to move out of sight, back off or take an alternative route.

- Stay close together when in a group to reduce the level of disturbance. Ensure that wildlife doesn't get surrounded and has an escape route.

- Let animals move away and please don't chase, feed or touch wild animals. Feeding wild animals damages their health, changes their natural behaviours, and exposes them to dangers such as predators.

- Keep your dog clear of birds and other animals.

- Don't linger for too long when you are close to wildlife.

- Report wildlife sightings – these are all of interest to the National Biodiversity data centre.

Sensitive Sites and Times of the Year

- Known animal breeding sites should be avoided during the critical times of the year. Breeding sites can be in a wide range of locations from cliffs, to dunes to rocky shores.

- Keep activities such as launching and landings away from bird breeding grounds and roosts, and breeding and haul-out sites of seals.

- Consider breeding times of bird species throughout the year.

- Avoid nesting and feeding sites of birds. Migratory shore-birds rely on maximum time for feeding each day to ensure a good weight for migration. Nesting birds with chicks will not allow chicks to eat when humans are present – chicks will starve if people are present all day.

Bernie Brown 2016

- Consider basking sharks and marine mammals that enter Irish coastal waters at different times of the year.

- Protect fragile sand dunes. Carry boats instead of dragging them. Tread carefully to avoid disturbing bird nests. On beaches, do not leave boats in the fragile foredunes.

- Make sure your pets keep well clear of birds and other wildlife. Keep dogs on a lead if necessary, and don't take pets where they're not allowed.

Travel and Camp on Durable Ground

Beaches and sand dunes are prone to erosion and easily damaged by people and vehicles. Trampling either by foot or by vehicle is one of the most damaging activities that can take place in the coastal zone. Take care not to drive, camp, walk on or through sand dunes. Sand dunes have fragile vegetation and a slow recovery period. Trampling in sand dunes tends to result in tracks or paths developing which cut across the dune generally from the road towards the beach. This leads to compaction of the soil, increased erosion, damage to vegetation, reduced biodiversity and the greater the number of paths there are, there is a greater likelihood of flooding on the dune during very high tides and storm events. This leads to further erosion and increases soil salinity. Sand dunes are mobile and undergo natural rates of erosion and sediment replenishment which is aided by vegetative cover and topography. By damaging the vegetation and reducing biodiversity, we increase erosional rates, alter the topography, interrupt natural cycles, and limit the ability of the dune system to provide protection to human settlement. This in turn affects the availability of food for many animal species, as well as breeding and roosting sites. It is important to remember that the coast is a fragile place despite its appearance. To avoid these kinds of problems, recreationists need to recognise "durable surfaces". Durable surfaces are surfaces that are minimally affected by camping and hiking. They include rock outcrops, sand (with sand dunes being an exception to this), gravel, trails, or water.

Bernie Brown 2015

Watch Where You Go

To help protect the coast, keep to established paths and dune boardwalks where they are present. However, there are many areas where there are few, if any trails and no established campsites. These areas that see little human traffic are often referred to as pristine areas. If you would like to travel off trail, use the most durable surfaces such as rock, sand, gravel, and navigable water. Stick to existing tracks where soils are not prone to erosion and rare species are not present. Along stretches of coastline where there are no designated trails, hiking at low

tide is generally best practice because the hard sand, gravel, or rock of the intertidal zone (the area between the highest and lowest tides) is exposed. In this area, be careful to avoid crushing intertidal life such as mussels, barnacles, and algae. It is best to walk "wide" over sandy soils to spread compression away from the middle of the track. If you absolutely must travel over fragile terrain such as sand dunes, try to place your footsteps in the least destructive locations and encourage your companions to step in the same spots.

Valerie O'Sullivan 2011

Use established campsites that are big enough for your group. Where there are no car parks provided, park close to the road rather than drive on fragile habitats. Certain areas have designated campsites. Use of these amenities can reduce damage to the surrounding vegetation and other natural features. If camping outside of a designated campsite it is preferable, if weather and tides permit, to camp on the shoreline, especially if it is a sand or gravel beach. Use your tide tables and visual signs to find the high tide mark. Look for a level spot rather than creating one and look out for obvious bird nesting activity and other signs of animals so that you can avoid these areas. Be aware of areas where camping may be restricted or landowner permission may need to be sought. There are six national parks within Ireland, information regarding camping in these areas can be found through the National Parks and Wildlife Service (NPWS) or by directly contacting the National Park.

