

A Comparative Study of how the National Park Services in the United States of America and the Republic of Ireland Approach Health and Safety

by

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Declaration

I declare that I am the sole author of this thesis and that all the work presented is my own, unless otherwise referenced. I also declare that this work has not been submitted in whole or part, to any other university or college for any degree or qualification.

Signed: 

Date 08/09/08

ABSTRACT

This project is a comparison study of how the United States of America and the Republic of Ireland park services manage health and safety in their National Parks. The project looks at the legislation of both countries, how the National Parks approach safety for both employees and visitors and how the two park service's record incidents. By comparing the two countries approach to health and safety at National Parks it should be possible to discern if one country has a system that is working better than the other country's. It then may be possible to use that country's system as a template for the other country. By analyzing both systems it may be possible to identify issues in the current procedures in health and safety that need to be reassessed. Also, on an international scale the different park services may use this study to adapt their health and safety programme.

It was found that the two countries approach health and safety in national parks was in a similar fashion and that the two park services had a system where there was national-level guidelines, duties and procedures set in place, but the main health and safety decisions were left up to the individual park managers. This approach leads to variations in how the different parks within the same country approached health and safety. In both countries safety issues are being reexamined at the park services and safety guidelines are being revised. This is mainly due to recent changes in safety legislation. Both of the countries national parks had a low percentage of injuries. However, both of the park services' methods of recording visitor numbers and incidents mean that the data on injuries area not accurate. It is recommended that both countries' park services improve their recording system so that they are informed as to where to focus their resources.

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List of Abbreviations

EMT Emergency Medical Technicians

EMS Emergency Medical System

GPRA Government Performance and Results Act

HSA Health and Safety Authority

IMRA Irish Mountain Rescue Association

NPS National Park Service

NPWS National Parks and Wildlife Service

OPW Office of Public Works

OSHA US Department of Labour Occupational Safety and Health Administration

PMDS Performance Management Data System

PPE Personal Protective Equipment

SAC Special Area of Conservation

SAR Search and Rescue

SMIS Safety Management Information System

SOP Safe Operating Procedures

UNESCO United Nations Educational, Scientific and Cultural Organisation

TBI Technical Board of Investigation

CHAPTER ONE INTRODUCTION, AIMS AND OBJECTIVES

1.1 Introduction

Participation in outdoor activities, which includes visits to National Parks, is on the rise. (Johnson et al. 2007, p 186) Annually, both the United States of America and the Republic of Ireland have millions of visitors to their National Parks. The nature of National Parks means that both employees and visitors face the possibility of injuries, and in some case even fatalities. In spite of this there have been very few studies in regards to National Parks health and safety policy towards employees and visitors. There are approximately a hundred nations with national parks, with 1,200 parks in total. The author has found no international guidelines on health and safety for national parks. (National Park Service, 2008a)

This project will compare how the United States of America and the Republic of Ireland National Park System manages health and safety both for employees and visitors. Established in 1916 and with currently 391 areas, the National Park Service (NPS) in the United States of America is a larger and longer established park service than that of the National Parks and Wildlife Service (NPWS) in the Republic of Ireland. Thus, this project will be comparing a larger and more established park service to a smaller and younger park service in the hope of discovering if there are health and safety systems that work for both large and small national park services. Due to the fact that there are no international guidelines on health and safety for National Parks it is hoped that this study would be the first of many in an attempt to set up international health and safety guidelines for National Parks.

1.1.1 Background Information on the Six National Parks from the United States of America

The six national parks in the United States of America that this project will be focusing on are: Big Bend National Park, Death Valley National Park, Everglades National Park, Great Smoky Mountains National Park, Wind Cave National Park and Yellowstone National Park. These parks were selected because they gave the most representative sample of the different types of national parks which are in the United States. Two parks from each part of the continental United States were chosen. The two parks from the West Coast are Yellowstone National Park and Death Valley National Park. Big Bend National Park and Wind Cave National Park are from the Mid-West of America. Great Smoky Mountains National Park and Everglades National Park are from the East Coast.

Big Bend National Park

Big Bend National Park is located in southwest Texas. The Park is hundreds of miles away from the nearest city. The Park is an hour's drive away from the RioGrande. (National Park Service, 2008b) The Park was established in and opened to the public in 1944. (National Park Service, 2008c) The current size of the Park is 801,163 acres. (National Park Service, 2008d) In 2007 the Park had 364,856 visitors. (National Park Service, 2008e)

The different environments found in Big Bend National Park include mountains, desert, and rivers. The different environments give rise to a wide variety of flora and fauna. There are over 1,000 species of plants are found within Big Bend National Park. With approximately 60 of cacti found in the Park it makes Big Bend

National Park the park with the greatest variety of cacti in the United States. There are at least 3,600 species of hard-bodied invertebrates found within the Park, 40 different species of fish, 450 different species of birds, 75 different species of mammals, 31 species of snakes, seven species of turtles and 22 species of lizards. (National Park Service, 2008f)

The area that is now Big Bend National Park has a rich cultural history. Humankind has lived or passed through the area for thousands of years, and their presence is found through archaeological sites. (National Park Service, 2008c)

Death Valley National Park

Death Valley National Park is found in two states, California and Nevada. In 1933 Death Valley was established as a National Monument, it was re-designated as a National Park in 1994. The size of the park is 3,372,402 acres. (National Park Service, 2008d) In 2007 the Park had 704,122 visitors. (National Park Service, 2008e) The Park is the lowest point in the Western Hemisphere and with summer temperatures commonly reaching above 120 degrees Fahrenheit/ 49 degrees Celsius, it is one of the hottest places in the world. (National Park Service, 2008g)

The different environments found in Death Valley National Park include: sand dunes, faults, desert, mountains, and canyons. Due to the fact that the Park has harsh desert conditions and snow covered mountains the range of flora and fauna that can be found in the Park is wide. Found within the Park are plants and animals that are unique to the harshest deserts. (National Park Service, 2008h)

There is a wide variety of animals in Death Valley National Park, including 51 species of native mammals, 307 species of birds, 36 species of reptiles, three species of amphibians, and five species and one subspecies of native fishes. There is ongoing research to identify the different butterfly species. (National Park Service, 2008i)

Although the conditions at Death Valley National Park are harsh people have been living in the area for thousands of years. The Timbisha Shoshone Indians lived in the area for centuries before any Europeans arrived. (National Park Service, 2008j) Scattered throughout Death Valley are ghost towns that date back to the late 1800's. (National Park Service, 2008k)

Everglades National Park

Everglades National Park is located in South Florida. The Park was established in 1947. (National Park Service, 2008k) The Park's current size is 1,508,538 acres, making it the tenth largest national park in the United States. (National Park Service, 2008d) In 2007 there were 1,074,764 visitors to the Park. (National Park Service, 2008e) The Park is the largest subtropical wilderness in the United States and has been designated an International Biosphere Reserve, a World Heritage Site, and a Wetland of International Importance. (National Park Service, 2008l)

Some of the ecosystems found in Everglades National Park are: pineland, hardwood hammock, coastal lowlands, mangrove, cypress, freshwater marl prairie, marine, freshwater slough and estuarine. (National Park Service, 2008m) In the Park there are 17 different species of amphibians, over 360 species of birds, nearly 300

species of fish, over 40 species of mammals and over 50 species of reptiles identified. Over 1,000 species of plants are found within the Park. (National Park Service, 2008n)

There have been people in South Florida dating back to 10,000 B.C. The Native American tribes of the Creeks and Seminoles were in the area as early as the eighteenth century. (National Park Service, 2008o)

Great Smoky Mountains National Park

Great Smoky Mountains National Park is located in the states of Tennessee and North Carolina. The Park was established in 1934. (National Park Service, 2008p) The current size of the Park is 521,776 acres. (National Park Service, 2008d) In 2007 there were 9,372,253 visitors; making it the most visited National Park in the United States. (National Park Service, 2008e)

The different ecosystems found in Great Smoky Mountains National Park are mountains, forests, streams and waterfalls. (National Park Service, 2008q) There are over 1,600 species of flowering plants found within the Park. There are over 200 species of birds, 43 species of amphibians, nearly 60 species of fish, 66 species of mammals and 23 species of reptiles are found within the Park. (National Park Service, 2008r)

The Great Smoky Mountains have had a long human history spanning thousands of years, from the prehistoric Paleo Indians to early European settlement in the late 1700s. (National Park Service, 2008s)

Wind Cave National Park

Wind Cave National Park is located in South Dakota, and was established in 1903, making it the first national park to protect a cave. The Park's current size is 28,295 acres. (National Park Service, 2008t) In 2007 there were 603,159 recorded visitors to the Park. (National Park Service, 2008e)

Wind Cave National Park contains one of the world's longest and most complex caves. (National Park Service, 2008u) The Park has eight caves, one of which is a major cave. The public has access to seven of the eight caves. (Hooker and Shalit, 2000, p19) However, the caves are not the only important ecological features in the Park. The Park also contains mixed-grass prairie and ponderosa pine forest. (National Park Service, 2008u)

Native Americans knew about the caves for hundreds of years and regarded them as sacred. The first recorded finding and exploration of the caves by non-native Americans took place in 1881. In 1890 there were several mining claims at Wind Cave. In 1903, President Theodore Roosevelt signed the bill creating Wind Cave National Park. However, the Park lands at that time were small and there were no bison, elk, or pronghorn. In 1912, the American Bison Society was looking for a place to re-establish a bison herd. Due to the excellent prairie habitat around the park, a national game preserve was established bordering Wind Cave. The preserve became part of the Park in 1935. The Park was enlarged in 1946 and again in 1978. (National Park Service, 2008v)

Yellowstone National Park

Yellowstone National Park is located in three states, Wyoming, Montana, and Idaho. It is the United States first national park and was established in 1872.

(National Park Service, 2008w) Its current size is 2,219,791 acres. (National Park Service, 2008d) In 2007 there were 3,151,343 visitors to the Park. (National Park Service, 2008e)

Some of the ecological features found in Yellowstone National Park include: mountains, forests, meadows, geysers, hot springs, lakes, and canyons. (National Park Service, 2008x) There are over 1,700 species of native plants and over 170 species of exotic plants found in Yellowstone National Park. (National Park, 2008y) The types of animals found in the Park include birds, mammals, reptiles and amphibians. (National Park Service, 2008z)

Humans have inhabited the area of Yellowstone for more than 11,000 years. The Native Americans used the area for hunting and transportation routes. A little over 200 years ago the first Europeans entered the area. The area was used by fur trappers, almost leading to the extinction of the beavers. In the 1860s prospectors and miners searching for gold came to Yellowstone. In 1872, when the United States was not even 100 years old, the area was designated a national park, the first in the world. In the words of President Ulysses S. Grant Yellowstone would be, "dedicated and set apart as a public park or pleasuring ground for the benefit and enjoyment of the people." (National Park Service, 2008a1)

1.1.2 Background Information on the Six National Parks From the Republic of Ireland

The six national parks in Ireland that this study will be focusing on are Ballycroy National Park, Connemara National Park, Glenveagh National Park, Killarney National Park, The Burren National Park and Wicklow Mountains National Park.

Ballycroy National Park

Ballycroy National Park is located in County Mayo and is Ireland's sixth National Park. It was established in November 1998. (National Park and Wildlife Service, 2008a) According to Denis Strong the Park is at an early stage of development and currently does not have any type of visitor facilities. (personal communication, e-mail, May 06, 2008) The Park comprises of 11,000 hectares of blanket bog and mountainous terrain. The Owenduff bog is one of the last intact blanket bog systems in Western Europe. The Park is also home to a variety of flora and fauna. Ballycroy National Park is part of the Owenduff/Nephin Complex Special Area of Conservation (SAC) and Special Protection Area. These European designations are part of the Natura 2000 Network, which protect rare and important habitats and species under the EU Habitats and Birds Directives. (National Park and Wildlife Service, 2008a) Before the area that is now Ballycroy National Park was purchased by the State the lands were used for agriculture, turbary, and recreational uses including fishing, shooting, and hillwalking. The area was well known for fishing and hunting in the past. Near the Owenduff and Tarsaghaun rivers the remains of stone buildings and traditional cultivation ridges can be seen. The Bangor Trail may date back to the 16th century. Landlords were responsible for the

upkeep of the sections of the trail that passed through their land. Before the introduction of modern roads between the Bangor Erris region and Newport the trail was used as the main route for people and livestock. (National Park and Wildlife Service, 2008b)

Connemara National Park

Connemara National Park is located in the west of Ireland in County Galway. The Park was established in 1980. Connemara National Park comprises of 2,957 hectares of mountains, bogs, heaths, grasslands and woodlands. Some of the Park's mountains are part of the Twelve Bens or Beanna Beola range. (National Park and Wildlife Service, 2008c) Some of the flora and fauna that is found in the park include heather, cross-leaved heath, purple moor grass, sundews, meadow pipits, skylarks, stonechats, chaffinches, robins, kestrel, foxes, stoats, shrews, bats, and the Connemara Pony. (National Park and Wildlife Service, 2008d) Before the area that is now Connemara National Park was obtained by the state much of the lands were part of Kylemore Abbey Estate and the Letterfrack Industrial School; the rest of the lands were privately owned. (National Park and Wildlife Service, 2008c)

Glenveagh National Park

Glenveagh National Park is located in County Donegal. Much of the lands that encompass the Park were established as Glenveagh National Park in 1975, the Victorian castle and gardens that are now part of the park were obtained in 1983. The Park and gardens opened to the public in 1984 and the castle in 1986. The Park is 14,000 acres and has three areas. The largest area is the former Glenveagh Estate, including most of the Derryveagh Mountains. The west part consists of quartzite

hills around Crocknafarragh. The southern area of the Park is made up of the peatlands of Lough Barra bog, Meenachullion and Crockastoller. The Park also contains 100 hectares of natural and semi-natural woodland. The two highest mountains in county Donegal are found within the park (Errigal and Slieve Snaght). (National Park Wildlife Service, 2008e) Due to the variety of habitats in the area, Glenveagh National Park contains a wide variety of flora and fauna. In 2001 the reintroduction of golden eagles took place and the project is ongoing and it is hoped that by 2010 some of the eagles may be breeding. (National Park Wildlife Service, 2008f)

Much of Glenveagh National Park was owned by a wealthy land speculator who managed the area as a private deer forest. The last owner of the Victorian castle and surrounding gardens was an Irish-American who donated the lands and castle to the state. (National Park Wildlife Service, 2008)

Killarney National Park

Killarney National Park is located in County Kerry and is Ireland's first national park. In 1932, 4,300 hectares of the Park, it is now 10,236 hectare, was given to the state by Senator Arthur Vincent. The Park in 1981 was designated as a Biosphere Reserve by the United Nations Educational, Scientific and Cultural Organisation (UNESCO). The Park is now part of a world network of natural areas which have conservation, research, education and training as major objectives. There are an estimated 1.5 million visitors to Killarney National Park annually. These visitors partake in a variety of activities such as hiking, guided walks, pony trekking, cycling, boating, fishing, and visiting the buildings within the park. (National Park Wildlife Service, 2008h)

Killarney National Park has a wide range of different habitats and buildings, including mountains, lakes, woodlands, waterfalls, Muckcross House and Gardens, Ross Castle, Dinis Cottage, Killarney House and Gardens and Knockreer House. Found within the Park is the highest mountain range in Ireland, the McGillicuddy's Reeks. (National Park Wildlife Service, 2008i) Killarney National Park also has a wide variety of flora and fauna. In 2007 the Park reintroduced the white tail eagle. (National Park Wildlife Service, 2008h)

There is evidence of human presence in the lands that are now Killarney National Park dating back to the early Bronze Age. During this time copper was being mined at Ross Island. There are still remains of the monastic settlements from early Christian times from the 11th-13th centuries. A Franciscan Friary, Muckcross Abbey, was founded in 1448. The ruins are the burial place of local Chieftains and, in the 17th and 18th centuries, of the Kerry Poets, Aodhgan O' Raithaile, Eoghan Rua O' Sullivan, Piaras Feiriteir and Seafraidh O' Donoghue. (National Park Wildlife Service, 2008j)

The Burren National Park

The Burren National Park is located in County Clare, in the south-eastern corner of the Burren. The Burren National Park was established in 1991 and is approximately, 1500 hectares in size. Séamus Hassett stated that the Burren National Park does not currently have a visitor centre and the NPWS does not provide any visitor access to the Park. Also, there are no fulltime rangers and the Park is “very much unmanned”. (personal communication, e-mail, May 21, 2008) Much of the Burren is designated as a SAC. The Burren is approximately 250 square kilometres in size. The Park contains all the major habitats found within the Burren such as

limestone pavement, calcareous grassland, hazel scrub, ash and hazel woodland, turloughs, lakes, petrifying springs, cliffs and fen. (National Park Wildlife Service, 2008k) There are a wide variety of flora and fauna found within the Park, many of them rare. The flora of the Burren is especially diverse, 75% of the floras found in Ireland are found in the Burren. Some of the more rare species of plants are protected under the 1999 Flora Protection Order. The park also has a wide variety of fauna especially birds. There have been Eighty-Nine species of bird recorded within the Park and at least fifty species use the park for breeding. (National Park Wildlife Service, 2008l)

Farming, both current and in the past, has had a great impact on the Burren. The past farmers used techniques that have preserved the unusual flora and habitats that remain today. The farming practices have not only preserved the wildlife but have also enhanced it. (National Park Wildlife Service, 2008m) Currently there is a project, “Farming for Conservation in the Burren”, taking place to look at the current farming management of the region and trying to develop a sustainable farming system that is also beneficial to conservation. (National Park Wildlife Service, 2008l)

Wicklow Mountains National Park

Wicklow Mountains National Park is located in County Wicklow. The park was established in 1991 with an initial core area of 3,700 hectares; currently the Park is over 17,000 hectares but will continue to grow as new lands are acquired. It is estimated that one million visit the Park each year. Besides mountains, heath, bog, streams, lakes and woodlands, the ancient monastic settlement of St. Kevin is found

within the Park. (National Park Wildlife Service, 2008n) Many of the flora and fauna are protected under the Wildlife Act. (National Park Wildlife Service, 2008o)

The first known inhabitants of the area that is now Wicklow Mountains National Park came from Britain between 7000 and 4000 BC, during the Stone Age. Farming started in the area around 4000-2000 BC. During the Late Bronze Age route ways were being developed to aid in trading. In the sixth century, St. Kevin crossed the Wicklow Mountains from Hollywood to Glendalough. County Wicklow was formed in 1597. The lands that now make up the Park were both publicly and privately owned. The lands that were publicly owned were used as nature reserves and the state's commercial timber production agency. The main areas that were privately owned, and that the state purchased, are in Ballingonneen, Kippure East, Ballinabrocky, Lough Bray, Derrybawn, Glencree and Ballinastoe. Due to the way the land was purchased the boundaries of the Park at the moment are based on previous land ownership patterns, rather than on an ecological unit. (National Park Wildlife Service, 2008p)

1.2 Aims and Objectives

- Compare health and safety legislation in the United States of America and the Republic of Ireland
- Compare how employee safety/training is managed at national level and local park level
- Compare how visitor safety is managed at national and local park level

- Compare and look at how incidences are recorded for both employees and visitors and what the different park service does with the information
- Use GIS to map out where the individuals are injured in order to see if there is an area or series of areas that have a high injury rate
- Look at number of incidences occurring in each park that is being sampled

By comparing the United States of America and the Republic of Ireland park systems if one country has a system that is working better than the other then one country may use the other country's system as a template to improve their own system. By analyzing both systems it may be possible to identify issues in the current procedures in health and safety that need to be reassessed. Also, on an international scale the different park services may use this study to adapt their health and safety programme. Finally, the fact that America's park service is much larger and longer established than Ireland, Ireland may learn from America's mistakes and what they are doing right in dealing with an ageing infrastructure. Also, if Ireland's park service were to expand in size they can also learn from America's mistakes and accomplishments in dealing with health and safety on a large scale.

2.1 The United States of America

This section of the literature review will cover the history of the NPS, the different pieces of legislation that affect the management of health and safety at the NPS and the Department of the Interior Audit on Health and Safety. As stated in the introduction six parks from the United States of America are being sampled, Big Bend National Park, Death Valley National Park, Everglades National Park, Great Smoky Mountains National Park, Wind Cave National Park and Yellowstone National Park. This section of the literature review will cover any previous studies on health and safety that reviewed any of the six parks that are included in this project.

2.1.1 Background of the National Park Service**History of the National Park Service**

In 1872 Yellowstone National Park, located in the states of Wyoming, Montana and Idaho in the United States of America, became the first national park in the world. In the following years the United States designated an additional 35 National Parks and Monuments. The National Parks were managed by the Department of the Interior while the Monuments were managed by the Forest Service of the Department of Agriculture and the War Department. In August 1916 the United States President, Woodrow Wilson, signed the Organic Act which created the NPS. The Act placed the management of the various federal parklands under the management of the NPS, which is a federal bureau in the Department of the Interior. In 1933 Executive Order 56 transferred National Monuments and Military sites from

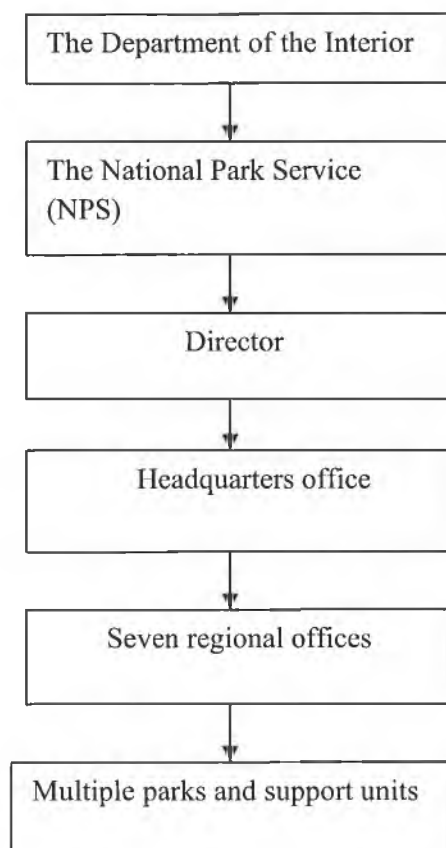
the Department of Agriculture and War Department to the NPS. (National Park Service, 2008a)

Today, the NPS has 390 sites comprising more than 84 million acres.