Choose an area that seems safe, free from wildlife and well suited to low-impact camping. Consider your visual impact on other users or wildlife. Be unobtrusive and keep noise down. In pristine areas, vary your route to water, to the "toilet" and to sleeping areas to prevent tracks from forming. Pitch late (just before dark) and pack up early (gone by 9am) to cause as little disturbance as possible. Make sure to avoid bird roosting sites. Keep your stay to a minimum, one night in one location is good, two or more nights and you start to damage vegetation. Leave your campsite as you found it. Before departing, naturalise, and disguise the site by replacing any rocks or sticks you may have moved. Re-cover scuffed up areas with natural materials.

Leave What You Find

Beach combing is a long-established activity that many people enjoy. By leaving behind items such as rocks, shells, plants, fossils, and other objects of interest we pass the gift of discovery on to those who follow.

Preserve the Past

Discovering evidence of earlier times is exciting. It is important to learn to recognise historical and cultural sites so you can avoid damaging them. Be alert for shell middens (mounds of shells), grave markers and other human artefacts.

Leave Natural Objects Undisturbed

Natural beach litter such as driftwood and seaweed may be home to small creatures and so please leave them in place. Man-made litter should always be removed. Teach children to care for nature. Remind them that natural objects help to fill important ecological niches, such as a sea shell can become the home of a hermit crab. Don't take wildlife home. Practice catch and release methods.

Observe sea creatures in buckets and then release them back where you found them. Take care when touching soft bodied animals as they are very delicate. Instead of taking objects with you, take pictures instead. Let photos, drawings and memories be your souvenirs. Be mindful that it is not permitted to remove some objects such as gravel and rock from the beach and coastline. Areas that are protected under EU legislation will have their own regulations in place. Be mindful of protected species, as it is prohibited to pick or collect these. When in the sea, avoid bringing up corals, starfish, or sea urchins as this can destroy years of growth. Be careful not to disturb the equipment of farmers, anglers, fishermen and others who derive their income from the land and sea. Best practice is to leave what you find.

Valerie O'Sullivan 2011

Invasive Species

An invasive species is an organism that causes ecological and/or economic harm in a new environment where it is not native. These introduced plants and animals can cause large scale irreversible changes to ecosystems. They pose significant risks, including direct competition for resources, predation, disease, and degradation of habitats.

Invasive species can be introduced to an area in a variety of ways. They can be transported on the hulls of boats, in the tread of your boots and vehicle tyres, and be attached to tents, packs, and other equipment. Once established in a location they can then spread to other locations and habitats.

We can help prevent the spread of invasive species by following a few practical suggestions:

- Do not transport flowers, weeds, or aquatic plants into natural habitats.

- Empty and clean your packs, tents, boats, fishing equipment, vehicles, and other gear after every trip, onsite before departing.

- Water, mud, soil, and sand may contain harmful seeds, spores, or tiny plants and animals.

- Clean out the dirt of your boots and tyre treads.

- Never discard or release, live bait.

- Make sure pets are immunized, and their coats are free from seeds, twigs, and harmful pests such as ticks.

Further information on biosecurity can be found on the National Biodiversity Data Centre (NBDC) website.

Foraging

Throughout human history, people have relied on gathering food items as a form of sustenance. Today, however, foraging is primarily a leisure activity rather than a necessity. In recent years, interest in foraged foods has seen a dramatic increase which raises some issues of sustainability. There are several steps that you can take to ensure that you forage in a sustainable way,

Group foraging for seaweed (Fáilte Ireland 2013)

whereby you enjoy the process and the results of foraging whilst minimising your impact on the environment.

- First, don't break the law to forage. Find out if foraging is permitted and what restrictions may be in place. Observe local byelaws and restrictions on the collection of animals and plants.
- Never gather a rare or protected species. It is your responsibility to be aware of what conservation designations / listed species there are in any area you plan to use.
- Know what you gather, if you don't have a knowledgeable tutor or guidebook then only eat what you are 100% certain is safe and not a protected or poisonous species.
- Limit sessions to 'taster sessions', not 'harvesting sessions' for full meals. Bring your main food source with you and use the minimum of foraged items to supplement or add flavour to your meal.
- Don't be greedy; once it's gone it's gone, leave a healthy amount so animals / plants can repopulate / recover quickly. Picking species such as limpets will have an impact on wildlife – it's a major source of food and therefore survival, so leave plenty behind.
- Don't pull up whole plants. Use appropriate equipment - a good knife or pair of scissors can help to remove the desired part of plant without causing too much damage to the rest of the plant, and to surrounding vegetation
- Learn which part of a plant can be picked without causing harm – tips are often the growing point and often mentioned as the best bit of the plant to eat but when picked can cause the plant to die, or have severely reduced growth, flowering, and fruiting.
- Pass on knowledge and methods without harming life if possible by employing methods such as 'catch and release' of fish / crustaceans.
- Limit using key species such as limpets, as harvesting too many will have an impact on the habitat.
- Shellfish, such as crabs and lobsters, take several years to grow to maturity; over collecting in an area soon depletes stocks. It is advisable not to collect shellfish, but if you must collect, only take mature fish or shellfish and only what you need for yourself. Information on the collection of shellfish and regulations can be found on the Sea-Fisheries Protection Authority webpage at www.sfpa.ie/Sea-FisheriesConservation.

Dispose of Waste Properly

Waste

"Leave No Waste". Anyone who participates in recreation along the coast has a responsibility to clean up before he or she leaves. To minimise the amount of packaging bought to the coast, repack food into recyclable containers before you leave your home. Once at the coast and before departing, inspect your rest areas and campsite for rubbish and spilled foods. Pack out general rubbish, kitchen waste, including leftover food, and search the area for "micro-rubbish" such as bits of food, chewing gum, cigarette butts and organic litter such as tea bags, orange peel, fruit remains, egg shells and nut shells. Even organic litter although biodegradable, takes years to break down and attracts scavengers that harm other wildlife. Pack durable bags to carry your rubbish out (and maybe someone else's). Get involved and take part in the Clean Coast programme by doing a 2-minute beach clean. More information on the Clean Coasts programme can be found online.

Plan meals to avoid generating messy, smelly rubbish. Pack out all waste – don't count on a fire to dispose of it. The leaving behind of food waste will attract animals, including many animals that may not normally visit an area and makes the site unattractive to other visitors. Overlooked rubbish is litter. Litter along the beach and coastline negatively impacts on everyone. Many of us enjoy visiting an unspoilt coastline. Litter is unsightly and ruins everyone's outdoor experience, lowering people's moods and has implications on whether people choose to return to an area. It also poses a hazard to both us and animals. For animals, litter can be deadly. Animals scavenging for food can ingest bits of dropped food packaging. This damages their digestive systems. Plastic rings from beer packs and plastic bags kill shorebirds, turtles, and other marine mammals. Lost fishing equipment can ensnare or injure wildlife so be careful not to leave any behind. Dispose of waste line safely; and if it is safe to do so, retrieve missing or broken gear.

Do not place rubbish bags next to a full bin. This attracts scavengers, causes harm to animals and often attracts more litter and encourages dumping. Instead, look for the next appropriate waste disposal facility. Report any pollution to the local council.
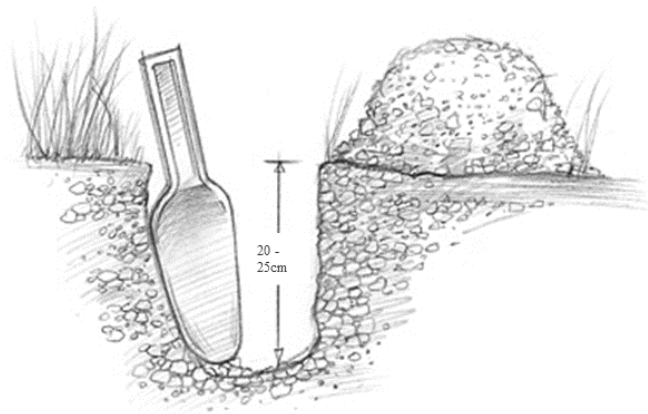
Human Waste

"Where's the toilet?" is an important question, especially in the outdoors. The four objectives of human waste disposal are:

- Avoid polluting water sources.
- Minimise contact with insects and animals.
- Maximise decomposition.
- Minimise the chance of social impacts.