(National Park Service, 2008a) The NPS has approximately 273 million visitors to their sites each year, the bureau with the most visitors in the Department of the Interior. (U.S. Department of the Interior Office of Inspector General 2008, p1)

Additional National Parks can be designated by Acts of Congress. The President can designate national monuments on lands that are already under Federal jurisdiction.

(National Park Service, 2008a) The basic current park organization is shown in the following diagram. Figure 2.1 NPS Organization



(Source: National Park Service, 2008b1)

Headquarters consists of the Office of the Director and six Associate Directors. The office provides leadership at a national level, formulates policy and budget and offers programme guidance and legislative support. The office is accountable for programs and activities managed by the field and key program offices. There are seven regions in the NPS (See Figure 2.2 for a map of the regions). Each region is headed by a Regional Director who reports to a Deputy Director. The Regional Director is responsible for strategic planning and direction, policy oversight, and assistance in public involvement, media relations, and strategies for parks and programs within the region. Each park is headed by a Park Manager who reports to the Regional Director. The Park Manager's duties include:

- managing all park operations to achieve programme goals,
- developing and fostering external partnerships,
- directing and controlling all program activities, including interpretation and education; visitor services; resource management and protection; facility management,
- administrative functions such as procurement, contracting, personnel, and financial management,
- Acting as field representatives for all NPS programmes.

(National Park Service, 2008b1)

Figure 2.2 Map of the NPS Regions



(Source: National Park Service, 2008b1)

2.1.2 Legislation

The main pieces of health and safety legislation which regulates American National Parks in regards to employee safety are *The Occupational Safety and Health Act of 1970* (most recent amendment occurred in 2004) and its corresponding Regulations and Executive Orders. The current corresponding Regulation is *Title 9 of the Code of Federal Regulations, Part 1960* and *Executive Order 12196* is the corresponding Order to the Act. The NPS has two duties under the Act which are:

- to furnish each employee a place of employment which is free from recognized hazards that are causing, or are likely to cause, death or serious physical harm to its employees
- to comply with occupational safety and health standards under this Act

Employees have one duty, which is to comply with occupational safety and health standards and all rules, regulations, and orders issued in compliance of the Act. (Senate and House of Representatives of the United States of America Congress assembled, 1970 [amendment in 2004])

Under *Executive Order 12196* and *Title 9 of the Code of Federal Regulations, Part 1960* duties are extended to the heads of Agencies. The heads of Agencies must have a health and safety programme that a designated official would be responsible for and this person should have the rank of Assistant Secretary. The programme should have an adequate budget and personnel to operate effectively. The programme should ensure that any unsafe working conditions are promptly

alleviated and signage is posted until the unsafe working conditions are alleviated. (The Executive Branch of the United States of America, 1980a) Inspections, both announced and unannounced, should be performed at least annually in the work place and carried out by competent inspectors with the necessary equipment. Employee representatives must accompany the inspections. When hazardous conditions are found there should be follow-up inspections to ensure the hazardous conditions are alleviated. When an employee reports a hazardous condition, inspections are required within 24 hours for imminent dangers, within three working days for potential serious conditions and within 20 working days for all others. Employees must be able to report health and safety issues anonymously and without fear of repercussions. As part of the health and safety programme, appropriate safety training must be provided for employees to safely carry out their work. The training must include the employee's rights and responsibilities. Each employee who is in a health and safety position must receive health and safety training within six months of his/her appointment. As part of the programme, recognition of superior performance in regards to health and safety should be given. Records of the health and safety programme should be maintained and an annual report on the programme should be submitted to the Secretary of the Department of the Interior. Committees must be established to assist with the health and safety programme. (See appendix A for the 12 duties of the heads of agencies and appendix B for the criteria of a well designed health and safety programme) (The Executive Branch of the United States of America, 1980b)

According to Dr. Sara Newman there is no specific legislation for the protection of visitors except for the general principle of law of “Duty of Reasonable Care.” (personal communication, Questionnaire A, April 08, 2008)

The *Government Performance and Results Act, 1993* (GPRA) requires Federal programmes, which includes NPS, to make programme goals and to measure program performance against those goals by collecting data. The progress of the programme performance must be publicly reported. Programmes covered under this Act include health and safety programmes. (Senate and House of Representatives of the United States of America in Congress assembled, 1993)

2.1.3 The Department of the Interior Audit

The Department of the Interior’s ability to maintain its infrastructure is challenged by limited resources and aging facilities. (Department of the Interior, 2008p1) In March 2008 the Department of the Interior, Office of the Inspector General released an audit report on *Health and Safety Concerns of the Interior’s Facilities*. The NPS was one of the bureaus on which the audit focused. Ten National Parks and two Offices in the NPS were contacted for the audit. (Department of the Interior, 2008p37) Three of the areas contacted for the audit were also contacted for this study: Everglades National Park, Yellowstone National Park and Headquarters Offices.

The auditors found that the NPS has let crucial maintenance lapse for several years. The most serious example of this lapse of maintenance is at the Wawona Tunnel in Yosemite National Park. (U.S. Department of the Interior Office of Inspector General 2008, p11) The water systems at Yellowstone and Yosemite

National Parks are a safety concern. It was found that in the combined parks, 47 drinking water systems and 42 wastewater systems are in various states of deterioration. Thus, disposing of wastewater and providing safe drinking water at the parks present a growing health risk to the public and employees. (U.S. Department of the Interior Office of Inspector General 2008, p13)

As part of the audit a survey on health and safety issues was distributed to employees. In the NPS 21,487 employees were contacted and 2,416 responded. The survey asked 15 questions. The majority of the NPS respondents (81%) believe the health and safety of the general public is protected when visiting their workplace. Nine percent of the respondents were found to believe that the public was not protected when visiting their Park. Of the three survey statements below:

1. "The more serious health and safety issues in my work place are corrected before the less serious ones"
2. "I believe that my bureau is doing an effective job of reducing job-related accidents at my work place"
3. "Health and safety concerns that are reported to management are addressed in a timely manner"

the third statement had the highest percentage of NPS respondents who disagreed with it (16%), the first statement had the second highest percentage of respondents who disagreed with it (13%) and the second statement had the lowest percentage of respondents who disagreed with it (12%). Of the respondents who disagreed with the statements, some stated that they were reluctant to report health and safety concerns because of the fear of reprisal and

of the pressure to maintain a good safety record. Also, some of the respondents stated that safety concerns have not always been mitigated based on seriousness or risk, but were prioritized and addressed if there was a “quick fix” or if they were inexpensive to fix. Some of the issues impacting getting safety concerns mitigated include:

- Shortage of funding and personnel including maintenance and safety staff,
- Lack of, or untimely response from, management; some respondents felt that concerns brought to management were not taken seriously, were ignored, or took years to be addressed. (U.S. Department of the Interior Office of Inspector General 2008, p 22,23)

When discussing senior level management, immediate supervisor and fellow workers NPS respondents stated that health and safety was a higher priority with fellow workers and their immediate supervisor. The immediate supervisor and fellow workers only had 1% difference in respondents who stated that health and safety was not a priority, the former being 7% and the latter being 6%. However, 14% of the respondents stated that health and safety was not a priority of senior level management. Some of the respondents stated that there is a reactive culture in regards to health and safety. (U.S. Department of the Interior Office of Inspector General 2008, p 23)

Twenty-six percent of the respondents to the survey from the NPS stated that uncorrected serious health and safety issues do exist in their workplace. The following are some of the areas of most concern:

- **Air Quality and Exposure to Hazardous Substances:** Poor air quality, heating, ventilation and air conditioning problems and exposure to hazardous substances were all listed as concerns. Some of the reasons for poor air quality includes: dirty air filters, construction debris, falling brick dust from deteriorating buildings and poor building ventilation.
- **Maintenance and Janitorial Services:** Overloaded electrical systems, tripping and slipping hazards, hazardous trees on trails and picnic areas not being addressed and simple items such changing a light bulb or fixing a hole in the wall not being addressed are some of the maintenance related concerns. Filthy toilets and workspaces are some of the failures of day-to-day janitorial services.
- **Disabled Persons Accessibility:** Handicap accessible doors not working and elevators not operating or existing have been reported. A survey respondent stated, “We have had park visitors in wheelchairs who had to crawl up the stairs to meet with our staff.”
- **Structural:** Shifting walls, lack of seismic reinforcement, cracks in walls and condemned buildings were all listed as structural problems of buildings in which some of the National Park Service employees worked. (U.S. Department of the Interior Office of Inspector General 2008, p 18-20)

On the issue of training 5% of the NPS respondents stated that they have not been trained to safely perform the duties associated with their job, 8% stated that they have not received safety equipment appropriate to their job and 5% stated that

they have not received training in the appropriate use of their safety equipment.

Some of the training/equipment issues include:

- Outdated or expired equipment,
- Receiving and using equipment without proper training,
- Employees purchasing their own equipment,
- Not receiving initial or refresher training on duties,
- Not receiving adequate medical monitoring.

Some employees have stated that requests for training and equipment are denied due to lack of funding and management support. (U.S. Department of the Interior Office of Inspector General 2008, p 25) In spite of these issues on health and safety that were raised 45% of the NPS respondents stated that their park was safer than five years ago. (U.S. Department of the Interior Office of Inspector General 2008, p 47)

Some of the additional issues that were raised as part of the audit include:

- **Unsafe and Unreliable Radio Communications:** A survey respondent stated “Our biggest issue at the park is the lack of a reliable functioning radio system that is paramount to the safety of our park employees.” Many of the radios are outdated or not working and the coverage is minimal. This is a huge safety issue because due to staff cuts many employees are working in remote areas alone without adequate communications. The Department is currently taking action to correct the problem, but the auditors recommend that this issue continues to be at the forefront of the Department’s priorities.

- Security and Emergency Preparedness: Some employees are concerned about lack of qualified personnel in security positions, easy entrance into their workplaces, increased violence on federal lands, protection from severe weather, protection from possible terrorism, lack of fire alarms, fire suppression, egress and fire drills.
- The Incident Tracking System: Due to the incomplete data the mandatory method for accident reporting has been found to be ineffective as a tool for the Department to manage health and safety.
- General Health and Safety: Some of the general health and safety concerns include: work related stress, lack of safe drinking water, lack of first-aid equipment, lack of training in specialized areas and lack of first-aid training. (U.S. Department of the Interior Office of Inspector General 2008, p 7,25-27)

The audit found that the Department of the Interior and the NPS needs to improve and expand their health and safety programmes, focusing on increasing the number of trained safety personnel, having an effective safety inspection programme, improving the Incident Tracking System, having effective coordination between the health and safety and asset management programmes. An organizational structure needs to be created that enhances the authority and visibility of safety officers to promote safety and be in compliance with Regulations. (U.S. Department of the Interior Office of Inspector General 2008, p 4)

2.1.4 Previous Studies Conducted

Two previous studies dealing with health and safety matters have been conducted in two of the six National Parks that are being sampled for this report, one dealing with Wind Cave and one with Yellowstone.

A study conducted on underground medical treatment protocols in cave rescues in National Parks located in the United States included Wind Cave National Park in its sample size. The study found that most parks have a general plan or protocol in the event of a rescue situation which includes mobilizing the park personnel, the park and county search and rescue organization and any rescuers referred by the National Cave Rescue Commission. Medical care at the parks is provided by park medics and park Emergency Medical Technicians (EMT). The park medic qualifications are equal to an EMT-Intermediate with the American Red Cross. The EMTs and park medics called to a cave rescue situation would have cave rescue training. (Hooker and Shalit, 2000, p17)

At the time the study was conducted (1997) there was no method of tracking injuries or emergency medical service calls for caving incidents. The individual park emergency medical services had to be contacted in regards to visitor numbers, medical calls and type of injury sustained. The information obtained for the individual park emergency medical services was estimated, based on their recollection of previous events and the yearly census summary data sent to the emergency medical services director's office. The data obtained showed that in 1997 Wind Cave had 100,000 visitors. During the 1997 season there were approximately four recorded medical calls and no carry-outs of the caves located in the park. The types of injuries that the visitors sustained were abrasions, contusions and cuts. The

overall types of injuries and number of injuries from the 14 National Parks that were surveyed were few and minor in nature. Out of the 2 million visitors, there were approximately 209 medical calls and 57 carry outs. None of the injuries were life threatening and most of the injuries were due to elderly visitors being fatigued and unable to ascend the path that exited Mammoth Cave in Mammoth Cave National Park. The reason for the low injury rate is due to the fact that a guided walking tour, which is usually on a paved path, accounts for the vast majority of cave visits. Most of the National Parks in the study had written or verbal warnings about the potential hazards of entering the caves. (Hooker and Shalit, 2000 ,p17-19)

For Wind Cave National Park where types of injuries were abrasions, contusions and cuts the study suggests that precautions such as wearing long-sleeved shirts, helmets or thick caps should be stressed. The study also suggests that the National Park Service should have a database that characterizes the minor injuries thus having a more rational approach to the steps taken to lessen visitor injuries. (Hooker and Shalit, 2000, pg20) According to Dr. Sara Newman this database has not been implemented in the National Park Service (personal communication, June 30, 2008)

A study was conducted that looked at the Emergency Medical System (EMS) database in Yellowstone National Park for the 2003 to 2004 calendar year. During this year EMS was required 5.2 times per 100,000 visitors. There were 306 EMS runs for trauma during that time. Of the 306, runs 125 patients (40.8%) required EMS transport and of those needing transport 58.4% were basic life support; the remaining 41.6% needed advanced life support. There were no fatalities. Walking and hiking activities accounted for the majority of the injuries (38%), followed by

camping (11.1%), biking (4.9%) and horseback riding (4.9%). Most of the injuries were minor in nature with the highest percentage being soft tissue injuries (77.4%), followed by fractures or dislocations (8.8%) and environmental exposure (5.9%).

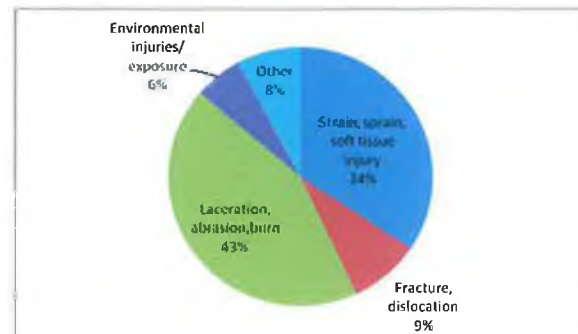
The area of the body that received the most injuries were the legs (36.6%), followed by the arms (27%) and the head (20.6%). Of the walking and hiking injuries 56.5% involved the legs. The majority of the injuries occurred between the hours of 15:00-23:00 (52.9%) and in the summer (62.7%). The study may not have captured all of the injuries that occurred during the 2003 to 2004 calendar year due to the fact that it did not look at the data from the ambulatory clinics in the park. Furthermore, some people may not have reported their injuries. (Johnson et al. 2007, p186-188)

Figure 2.3 Park Activity During Injury



(Souce: Johnson et al. 2007,p188)

Figure 2.4 Type of Injury



(Souce: Johnson et al. 2007,p188)

2.2 The Republic of Ireland

This section of the literature review will cover the history of the NPWS and the different pieces of legislation that affect the management of health and safety at the NPWS. The author could not find any audits on Health and Safety performed by the Department of the Environment Heritage and Local Government on that included the NPWS. Also, the author could not locate any previous studies dealing with health and safety in the national parks.

2.2.1 Background of the National Parks and Wildlife Service

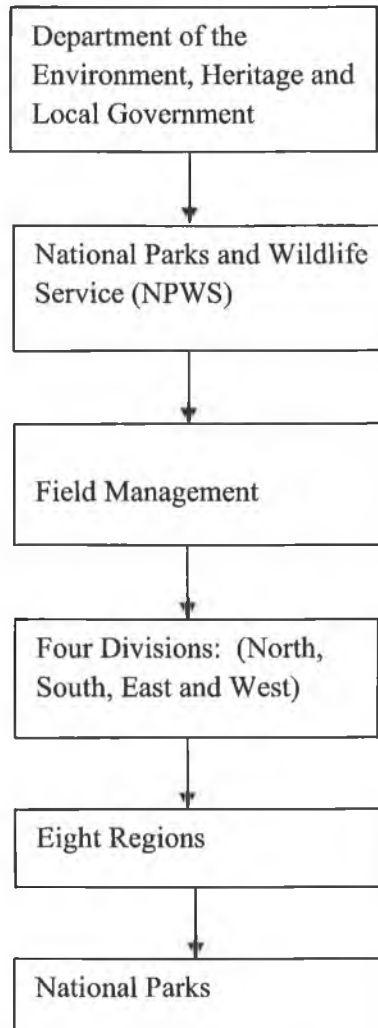
History of the National Parks and Wildlife Service

Ireland's first National Park, Killarney, was established in 1932 and placed under the Office of Public Works (established in 1831). The NPWS of the Office of Public Works (OPW) managed the Parks until 1990. Then a new department, The Department of Arts, Culture and the Gaeltacht, was created. However, in 1997, a new government was elected, and the OPW was renamed Heritage, Gaeltacht and the Islands. Also in 1997, it was decided to incorporate the names Heritage, Gaeltacht and the Islands to Dúchas The Heritage Service, which would take over National Parks and Monuments, Waterway and Wildlife Services, formerly those of the OPW. (National Park and Wildlife Service, 2007a)

The management of Irish National Parks changed again in 2003 when Dúchas The Heritage Service was abolished. National Parks, Conservation Sites and Nature Reserves management was transferred to the NPWS which forms part of the Department of the Environment, Heritage and Local Government. (National Park and Wildlife Service, 2007a) Management of National Monuments and Historic

Properties was transferred to the OPW. (Office of Public Works, 2008) The basic current park structure is :

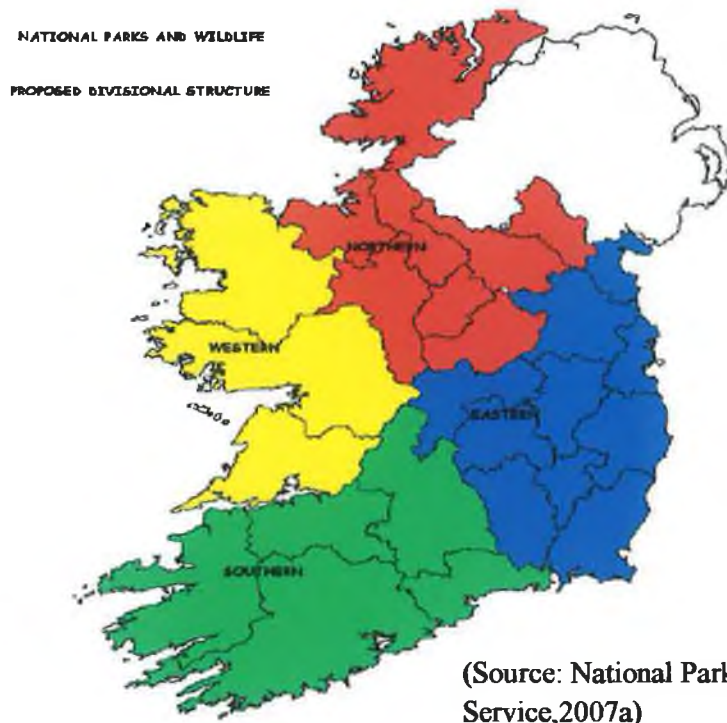
Figure 2.5 NPWS Organization



(Source: National Park and Wildlife Service, 2007a)

Mr. Pat Warner stated that the NPWS has three sections: administration, research and field management. The field management is the only section that is being looked at in this study due to the fact that it manages the National Parks. Within the field management section there are four divisions (North, South, East, West) and within each of the divisions there are two regions. The North division contains the North Midland region and the North Western region. The South division has the Mid-Southern region and the South West region. The East division contains the North East region and the South Eastern region. The West division has the Mid-Western region and the Western region. Some of the regions have national parks and others do not. In the North Western region is Glenveagh National Park. Killarney National Park is in the South West region. In the South-Eastern region is Wicklow Mountains National Park. The Burren National Park is located in the Mid-Western region. There are two national parks located in the Western region and they are Ballycroy National Park and Connemara National Park. (See Figure 2.4 for a map of the divisions and a map of the regions) Each division has a manager and the regions have managers and deputy regional managers. Each park also has a manager. However, many of the parks would have personnel with multiple park and regional responsibilities. (personal communication, March 12, 2008)

Figure 2.6 Maps of NPWS Divisional and Regional Structure



(Source: National Park and Wildlife Service, 2007a)

Regional Structure



(Source: National Park and Wildlife Service, 2007a)

2.2.2 Legislation

According to Mr. Pat Warner the main piece of current legislation for health and safety that regulates Irish National Parks in regards to employee safety is Safety, Health and Welfare at Work Act 2005 and its corresponding Regulations. Part 6 of the Act allows for Regulations to be made under the Act and that the Health and Safety Authority (HSA) must publish Codes of Practice if requested by the Minister. The most recent Regulation is the Safety, Health and Welfare at Work (General Application) Regulations 2007. There are also various Codes of Practice published by the HSA. (personal communication, Questionnaire A March 12, 2008)

The NPWS must ensure, so far as is reasonably practicable, the safety, health and welfare at work of all of their employees. (Section 8, (1)) The duties of the NPWS include the management of the work place which includes preventing improper conduct from staff. The NPWS must also have a safe workplace which includes safe means of access and egress, safe equipment, safe systems of work and adequate welfare facilities. (Houses of the Oireachtas,2005,p18)

The NPWS must carry out hazard identification and a risk assessment of all work places and provide a written safety statement. The risk assessment should address any significant hazards and risks, apply to all aspects of the work and cover non-routine as well as routine operations. As part of the risk assessment substances or articles that produce noise, vibration or ionising or other radiations need to be taken into account and prevented, as far as is reasonably practicable. The risk assessment should be reviewed and amended if it is no longer valid, or there is reason to believe it is no longer valid, and/ or there has been a significant change in the matters to which it relates. Included in the safety statement should be the complete list of the

hazards identified and the risks from those hazards that were found in the risk assessment, the duties of the employees and the protective and preventive measures taken to alleviate these hazards and risks. (See Appendix C for the complete list of what is required in the safety statement). The protective and preventive measures should adhere to principles of prevention. (See Appendix D for the 9 General Principles of Prevention) If risks cannot be eliminated suitable personal protective equipment (PPE) must be provided and maintained. Employees required to use the PPE must be trained in the proper use of the equipment before they are required to use it. (Houses of the Oireachtas,2005,p18,19,30)

The NPWS must provide training to their employees for each task before being asked to perform the task, this includes training on recruitment, when new systems of work or technology are introduced and in the event of task or job transfer. The NPWS also needs to take into account the employee's capabilities and not put the employee at risk by being given a task in which they are not competent. All training must be in a manner and language that would be understood by the employee and not have a financial cost to the employee. It is recommended that training records be kept by both the NPWS and the employee. (Houses of the Oireachtas,2005,p 21,22)

The NPWS must have an emergency plan and measures. Employees must be made aware of the emergency measures and the emergency plan. (See Appendix E for what the emergency plan must cover) If an employee missed three days or more of work due to an injury sustained at work the incident must be reported to the Health and Safety Authority. The NPWS must consult with its employees in regards to health and safety; this can be done by safety committees and safety representatives. Health or welfare measures taken by the NPWS must not have a

financial cost to their employees. The NPWS may obtain, where necessary, the services of a competent person to assist in ensuring the safety, health and welfare of their employees. (Houses of the Oireachtas,2005,p 19, 21-23 34)

The duties under the Act apply to permanent employees, fixed-term contract employees, temporary contract employees and to others, including those who are not employees, who may be exposed to risks to their safety or health at the place of work while work is being carried out. Thus, measures must be taken to ensure that the public is protected, as far as reasonably practicable, from the hazards of the owner's work place. (See Appendix F for the full list of employer duties) (Houses of the Oireachtas,2005,p 19)

The employees also have duties under the Act. The employees must comply with health and safety legislation. They must take reasonable care to protect their own safety and the persons affected by their acts at work. The employees must not engage in improper conduct including violence, bullying or horseplay which could endanger another person at work. They must be free of the influence of drugs and alcohol. The employees have a duty to co-operate with their employer or any other person as necessary to assist that person in complying with safety and health legislation which included undergoing required training and medical tests. They must take account of the training and instructions given by the employer and correctly use any article or substance of protective clothing and equipment for their use at work or for their protection. The employee must not misrepresent them self in regards to the level of training they have received. The employee must report to the appropriate person as soon as they become aware of work being carried out that might endanger their safety, health or welfare or another person, any defect in the

place or system of work or any substance likely to endanger someone, and a breach of safety and health legislation likely to endanger someone. No one, including the public, must interfere with anything provided under legislation to protect individuals from harm. (See Appendix G for the complete list of employee duties) (Houses of the Oireachtas, 2005,p 23-25)

Visitors to Irish National Parks fall under two pieces of legislation: *Safety, Health and Welfare at Work Act 2005* and *Occupiers' Liability Act 1995*. Since the National Parks are dealing with land sites the *Occupiers' Liability Act 1995* is more relevant. In this Act visitors to the park fall under two categories depending on where they enter the park and where they go in the park. (Houses of the Oireachtas, 1995)

A person who enters the Park where there is no car park and which is not a normal place of entry and goes to areas that are remote and not designed as a trail by the park are considered to be trespassers. The National Park owes to the trespassers a duty not to injure the person or damage the property of the person intentionally, not to act with reckless disregard for the person or property of the person and to display signage on the entry warning of the danger of the area. (Houses of the Oireachtas, 1995)

A visitor to the park is defined in the *Occupiers' Liability Act 1995* as a visitor if they enter the Park where there is car parking, a visitor centre or any other arrangements that the Park has made to invite people to the park. Also, if the person hikes on designated trails and any place that the Park has clearly invited people to go, that person is defined as a visitor and the Park has a stronger duty to those people defined as a visitor under the Act than those defined as trespassers. The Park's duty

to the persons defined as visitors under the Act is a common duty of care. Common duty of care means a duty to take such care as is reasonable in all the circumstances (having regard to the care which a visitor may reasonably be expected to take for his or her own safety and, if the visitor is on the premises in the company of another person, the extent of the supervision and control the latter person may reasonably be expected to exercise over the visitor's activities) to ensure that a visitor to the premises does not suffer injury or damage by reason of any danger existing thereon. (Houses of the Oireachtas, 1995) Mr. Pat Warner stated that under this duty if the park designates a trail the park has to make sure that the trail is safe for hikers. For example, if there is an area of the trail on which a person is likely to fall the park has to put a hand rail in that area of the trail. However, if the park has done its' duty and identified where there are hazards and has taken measures to reduce the risk and a person ignores the Park's measures and gets injured then the park has no liability. For example, if there was a hole in a trail and the park had taped off the area where there was the hole and a person entered the taped off area and injured their self the Park would not be liable. (personal communication, July 04, 2008)

2.3 Findings of Literature Review

The author found little information that would be relevant for the literature review for this project. There were only nine previous studies on health and safety found for American National Parks. Out of the nine, two of the studies involved the parks that are being sampled for this project. The author found no previous studies involving health and safety at Irish National Parks. However, there was enough information to proceed with this project. The fact that there have been few studies done on safety in National Parks means that this project is original research.

CHAPTER THREE METHODOLOGY

The author used three main ways of obtaining information for this project:

- Personal correspondence
- Questionnaires
- Published and unpublished documents

The methodology chapter will detail how the author used the above ways to carry out this project. The methodology varied slightly with regards to the United States of America and the Republic of Ireland. The author had one personal interview with a park employee in the Republic of Ireland.

3.1 The United States of America

Various methods were used to obtain information for the literature review. International Union for Conservation of Nature and UNESCO websites were assessed to find out if there were any international safety standards or guidelines for National Parks. To obtain the information on the History of American National Parks and the background information on the individual parks the following was used: The NPS website, individual park web sites and personal correspondence. The author accessed the US Department of Labour Occupational Safety and Health Administration (OSHA), the electronic code of Federal Regulations and The National Archives web sites to obtain the legislation information. Personal correspondence via e-mail was also used to gain an understanding on how the current legislation affects the National Parks. The person who was contacted for

legislation information dealing with visitors was Sara Newman, MCP, Dr PH, Public Risk Management Program Director, National Park Service.

A range of databases were searched for previous studies and information that would relate to this report. The terms “Health and Safety in American National Parks”, “Health and Safety in National Parks”, “National Park Safety”, “Health and Safety” and “National Parks” were used in the searches. The author found nine previous studies were conducted on safety issues dealing with the American National Parks and one audit on safety issues. Of the ten reports, one dealt with the NPS as a whole: *The Department of the Interior’s Audit Report on the Health and Safety Concerns at the Department of the Interior’s Facilities*. Two of the studies dealt with the same parks that are being sampled in this report: *Subterranean medicine: an inquiry into underground medical treatment protocols in cave rescue situations in national parks in the United States* and *Injuries Sustained at Yellowstone National Park Requiring Emergency Medical System Activation*.

This report used various means of collecting data on how the NPS manages safety. The means that were used included personal correspondence via phone interviews and e-mail, two questionnaires and consulting the park’s websites. The reason for using different methods to obtain the data for this report was to lessen the chance of bias. The questionnaires were used in this study in order for there to be some consistency in the data gathered and to facilitate a comparison between the two countries. The phone interviews and e-mail correspondence allowed for more broad answers and understanding of how health and safety is managed at NPS. In the early stages of the research process the Director of NPS, Mary Bomar, was contacted via e-mail. She directed me to the Public Risk Management Program Director for NPS,

Dr Sara Newman. Dr. Newman and the author have been corresponding via e-mail where the numbers 1, 3-17 and 28 of Questionnaire A was asked (See Appendix H for Questionnaire A); the reason that the whole of questionnaire was not ask is because many of the questions where not relevant to visitor safety. The draft of The Public Risk Management Program Strategic Plan and the power point presentation from the *Public Health Program Annual Meeting* held in March 2008(unpublished) was also obtained via e-mail. Dr. Newman and the author spoke once on the phone for to discuss any questions that the author had in regards to the draft of *The Public Risk Management Program Strategic Plan*(unpublished) and to get a general understanding on how the NPS manages visitor safety. Further communication with Dr. Newman has been via e-mail. Dr. Newman gave the author the number of American parks that could be contacted that would not put undue strain on the NPS resources. Dr. Newman also gave the contact names and details of the six national parks in the United States that were included in this report. The initial contact the author made with the employees of the parks was via e-mail. If the employee agreed they were then contacted by phone by the author to obtain a general picture of how health and safety was being managed in the employee's park. Questionnaire B was given to the six park contacts. Questionnaire B consisted of both open and closed questions as suggested in *Questionnaire Design, Interviewing and Attitude Measurement*. (Oppenheim, 2003, p. 113-115) Also, some of the questions in Questionnaire B allowed the person answering it to give their opinions. (See Appendix I for Questionnaire B) Dr. Newman provided the Performance Management Data System (PMDS) injury data for the six parks included in this report. The author tried numerous times to get information on the employee section of the Risk Management Division. However, at the time of this study the

Occupational Health and Safety Risk Management programme does not have a director or deputy director and the programme is very understaffed. Thus, information on employee safety could not be obtained at a national level. The author realises that this limits the study's comparisons at the national level. However, the author was able to get information on employee safety via the six parks that were contacted and from the *Reference Manual #50B: Occupational Safety and Health Program*. Each park's website was consulted to see if health and safety tips and warnings were posted for the public to consult.

3.2 The Republic of Ireland

To obtain information for the literature review various methods were employed. To obtain the information on the History of Irish National Parks and the background information on the individual parks the following was used: the NPWS website, individual park web sites, the OPW web site, and personal correspondence via interview and telephone. The author accessed Acts of the Oireachtas to obtain the legislation information. Personal correspondence via an interview and the telephone was also used to gain an understanding of how the current legislation affects the National Parks. The person who was contacted for both the park background and legislation information was Pat Warner, Divisional Manager, Northern Division, NPWS National Coordinator of Health and Safety and Training, NPWS.

A range of databases were searched for previous studies and information that would relate to this report. The HSA and Health and Safety Review Websites were consulted. The terms "Health and Safety in Irish National Parks", "Health and Safety in National Parks", "National Park Safety", "Health and Safety" and

“National Parks” were used in the searches. The author found no previous studies dealing with safety in Irish National Parks.

This report used various means of collecting data on how NPWS manage safety. The means that were used included personal correspondence via interviews, phone and e-mail, two questionnaires and consulting the park’s websites. In the early stages of the research process Ciaran O’ Keeffe of the NPWS was contacted via e-mail. He directed me to the NPWS National Coordinator of Health and Safety and Training, Pat Warner. Mr. Warner and the author arranged a meeting where the questions on Questionnaire A were asked (See Appendix H for Questionnaire A). Also, during the meeting information on how the NPWS approached health and safety for both employees and visitors at a national level was recorded. During the meeting the draft *Safety Statement for the Mid West Region*(unpublished), a copy of the training schedule for Ballinacorney based staff, a course list with objectives for field staff training(unpublished) and a list of the different training courses available to NPWS employees was obtained. The author did not obtain the other regions’ draft Safety Statements due to the fact that they are 95% the same as the draft *Safety Statement for the Mid West Region*(unpublished). Further correspondence with Mr. Warner was via e-mail and phone. During that interview the author learned that Irish Mountain Rescue Association (IMRA) would enter the park grounds when a rescue was needed. Thus, Paul Whiting, the Development Officer of IMRA, was contacted via phone. Mr. Whiting e-mailed the author the rescue data and contact details of the different rescue teams who would be called out to the various parks if rescue was needed. Unfortunately, the rescue data collected from Mr. Whiting could not be used to tell how many call outs there were to each park due to the fact that they collected data for the whole region the teams are responsible for and there was

no coordinates data for the author to use maps of the regions and park lands to find out how many of the call outs were in National Park lands. However, the data did give the author an idea of how hill walkers/hikers were being injured and what part of their bodies were most likely to be injured. Also, some contacts that Mr. Whiting gave the author were able to provide information how the different parks liaise with IMRA. The author contacted the NPWS Personnel Department, the NPWS Health and Safety Department and the HSA for data on employee injuries. However, the author was unable to obtain that data due to the confidential nature of the reports.

Mr. Warner gave the contact names and details of the six national parks in Ireland that were included in this report. The author initially contacted the employees of the parks via e-mail. If the employee agreed they were then contacted by phone to obtain a general picture of how health and safety was being managed in the employee's park. Questionnaire B was given to the six park contacts. (See Appendix I for Questionnaire B)

Each park's website was consulted to see if health and safety tips and warnings were posted for the public to consult.

3.3 Limitations of Project and Methods

The study is limited by a few factors, the biggest being the park sample size. However, due to the fact that there are only six National Parks in Ireland and that the NPS in the United States of America stated that they only have the resources for the author to contact six of their National Parks, this limitation cannot be alleviated. Another limitation of this study is that due to the lack of time or monetary resources the author could not personally visit the Parks that were sampled in the project and

had to rely on communication via phone and e-mail. Thus, the project is based on second hand information rather than primary observation. The project was limited by the information that was given to the author and, as in the case of NPS, the author did not have a contact at the national level in regards to employee health and safety as there was no-one running the programme. The programme was severely understaffed and they did not have the personnel to deal with things other than day-to-day duties. However, this limitation was overcome somewhat by the fact that in the Director's Order there are some guidelines on safety training and the author was able to get information on training being carried out at the local level via Questionnaire B, which was given to the six parks that were sampled in the NPS for this project.

CHAPTER FOUR RESULTS

In this chapter a brief summary of the following will be given:

- Overall safety structure of National parks, roles and responsibilities of the park service in the United States of America and the Republic of Ireland,
- Employee safety management/training of the park service in the United States of America and the Republic of Ireland,
- Visitor safety of the park service in the United States of America and the Republic of Ireland,
- The reporting, recording and investigating incidents, accidents and near Misses of the park service in the United States of America and the Republic of Ireland,
- The twelve sampled parks,
- Questionnaire B results

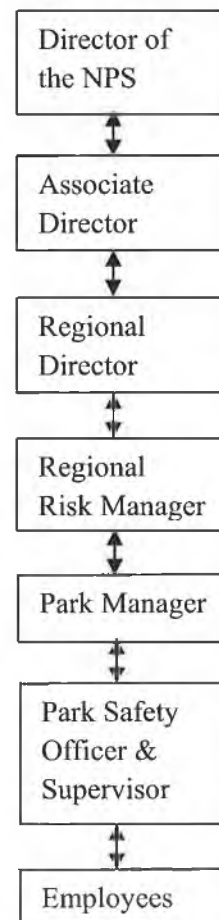
Questionnaire B results will be presented in a graphic format.

4.1 Overall Safety Structure of National Parks, Roles and Responsibilities

4.1.1 The United States of America

The structure for safety is very similar to the overall park structure mentioned on page 16. However, there are some differences. Dr. Sara Newman stated “Some of the National Parks have a safety officer while others do not”. The person who decides whether a park needs a safety officer is the park manager. (personal communication, e-mail, July 01, 2008) The basic health and safety structure is shown in Figure 4.1

Figure 4.1 Health and Safety Structure of NPS



(Source: National Park Service, 1999)

There is a Risk Management Program which is broken down into two sections: Occupational Health and Safety which promotes employee safety and Public Risk Management which promotes visitor safety. Each of these programmes has a director. (National Park Service, 1999) The two directors work closely together and collaborate when issues that affect both employees and visitors arise. According to Dr. Sara Newman, who is the Director of the Public Risk Management Program, the two directors work closely together and collaborate when issues that affect both employees and visitors arise. (personal communication, e-mail, July 09, 2008) Dr. Sara Newman stated “There are safety committees which meet at the local, regional and national level to address safety issues at the respective levels.” (personal communication, e-mail, July 14, 2008)

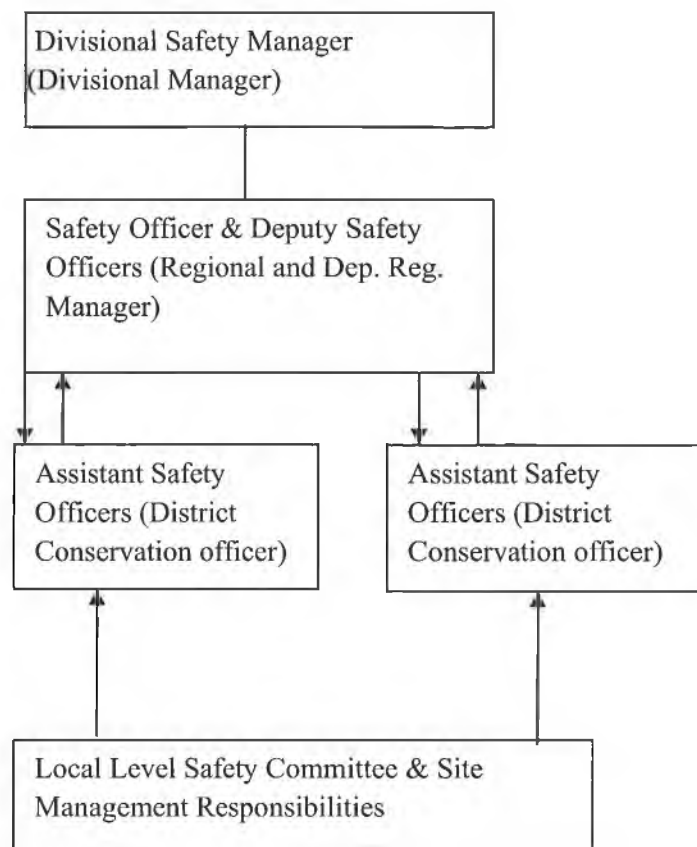
The Director of the NPS has issued an order dealing with occupational safety and health for employees (*Director's Order #50B: Occupational Safety and Health*). This order states the background and purpose, authority of the Director to issue the Order and the policies, requirements and responsibilities. The Director, Associate Director, Risk Management Programme Directors, Regional Directors, Regional Risk Managers, Park Managers, Park Safety Officer, Supervisors and Employees all have health and safety duties under *Order #50B*. (National Park Service, 1999) The overall safety structure and roles and responsibilities at the NPS is further elaborated in subsection 5.2.1

4.1.2 The Republic of Ireland

At the national level the NPWS must only comply with Irish legislation. According to Pat Warner there is no European legislation or requirements or UN legislation or recommendations dealing with health and safety in National Parks.

(personal communication, Questionnaire A, March 12,2008) To comply with the requirement under *The Safety, Health and Welfare at Work Act 2005* every employer must consult with their employees regarding health and safety. The NPWS has established a Safety Management Structure to allow two-way communications between all the levels in the organisation. (National Parks and Wildlife Service, 2008q,6) The Structure is organized in the following manner:

Figure 4.2 Health and Safety Structure of NPWS



(Source: National Parks and Wildlife Service, 2008q,6)

The NPWS Draft of the *National Parks and Wildlife Service Safety Statement* (unpublished) outlines the policies, requirements and responsibilities. The Safety Manager, Safety Officers and Deputy Safety Officers, Assistant Safety Officers and Employees all have health and safety duties under the Draft of the *National Parks and Wildlife Service Safety Statement* (unpublished). (National Parks and Wildlife Service, 2008q) The overall safety structure and roles and responsibilities at the NPWS is further elaborated in subsection 5.2.2 .

4.2 Employee Safety Management/Training

4.2.1 The United States of America

As part of the *Reference Manual #50B: Occupational Safety and Health Program* there is a section on employee safety and training. The reference manual covers basic training requirements, specialized training requirements, mandatory training requirements and the time period in which the training must be given. (National Park Service, 1999)

As stated on page 48 there is a National Risk Management Programme which contains a section for employee safety and safety training. This programme provides guidance, support and the structure of the basic training that every employee receives in the different parks. (National Park Service, 1999) How the NPS approaches employee safety management and training is elaborated in subsection 5.3.1.

4.2.2 The Republic of Ireland

Pat Warner stated that “NPWS employees receive more training than any civil servant in Ireland”. Some of the training courses are centrally based and some are locally based. As with Health and Safety legislation there are no international

training standards to which the course must adhere. (personal communication, Questionnaire A, March 12,2008)

Besides training courses, the National Parks and Wildlife Service Safety Statement has Safe Operating Procedures (SOP). Both General SOP and Field Staff SOP are provided. (National Parks and Wildlife Service, 2008q, p 16, 155) How the NPWS approaches employee safety management and training is elaborated in subsection 5.3.2

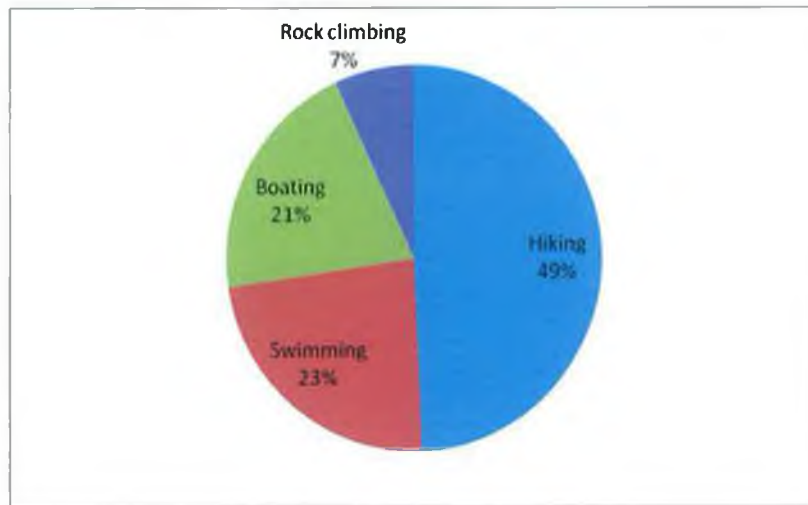
4.3 Visitor Safety

4.3.1 The United States of America

Currently, visitor safety is managed at the individual park level and the approach to visitor safety varies from park to park. The NPS has never established a formal service-wide visitor risk management program or a reliable and consistent means of collecting information on visitor incidents to enhance visitor safety efforts at the park level. There is currently a focus on implementing a public risk management programme at the national level to act as a resource for the regions and individual parks. *The Public Risk Management Program Strategic Plan*(unpublished) is currently being written, the latest draft was released in March 2008. (National Park Service, 2008d1,p2)

The Public Health Program held an Annual Meeting (unpublished) in March 2008. The meeting covered how many injuries and fatalities reported since 2005 and the trends in Search and Rescue (SAR) and EMS call outs. The greatest cause for SAR in 2006 was hiking (36%), then swimming (17%), third was boating (15%) and fourth was rock climbing (5%). (National Park Service, 2008e1p14)

Figure 4.3 SAR Causes in 2006



(Source: National Park Service, 2008e1p14)

In subsection 5.4.1 visitor safety at the NPS is further discussed.