Wherever possible, take time to locate and use toilets for human waste disposal. Some coastal areas are next to settlements where facilities are available and some beaches have facilities provided. However, this is not the case everywhere.

When on land, if you must go, deposit human waste in a "cat hole". A "cat hole" is a dug hole of 20-25cm depth and at least 30 metres (70 steps) from tracks, waterbodies, camps, and watercourses. To promote decomposition, choose a site in organic soil, rather than deep sandy mineral soil. Bring a trowel to dig the hole, and gently remove a sod of earth and carefully put to the side. After use and before replacing the sod of earth, mix some soil into the faeces to promote decomposition. Replace the sod and disguise the location by lightly tramping around the edges. "Naturalise" the site by scattering leaf litter or other natural material. Human waste should not be deposited under rocks because it will decompose slowly there.

Make sure to pack out/remove all used toilet paper and hygiene products in an impermeable bag. All plastic bathroom waste, including hygiene products, wet wipes and cotton buds need to go into a bin. Please do not flush these items down the toilet when you find the nearest facilities, as they potentially will end up on our beaches.

Animal Waste

Just as human waste can be unpleasant and cause pollution, dog fouling has the same effect. Dog owners and handlers must ensure that dog mess is disposed of safely and does not disturb others. Always carry impermeable or compostable bags for this purpose and carry out your dog's waste, disposing of it in the appropriate bins.

Special Environments

There are many unique environments to be discovered along the coast. These include sand dune systems (including machair, a rare type of sand dune restricted to the western coasts of Scotland and northwest Ireland), cliffs, rocky shores, salt marshes and beaches to name a few. Several of these habitats are protected under the EU Habitats Directive. When in these environments, it is necessary to carry out your waste.

Beach & Shoreline: The ocean, rich in bacteria, is generally viewed as an acceptable environment for small-scale human waste decomposition, below the high tide line and only if necessary. Wave and current action quickly break down the faeces into small pieces which are then further broken down by the bacterial life in the sea. If performed properly, sea dispersal will leave no signs along the coastline for the next visitor to encounter. When along the beach and shoreline, it is important to think of other users and the level of use that the beach receives, for example, the beach may be a popular bathing area, so consider the situation and environment that you find yourself in. Always try to locate the nearest facilities.

Careless use of soaps and detergents can harm plants and animals and impact on other recreationists. For dishwashing and bathing, make sure you are at least 30 metres away from water sources, using little or no soap. When you are camped in a saltwater environment that has no specific regulations for waste water disposal, the best place to get rid of it is below the high tide line or in the ocean itself. For bathing in the ocean environment, consider going without soap. If you choose to bathe with soap, do so below the high tide line. This technique will allow the gravel or sand to filter the water. Avoid washing directly in salt water that is rich in intertidal life. Toothpaste, near the sea, can be spat below the high tide line.

Minimise the Effects of Fire

Fires can cause lasting impacts and can be devastating to natural habitats, wildlife, and property. Along with the destructive nature of fire, the natural appearance of many recreation areas has been compromised by the careless use of campfires and the demand for firewood. Campfires are beautiful by night. But the enormous rings of soot-scarred rocks, overflowing with ashes, partially burned logs, food, and rubbish are unsightly by day. Many lasting impacts associated with campfires can be avoided by using lightweight stoves, fire pans, mound fires and other Leave No Trace techniques. Fires and barbeques are inappropriate in fragile environments such as sand dunes but they may be permitted along the beach below the high tide line.

Check Local Regulations and Conditions

There are several points to consider before starting a fire. Check local regulations, byelaws and with local land managers regarding lighting a fire. It may be prohibited to build a campfire in some areas. Consider alternatives to a fire. Lanterns, candles, and torches are excellent sources of light for after dark. Where fires are permitted and appropriate, use techniques to reduce your impact on the land and avoid leaving unsightly and ecologically damaging fire scars.