4.3.2 The Republic of Ireland

Pat Warner stated “NPWS does not currently have a programme at the national level to deal with visitor safety nor is the service looking to implement one”. “Visitor safety falls to each park and the Park Manager makes the day-to-day safety decisions.” (personal communication, Questionnaire A, March 12,2008)

According to Pat Warner the NPWS does not have a search and rescue team due to lack of need, external organizations like IMRA carry out the search and rescues. There is no national agreement between IMRA and NPWS. However, some of the individual parks liaise with IMRA. (personal communication, Questionnaire A, March 12,2008) How NPWS approaches visitor safety is further discussed in subsection 5.4.2.

4.4 Reporting, Recording and Investigating Incidents, Accidents and Near Misses

4.4.1 The United States of America

According to Dr. Sara Newman the NPS has a separate recording system for employee and visitor incidents. If an employee has an incident an investigation will take place. The procedures for the investigation depend on the severity of the incident. There is one centralized system for recording visitor injuries and fatalities in parks, the PMDS which was set up to collect the GPRA data. The individual parks have systems to record visitor accident/ incidents data but the systems are not centralized. There are at least nine different recording systems that are used by the different parks at NPS. (personal communication, Questionnaire A, April 08, 2008)

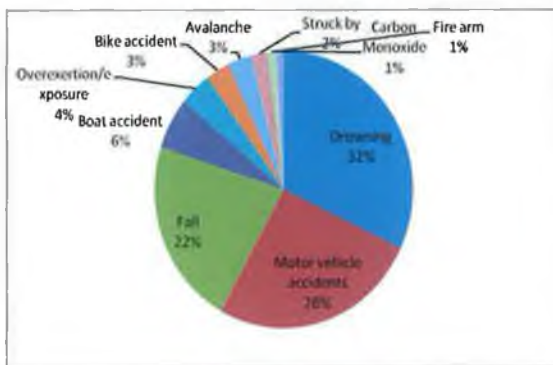
According to the GPRA data for the PMDS in 2006 there were 5,337 incidents and 148 fatalities that were reported in national parks. (National Park Service, 2008e1,p11) The NPS had 272,623,980 visitors during 2006. (National Park Service, 2008e) The EMS data reported that in 2006 there were 24,559 EMS responses and 299 fatalities. The SAR teams reported 3,623 incidents; of them 2,899 were searches for 2006. Forty of the 2,899 people who were searched for were not found. Of the 3,623 incidents there were 119 fatalities, 1,445 injured and 1,211 lives were saved. (National Park Service, 2008e1,p13)

In 2007 according to the GPRA data there were 4,598 incidents and 171 fatalities that were reported in national parks. (National Park Service, 2008e1,p11) There were 275,581,547 visitors during 2007. (National Park Service, 2008e) The

Morning Report looks at fatalities and causes of fatalities, excluding intentional injuries. In 2007 there were 97 reported fatalities; of these 34 were caused by motor vehicle crashes. The activity with the highest fatality rate in 2007 was driving (27%), 2nd was swimming (17%) and 3rd was hiking and boating (12%). Other activities that resulted in fatalities in 2007 were walking, flying, biking, skiing, target shooting and fishing. The biggest cause of fatalities in 2007 was drowning (32%), 2nd was motor vehicle accidents (26%) and 3rd was death due to a fall (22%). Other causes of fatalities were boat accidents, overexertion/exposure, bike accidents, avalanches, struck by something, carbon monoxide poisoning and firearms.

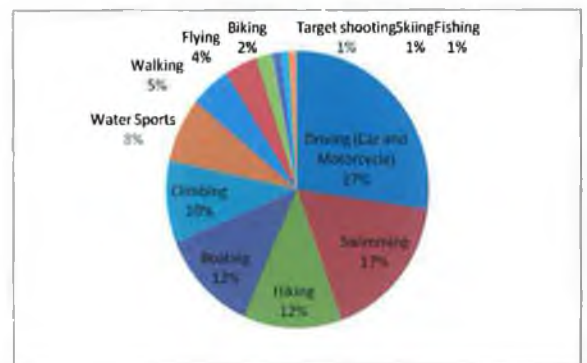
(National Park Service, 2008e1,p 16-18)

Figure 4.4 NPS Fatalities by Activity 2007



(Source: National Park Service, 2008e)

Figure 4.5 NPS Fatalities by Cause 2007



(Source: National Park Service, 2008e)

The Reporting, Recording and Investigating Incidents, Accidents and Near Misses procedures at NPS is elaborated in subsection 5.5.1.

4.4.2 The Republic of Ireland

According to Pat Warner the NPWS report form for employee and visitor incidents is the same. A central recording system has been set up within the last year for employee incidents. The incidents are investigated. (personal communication, Questionnaire A, March 12, 2008)

According to IMRA's Annual Report for 2007 the majority of injuries that they encountered, both in the National Parks and outside park lands, were lower limb injuries (44%). Other injuries include: head/spinal injuries, heart attack, hypothermia and some people had serious multiple injuries. Mountain Rescue Ireland reported that there were 11 fatalities. However, it is unclear if any of these fatalities occurred on park lands. (Irish Mountain Rescue Association, 2008) The Reporting, Recording and Investigating Incidents, Accidents and Near Misses procedures at NPWS is elaborated in subsection 5.5.2.

4.5 The Twelve Sampled Parks and Questionnaire Results

4.5.1 The United States of America

Big Bend National Park

In 2005 there were 398,583 recorded visitors to Big Bend National Park. (National Park Service, 2008e) According to the GPRA data for the PMDS, provided by Dr. Sara Newman, there was one unintentional fatality and 33 injuries reported during that year. (personal communication, e-mail, May 09, 2008) In 2006 there were 298,717 recorded visitors to the Park. (National Park Service, 2008e) According to the GPRA data for the PMDS, provided by Dr. Sara Newman, there

were two unintentional fatalities and 32 injuries reported. (personal communication, e-mail, May 09, 2008) In 2007 there were 364,856 visitors to the Park. (National Park Service, 2008e) The GPRA data reported there were one unintentional fatality and 30 injuries. (personal communication, e-mail, May 09, 2008)

Death Valley National Park

In 2005 there were 800,113 recorded visitors to Death Valley National Park. (National Park Service, 2008e) According to the GPRA data for the PMDS, provided by Dr. Sara Newman, there were six unintentional fatalities and 105 injuries reported during that year. (personal communication, e-mail, May 09, 2008) In 2006 there were 744,440 recorded visitors to the Park. (National Park Service, 2008e) According to the GPRA data for the PMDS, provided by Dr. Sara Newman, there were five unintentional fatalities and 62 injuries reported. (personal communication, e-mail, May 09, 2008) In 2007 there were 704,122 visitors to the Park. (National Park Service, 2008e) The GPRA data reported there were three unintentional fatalities and 148 injuries. (personal communication, e-mail, May 09, 2008)

Everglades National Park

In 2005 there were 1,233,837 recorded visitors to Everglades National Park. (National Park Service, 2008e) According to the GPRA data for the PMDS, provided by Dr. Sara Newman, there were no unintentional fatalities and 50 injuries reported during that year. (personal communication, e-mail, May 09, 2008) In 2006 there were 954,022 recorded visitors to the Park. (National Park Service, 2008e) According to the GPRA data for the PMDS, provided by Dr. Sara Newman, there were no unintentional fatalities and 27 injuries reported. (personal communication, e-

mail, May 09, 2008) In 2007 there were 1,074,764 visitors to the Park. (National Park Service, 2008e) The GPRA data reported there were no unintentional fatalities and three injuries. (personal communication, e-mail, May 09, 2008)

Great Smoky Mountains National Park

In 2005 there were 9,192,477 recorded visitors to Great Smoky National Park. (National Park Service, 2008e) According to the GPRA data for the PMDS, provided by Dr. Sara Newman, there were nine unintentional fatalities and 107 injuries reported during that year. (personal communication, e-mail, May 09, 2008) In 2006 there were 9,289,215 recorded visitors to the Park. (National Park Service, 2008e) According to the GPRA data for the PMDS, provided by Dr. Sara Newman, there were seven unintentional fatalities and 122 injuries reported. (personal communication, e-mail, May 09, 2008) In 2007 there were 9,372,253 visitors to the Park. (National Park Service, 2008e) The GPRA data reported there were four unintentional fatalities and 80 injuries. (personal communication, e-mail, May 09, 2008)

Wind Cave National Park

In 2005 there were 612,478 recorded visitors to Wind Cave National Park. (National Park Service, 2008e) According to the GPRA data for the PMDS, provided by Dr. Sara Newman, there were no unintentional fatalities and two injuries reported during that year. (personal communication, e-mail, May 09, 2008) In 2006 there were 591,049 recorded visitors to the Park. (National Park Service, 2008e) According to the GPRA data for the PMDS there were no unintentional fatalities and two injuries reported. (personal communication, e-mail, May 09, 2008) In 2007

there were 603,158 visitors to the Park. (National Park Service, 2008e) The GPRA data reported there were no unintentional fatalities and four injuries. (personal communication, e-mail, May 09, 2008)

Yellowstone National Park

In 2005 there were 2,835,651 recorded visitors to Yellowstone National Park. (National Park Service, 2008e) According to the GPRA data for the PMDS, provided by Dr. Sara Newman, there were six unintentional fatalities and 129 injuries reported during that year. (personal communication, e-mail, May 09, 2008) In 2006 there were 2,870,295 recorded visitors to the Park. (National Park Service, 2008e) According to the GPRA data for the PMDS, provided by Dr. Sara Newman, there were two unintentional fatalities and 248 injuries reported. (personal communication, e-mail, May 09, 2008) In 2007 there were 3,151,343 visitors to the Park. (National Park Service, 2008e) The GPRA data reported there were five unintentional fatalities and 157 injuries. (personal communication, e-mail, May 09, 2008)

4.5.2 The Republic of Ireland

Killarney National Park

Pat Foley reported that Killarney National Park had no fatalities or injuries reports in 2007. The Park had an estimated 1.2-1.5 million visitors. (personal communication, Questionnaire B, July 25, 2008)

Wicklow Mountains National Park

Wicklow Mountain National Park had eighteen incident/accident reports in 2007. (National Parks and Wildlife Service, 2008r) According to Ciara O' Mahony

due to the nature of the Park recording annual visitor numbers is impractical.

(personal communication, Questionnaire B, July 07, 2008)

4.5.3 Questionnaire Results

There was an overall 33% response rate to Questionnaire B. The United States of America and the Republic of Ireland had an equal response rate of 33%. Fifty percent of the respondents from the NPS stated that their park focuses more on employee safety than visitor safety and 50% stated that their park focused equally on employee and visitor safety. None stated that their park focused more on visitor safety. Fifty percent of the respondents from the NPWS stated that their park focuses more on employee safety and 50% stated that their park focused equally on employee and visitor safety. None stated that their park focused more on visitor safety.

Figure 4.6 Percentage of Parks That Focuses More on Employee Safety

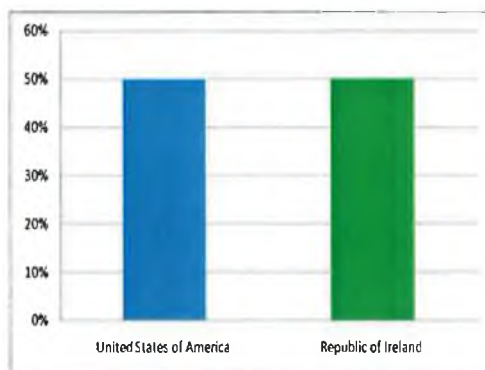
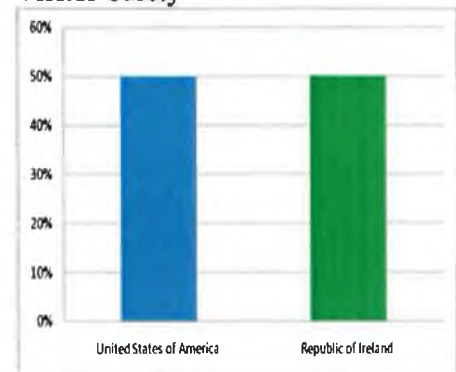


Figure 4.7 Percentage of Parks that Focuses Equally on Employee and Visitor Safety



One hundred percent of the respondents from the NPS stated that their park has guidance on visitor safety in the Park's Management Plan. One hundred percent of the respondents from the NPWS stated that their park has guidance on visitor safety in the Park's Management Plan. Also, 100% percent of the respondents from the NPS stated that their park has guidance on employee safety in the Park's

Management Plan. Fifty percent of the respondents from the NPWS stated that their park has guidance on employee safety in the Park's Management Plan.

Figure 4.8 Percentage of Parks that Have Guidance on Visitor Safety in the Park's Management Plan

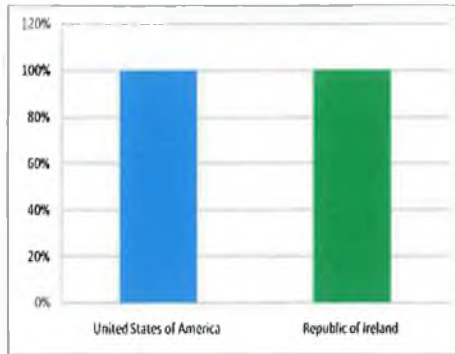
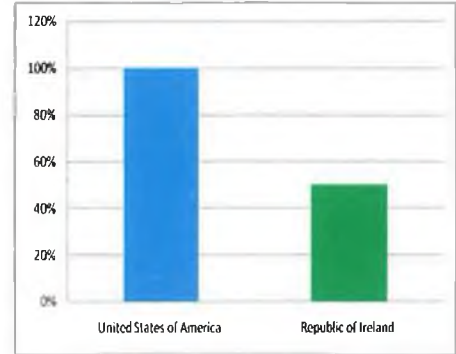


Figure 4.9 Percentage of Parks that Have Guidance on Employee Safety in the Park's Management Plan



One hundred percent of the respondents from the NPS stated that their park has a system to record visitor numbers. Fifty percent of the respondents from the NPWS stated that their park has a system to record visitor numbers. One hundred percent of the respondents from the NPS and NPWS stated that visitors can enter the park without being counted.

Figure 4.10 Percentage of Parks That Have a System to Record Visitor Numbers

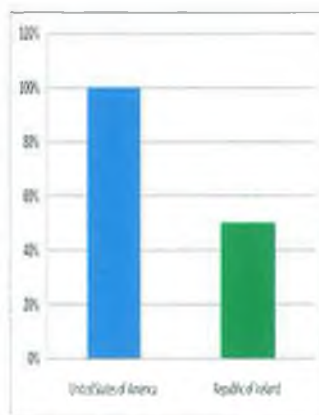
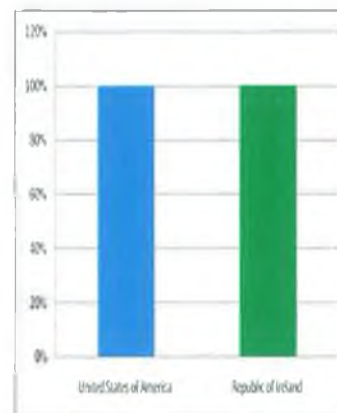


Figure 4.11 Percentage of Parks Where a Visitor Can Enter the Park Without Being Counted



Out of the respondents from NPS 100% stated that their park has an outreach programme. However, 50% of the respondents from NPS stated that safety is covered in their park outreach programme. Out of the respondents from NPWS 50% stated that their park has an outreach programme. None of the outreach programmes at NPWS cover safety.

Figure 4.12 Percentage of Parks With an Outreach Programme

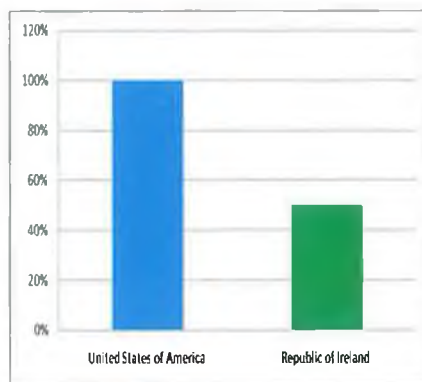
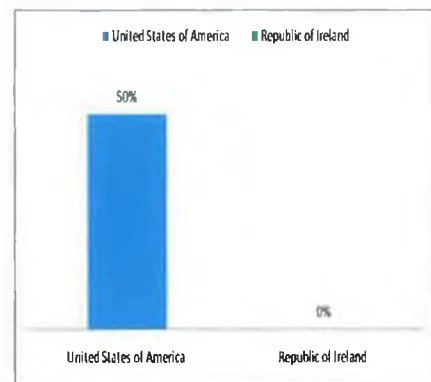


Figure 4.13 Percentage of Parks' Outreach Programme that covers safety



Fifty percent of the respondents from the NPS stated that safety is discussed at less than half of the meetings when having park-related meetings and 50% stated that safety is discussed at more than half of the meetings when having park-related meetings. Fifty percent of the respondents from the NPWS stated that safety is discussed at less than half of the meetings and 50% stated that safety is discussed at every park-related meeting.

Figure 4.14 Percentage of Parks Where Safety is Discussed at Less Than Half the Meetings

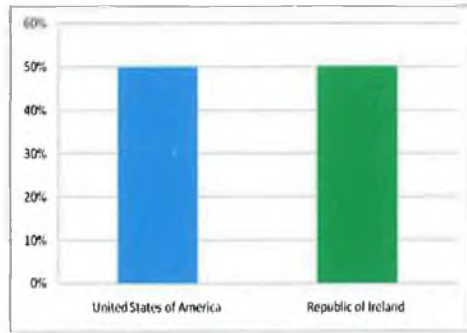


Figure 4.15 Percentage of Parks Where Safety Discussed at More Than Half the Meetings

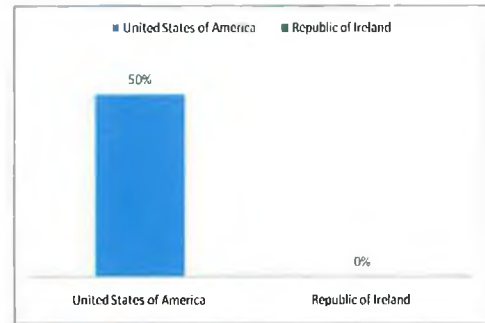
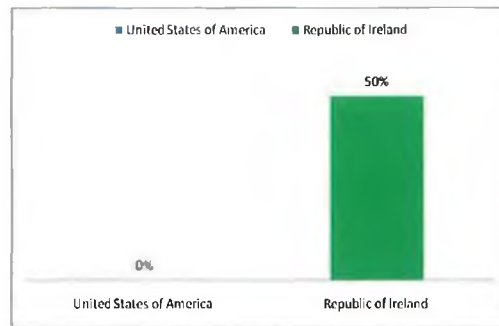
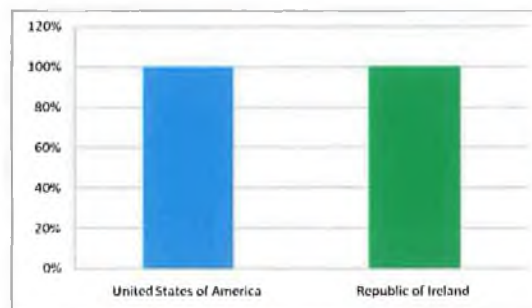


Figure 4.16 Percentage of Parks Where Safety is Discussed at All the Meetings



With both the NPS and the NPWS one hundred percent of the respondents stated that their park liaises with relevant organizations in dealing with park safety.

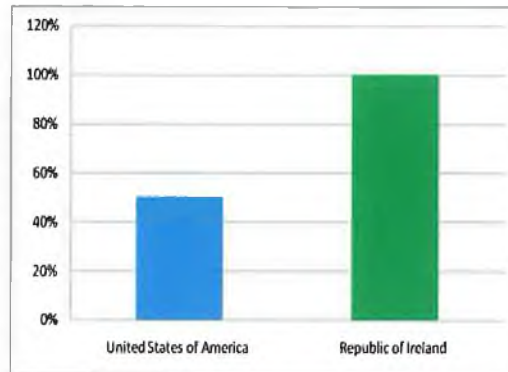
Figure 4.17 Percentage of Parks That Liaises With Other Organizations in Regards to Park Safety



Fifty percent of the respondents from the NPS stated that their Park receives adequate funding to deal with health and safety issues and 100% of the respondents

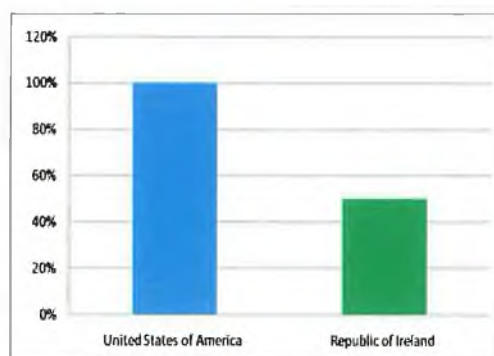
from the NPWS stated that their Park receives adequate funding to deal with health and safety issues.

Figure 4.18 Percentage of Parks that Receives Adequate Funding for Safety



The author checked the websites of the twelve parks being sampled in this project for safety information for the public. One hundred percent of the parks sampled from the NPS had safety information on their website. Fifty percent of the parks sampled from the NPWS had safety information on their website. The national parks in Ireland that have safety information on their websites are: Wicklow Mountains National Park, Ballycroy National Park and Glenveagh National Park.

Figure 4.19 The Percentage of Parks That Cover Safety on Their Website



The Twelve Parks will be discussed further in section 5.6

CHAPTER FIVE DISCUSSIONS

In this chapter the author will go into detail on the subjects addressed in Chapter Four. The author will also compare the park services of the United States of America and the Republic of Ireland and their approach to the different subjects.

5.1 Comparison of the United States of America and the Republic of Ireland Health and Safety Legislation

The Irish and American Health and Safety legislation have many similarities and a few differences. Both countries' legislation require that employers provide a safe working environment, training for their employees, the establishment of a safety committee, and for hazards to be identified and addressed in a timely manner. Employers of the national park service in both countries must also inform their employees of the safety hazards in the work place and must have a safety programme or plan in action. Competent safety personnel are also required by both services. Also, in both the United States of America and Ireland the safety legislation has either recently been amended (*The Occupational Safety and Health Act of 1970* amended in 2004) or a new Act put into place (*Safety, Health and Welfare at Work Act 2005*). Employees in both countries must comply with safety and health legislation. Finally, in both countries there is much more legislation dealing with the Health and Safety of employees of the National Parks than the visitors.

Although there are many similarities between the two countries' legislation there are some differences as well. In the American legislation it states that there must be safety inspections of the work place at least annually. The Irish legislation does not state how often the safety inspections are to be performed. Also, in the

American legislation it states that there should be an adequate budget for the health and safety programme. Irish legislation does not state anything about budgets but refers to the safety responsibilities of the employer. Under the Irish legislation the employee has the duty to report any work being carried out which might endanger their safety, health or welfare or that of another person, any defect in the place or system of work or any substance likely to endanger someone, and a breach of safety and health legislation likely to endanger someone. In American legislation it is not a duty for the employee to report any safety issues but they are protected by law from any negative repercussions if they do report any issues. In American legislation federal programmes must make goals and have a system to track their performance with the goals, which includes health and safety. Finally, American legislation states that there should be recognition for superior performance in safety and health responsibilities by individuals or groups. The Irish legislation does not state anything in regards to recognition of those who are performing well in health and safety.

5.2 Overall Safety Structure of National Parks, Roles and Responsibilities

5.2.1 The United States of America

As stated in subsection 4.1.1 some of the National Parks have a safety officer while others do not and the person who decides if a park needs a safety officer is the Park Manager. According to Dr Sara Newman the reason why all parks do not have a safety officer is because some of the parks do not have enough visitor numbers or very few opportunities for recreational visits for there to be a safety officer. Also some safety officers are responsible for more than one park. (personal communication, e-mail, July 01, 2008)

In subsection 4.1.1 it was brought to the attention to the reader that *Director's Order #50B: Occupational Safety and Health* states the background and purpose, authority of the Director to issue the Order and the policies, requirements and responsibilities. The current Order (*Director's Order #50B: Occupational Safety and Health*) and corresponding Manual (*Reference Manual #50B: Occupational Safety and Health Program*) are currently being revised. However, until that revision is released the NPS follows the current order. The current order was released in 1999. There is currently no Director's Order and Reference Manual in regards to visitor safety, however, there is a Director's Order and Reference Manual that is pending and will be ready for circulation by the end of 2008 (National Park Service, 1999)

According to the Order it is NPS policy to "provide for a safe and healthful place of employment, and to protect Federal and private property from accidental damage or loss associated with National Park Service operations." (National Park Service, 1999)

The Director is responsible for setting up a service-wide health and safety goals and policies. The Director also is responsible for establishing a system of accountability for achieving the goals. The Associate Director is designated by the Director. The Associate Director serves as the Designated Agency Safety and Health Official for the NPS and appoints and supervises the NPS Risk Management Manager. The Associate Director also participates in Departmental Safety and Health Council meetings. The Risk Management Programme Manager reviews the different Regions safety programmes at least once every three years. They also provide support to the Regional Managers and participate in the Department's Safety

and Health Council. They serve as a liaison between the NPS and OSHA. (National Park Service, 1999)

The Regional Director prepares the annual risk work plan and determines if park managers have an effective health and safety process. If the park does not have an effective process then the Regional Director takes action to make sure that an effective process is implemented. The Regional Director duties also include recognizing and rewarding safety achievement. The Regional Risk Manager provides regular and repeated counsel to individual field unit managers with sustained high accident rates to improve their safety record. They also assist the Regional Director in the annual risk work plan and represent the region as a member of the national Risk Management Council. The Park Manager's main duties in regards to health and safety include implementing and enforcing occupational safety standards and procedures, providing protection to employees and volunteer from hazards, identifying, evaluating, and controlling hazards. They are also responsible for investigating employee accidents and conducting an annual audit on their health and safety programme. Park Managers are responsible for ensuring that employees receive the appropriate health and safety training and for providing feedback on safety performance. They also recognize and award safety achievement. The Park Safety Officer assists the Park Manager in the safety programme. They record employee accident data. They are the point-of-contact for health and safety for employees of the park. The park's supervisor is directly responsible for employee work practices. They also implement and enforce occupational safety and health standards within the supervisor's scope of authority which includes inspecting facilities under their control to ensure compliance with safety standards. The

Supervisor is responsible for conducting safety orientation for all new staff members within their section, and conducts yearly refresher safety training for seasonal employees and volunteers within their section. Every NPS employee is responsible for adhering to the health and safety procedures. They must identify and, where appropriate, correct unsafe conditions and work practices. It is their duty to report unsafe conditions and/or operations, to immediately report an incident including a near miss, to the supervisor. They should help establish a safe and healthful working culture and practice safe work procedures. (See Appendix J for the full list of roles and responsibilities) (National Park Service, 1999)

Also, stated in subsection 4.1.1 there is a Risk Management Program. This programme is supervised by the Associate Director who appoints the Program Directors. The purpose of the Risk Management Program is to implement a continuously improving and measurable risk management process that provides safety for employees and visitors and maximizes the use of available resources and minimizes the monetary loss through worker's compensation claims. (National Park Service, 1999)

5.2.2 The Republic of Ireland

Shown on figure 4.2 the NPWS has safety committees. The Draft of the *National Parks and Wildlife Service Safety Statement* (unpublished) requires safety committees to be set up as follows:

1. The Department of the Environment, Heritage and Local Government has a safety committee on which NPWS staff sits on. Matters that require a

departmental level response would be brought to this committee by the NPWS representatives.

2. NPWS has a central safety committee which is chaired by a Divisional Manager who produces the draft SOPs document and advises management. The committee includes an elected Safety Representative and Safety Officer from each division.
3. Each Division and large National Park should also have a local safety committee which is convened by the Safety Officer, Deputy Safety Officer or Assistant Safety Officer and which Safety Representatives can sit on. Safety Managers should be present at all meetings. The majority of the members shall be appointed by employees. The committee should meet at least once a year and no more than once every three months unless there are emergencies. The minutes should be sent to the Safety Managers and all staff. (National Parks and Wildlife Service, 2008q,p 8-12)

The safety policy of the National Parks and Wildlife Service which is outlined in the Draft of the *National Parks and Wildlife Service Safety Statement* (unpublished) states that it is the mission of NPWS to provide a safe and healthy work environment for all their employees. It is the policy of NPWS to consult with all employees on matters of health and safety. The policy also states that safe working practices are a condition for employment and that all personnel will assume responsibility for working safely. (National Parks and Wildlife Service, 2008q,p 5)

As stated in subsection 4.1.2 the Safety Manager, Safety Officers and Deputy Safety Officers, Assistant Safety Officers and Employees all have health and safety

duties under the Draft of the *National Parks and Wildlife Service Safety Statement* (unpublished). The Safety Manager appoints and clearly defines the roles for the Safety Officers, Deputy Safety Officers, Assistant Safety Officers and temporary safety officers and Safety Advisors which are available to all Safety Officers. The temporary safety officers would take responsibility for when there are absences of the permanent safety personnel. They also set up local Safety Committees. This is done to ensure that employees can express their views on safety. They are responsible for putting in place systems of safety training for NPWS employees including a system to record the training. They must ensure that the requirements of legislation, instructions and SOPS are put into place and enforced in all areas under their control. They are responsible for providing safe systems of work, a system for making risk assessments and a system for safety inspections. For construction projects they appoint a person to manage the health and safety aspect of the project. (National Parks and Wildlife Service, 2008q,p8)

The Safety Officers and Deputy Safety Officers have the same responsibilities. The division of duties is arranged locally. They co-operate with safety committees, Safety Representatives and the Safety Manager by providing information and consulting in matters of health and safety. They are responsible for ensuring that all relevant safety training is identified, carried out and recorded. During the training all employees are informed of their duties and of the safe systems of work. They are responsible for ensuring that work is planned with attention given to health and safety and that the appropriate PPE and safety equipment is identified, purchased, issued and replaced as appropriate. Their duties include ensuring that safety inspections of lands, premises and equipment takes place and that the results

are recorded. They must ensure that all accidents are investigated and that the accident reports are sent to the Safety Manager. They must notify the HSA when an employee is absent for three or more days of work due to an accident. (National Parks and Wildlife Service, 2008q, p9)

The Assistant Safety Officers must ensure that all work is conducted in a safe and legal manner and that all PPE and safety equipment is used and checked and replaced when necessary. They must ensure that hazard identification and risk assessment are carried out for all work and acted on, and insist that immediate emergency action be taken where appropriate to deal with hazards identified. They are also responsible for reporting and investigating incidents and accidents. Their duties include co-operating with safety committees and Safety Representatives. (National Parks and Wildlife Service, 2008q, p9)

The Draft of the National *Parks and Wildlife Service Safety Statement* (unpublished) states the employee's duties that are outlined in the *Safety, Health and Welfare at Work Act 2005* which is given in Appendix G. The Draft of the National *Parks and Wildlife Service Safety Statement* (unpublished) also gives employees additional duties. Employees must read, understand and utilise the SOPs provided for safe execution of the individual work processes. They also must inspect the work area and equipment to ensure that it is in proper working order and in safe condition prior to beginning work. Equipment which is in poor/dangerous condition must be clearly tagged with a red "DO NOT USE" label. Employees must ensure that all team members are working in accordance with procedures and training and, voice any concerns regarding a work process or any environmental, health and safety issues to the designated officials and work toward improvement and resolution of

those issues. Employee must report any near misses to the Safety Officer. In the event of serious or imminent and unavoidable danger all employees are required to stop working and report the situation to their Safety Officer or to Senior Management in the event that the Safety Officer is unavailable. (See Appendix K for the full list of Roles and Responsibilities) (National Parks and Wildlife Service, 2008q, p 11,12)

5.2.3 Comparison of the United States of America and the Republic of Ireland

The safety policy of the NPS in America differs from the NPWS in Ireland in the NPWS safety policy places a joint responsibility for safety on the NPWS and employees of the NPWS. While the NPS policy states that it is the NPS policy to provide a safe working place while not placing any responsibility for safety on the employees. The overall structure of NPWS is more complex than the NPS. The NPWS has national level, divisional level, regional level and individual park level. While the NPS has national level, regional level and individual park level. Even though the overall structure of NPWS is more complex the safety structure of the NPS is more complex than the NPWS safety structure. For example, the safety system in the NPS is split at the national level into two programmes, one for employees and one for the public. The NPWS has one national safety programme that deals with both employee and visitor safety issues. In NPWS each park has a Safety Officer while in NPS some parks have a Safety Officer while others do not, depending on what the Park Manager decides. As part of the safety structure both countries have participation and responsibilities from the National Level down to the individual employee level and communication with regard to safety flows both ways.

Also, in both countries there are safety representatives and safety committees in place. The safety committees of the two park systems are very similar in structure. Both park services have committees at the local level, regional level and national level.

The NPS has more safety positions to be filled than the NPWS. For example, at the NPS there is a Regional Director and a Regional Risk Manager, while at NPWS the Divisional Manager serves as both the Divisional Manager and the Safety Manager. Due to this the safety duties in the NPS are shared by more individuals than at NPWS. In the NPWS the national level and divisional level safety personnel have more responsibilities than the NPS national level and regional level safety personnel. At the local level the safety personnel at NPS have more responsibilities than local level NPWS safety personnel. For example, the Safety Manager at the divisional level in NPWS has 12 duties while the corresponding Regional Risk Manager in NPS has four duties. While the park managers at NPS have 20 safety duties, the most duties out of any NPS employee, the NPWS park managers do not currently have any safety duties. However, most of the park managers at the NPWS also have regional offices. The Deputy Safety Office of the Region would oversee the safety at the park level. This is due to the fact that most of the regions would only have one National Park. At the NPS it would be rare for an employee to have an office at both the park level and the regional level due to the fact that in most regions in the States there are several National Parks.

In both countries there are persons responsible at the national and local levels for safety training, carrying out safety inspections and accident investigations and ensuring that there are safe systems of work in place. Employees of both park

services are required to report unsafe conditions, follow training that is given, and report when an incident occurs, including near misses. Employees at the NPWS have the duty to inspect their work area and tag any unsafe equipment while at NPS that duty falls to the Supervisor. Also, at the NPWS there is a duty for employees to stop working and report any serious or imminent danger to the safety officer while in the NPS there is no mention of stopping work and reporting any immediate dangerous situations. The NPS employees have the duty to maintain a level of personal fitness that is required for their job. The NPWS duties do not mention that employees are required to maintain a level of personal fitness. At the NPS the Regional Director, the Park Manager and Supervisor all have the duty to award safety achievements to individuals or teams while the NPWS does not have an award system in place. As part of the duties of the different safety personnel of the NPS a number of inspections must be carried out within a given time period and the safety programme has to be reassessed at a given time period as well. The duties of the NPWS state that inspections have to be carried out but there is no mention of how many must be undertaken and there is no timeline for reassessing the safety programme.

5.3 Employee Safety Management/Training

5.3.1 The United States of America

As part of the *Director's Order #50B: Occupational Safety and Health* there is a corresponding Manual (*Reference Manual #50B: Occupational Safety and Health Program*). In subsection 4.2.1 it is pointed out that one of the sections in the Manual covers employee safety and training. Each park is required to develop and implement a safety training plan annually. All safety training that takes place is

required to be recorded by the park and the records maintained in the official training files. Each employee, upon recruitment, must have orientation training in the Occupational Safety and Health Program. This requirement also includes managers and supervisors. Safety training that equips employees with the necessary knowledge and skills to safely carry out their assigned tasks and recognizes and deals with potential emergencies should be given within six months of assignment of the task. The park's Risk Managers will advise park management on recommended training for safety and health personnel. Specialized training will be given when required. Safety and Health Committee members will receive training within six months of appointment for the tasks required from committee members. Supervisor's training must include methods on how to conduct informal safety worksite inspections. (National Park Service, 1999)

All persons, employee or volunteer, who is part of the NPS Fire Brigade will have specialized training which includes courses on fire fighting, fire behaviour and fire line safety. There will be at least eight hours of annual refresher training. The annual fire line refresher training will have a 12 month currency. (National Park Service, 2008c1, Chapter 10, p2) Each Park Manager is responsible for deciding the level of medical care the park provides, based on the needs of the Park. The first aid and emergency medical training will depend on the level of medical care the Park will provide. (National Park Service, 1999)

According to Bob Smith the park medics receive the same training as an EMT-Intermediate Grade. There are many organizations that provide EMT training that complies with the Department of Transportation requirements; the Wilderness Medicine Institute and US Air Force 445th Medical Squadron at Wright-Patterson

Air Force Base are two organizations that NPS has used for providing EMT training. When the training is completed a written and a practical exam must be passed for certification by the National Register of Emergency Medical Technicians. EMT-Basics must have 48 hours of continuing education and a 24 hour refresher course every two years. They also must have a yearly CPR for Healthcare Providers which is sanctioned by the American Heart Association. At Death Valley National Park emergency services personnel have training once a month. While other park employees have safety training less often and when the need arises. (personal communication, Questionnaire B, July 09,2008)

The mandatory training requirements include safety training for Managers, Supervisors, Safety/Health Specialists and Safety/Health Inspectors. Committee Members, Employees, and Representatives safety training is also mandatory. There are specific training for work activities that are covered in the OSHA general industry standards which includes hazardous materials, personal protective equipment, working in confined spaces and welding, cutting, and brazing. (Occupational Safety and Health Administration, 2006) There is also specific construction training which is covered in the OSHA Construction Standards that is mandatory for employees carrying out construction. (National Park Service, 1999)

The Director of the National Risk Management Program liaises with the Regional Manager in regards to employee safety issues at a regional level and the Regional Manager would liaise with the different Park Managers in regards to employee safety issues. (National Park Service, 1999) According to Richard Powell at the time of this project the employee section of the National Risk Management Program does not have a director or a deputy director and the section is

very understaffed. (personal communication, e-mail, June 26,2008) According to Dr. Sara Newman, the NPS is recruiting for a director and deputy director for the employee section of the National Risk Management Program. This shortage of staff does not mean that there is not any employee safety or safety training that is being conducted, it just means that the Regional Managers would have less support at the national level until the position of director is filled. (personal communication, e-mail, July 09,2008)

5.3.2 The Republic of Ireland

Pointed out in subsection 4.2.2 NPWS employees receive more training than any civil servant in Ireland. For example, a NPWS employee has, on average, 15 days of training out of a year. Five to 10 days out of the 15 would be health and safety related training, making over half of the training courses safety based. The average civil servant in Ireland has on average five days of training per year. (personal communication, Questionnaire A, March 12,2008)

According to Pat Warner the bigger courses are centrally based, for example, Mountain Leader Training. Some of the courses are held locally, for example, safe pass, manual handling and first aid. There are different levels of training depending on the course itself, some are provided by Foras Áiseanna Saothair (Training and Employment Authority), some are provided by the Institution of Occupational Safety and Health. All of the new employees are given a basic training course, and then the employees are given job specific training. Once a year the employee would meet with their supervisor and discuss what training they personally require and what training is mandatory. The numbers of employees requesting or needing training

will determine the training courses that are offered that year. (personal communication, Questionnaire A, March 12,2008)

Mr. Warner stated that “there is ongoing safety training that employees must take due to changes in legislation, policy, codes of practice and when the need arises”. Every year employees must receive safety training and the record of the training is kept at the park. The overall training programme changes every year (approximately 20% of a difference each year) and is an evolving process. Employees and safety representatives can express their opinion as to what training is needed or if a change in training is needed. (personal communication, Questionnaire A, March 12,2008) In the calendar year 2007-2008 several specialist training courses were offered. (See Appendix L for the specialist training courses offered in the calendar year 2007-2008) (National Parks and Wildlife Service, 2007b)

According to Mr. Warner if a course has been changed from one year to the next and the change is minor employees who have previously taken the course do not need to retake it. However, if the course is changed a document explaining the changes is given to the employees who have previously taken the course. (personal communication, Questionnaire A, March 12,2008)

SOPs which were mentioned in subsection 4.2.2 are also used as a safety tool for employees. The Safety Statement clearly states that the SOP does not replace the need for proper training. The General SOP are for workshops, ground-works and offices. (See Appendix M for a list of General SOP and a copy of the SOP for Chainsaws) Each of the General SOP covers what to do, what not to do and what to wear when carrying out the task relevant to the SOP. The Field SOP section in the

Safety Statement are for the different safety issues that a field ranger may come across, for example, dealing with animal carcasses. (See Appendix N for a list of the of Field Staff SOP) Each of the Field Staff SOP covers what to do, what not to do, what training course is needed, emergency and other procedures and what to wear when carrying out the relevant task. (National Parks and Wildlife Service, 2008q, p 16-278)

5.3.3 Comparison of the United States of America and the Republic of Ireland

In both the NPS and NPWS there is training at the national level and the local park level. Also, in both services the training programme is reviewed annually and there is a basic training safety course that every employee must take. The training process in each country is a cautiously evolving process that takes account of changes in legislation, policy and technology. Employees in both services are also given task-specific training before being expected to carry out the task and training on the proper use of PPE. Both park services have individual training plans for the different employees and training records are kept at the local level by the individual parks. In both countries' parks the training is provided by a range of organisations. Many of the courses that are offered are the same in both park systems. For example, basic first aid training is required for all field park rangers. There is also training on off-road driving, the use of firearms and the use of power tool training in both park services.

In the *Reference Manual #50B: Occupational Safety and Health Program* it states that it is mandatory that managers, supervisors, safety/health specialists, safety/health inspectors, the safety committee members and safety representatives

receive specific safety training courses within six months of their appointment. The NPWS safety statement does not state a time line for managers, supervisors, safety/health specialists, safety/health inspectors, the safety committee member and safety representatives receive safety training that is specific to their appointed title. At the NPWS both the national level and the local park level have equal training input, while at NPS the training is more on the local park level and that park's needs. Nationally the NPS Risk Programmes make sure that the training was standardized but each park decides what courses to offer. With NPWS the parks will tell the national level what courses they are interested in and based on the interest and need the courses that would be offered would be decided at the National level. The NPWS employees also all received the same amount of safety training per year (10 days per year). While at the NPS the safety training that each employee receives per year can vary largely depending on their duties. The variety of different safety training courses that are offered at the NPS is much larger than at NPWS. For example, there is the fire service at NPS and their range of training courses. The NPWS safety statement has SOP for different tasks that the employees should refer to before carrying out the task. While at NPS some parks would have these procedures while others would not.

5.4 Visitor Safety

5.4.1 The United States of America

In section 8.2.5.1 of the current NPS Management policy it states that "The saving of human life will take precedence over all other management actions as the NPS strives to protect human life and provide for injury-free visits." However, the Park Managers must have a balance between safety and preserving the national

habitat that the Park was set up to protect. The NPS have their own SAR teams and EMS. Each Park Manager decides if a SAR team or EMS is needed in their park. Some of the problems that some parks face in regards to visitors and their safety includes the fact that some parks attract visitors who are seeking a high-risk, high-adventure experience. It cannot be assumed that all of these individuals are adequately experienced and equipped to protect themselves or others from injury. To deal with this problem some parks require that visitors who are going to be partaking in a high-risk activity to have permits. However, there is no service-wide permit system. Another problem that faces each park in regards to visitors is that some visitors who are not accustomed to the extreme environments of the parks or to engaging in physical activity may not be prepared to manage the physical demands of the outdoor environment. Some of the parks have information on their websites warning visitors of the extreme environments. Again, there is no service-wide system in place to deal with the above problem.

(National Park Service, 2008d1,p2-4)

As addressed in subsection 4.3.1 The NPS has never established a formal service-wide visitor risk management program or a reliable and consistent means of collecting information on visitor incidents to enhance visitor safety efforts at the park level. Thus, there is no a systemic service-wide way of addressing visitor safety.

(National Park Service, 2008d1,p2) According to Dr Sara Newman there are measures being done at the different parks to mitigate risks. However, the measures are not consistent across the parks and are not shared among the parks. The above issues are the reasons that there is currently a focus on implementing a public risk

management programme at the national level to act as a resource for the regions and individual parks. (personal communication, Questionnaire A, April 08, 2008)

Dr. Sara Newman stated “in the past there have been attempts to have a public risk management programme, however, for various reasons the programme was never implemented”. “The current NPS Director, who took office in 2006, has health and safety as one of her priorities.” (personal communication, April 16,2008) This is one of the reasons why the NPS is trying again to implement the public risk management programme. According to Dr. Sara Newman the public risk management programme is being set up to provide a central point support system for the Parks and a way for the different Parks to liaise with each other. (personal communication, April,16,2008) For example, if a Park on the East Coast is having an issue with trail safety and a Park on the West Coast had the same issues on trail safety in the past, the programme would put the two parks in contact with each other.