Build a Minimum Impact Fire

First, consider if you need a fire. What is its purpose? And is it truly needed? If a campfire is important to you:

- Carry out a risk assessment taking into consideration location, nearby vegetation, tents, and wind direction. Decide whether it is safe and responsible to build a fire. If in doubt, don't have a fire.
- Have a trowel or small shovel and plenty of water to hand for saturating the ashes with water.
- Pack a first aid kit with burn treatment gel and cling film.
- Do not use accelerants to light your fire.
- Keep your campfire small and manageable.
- Clear the surrounding area of any excess debris.

There are several techniques that can be used to build a minimum impact fire. On the beach, where it is permitted, a beach campfire is made by excavating a shallow depression in the sand or gravel along the shoreline, below the high tide mark. In this instance, it is necessary to plan

for tides. Do not place rocks around the fire that have been in water, as water in cracks can flash to steam and cause explosions with rock shards. Regarding driftwood, take, and use only smaller pieces leaving behind the larger pieces of wood. Once the fire is out and the ash has cooled, make sure to remove all the ash, and scatter it before refilling the depression. If left in place the ash will "float" through the sand or gravel, and the fire site will be obvious to others.
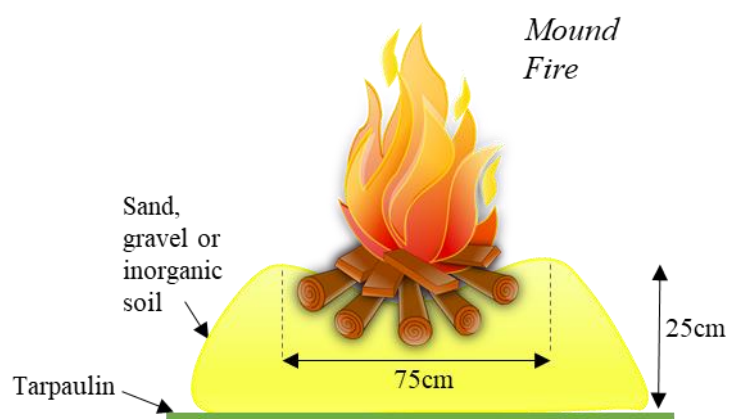
If you must have a fire above the high-water mark, use established fire rings if present or make a pan fire or mound fire. Keep fires and disposable barbeques raised off the ground as the heat generated, scars and scorches the surrounding vegetation and damages the subsoil. This in turn leads to increased levels of erosion.

Pan Fire

Fire pans are metal pans that make good containers for low-impact fires. Use a pan on a durable surface devoid of any vegetation. Line the pan with a few inches of inorganic soil, sand or gravel and elevate it with stones to prevent damage to the ground below.

Mound Fire

To build a mound fire collect sand, gravel or inorganic soil using a stuff sack from below the tide line or the high-water mark (it will require several loads). Lay down a heat resistant

tarpaulin or ground cloth and construct a pedestal 25 cm thick and 75 cm in diameter on top. A thick enough mound used with the tarpaulin insulates the ground from the heat of the fire. Be sure to return the materials used in your mound to its source once the fire is completely out.

Use of Dead and Downed Wood

You are free to pick twigs and small sticks from the ground. To avoid damaging the environment do not take twigs, branches, or bark from growing trees or shrubs. Leave in place larger pieces of downed wood, as these play an important role in nutrient recycling and whilst decaying, are home to many invertebrates. Leave larger pieces of driftwood found along the beach in place but you may use small twigs.

Manage Your Campfire

- Never leave your campfire unattended.
- Don't try to burn leftover food or rubbish that would have to be removed later.
- Burn the wood completely to ash.
- Drown your fire in water when its ready to be put out. Stir the remains to make sure all the ash is exposed to the water. Everything should be cool to the touch.
- Remove all litter.
- Scatter the ashes widely with a small shovel or pot lid.
- Restore the appearance of the fire site.