Dr Sara Newman stated

“The programme is meant to enhance the safety procedures that the park rangers are currently doing”. “The programme will also investigate whether there are more scientific ways to approach public safety and how to mitigate risks while saving time.” “The individual Park Managers will still be responsible for visitor safety in their parks, the programme is meant to be a tool for them to use.”

(personal communication, April,16,2008)

According to Dr. Sara Newman one of the safety issues that the programme is currently researching is signage. The NPS is currently working with the Centre for Disease Control to research which is the most effective way to display signage for different hazards. The results will be given to each of the Parks and any updated

literature will also be given to the parks. The research on signage is just one example of the support the National Public Risk Programme is trying to give to the individual parks. (personal communication, April 16, 2008)

According to Dr. Sara Newman Besides the public risk management programme that is being set up, the public risk programme is conducting a needs assessment at all of the parks to identify what parks need to improve their efforts, and to ascertain possible health and safety improvements for visitor risk management. (personal communication, Questionnaire A, April 08, 2008)

Also mentioned in subsection 4.3.1 *The Public Risk Management Program Strategic Plan* (unpublished) is currently being written, the latest draft was released in March 2008. The strategic plan is meant to provide the framework for establishing the Public Risk Management Program to enhance park units' ability to systematically and more effectively manage visitor risk. The plan recognizes that the primary responsibility of safety falls on the park visitors themselves and that no single approach to visitor safety will eliminate all the risks that the visitors may encounter. There are six strategies in *The Public Risk Management Program Strategic Plan* (unpublished).

1. Establish the Infrastructure and Elements of an Evidence-Based, Interdisciplinary Public Risk Management Program
2. Establish an Effective Data Collection and Information Management System
3. Develop Risk Management Intervention Strategies and Studies
4. Establish an Effective Communication and Education Effort

5. Establish Evidence-Based Research to Inform Program
6. Create Incentives to Build Capacity and Motivate Staff to Provide Quality Services

Each of the strategies have objectives and short-term, midterm and long-term outputs for each objective. (National Park Service, 2008d1,p4-9)

The draft states that risk assessment methods, along with other tools, are to be used to identify threats to persons and property. According to Dr. Sara Newman in the past some parks did risk assessments and others did not.(personal communication, April 16,2008) *The Public Risk Management Program Strategic Plan* (unpublished) will make it a policy that all of the parks will carry out risk assessments. Also, the plan is that the risk assessments/risk management frameworks will eventually be used to identify management options for the different parks. The NPS long-term output on this will have a reference library of the different frameworks. (National Park Service, 2008d1,p7)

Public safety is currently addressed at a local level and the decisions are left to the Park Managers. Some examples of the safety decisions that the Park Managers must make include: whether to install warning signs or artificial lighting; whether to distribute weather warnings or advisories; whether to redesign and/or reconstruction of a road; whether to eliminate potentially dangerous animals; close roads and trails; install guardrails and fences; grant or deny backcountry or climbing permits; restrict or limit certain recreational activities. (National Park Service, 2008d1,p3) However, the Park Managers do not have training in public risk. Dr. Sara Newman stated “most of the Park Managers have been working for the NPS for

decades and they make their decisions based on their experience”.(personal communication, April16,2008) One of the objectives of the Strategic Plan is to put in place a public risk management staff training program. There are also plans to develop a NPS wide training programme for the volunteers. (National Park Service, 2008d1,p8) According to Dr. Sara Newman currently some of the Parks have training in health and safety for the volunteers and some don’t. (personal communication, April16,2008)

Besides how many injuries and fatalities reported since 2005 and the trends in SAR and EMS callouts discussed in subsection 4.3.1 the Annual Meeting (unpublished) also covered what the different parks are currently doing for visitor safety, signage, which park won in 2006 the Andrew C. Hecht Public Safety Award and what they did to win it, an outline of the Public Risk Management Program, and the different organisations that NPS has liaised with in regards to visitor safety. (National Park Service, 2008e1p 4-19,24-29,33,41) According to Dr. Sara Newman the NPS has two safety awards that are given annually, the Director’s Safety and Health Achievement Award for employees and the Andrew Clark Hecht Memorial Public Safety Achievement Award which is the highest award bestowed by the NPS for outstanding public safety achievement. (See Appendix O for the criteria of these two safety awards) (personal communication, e-mail, July 23,2008)

5.4.2 The Republic of Ireland

As stated in subsection 4.3.2 at the NPWS there currently is not a programme at the national level to deal with visitor safety nor is the service looking to implement one. Visitor safety falls to each park and the Park Manager makes the day-to-day safety decisions. Pat Warner stated “there is communication from the

different parks to the NPWS about visitor safety”. “Visitor safety issues can be raised at the different safety committees.” (personal communication, Questionnaire A, March 12,2008)

According to Pat Warner the NPWS always has to be vigilant as to where the public go in the different parks and what the possible dangers are. Each park is required to do a regular safety report on hazard inspection and risk assessment. Also, the different Parks must ensure that there is signage erected warning the visitors of the hazards of the Park. The designated trails must be checked and safe within reason. Appropriate guardrails and steps must be in place along the trails at any hazardous spot. There are no guidelines on how often the trails are checked but in most Parks the trails are checked daily. Any hazards that are identified must be alleviated, or if that is not possible, made known to the public and sectioned off from public access within reason. Seventy-five percent of serious visitor injuries occur when crossing streams while hiking. Visitors are injured while crossing streams for a variety of reasons including, wearing improper footwear, trying to jump the stream and miscalculating distance and slipping. The primary responsibility for safety falls on the park visitors. (personal communication, Questionnaire A, March 12,2008)

It was pointed out in subsection 4.3.2 that the NPWS does not have a SAR team and that some of the parks liaise with IMRA. According to Ann Fitzpatrick in Wicklow Mountains National Park there are two Mountain Rescue teams, Glen Of Imall and Dublin Wicklow. The protocol that is agreed between Wicklow Mountains National Park and the two rescue teams is that if either of the two teams is called out to park land then the Duty Ranger is informed. However, this sometimes is not done due to the hurried nature of mountain rescue or the people

dealing with the rescue may not be aware of the land ownership. The Glen of Imaal team has three NPWS employees and since they must report to their managers when they are on duty and must leave to perform a rescue, it is easier to follow the protocol. Sometimes, the callouts to Wicklow Mountains National Park go unreported to the park if the three NPWS employees are not on duty or if the Dublin Wicklow team is in. (personal communication ,e-mail, July 01,2008)

According to Ann Fitzpatrick in addition to notification, all Wicklow Mountains National Park staff members are associate members of the Glen Of Imaal Team, this is in recognition of the valuable assistance they provide during callouts. Assistance typically includes: use of vehicles and drivers, use of rescue boat and boat operator, use of buildings and associated telecommunications systems, printers, computers and kitchen facilities, parking attendants, key holders and ground control assistance. (personal communication ,e-mail, July 01,2008)

Ann Fitzpatrick stated “after each callout to Park lands, usually an accident report form is filled out by Park personnel and the data will be sourced from the Mountain Rescue personnel”. “In addition, the annual statistics from Mountain Rescue Ireland are available to Wicklow Mountains National Park.” (personal communication, e-mail, July 01,2008)

According to Liam Ó hAisibéil Connemara National Park and Galway Mountain Rescue established a good relationship over the past few years as regards mountain safety and access in Connemara. Galway Mountain Rescue has responded to callouts in Connemara National Park lands since 2005 and Galway Mountain Rescue have contact numbers for the Conservation Rangers should they need to gain access to areas of the park or forestry on the south-eastern boundary of the park.

The Ranger will facilitate access to the team and assist them when it is necessary as regards arriving at the location within park lands. Galway Mountain Rescue have provided Connemara National Park with a procedure list for contacting Mountain Rescue in the event of an emergency, as well as contact numbers for team leaders and deputy team leaders. The Connemara National Park has not asked for the data that Mountain Rescue Ireland keeps. The main reason for this is because the callouts to the Park lands are very few in number. For example, in 2007 there were nine callouts in the Galway-Clare area and on average there are only 13 callouts in the area per year. The majority of the callouts would not be in Park lands. (personal communication, e-mail, July 02,2008)

Liam Ó hAisibéil stated that the Connemara National Park and Mountain Rescue Ireland work together on mountain safety issues besides rescuing people. In 2006 the Mountain Rescue Ireland Galway team leader and Park officials worked together in developing the first signage for a mountain trail. Also in 2007 Mountain Rescue Ireland and the Mountaineering Council of Ireland provided Connemara National Park with leaflets on the possible dangers of hillwalking/hiking. The leaflets covered appropriate clothing/gear, weather and how to hike in bad weather and instructions as to what to do in an emergency. (personal communication, e-mail, July 02,2008)

5.4.3 Comparison of the United States of America and the Republic of Ireland

At both NPS and NPWS the Park Managers make the day-to-day calls on visitor safety. In both park services they make the decision on whether to close a trail. At NPWS risk assessments, which include risks to visitors must be carried

out. The NPS is currently working towards risk assessments being carried out at each park. The requirement for each park to carry out a risk assessment that includes risks to visitors should be in place by 2009. At both NPS and NPWS currently there is no national programme for visitor safety and there is no standardized approach to visitor safety. For example, at both NPS and NPWS the different parks have their trails checked for hazards but how often they are checked is up to the different Park Managers.

At the NPS a national programme on visitor safety is being set up to standardize some aspects of visitor safety and to be used as a tool for the different parks. The NPWS has no plans is setting up at national programme for visitor safety, although safety issues can be brought up in the different safety committees. In both park services the majority of visitor injuries occur while hiking and around water. The primary responsibility of safety falls on the park visitors of both countries. The NPS has their own SAR teams, while at NPWS the SARs are carried out by external organizations. At both NPS and NPWS the best way to use signage is being studied. However, at the NPS the study is being done at the national level, for all parks to use. While at NPWS the signage is dealt with by the individual parks. In the NPS there is an annual award that is given to a park for safety performance. At NPWS there is no award system in place.

5.5 Reporting, Recording and Investigating Incidents, Accidents and Near Misses

5.5.1 The United States of America

One of the duties that employees of the NPS have is to report to their supervisor as soon as possible any accidents or incidents they witness, or in which they are involved. The employees can make the report in oral or written form. If the accident or incident is not a serious accident supervisors will investigate and fill out the required reports which include the Safety Management Information System (SMIS). The SMIS is a Department-wide reporting system that all the bureaus of the Department of the Interior use. (National Park Service, 1999) However, as stated in the audit report SMIS data is incomplete, not user friendly and needs to be improved. (U.S. Department of the Interior Office of Inspector General 2008, p 7,8) The data also must be recorded for GPRA. After the supervisor investigation the Park Manager will hold a Technical Board of Investigation (TBI), as soon as possible, in the event of a lost time injury, motor vehicle accident, equipment damage, or fire. Based on the potential risk and/or potential re-occurrence other personal injuries, property damage accidents, or near-miss incidents may be examined by the TBI. The TBI examines the investigation that the supervisor carried out to ascertain the root cause(s) of the accident/incident. The TBI will also establish findings of fact, and make recommendations for a corrective action plan. (National Park Service, 1999)

A serious accident is when:

- there is one or more job-related fatalities,
- three or more persons are hospitalized,
- when property is damaged and/or there is an operating loss of \$250,000 or more,
- serious tort implications are indicated,
- the Associate Director deems an accident warrants further investigation

When a serious accident occurs the Associate Director delegates the responsibility of investigation to the Program Manager, WASO Risk Management Program Office.

The Program Manager immediately authorizes a Serious Accident Investigation Team, ensuring that the Team has adequate authority and resources to conduct and complete the investigation. The NPS Risk Management Program Office is the designated office of record for all serious accident investigation reports.

Accident/incident report information is controlled in accordance with the Privacy Act and Freedom of Information Act requirements. Accidents involving a fatality or multiple hospitalizations must be reported to the nearest OSHA Area Office, Departmental Emergency Reporting System and NPS Risk Management Program Office within 8 hours. Accidents involving property damage and/or an operating loss of \$250,000 or more will be reported to the Departmental Emergency Reporting System and the NPS Risk Management Program Office within 24 hours.

(See Appendix P for the Serious Accident Investigation Procedures, Time Frames and Team Checklist) (National Park Service, 1999)

According to Dr Sara Newman each park is required to report on visitor safety as part of GPRA. As stated in subsection 4.4.1 there is one centralized system for recording visitor injuries and fatalities in parks, the PMDS which was set up to collect the GPRA data. With the PMDS the parks enter the number of injuries and fatalities that have occurred to visitors at the end of each fiscal year. The data are simply count data and do not provide any detail on cause, activity of victim, age or location. EMS and SAR data are also provided at the end of the fiscal year and provide some detail on the injury. However, these data only include injuries that required either EMS response or a SAR. The SAR data does state what a person was doing when they were injured, but it is general and may not accurately reflect how the person was injured. For example, the report may say the person was hiking but gives no indication whether the person fell in water and drowned, or they had a heart attack, or was killed by some other means. The report may say that the person was boating, but the person drowned by swimming near the boat. (personal communication, Questionnaire A, April 08, 2008)

As pointed out in subsection 4.4.1 that there are multiple recording systems used by the different parks. Some of the systems only record motor vehicle accidents. Other systems only record injuries and fatalities that were accidental. Some of the parks record near misses while others do not. In most parks a ranger or dispatcher records the data but there is no consistency in how data are recorded. The different data systems that are used can provide a picture of the injury issues in the Parks. However, the data cannot be combined because they are not linked by an

identifier. (personal communication, Questionnaire A, April 08, 2008) The NPS lacks a systemic data collection system in which standard terms are used. Due to this fact, the data on whether the NPS is reaching the goal of improving program efficiency is not as reliable as it could be. Also, investigative reports may include little information of value to prevent re-occurrences. (National Park Service, 2008d1,p2)

Dr. Sara Newman stated “it is also not clear if the data impacts on policy but there are some examples from park to park in which the Park Manager has used injury data to drive management decisions such as where to put up signs”. (personal communication, Questionnaire A, April 08, 2008)

5.5.2 The Republic of Ireland

According to Pat Warner whenever there is an incident, accident or near miss a report form should be filled out (See Appendix Q for the report form). However, in the case of near misses they are not always reported, technically near misses are recorded but practically they are not. As stated in subsection 4.5.2 the report form is used for both employee and visitor incidents. If an employee has to miss three or more working days the NPWS must notify the HSA, due to this requirement a central recording system has been set up within the last year. Once the incident, accident or near miss is recorded it is then investigated by a safety officer or team of safety officers. Once the investigation is complete the investigator(s) fill out a form with their findings and recommendations, sometimes the recommendations include retraining of employees or rewriting of a training course. Safety has impacted on the policy for managing Ireland’s national parks. The major issue would be liability and claims. (personal communication, Questionnaire A, March 12, 2008)

5.5.3 Comparison of the United States of America and the Republic of Ireland

Both the NPS and the NPWS require an incident occurs to be reported and investigated. Also, there are legislation requirements that if an injury to an employee is severe then it has to be reported to the respective authorities (HSA for NPWS and OSHA for NPS). However, with the NPWS there is one reporting system and the report form is the same for both visitors and employees, while at the NPS there is a different system for employees and visitors. Both with employees and visitors there are multiple reporting systems, especially with visitors, and the systems are not linked by an identifier and cannot be combined. At NPWS health and safety data has impacted on policy, however, at NPS the impact is unclear, due to the fact that the reporting system at NPS is not standardised.

5.6 The Twelve Sampled Parks and Questionnaire Results

5.6.1 The United States of America

Big Bend National Park

According to Katie Morris the Park's system of recording visitor numbers works in the following way: there are vehicle counters at the entry points to the Park. Also, the Park staff receives a monthly total from the back county permits, campground counts, and lodge visitors. The numbers from these different sources are compiled monthly and sent to the Intermountain Regional office where the numbers are maintained. In spite of this system a visitor can enter the Park grounds without Park employees knowing about it. Dehydration and environmental exposure are the

two biggest safety issues for both employees and visitors. (personal communication, Questionnaire B, July 24, 2008)

Katie Morris pointed out that Big Bend National Park focuses equally on visitor and employee safety. The safety team would primarily focus on employee safety. However, many measures have been taken for visitor safety. Some of these measures include safety bulletins and the Daily Report has safety issues and road closure information. The visitor centres have bulletins about safety and there is a safety talk that is given for outdoor interpretation programs. The Park also has public outreach programmes and safety is included in the programmes. (personal communication, Questionnaire B, July 24, 2008) The Park's website also has a full section on safety issues. The section has safety tips for driving/motorcycle safety, hiking, swimming, fire, tips on dealing with the heat, safety considerations for parents, and safety issues dealing with poisonous and other dangerous animals. Two particular animals that the website has information pertaining what to do if a visitor encounters them are mountain lions and black bears. The website also has an informational brochure on how to survive exposure to the sun and outlines what precautions a visitor should take before heading to the Park. (See Appendix R for the survival tips and safety steps to take before heading to the Park) (National Park Service, 2008f1) Due to the fact that the Park is on the border between the United States of America and Mexico there is a section on visiting the border area, which includes border safety. (National Park Service, 2008f1) The links to the safety issues and border issues are found on the Park's homepage and is easy to access. Also, on the homepage is a link to the Park's daily report which covers weather, temperature, river levels and current conditions of the Park.

According to Katie Morris the type and frequency of safety-related training an employee of Big Bend National Park receives depends on their job duties. The basic training that all rangers receive is basic first aid and CPR. The first aid training is repeated every three years and CPR training is conducted every year. The law enforcement rangers receive more advanced first aid training and are either EMT-B or EMT-I. They must complete annual requirements to maintain their certification. The Park has a fire brigade with 3 engines located throughout the park. The fire brigade trains every fortnight. The Park also has an emergency services dispatch. All the dispatchers maintain certification in Emergency Medical Dispatch. Some of the rangers are certified in swift water rescue, technical climbing, other search and rescue needs. These rangers receive annual training to maintain their certification. All of the Rangers receive hands-on scenario training. Big Bend National Park has a volunteer organisation. The volunteers receive a two-week training course which includes basic first aid and CPR. They also receive specific on-the-job training. (personal communication, Questionnaire B, July 24, 2008)

Kate Morris stated “if an employee has an incident the first thing that occurs is that first aid is given if needed”. “The employee’s supervisor and the employee fill out the report form and the supervisor enters the data in the NPS safety management information system.” “This data is reviewed by the Collateral Duty Safety Officer.” “The Collateral Duty Safety Officer and safety committees then conduct a root cause analysis to determine why the incident occurred and how to prevent reoccurrence, if possible.” “The data from the reports are generated and sent to OSHA.” (personal communication, Questionnaire B, July 24, 2008)

Big Bend National Park emergency services and the fire brigade train once or twice a year with other parks. However, due to the remote location of Big Bend National Park the Park usually does not liaise with other parks in regards to safety. Sometimes an employee of Big Bend National Park goes to training and may make contact with other park service employees and ideas may be shared. Also, when a significant event happens the Risk Management division will send out a bulletin to all park units. The Park does liaise with other organizations in regards to health and safety. Big Bend National Park emergency services and fire brigade works directly with Terlingua Fire and EMS located in the small community west of the Park. The organizations assist each other in medical, fire and rescue situations. (personal communication, Questionnaire B, July 24, 2008)

According to Questionnaire B safety is discussed in more than half the meetings when there are park related meetings. The employee safety team and executive safety team have meetings monthly. There are employee meetings every three months and safety is a topic that is always covered in these meetings. The different divisions in the Park have five minute tailgate meetings throughout the year. Also, the Park provides safety events throughout the year. (personal communication, Questionnaire B, July 24, 2008)

In Katie Morris's opinion the Park receives adequate funding to deal with safety issues. "The Park Manager is very supportive of employee and visitor health and safety reasonable requests would receive funding." (personal communication, Questionnaire B, July 24, 2008)

Also, in Katie Morris's opinion a centralized system that provides safety training, guidance and tools for the National Park would be a useful tool for Big Bend National Park. However, due to the fact that each park has unique safety issues it is be vital that the individual parks to maintain an active role in its safety programme. (personal communication, Questionnaire B, July 24, 2008)

According to Katie Morris the safety programme at Big Bend National Park does have room for improvements and is a living system with continuous improvements and changes. Three ongoing issues that need to be addressed are:

- Getting all the supervisors on the same page concerning safety
- Getting employees to report safety issues without the fear of reprimand
- Improving the Collateral Duty Safety Officer training

Most of the parks have Collateral Duty Safety Officer(s) and many of them are not professionally trained as a safety officer. To deal with this issue the NPS either needs to improve the Collateral Duty Safety Officer training programme or hire full time safety officers who are professionally trained and competent in safety and health. (personal communication, Questionnaire B, July 24, 2008)

Death Valley National Park

According to Bob Smith the Park's system of recording visitor numbers works in the following way: the visitors are counted by sales of entrance fees. There are other recording methods as well. However, it is not unusual for someone who is

visiting the Park not to be counted or seen by an employee. (personal communication, Questionnaire A, July 09, 2008)

Bob Smith stated “there is guidance on employee and visitor safety in Death Valley’s management plan”. The Park focuses more on employee safety than visitor safety.” “Measures which are taken by the Park for visitor safety include signage and advisories.” (personal communication, Questionnaire A, July 09, 2008)

The Park’s website has a page on safety tips for visitors. The topics that are covered on the safety page include dangerous animals, flash floods, mine hazards and hiking. There is also a list of signs of trouble and the main cause of death in the Park. Drinking plenty of water and having extra water in the car is strongly emphasised on the safety page. (National Park Service, 2008h1) The link to the safety page is on the Park’s homepage and is easy to access. Also, on the Park’s homepage there is a link to a daily report. This report covers weather conditions, temperature, road conditions and current conditions of the Park. (National Park Service, 2008i1)

According to Bob Smith the Park does have a public outreach programme. Safety issues are not included in the programme. However, safety is addressed if it is relevant to the topic that is being presented. Driving and dehydration are two of the biggest safety issues for both employees and visitors. (personal communication, Questionnaire B, July 09, 2008)

The type and frequency of safety related training an employee of Death Valley National Park receives depends on their job duties. The basic training that all

rangers receive is basic first aid and CPR. The first aid training is repeated every three years and CPR training is every year. Employees that are part of emergency services have training monthly. The Park has volunteers and the volunteers receive the same basic training that all the Park's rangers undergo. If an employee has an incident usually a board of inquiry is held and an incident report is filled out.