A Few Terms Defined

- **Established campsite:** Campsite made obvious by unvegetated ground or a "barren core."
- **Habituated:** Animals that are comfortable in the presence of humans and have become accustomed to frequenting developed areas, campsites, trails, or roadsides.
- **Invasive species:** Plant or animal that is not native to this country and that can aggressively out-compete native species.
- **Inorganic soil:** Soil that consists primarily of minerals with little or no plant and animal remains.
- **Naturalise:** To restore a site to its previous state so that it appears untouched by human use.
- **NATURA 2000 and SPAs:** In 1992 the Council of the European Communities adopted the Habitats Directive, on the conservation of natural and semi-natural habitats and species of flora and fauna. The Directive seeks to establish "Natura 2000", a network

of protected areas throughout the European Community. It is the responsibility of each member state to designate Special Areas of Conservation (SACs) to protect habitats and species, which, together with the Special Protection Areas (SPAs) designated under the 1979 Birds Directive, form Natura 2000. In Ireland, the National Parks and Wildlife Service are responsible for designating and monitoring the health of these sites. Certain restrictions may apply to these areas as they represent some of the most sensitive and priority landscapes on a European scale.

- **Machair:** A coastal grassland formed by wind-blown calcareous sands. It is one of the rarest habitat types in Europe and is characterised by herbaceous plants. It is restricted to the western coasts of Scotland and northwest Ireland. Protected under the EU Habitats Directive.
- **Pristine:** A place where signs of human impacts are absent or difficult to detect.
- **Rip Current:** A fast flowing area of water that can pull people or objects away from the land.
- **Tracks:** Paths created by travelling on non-durable surfaces between campsites and other sites of interest such as mountain summits.
- **Trail:** Trails which are managed and signed such as National Waymarked Trails.

Get Involved

There are a number of ways to become involved with Leave No Trace:

Adopt the Principles – Start to incorporate some of the techniques mentioned in this booklet when out and about in the countryside.

Training – Participate in Leave No Trace Training. Leave No Trace is based on a tiered education programme, with three types of training. For more information on Leave No Trace training please visit the training section on **www.leavenotraceireland.org**.

Support – Support the organisation by becoming a member or partner of Leave No Trace Ireland. For more information please visit the support section on **www.leavenotraceireland.org**.

Leave No Trace Ireland is a network of organisations and individuals with an interest in promoting the responsible recreational use of the countryside and wild places. Leave No Trace Ireland's main financial partners are;

Further Information

Please find below several organisations and webpages that may be of interest.

Bird Watch Ireland

www.birdwatchireland.ie

Clean Coasts Programme

cleancoasts.org

Environmental Protection Agency

Information on beaches - www.beaches.ie

Environmental information - www.epa.ie

Fishing

www.fishinginireland.info

Foraging

www.theseagardener.ie

Irish Coast Guard

In an emergency dial 999 or 112 and ask for the Coast Guard.

Further contact details can be found on the Department of Transport, Tourism and Sport webpage at www.dttas.ie/maritime/ircg/contact.

Irish Wildlife Trust

www.iwt.ie

Leave No Trace Ireland

www.leavenotraceireland.org/

National Biodiversity Data Centre

www.biodiversityireland.ie

National Parks and Wildlife Service

www.npws.ie

Shellfish

Sea-Fisheries Protection Authority - www.sfpa.ie/Sea-FisheriesConservation.

Sunrise and Sunset

www.timeanddate.com

Tide Times

The United Kingdom Hydrographic Office provides tidal information for both the United Kingdom and Ireland - www.ukho.gov.uk/EasyTide/EasyTide/SelectPort.aspx.

Weather

Weather forecasts for Ireland are provided by Met Eireann - www.met.ie.

On the website, you can find marine weather and sea area forecasts as well as regional information.

Water Safety

Information on which beaches have a life guard can be found on the Irish Water safety website - www.iws.ie.

Additional information regarding water safety and recreational activities can be found at www.safetyonthewater.ie.

<u>Photographs</u>

Photographs courtesy of Leave No Trace Ireland's access to Fáilte Ireland's Content Pool [images online], available: www.irelandscontentpool.com/media/

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8. Appendix B

Survey that was completed by members of the Mulranny community.

Outdoor Recreation in the Coastal Environment and Leave No Trace

Section 1

1. What is your age?

17 or younger	18-20	21-29	30-39	40-49	50-59	60 or older

2. What is your gender?

☐ Male   ☐ Female   ☐ Other

3. Please state your nationality.

4. Have you heard of Leave No Trace?

☐ Yes   ☐   No

5. If you answered yes, how did you hear about Leave No Trace for the first time?

Website	Social Media	Word of mouth	Newspaper or news article	Publications	Event attended	Other

If you selected other, please specify.

6. If you answered yes, what is your level of knowledge of Leave No Trace practices?

Basic Knowledge			Moderate			In-depth Knowledge
1	2	3	4	5	6	7

7. Do you think the Leave No Trace programme is widely known across Ireland?

☐ Yes   ☐ No

The following questions will provide a series of statements. Please mark one answer for each statement.

8. I feel that residents have a higher responsibility towards the coastal environment than tourists or visitors.

Strongly disagree			Neutral			Strongly agree
1	2	3	4	5	6	7

9. I feel that people are largely aware of the impacts that they have on the coastal environment.

Strongly disagree			Neutral			Strongly agree
1	2	3	4	5	6	7

10. I feel that if people are made more aware of the impacts recreation has on the environment, they are more likely to be respectful and mindful of their actions.

Strongly disagree			Neutral			Strongly agree
1	2	3	4	5	6	7

11. Programmes such as Leave No Trace are important in encouraging responsible outdoor recreation.

Strongly disagree			Neutral			Strongly agree
1	2	3	4	5	6	7

12. Rank the following, in order of who you think has the greatest responsibility towards the coastal environment, with 1 being the most responsible and 5 being the least responsible.

Government	Irish Population	Local Communities	Tourism businesses	Tourists

13. What are the main issues that need addressing in Mulranny regarding the coast and recreational impacts?

14. In your own words, what changes or steps would you like to see take place to help conserve the coast and raise awareness of recreational impacts?

15. Do you have any suggestions or recommendations on how people can behave responsibly when engaging in recreational activities by the coast? Please outline below.

Section 2 – Mulranny Environmental Group

1. What activities, in relation to the coast, does the MEG get involved in or organise?

2. As part of the MEG what activities do you personally get involved in?

3. Where do you think the MEG's role is, in the process of coastal protection?

4. Where do you think your own personal role is?

5. What management approaches have you used or have found to be effective?

6. Who else do you feel should be involved or a part of the process of coastal protection?

7. Who do feel should be responsible and for what?

9. Appendix C

Workshop Agenda.

Table 4: Outline of the workshop held with the MEG.

Workshop: Thursday 10th August 2017			
Time (pm)	**Duration (minutes)**	**Activity**	**Description**
Action Plan			
6:00 - 6:10	10	Introduction	Introduction to the project, to LNT and the aims of the workshop.
6:10 - 6:15	5	Identify Issues	Assign 3 groups. Appoint a speaker for the group & a scribe. What are the main issues in Mulranny in relation to coastal recreation? Each group identifies the top 3 issues they believe are the main issues. Issues to be written on 3 post-it notes.
6:15 - 6:20	5	Feedback	Each group presents their main issues.
6:20 - 6:25	5	Vote	Overall the whole group identifies the top 3 issues out of all of the issues presented.
6:25 - 6:30	5	Solutions	Allocate 1 issue to each group. Each group to determine what the main solution is to the assigned issue.
6:35 - 6:40	5	Feedback	Each group presents their solutions.
6:40 - 7:05	25	Action Plan	Compile an action plan per group. Group leader draw a timeline on a white board or flip chart with "now" written on the left and future (5/10 years) on the right, where the solution has been implemented & problem solved. Working backwards, participants to write key events or decisions on post-it notes & place events along the time line. Use these events to plan short, medium & long term actions & assign to relevant players: Community, LNT & Local Authority.
7:05 - 7:10	5	Feedback	Each group to present their action plan.
7:10 - 7:20	10	Group Feedback	Discussion of action plans.
Ethics Document Feedback			
7:20 - 7:25	5	Review	Split into 2 groups & combine feedback under 1. what do you like about the guidance? (top 3 points). 2. What do you not like/what is missing? (top 3 points).
7:25 - 7:35	10	Review	3. How can the guidelines be improved? (solutions to issues). 4. Any other comments?
7:35 - 7:40	5	Feedback	Each group presents their feedback.