(personal communication, Questionnaire B, July 09, 2008)

According to Bob Smith Death Valley National Park would liaise with other National Parks in regards to safety via management meets and conference calls. Sometimes rangers receive refresher training in other parks. Also, Death Valley National Park provides training that rangers from other parks would attend. The Park does liaise with other organizations in regards to health and safety. These organizations include Mercy Air, Pahrump Fire, Beatty Fire, Furnace Creek Fire.

(personal communication, Questionnaire B, July 09, 2008)

According to Questionnaire B safety is discussed in less than half of park-wide meetings held at Death Valley National Park. However, if an incident has occurred there is usually a meeting to discuss that incident. The Park's safety committee meets bi-monthly. (personal communication, Questionnaire B, July 09, 2008)

In Bob Smith's opinion Death Valley does not currently receive adequate funding to deal with safety issues. However, "this is changing and it is a matter of management allowing the money to be spent on safety". (personal communication, Questionnaire B, July 09, 2008)

In Bob Smith's opinion a centralized system that provides safety training, guidance and tools for the National Park would not be useful for the Park because "each park has its own issues and can be better dealt with in house". (personal communication, Questionnaire B, July 09, 2008)

Mr. Smith believes that there are improvements that Death Valley National Park can be doing in regards to safety. However, he states that "Having been in emergency services for as long as I have, I feel that visitors sometimes think that the Park is designed to be safe at all times, and they forget to think while they are here". Also, "visitors should be responsible for their personal safety in a natural environment". "The Park is not there to hold their hands at each step." (personal communication, Questionnaire B, July 09, 2008)

Everglades National Park

Everglades National Park's website covers safety issues and tips for visitors in various links throughout the site. There is no one site devoted completely to safety. However, safety is covered in the sites *Things to Know Before You Come*, *Trails* and *West Nile Virus*. On the site *Things to Know Before You Come* there is information on the different conditions of the Park during the wet and dry seasons and what visitors need to be aware of during the two seasons. Also, the site has overall safety tips for visitors. These tips include: keeping in mind your physical limitations, familiarizing yourself with the trails before hiking, biking or paddling, notifying someone where you are going, bringing and drinking plenty of water, keeping children close by and not feeding the wildlife. (National Park Service, 2008j1) The site *Trails* covers the safety concerns raised by the changing weather conditions and what to do if caught in a lighting storm. It also covers the fact that

there are biting insects and what visitors can do to protect themselves. (National Park Service, 2008k1) The *West Nile Virus* site is an informational brochure on the West Nile Virus which is carried by mosquitoes. The brochure covers what West Nile Virus is, the symptoms, treatment and how visitors can protect themselves from the virus. The section on how visitors can protect themselves covers what they should do and what they should avoid. (National Park Service, 2002) These sites are easy to access, all three sites can be found under the *Plan Your Visit* section of the Park's webpage. The Park's website does not have a daily report of the current conditions of the Park. However, there is a link to the weather forecast of the area in which Everglades National Park is located.

Great Smoky Mountains National Park

Great Smoky Mountains National Park's website has a page on safety tips for visitors. The safety site has links to sites on water safety, motorcycle safety and hiking safety. The main safety page covers basic safety tips and statistics on the average number of serious injuries for various activities. Motor vehicle accidents have the highest number of serious injuries, followed by walking or hiking accidents. (National Park Service, 2008l1) On the water safety page it is clearly stated that water recreation is not recommended and that drowning is one of the leading causes of death in the Park. The page also has water safety tips such as do not climb on rocks near waterfalls. There are also tips on what to do if visitors find themselves in water. (National Park Service, 2008m1) The motorcycle safety page has a list of what the law requires, and suggestions on motorcycle riding such as carrying rain gear and watching out for wildlife. (National Park Service, 2008n1) The hiking safety page covers a wide range of safety issues. The page has basic safety tips such

as the amount of water the person should carry, letting someone know your route and return time, carrying a current park trail map and knowing how to read it, never hiking alone and checking the weather forecast. The page also covers issues such as ice and wet leaves, insects, poisonous snakes, bears, crossing streams, treating drinking water and hypothermia. There is a section on the page the covers factors that result in backcountry emergencies at the Park. (National Park Service, 2008o1)

The safety website is under the *Plan Your Visit* section of the Park's website and is easy to access. The Park's website does not have a daily report on the current conditions of the Park. However, there are separate sections of the Park's website that cover weather, temperature and trail/ road closures.

Wind Cave National Park

Wind Cave National Park website has a page on safety tips for visitors. However, the safety page is not easily accessible and is found only in the site index of the Park's website. The way that the Park's website is set up the only way a visitor would find the page on safety is if they were specifically looking for a page on safety issues at Wind Cave National Park. The safety page is very brief and covers cave safety such as what type of shoes to wear, low lighting in the cave, where the handrails are and a warning that the tours are moderately strenuous. The safety page also states that the visitor should read the safety information on their tour ticket or ask a ranger about any safety concerns they may have. (National Park Service, 2008o1) The Park's website does not have a daily report on the current conditions of the Park. However, there is a link to the weather forecast of the area in which Wind Cave National Park is located.

Yellowstone National Park

Yellowstone National Park has a safety page on its website. The page covers situations to avoid, safety tips in regards to bison, bears and coyotes, information for boaters, safety information in regards to bicycling, fallen trees, traffic, high altitude, and water issues. The page also has important telephone numbers to have while visiting the Park. On the main safety page there are links to other pages with safety tips. There is also a video that shows the danger of approaching elk. In this video it shows an elk ramming a car that has come too close. (National Park Service, 2008q1) One of the links is to a page dealing with detailed information on how to stay safe around wildlife. (National Park Service, 2008r1) There is also a video on how visitors can watch the wildlife safely and respectfully. (National Park Service, 2008s1) There is also a link to the Park's back country site which includes safety tips for hikers and campers. (National Park Service, 2008t1)

The safety website is under *Things to Know Before You Come* section of the Park's website and is easy to access. The Park's website has current conditions and updates section. This section covers information on roads, entrances, fire conditions, camping, trails and has a link to the Park's news release page. (National Park Service, 2008u1) This section does not cover the current weather conditions at the Park. Information about weather conditions is found in a separate section of the Park's website.

5.6.1 The Republic of Ireland

Ballycroy National Park

Ballycroy National Park's website has some safety tips for visitors to the Park. The tips include: hill walking in the Park can only be recommended for walkers with suitable outdoor clothing and equipment, don't hike alone, know your limits and inform a trusted person of your route and return time. (National Parks and Wildlife Service, 2008s) There is not a whole webpage devoted to safety and the safety tips are found under the *Visit Us* section of the website. The safety tips are easy to access.

Glenveagh National Park

Glenveagh National Park's website does not have a specific webpage devoted to safety. However, safety tips for visitors are found in two sections on the Park's website, *Visit Us* and *Activities*. In the *Visit Us* section the safety tips include: stay on paths and tracks and away from cliffs and waterfalls, do not light fires, always bring suitable attire and strong footwear when out walking and remember to bring adequate food and water when out walking; walks can sometimes take longer than planned, so be prepared. (National Parks and Wildlife Service, 2008t) In the *Activities* section of the Park's website it clearly states that most of the Park is suitable for properly prepared hikers only and that the details of your planned route and expected time of return should be given to personnel at the Park's Visitor Centre. (National Parks and Wildlife Service, 2008t) The safety tips are easily accessible.

Killarney National Park

According to Pat Foley Killarney National Park focuses equally on both employee and visitor safety. Also, in the management plan there is guidance on safety for both employees and visitors. The Park has hired a competent person to carryout the risk assessment. There are systemic inspections four times a year, once every season. A log of data on the area that was inspected and the condition of that area is kept. Also, if a visitor notifies the Park of an unsafe condition the Park takes action to rectify the problem. The Park does not have a public outreach programme and safety is not covered in the Park's website. The Park has a system to record the number of visitors. However, this system is very imprecise. Killarney National Park and Holland University collaborate in recording the number of visitors to the Park. Holland University brings students to the Park four times a year (once every season) and the students do a head count of the visitors. There is an estimated 1.2-1.5 million visitors a year. There are many open points to the Park and visitors can go uncounted. The biggest safety issue for visitors would be to identify the hazards. Overall safety is the biggest safety issue for the employees. (personal communication, Questionnaire B, July 25, 2008)

Pat Foley stated "the employees of Killarney National Park receive first aid training every three years". "Personal safety training is given as necessary." "Recently, defibulators have been issued to the Park." "The rangers have received appropriate training on their use." "The measures that are taken if an employee has an incidence depends on the severity of the incidence." "The first thing that would be done is to isolate the site and contact the emergency services if needed." "All incidences are

recorded and depending on the severity investigated.” The Park has a volunteer organisation. “The volunteers are responsible for their own training.” “The volunteers are not allowed to do a dangerous task without proof of training and certification.” (personal communication, Questionnaire B, July 25, 2008)

According to Pat Foley in 2007 there were no recorded fatalities or injuries for either employees or visitors at Killarney National Park. However, if a visitor is injured in the Park and is not attended to by a Park employee the visitor injury would not be recorded and the Park would not be aware of the injury unless the visitor feels that the Park was negligent and took legal action against the Park. Currently Mountain Rescue Ireland and Killarney National Park do not have a system in place to liaise when there are callouts to the Park land. There have been three employee accidents that were HSA reportable over the past four years. The Park does not record near misses. The records of accidents are stored to be reviewed when needed. (personal communication, Questionnaire B, July 25, 2008)

Killarney National Park would liaise with the other parks in regards to safety four times a year, when a committee of representatives meet. The Park also liaises with other organisations in regards to safety. These organisations are: Order of Malta and St John of God. Both of these organisations provide first aid when needed and would be at the Park when there is an event taking place. The Park has safety meetings four times a year. However, safety is always discussed when having Park related meetings. (personal communication, Questionnaire B, July 25, 2008)

Mr Foley believes that a centralized system for the national parks could be useful. A database of training companies and a rating of satisfaction on each company would be a useful tool for the parks. Also, a centralized auditing system would be another useful tool. However, each park is unique and has different needs. Each park should have their own recording system. (personal communication, Questionnaire B, July 25, 2008)

In Mr. Foley's opinion the Park receives adequate funding to deal with safety issues. However, there are improvements that can be implemented in regards to safety. The two main improvements in safety are better training in the identification of hazards and making both the visitors and employees aware of safety. It is important for management to be aware of any new safety legislation and that any new training to comply with the legislation is undertaken. (personal communication, Questionnaire B, July 25, 2008)

Wicklow Mountains National Park

Ciara O' Mahony stated" in Wicklow Mountains National Park, the park lands are broken up into separate areas, thus making a system of recording annual visitor numbers impractical". "For the same reason visitor access to the park cannot be controlled, thus visitors can enter the Park grounds without the knowledge of Park employees." "As at national level, the park focuses more on employee safety than visitor safety." "However, many of the measures that are being taken to improve employee safety also improve visitor safety as well." (personal communication, Questionnaire B, July 07, 2008)

A risk assessment carried out in 2007 identified 32 hazards. Out of the 32 hazards, 17 had a risk rating of intolerable and with the control method(s) listed in the risk assessment to be completed immediately. Eight hazards had the risk rating of substantial with the control measures to be completed as soon as possible. Seven of the hazards had the risk rating of moderate with two control measures to be completed as soon as possible, three control measures to be completed during the next scheduled works and two control measures are on-going. (See Appendix S for the complete risk assessment) (National Parks and Wildlife Service, 2008u)

According to Ciara O' Mahony there are regional safety meeting four times a year. There are no park specific safety meetings, however, the regional staff are also park staff. Safety is discussed at less than half the meetings due to the fact that safety issues are dealt with at the safety committees' meetings. If this system was not in place then all the park's meetings would be dominated by safety issues. Wicklow National Park has not liaised with other Parks on either visitor or employee safety. However, the National Parks and Wildlife Service do liaise via Safety Committees. (personal communication, Questionnaire B, July 07, 2008)

The Wicklow Mountains National Park Health and Safety Committee met on three occasions in 2007, and became the Wicklow District Health and Safety Committee on 3/10/07. The Wicklow District Health and Safety Committee's annual report for 2007 reported that there were eighteen incident/accident reports during the year. Of these 14 involved visitors, three involved Park employees and one was a near miss. The majority of the visitors' injuries were slips, trips and falls. All of the incidents have been reported to the Safety Manager and Personnel Section of the

Department of the Environment, Heritage and Local Government. None of the incidents were HSA reportable. (National Parks and Wildlife Service, 2008r)

According to Ciara O' Mahony the report forms are kept on file and have information on where and how the person was injured. However, this data has not been collated. (personal communication, e-mail, June 25, 2008) The annual report also stated that the committee addressed a number of employee and visitor safety issues, which are recorded in the minutes. Staff training is also recorded in the minutes of the meetings. The annual report also stated that there were requests for Rangers and General Operative staff to elect a safety representative and also that there had been no progress in establishing a safety management system. (National Parks and Wildlife Service, 2008r)

Wicklow Mountains National Park falls in the South Eastern Region. The South Eastern Region's safety committee was formed to achieve six objectives:

1. To secure improved communication and flow of information between South Eastern Region staff on health and safety matters
 2. To disseminate information in relation to progress on health and safety matters
 3. To promote a safe and healthy environment for employees of South Eastern Region and visitors to NPWS sites in the region
 4. To discuss and suggest ways of improving the safety management system
 5. To review safety performance
 6. To produce an annual report on safety matters in South Eastern Region
- (National Parks and Wildlife Service, 2008v)

The Chair, Secretary, all Section Heads and Safety Representatives and the District Conservation Officers should attend all meetings. Other staff may attend the meetings when matters that are of specific concern are discussed in the meeting. The committee will meet at least three times a year and discuss safety issues that are of specific interest to South Eastern Region. The committee members have three duties:

1. To attend all committee meetings, or to extend apologies when absent
2. To provide feedback from the committee to colleagues
3. To actively participate in the work of the committee to achieve objectives
(National Parks and Wildlife Service, 2008v)

According to Questionnaire B there is no guidance on employee safety in the Park's Management Plan. However, there is guidance on visitor safety in the Park's Management Plan, but it is broad and basic. The Park's local manager makes the decisions for the Park's visitor safety. It is the local manager who decides to close a trail if the trail is deemed unsafe. The biggest safety issue in Wicklow Mountains National Park is the safety of the walking trails. There currently is no formal system in place that states that the trails have been checked. The trails do get checked but there is no recording of when and who checks them. (personal communication, Questionnaire B, July 25, 2008)

The website for Wicklow Mountains National Park has information on safety issues for the public to read. It mentions not to swim in areas where there is a "no swimming sign" posted. The website gives the emergency numbers 999 or 112 in case of an emergency and it states that the *Mountaineering Council of Ireland*

Climbing Guide 'Wicklow' is available in the Information Office. There is a page dealing with mountain safety. This page covers precautions that hikers should take before going hiking in the Park, steps to take in the event of something going wrong and information on Mountain Rescue Ireland. (National Park and Wildlife Service, 2008w)

According to Ciara O' Mahony the Rangers in the park receive first aid training every two years. They also have two once-off training in Power Boat Two and Water Rescue. As with other National Parks the Rangers in Wicklow Mountains National Park have general ongoing safety training which is approximately 10 days or 4.3% of their working days per year. The park follows the same procedure that is set at the national level if an employee has an incident. Vehicle safety is the biggest safety issue for Park employees. (personal communication, Questionnaire B, July 25, 2008)

The Park currently does not have a volunteer program. However, the park does have outreach programs but safety is not included in the program. The park liaises with five organizations in matters of safety, the organizations are:

- Two mountain rescue teams (Dublin-Wicklow and Glen Of Imaal)
- Irish Water Safety
- Office of Public Works
- Wicklow County Council
- Garda (personal communication, Questionnaire B, July 25, 2008)

In Ciara O' Mahony opinion Wicklow Mountains National Park does receive adequate funding to deal with health and safety issues. However, the Park does not have adequate staff to deal with the safety issues. The safety issues are a management issue and staff has never been refused when looking for money for safety issues, but the park does not have enough staff to improve the safety system. Also, the data that is collected in regards to safety incidents are kept on file but are not used because the park does not have the staff numbers or time to use the data. (personal communication, Questionnaire B, July 25, 2008)

Ciara O' Mahony believes a system that provides centralized safety training, guidance and tools for the National Parks would be useful for Wicklow Mountains National Park, such as a standardized system of reporting incidents. However, there is a risk of increasing bureaucracy in safety issues that would have no benefit and use up resources. The main thing that can be done to improve safety at Wicklow Mountains National Park is to implement a comprehensive safety management system. The Park right now is reliant on individuals and not a safety system. There is no system in place to prove that safety features have been checked. Thus if the Park is taken to court they cannot prove that they checked the feature in question. The key areas to address are:

- A standardized way of assessing trail safety which includes training, a schedule for checking the trails and forms to fill out when checking the trails and a defined responsibility for taking action and recording it.
- A standardized way of assessing tree safety which includes training, a schedule for checking the trails and forms to fill out when checking

the trails and a defined responsibility for taking action and recording it.

- A system of assessment for water safety including where to place life buoys
- A system of assessment for underground sites. The Park has yet to deal with mines
- Record keeping needs to be defined at a national level

The first two areas are the biggest areas that need to be addressed at Wicklow Mountains National Park. (personal communication, Questionnaire B, July 25, 2008)

6.1 Conclusions

Despite the fact that the park service in the United States of America is a larger and longer established park service than that of the national park service in the Republic of Ireland the park services of both countries are very similar in how they deal with health and safety issues. Also, both park services are currently revising their safety programme. Both of the park services' health and safety programmes must be in compliance with legislation that governs their respective countries. The two countries' legislation is very similar with only a couple of differences on how the two park services approach health and safety. One example of this is that at the NPS it is a legal requirement for awards to be given to individuals or teams for outstanding safety performance. Thus, to be in compliance with legislation the NPS must have an award scheme. Recognition of outstanding safety performance is not legally required in the Republic of Ireland and the NPWS does not have an award scheme.

The NPS and NPWS approach to employee safety has some similarities and differences. Both park services are similar in the fact that 50% of the respondents to Questionnaire B stated that their park focuses more on employee safety than on visitor safety. However, due to the small sampling size of this project the results may not be actually portraying the whole picture. Also, with both park services there is training on the national and local level. However, at the NPS there currently is no programme director while at NPWS there is someone overseeing employee safety at the national level. The NPS has a more varied training schedule for their employees, depending on the employees' duties. The NPWS has a more uniform approach to

the amount of safety training that each employee receives per year. The issue of getting employees to report safety concerns without the fear of reprimand, as was found in the Department of the Interior Audit that was discussed in Chapter Two, was also found in this study. At the NPWS getting employees to report safety concerns was not raised as an issue that the service faces. Due to issues of confidentiality the author could not get figures on employee incidents for both park services. Therefore, it is not possible to analyze whether there is a higher percentage of employee injury at NPS or NPWS.

Safety is covered in-depth in the different park's websites at the NPS. The parks at the NPWS that do have safety information on their website have only brief information, and only Wicklow Mountains National Park has a separate page dealing with safety. Also, none of the parks at the NPWS have current park information such as weather, temperature and trail/ road closures on their website.

In regards to visitor safety the NPS has a much larger system in place. This is to be expected due to the fact that the NPS would have a vastly greater number of visitors per year. For example, the NPS has search and rescue teams, emergency medical services and fire brigades. There is currently no need for the NPWS to have search and rescue teams and emergency medical services. At the NPS each park has a system to record visitor numbers although the system can miss visitors. The visitation statistics for each National Park is available on the NPS website. Not all the parks at NPWS have a system to count visitors and those that do, do not have a daily counting system. Thus, the numbers of visitors to any of the NPWS is a gross estimate. The fact that both NPS and NPWS do not have in place a system where every visitor to their National Park is counted makes it difficult to have a precise

percentage of visitors that are being injured in the different parks each year.

Therefore, it is difficult to tell if any new safety measures are having an effect.

Both the NPS and the NPWS have a system to record employee and visitor injuries. However, in the author's opinion the recording methods of both the NPS and NPWS needs to be improved and the system is not being fully utilized as a tool for safety. In fact, two aims of this project, using a GIS to map out where the individuals are injured in order to see if there is an area or series of areas that have a high injury rate, and looking at the number of incidents occurring in each park that is being sampled could not be completed due to problems with the NPS and NPWS recording system. Mapping out where the injuries occurred could not be completed for either the NPS or the NPWS. The centralized recording system of the NPS is just count data and does not reveal where the injuries occurred. The NPWS recording system has that information, but the data has not been processed. The fact that there is not a national agreement with the different search and rescue teams means that there is a high likelihood that there are injuries that are being uncounted. With Killarney National Park there are certainly injuries occurring on the Park's lands that are not being recorded, due to the fact that unless a visitor's injury is attended to by a Park employee or if a visitor believes the Park was negligent and takes legal action against the Park, the visitor's injury is not recorded. Also, the author was unable to obtain incident data for all the parks at NPWS. The NPS recording system is too messy and there are too many systems in place and the systems are not linked by an identifier. The centralized recording system that is in place leaves a lot to be desired. The PMDS is just count data which has limited usefulness as a tool for improving safety. By not having any detail on how the injuries have occurred, it is impossible

to know where to focus resources for safety. The issue of the recording system at NPS was brought up multiple times including: the Department of the Interior Audit and the two previous studies discussed in Chapter Two. The NPWS has a better recording system in place in that there is one recording system which would include information on where the person was, how the person was injured and what part of their body was injured and other demographic information. However, the fact that the data has not been processed and the fact that there is a high probability that many visitor injuries are going unrecorded means that the recording system is not being fully utilized. These issues could lead to difficulties for the NPWS or individual parks to make decisions on if the NPWS need search and rescue teams or emergency medical services if visitation numbers rose. In fact, in the author's opinion the issues with the recording system at NPS and NPWS are the most serious flaws with their safety programme. If the recording system is not working well there is no way to telling if safety measures currently in place are working or where to focus the limited resources available.

6.2 Recommendations

Although both the United States of America and the Republic of Ireland National Parks have low numbers of injuries and the safety programme for both countries seems to be working well, improvements are needed for both countries.

6.2.1 Recommendations for Both the NPS and NPWS

The author would make the following recommendations for both the NPS and the NPWS:

- A check list for safety and steps to take before visiting the park should be available and easily accessible on all of the individual park websites.
- A current conditions of the park bulletin which includes trail closure, weather, temperature and any other relevant information should be available on all of the individual park's websites and updated daily.
- On each park's website there should be a section for visitors to report injuries, safety concerns and near misses that they may have encountered while visiting the park. This section should include a map where the visitors can locate where they were injured and an injury report form which includes type of injury, how the person was injured, date the person was injured, and demographic information. For validation the person filling out the report form can give their e-mail address and/or phone number.
- There should be a requirement that all of the parks have a comprehensive safety management system where there is a standardized way of assessing safety issues that includes a record of when, where, name of person doing the inspection and conditions of the area that is being inspected. Each park would be responsible for deciding what areas need to be inspected and how often the inspections should be done.

- A website should be available for employees anonymously report health and safety concerns.
- Cluster Maps can be used to identify areas in the individual parks where multiple injuries are occurring. Thus allowing the parks to identify problem areas and focusing their resources where they are needed.
- For the parks who have public outreach programmes, park safety should be included as part of the programme.
- There should be a more accurate measurement of number of people using the different trails and sections of the different parks. By having a more accurate measurement of trail usage the different parks would have a better understanding of how to approach safety with their limited resources. Also, the parks can get a better idea of the percentage of injuries that occur on the different trails.
- Each park should have an internal audit every couple of years which includes health and safety and the Departments that oversee the national parks should have an external audit which includes health and safety at least once every five years.

6.2.2 Recommendations for the NPS

The author would make the following recommendations for the NPS:

- There should be a centralized system for recording injuries and fatalities in parks, one for visitors and one for employees. The reporting form should include detailed information on what the person was doing and where they

were when the injury occurred, what part of their body was injured and the severity of the injury and demographic information. This one standardized reporting form would be used by all of the parks and the different emergency services in the parks. Periodically, the different emergency services would give copies of the reports to the Park Manager who would report this information to the Regional Manager, who would in turn report this information to the Risk Management Programme Manager. The data should be kept at the national level with the data for the individual parks and regions kept separately so that if a person wanted to know the injury data for an individual park or region that data can be easily obtained.

- There should be a system in place for temporary safety managers to deal with absences or if someone suddenly leaves the NPS. There should be this system in place at the park, regional and national level.
- Safe Operating Procedures documents should be in place at each park to accompany training. Employees should be required to refer to the Safe Operating Procedure document for the specific task before performing that task.
- The NPS should follow the recommendations of the auditors from the audit report on *Health and Safety Concerns of the Interior's Facilities*. It is also recommended that the U.S government should provide the NPS with adequate funding to deal with the ageing infrastructure and the consequent safety issues.

6.2.3 Recommendations for the NPWS

The author would make the following recommendations for the NPWS:

- There should be a national level agreement between IMRA and the NPWS that if IMRA is called out to National Park lands that the NPWS is made aware of the callout and records the information. This is needed so that the NPWS would have more accurate information on visitor injuries.
- To have a more accurate system of recording visitor numbers to the different parks.
- Have an award system in place for both employees and individual parks that have performed exceptionally well in safety aspects.
- Have the incident report forms data analyzed and easily accessible.
- Learn from the NPS and carry out maintenance within a reasonable time span. Also, when performing maintenance duties it is more effective in the long run to use more costly materials that fully repair the situation than to use cheaper materials that only provide a temporary solution

6.2.4 Recommendations for Further Study

This project was never meant to be a once off study. It is recommended that in a few years that the safety at the NPS and NPWS is re-examined at either separately or as a follow up comparison study. Also, a study that would compare different National Park Services worldwide would be a step in outlining international guidelines for safety in national parks.

References

The Executive Branch of the United States of America. (1980a). *Executive Order 12196, Occupational Safety and Health Programs for Federal Employees* [online].

The U.S. National Archives and Records Administration, 8601 Adelphi Road, College Park, MD 20740-6001. Available from: <http://www.archives.gov/federal-register/codification/executive-order/12196.html> [Accessed 23 April 2008]

The Executive Branch of the United States of America. (1980b). *Title 9 of the Code of Federal Regulations, Part 1960* [online]. The U.S. National Archives and Records Administration, 8601 Adelphi Road, College Park, MD 20740-6001. Available from: <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr;sid=9a1d51ef8d1ac9a7565a5d3e035390f8;rgn=div5;view=text;node=29%3A9.1.1.1.9;idno=29;cc=ecfr> [Accessed 23 April 2008]

Fitzpatrick, A. (Ann_Fizpatrick@environ.ie). (July 01,2008). *Re: Thesis-Mountain Rescue Ireland*. e-mail to K. Sutton (S00075428@itsligo.ie)

Foley, P. July 25, 2008. *Questionnaire B*

Hassett, S. (seamus_hassett@environ.ie). (May 21, 2008). *RE: Master's Thesis*. e-mail to K. Sutton (S00075428@itsligo.ie)

Hooker, K., Shalit, M., 2000. Subterranean Medicine: An inquiry Into Underground Medical Treatment Protocols in Cave Rescue Situation in National Parks in the United States. *Wilderness and Environmental Medicine*, 11 (1), 17-20

Houses of the Oireachtas,.(1995). *Occupiers' Liability Act 1995* [online]. Houses of the Oireachtas, Leinster House, Dublin 2. Available from:

<http://acts.oireachtas.ie/zza10y1995.1.html> [Accessed 30 June 2008]

Houses of the Oireachtas,.(2005). *Safety ,Health and Welfare at Work Act 2005* [online]. Houses of the Oireachtas, Leinster House, Dublin 2. Available from:

<http://www.oireachtas.ie/documents/bills28/acts/2005/a1005.pdf> [Accessed 25 October 2007],18,19 21-25,30,34

Irish Mountain Rescue Association, 2008. *Irish Mountain Rescue Association Incident Statistic Report 2007*. SportHQ13 Joyce WayPark West Business Park Dublin 12: Irish Mountain Rescue Association

Johnson, R. M., Huettl, B., Koesis, V., Chan, S. B., Kordick, M. F., 2007. Injuries Sustained at Yellowstone National Park Requiring Emergency Medical System Activation. *Wilderness and Environmental Medicine*,18 (2), 186-189

Morris, K. July 24, 2008. *Questionnaire B*

National Park Service. (1999). *National Park Service Director's Order #50B and Reference Manual #50B Occupational Safety and Health Program* [online]. U.S Department of the Interior. Available from:

<http://www.nps.gov/refdesk/DOrders/DOrder50B.html> [Accessed 01 July 2008]

National Park Service. (2002). *West Nile Virus* [online]. U.S Department of the Interior. Available from:

<http://www.nps.gov/ever/planyourvisit/upload/westnilevirus.pdf> [Accessed 20 July 2008]

National Park Service. (2008a). *History* [online]. U.S Department of the Interior.

Available from: <http://www.nps.gov/aboutus/history.htm> [Accessed 10 April 2008]

National Park Service. (2008b). *Big Bend National Park* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/bibe/index.htm> [Accessed 25 May 2008]

National Park Service. (2008c). *Big Bend National Park History and Culture* [online]. U.S Department of the Interior. Available from:

<http://www.nps.gov/bibe/historyculture/index.htm> [Accessed 25 May 2008]

National Park Service. (2008d). *Big Bend National Park, How Big Is It?* [online]. U.S Department of the Interior. Available from:

http://www.nps.gov/bibe/parkmgmt/park_sizes.htm [Accessed 25 May 2008]

National Park Service. (2008e). *National Park Service Public Use Statistics Office*[online]. U.S Department of the Interior. Available from:
<http://www.nature.nps.gov/stats/viewReport.cfm> [Accessed 25 May 2008]

National Park Service. (2008f). *Big Bend National Park, Nature and Science*[online]. U.S Department of the Interior. Available from:
<http://www.nps.gov/bibe/naturescience/index.htm> [Accessed 25 May 2008]

National Park Service. (2008g). *Death Valley National Park* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/deva/index.htm>
[Accessed 26 May 2008]

National Park Service. (2008h). *Death Valley National Park, Plants* [online]. U.S Department of the Interior. Available from:
<http://www.nps.gov/deva/naturescience/plants.htm> [Accessed 26 May 2008]

National Park Service. (2008i). *Death Valley National Park, Animals* [online]. U.S Department of the Interior. Available from:
<http://www.nps.gov/deva/naturescience/animals.htm> [Accessed 26 May 2008]

National Park Service. (2008j). *Death Valley National Park, People* [online]. U.S Department of the Interior. Available from:
<http://www.nps.gov/deva/historyculture/people.htm> [Accessed 26 May 2008]

National Park Service. (2008k). *Death Valley Ghost Towns* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/deva/historyculture/death-valley-ghost-towns.htm> [Accessed 26 May 2008]

National Park Service. (2008l). *Everglades National Park* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/ever/index.htm> [Accessed 1 April 2008]

National Park Service. (2008m). *Everglades National Park, Natural Features and Ecosystems* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/ever/naturescience/naturalfeaturesandecosystems.htm> [Accessed 1 April 2008]

National Park Service. (2008n). *Everglades National Park, Nature and Science* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/ever/naturescience/index.htm> [Accessed 1 April 2008]

National Park Service. (2008o). *Everglades National Park, Native Peoples* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/ever/historyculture/nativepeoples.htm> [Accessed 1 June 2008]

National Park Service. (2008p). *Great Smokey Mountains National Park* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/grsm/> [Accessed 2 April 2008]

National Park Service. (2008q). *Great Smokey Mountains National Park, Natural Features and Ecosystems* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/grsm/naturescience/naturalfeaturesandecosystems.htm> [Accessed 2 June 2008]

National Park Service. (2008r). *Great Smokey Mountains National Park, Nature and Science* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/grsm/naturescience/index.htm> [Accessed 2 June 2008]

National Park Service. (2008s). *Great Smokey Mountains National Park, People* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/grsm/historyculture/people.htm> [Accessed 2 June 2008]

National Park Service. (2008t). *Wind Cave National Park, Management* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/wica/parkmgmt/index.htm> [Accessed 3 June 2008]

National Park Service. (2008u). *Wind Cave National Park, Nature and Science* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/wica/naturescience/index.htm> [Accessed 3 June 2008]

National Park Service. (2008v). *A Brief History of Wind Cave National Park* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/wica/historyculture/learning-about-the-park.htm> [Accessed 3 April 2008]

National Park Service. (2008w). *Yellowstone National Park* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/yell/index.htm> [Accessed 5 June 2008]

National Park Service. (2008x). *Yellowstone National Park, Nature and Science* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/yell/naturescience/index.htm> [Accessed 5 June 2008]

National Park Service. (2008y). *Yellowstone National Park, Plants and Wildflowers* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/yell/naturescience/plants.htm> [Accessed 5 June 2008]

National Park Service. (2008z). *Selected Yellowstone Animals* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/yell/naturescience/animals.htm> [Accessed 5 June 2008]

National Park Service. (2008a1). *Indians and Early Explorers in Yellowstone* [online]. U.S Department of the Interior. Available from: <http://www.windowsintowonderland.org/history/indians&explorers/index.htm> [Accessed 5 June 2008]

National Park Service. (2008b1). *Organization*[online]. U.S Department of the Interior. Available from: <http://www.nps.gov/aboutus/organization.htm> [Accessed 10 April 2008]

National Park Service. (2008c1). *Wildland Fire Management Reference Manual 18* [online]. U.S Department of the Interior. Available from: http://www.nps.gov/fire/download/fir_wil_rm18.pdf [Accessed 12 July 2008], Chapter10,p 2

National Park Service, 2008d1. *The Public Risk Management Program Strategic Plan*. Version March 2008. Unpublished, 2-9

National Park Service, 2008e1. *Public Health Program Annual Meeting*. Version March 2008. Unpublished, 4-19,24-29,33,41

National Park Service. (2008f1). *Your Safety* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/bibe/planyourvisit/yoursafety.htm> [Accessed 20 July 2008]

National Park Service. (2008g1). *Border Safety* [online]. U.S Department of the Interior. Available from: http://www.nps.gov/bibe/planyourvisit/border_safety.htm [Accessed 20 July 2008]

National Park Service. (2008h1). *Your Safety* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/deva/planyourvisit/yoursafety.htm> [Accessed 20 July 2008]

National Park Service. (2008i1). *Morning Report* [online]. U.S Department of the Interior. Available from: http://www.dvnha.org/morning_report/Morning.pdf [Accessed 20 July 2008]

National Park Service. (2008j1). *Things to Know Before You Come* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/ever/planyourvisit/things2know.htm> [Accessed 20 July 2008]

National Park Service. (2008k1). *Trails* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/ever/planyourvisit/trails.htm> [Accessed 20 July 2008]

National Park Service. (2008l1). *Your Safety* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/grsm/planyourvisit/yoursafety.htm> [Accessed 20 July 2008]

National Park Service. (2008m1). *Water Safety* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/grsm/planyourvisit/watersafety.htm> [Accessed 20 July 2008]

National Park Service. (2008n1). *Motorcycle Safety* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/grsm/planyourvisit/motorcycle.htm> [Accessed 20 July 2008]

National Park Service. (2008o1). *Hiking Safety* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/grsm/planyourvisit/hikingsafety.htm> [Accessed 20 July 2008]

National Park Service. (2008p1). *For Your Safety*[online]. U.S Department of the Interior. Available from: <http://www.nps.gov/wica/planyourvisit/tour-hearing-impaired-safety.htm> [Accessed 20 July 2008]

National Park Service. (2008q1). *Information Every Visitor Needs to Know* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/yell/planyourvisit/yoursafety.htm> [Accessed 20 July 2008]

National Park Service. (2008r1). *Minimizing the Dangers of a Bear Encounter*[online]. U.S Department of the Interior. Available from: <http://www.nps.gov/yell/planyourvisit/bearenc.htm> [Accessed 20 July 2008]

National Park Service. (2008s1). *Wildlife Related Videos* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/archive/yell/insideyellowstone/0042wildlife.htm#respectwildlife> [Accessed 20 July 2008]

National Park Service. (2008t1). *Backcountry Camping & Hiking* [online]. U.S Department of the Interior. Available from: <http://www.nps.gov/yell/planyourvisit/backcountryhiking.htm> [Accessed 20 July 2008]

National Park Service. (2008u1). *Current Conditions and Updates*[online]. U.S Department of the Interior. Available from: <http://www.nps.gov/yell/conditions.htm> [Accessed 20 July 2008]

National Park and Wildlife Service. (2007a). *About Us* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from: <http://www.npws.ie/en/AboutUs/> [Accessed 1 October 2007]

National Park and Wildlife Service, 2007b. *National Parks and Wildlife Field Staff Training Course List with statements of Objectives*. Unpublished

National Park and Wildlife Service. (2008a). *Ballycroy National Park* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from: <http://www.ballycroynationalpark.ie/> [Accessed 6 June 2008]

National Park and Wildlife Service. (2008b). *Ballycroy National Park, History* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from: <http://www.ballycroynationalpark.ie/history.html> [Accessed 6 June 2008]

National Park and Wildlife Service. (2008c). *Connemara National Park* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from: <http://www.connemaranationalpark.ie/> [Accessed 6 June 2008]

National Park and Wildlife Service. (2008d). *Connemara National Park, Wildlife* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from: <http://www.connemaranationalpark.ie/wildlife.html> [Accessed 6 June 2008]

National Park and Wildlife Service. (2008e). *Welcome to Glenveagh National Park* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from: <http://www.glenveaghnationalpark.ie/> [Accessed 6 June 2008]

National Park and Wildlife Service. (2008f). *Glenveagh National Park, Wildlife* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from: <http://www.glenveaghnationalpark.ie/wildlife.html> [Accessed 6 June 2008]

National Park and Wildlife Service. (2008g). *Glenveagh National Park, History* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from: <http://www.glenveaghnationalpark.ie/history.html> [Accessed 6 June 2008]

National Park and Wildlife Service. (2008h). *Killarney National Park* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from: <http://www.killarneynationalpark.ie/about.html> [Accessed 7 June 2008]

National Park and Wildlife Service. (2008i). *Welcome to Killarney National Park Website* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from: <http://www.killarneynationalpark.ie/> [Accessed 7 June 2008]

National Park and Wildlife Service. (2008j). *Killarney National Park, History* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from: <http://www.killarneynationalpark.ie/history.html> [Accessed 7 June 2008]

National Park and Wildlife Service. (2008k). *Welcome to the Burren National Park Website* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from: <http://www.burrennationalpark.ie/> [Accessed 7 April 2008]

National Park and Wildlife Service. (2008l). *Burren National Park, Wildlife* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from: <http://www.burrennationalpark.ie/wildlife.html> [Accessed 7 June 2008]

National Park and Wildlife Service. (2008m). *Burren National Park, History* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from: <http://www.burrennationalpark.ie/history.html> [Accessed 7 June 2008]

National Park and Wildlife Service. (2008n). *Welcome to Wicklow Mountains National Park* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from: <http://www.wicklowmountainsnationalpark.ie/> [Accessed 7 June 2008]

National Park and Wildlife Service. (2008o). *Wicklow Mountains National Park, Wildlife* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from: <http://www.wicklowmountainsnationalpark.ie/wildlife.html> [Accessed 7 June 2008]

National Park and Wildlife Service. (2008p). *Wicklow Mountains National Park, History* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2.

Available from: <http://www.wicklowmountainsnationalpark.ie/history.html>

[Accessed 7 June 2008]

National Park and Wildlife Service, 2008q. *National Parks and Wildlife Service Safety Statement, Mid West Region*. Version 24/01/08. Unpublished,5,6,8-12, 16-278

National Parks and Wildlife Service, 2008r. *Wicklow District Health and Safety Committee Annual Report 2007*. Unpublished

National Park and Wildlife Service.(2008s). *Visit US* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from:
<http://www.ballycroynationalpark.ie/visit.html> [Accessed 21 July 2008]

National Park and Wildlife Service.(2008t). *Visit US* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from:
<http://www.glenveaghnationalpark.ie/visit.html> [Accessed 21 July 2008]

National Park and Wildlife Service, 2008u. *Wicklow National Park Risk Assessment*. Unpublished

National Park and Wildlife Service, 2008v. *Working Draft Terms of Reference for South-Eastern Region Safety Committee*. Version 22/2.08. Unpublished

National Park and Wildlife Service.(2008w). *Activites* [online]. National Parks & Wildlife Service, 7 Ely Place, Dublin 2. Available from:
<http://www.wicklowmountainsnationalpark.ie/activities.html> [Accessed 21 July 2008]

Newman, S. April 08,2008 . *Questionnaire A*

Newman, S. (sara_newman@nps.gov). (May 09, 2008). *Re: The 6 Parks*. e-mail to K. Sutton (S00075428@itsligo.ie)

Newman,S. (sara_newman@nps.gov). (July 01,2008). *RE: A question*. e-mail to K. Sutton (S00075428@itsligo.ie)

Newman, S. (sara_newman@nps.gov). (July 09, 2008). *RE: The last two parks*. e-mail to K. Sutton (S00075428@itsligo.ie)

Newman,S. (sara_newman@nps.gov). (July 14,2008). *RE: The last two parks*. e-mail to K. Sutton (S00075428@itsligo.ie)

Newman, S. (sara_newman@nps.gov). (July 23, 2008). *RE: The Hecht Public Safety Award*. e-mail to K. Sutton (S00075428@itsligo.ie)

Occupational Safety and Health Administration. (2006). *PART 1910 -- OCCUPATIONAL SAFETY AND HEALTH STANDARDS*. U.S Department of Labor.

Available from:

[http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS
&p_id=9696](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9696) [Accessed 23 April 2008]

Office of Public Works. (2008). *History*[online].Office of Public Works, 51 St.

Stephen's Green, Dublin2. Available from: http://www.opw.ie/about/fr_history.htm

[Accessed 18 January 2008]

Ó hAisibéil, L. (aspell.liam@gmail.com). (July 02,2008). *Re: Thesis-Mountain Rescue Ireland*. e-mail to K. Sutton (S00075428@itsligo.ie)

O'Mahony , C. (ciara_o'mahony@environ.ie). (June 15,2008). *Re: Documents*. e-mail to K. Sutton (S00075428@itsligo.ie)

O' Mahony, C. July 07, 2008. *Questionnaire B*

Oppenheim, A.N., 2003. *Questionnaire Design, Interviewing and Attitude Measurement*. New Edition. The Tower Building, 11 York Road, London SE1 7NX: Pinter Publications, 113-115

Powell, R. (Richard.Powell@nps.gov). (June 26,2008). *Re: Employee data*. e-mail to K. Sutton (S00075428@itsligo.ie)

Senate and House of Representatives of the United States of America in Congress assembled. (1970[amendment in 2004]). *Occupational Safety and Health Act of 1970*[online]. Occupational Safety & Health Administration, 200 Constitution Avenue, NW Washington, DC 20210. Available from:
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=OSHACT&p_id=2743 [Accessed 23 April 2008]

Senate and House of Representatives of the United States of America in Congress assembled. (1993). *Government Performance and Results Act of 1993*[online]. Office of Management and Budget. Available from:
<http://www.whitehouse.gov/omb/mgmt-gpra/gplaw2m.html> [Accessed 1 May 2008]

Smith, B. July 09, 2008 . *Questionnaire B*

Strong, D. (Denis.Strong@environ.ie). (May 06, 2008). *RE: Master's Thesis*. e-mail to K. Sutton (S00075428@itsligo.ie)

U.S. Department of the Interior Office of Inspector General. (2008). *U.S. Department of the Interior Office of Inspector General Audit Report, Health and Safety Concerns at Department of Interior's Facilities* [online]. U.S. Department of the Interior Office of Inspector General, Mail Stop 5341 MIB 1849 C Street, NW Washington, D. C. 20240. Available from: <http://www.doioig.gov/upload/2008-G-00171.pdf> [Accessed 23 June 2008],1,4,7,8,11,13,18-20,22,23,25-27,37,47

Warner, P. March 12, 2008 . *Questionnaire A*

APPENDIX A

Twelve Duties of the Heads of Agencies:

1. Furnish to employees places and conditions of employment that are free from recognized hazards that are causing or are likely to cause death or serious physical harm.
2. Operate an occupational safety and health program in accordance with the requirements of this order and basic program elements designed by the Secretary.
3. Designate an agency official with sufficient authority who would be responsible for the management and administration of the agency occupational safety and health program.
4. Comply with all standards issued under the Act, except where the Secretary approves compliance with alternative standards.
5. Ensure prompt abatement of unsafe or unhealthy working conditions.

Whenever an agency cannot promptly abate such conditions, it shall develop an abatement plan setting forth a timetable for abatement and a summary of interim steps to protect employees. Employees exposed to the conditions shall be informed of the provisions of the plan. When a hazard cannot be abated without assistance of the General Services Administration or other Federal lesser agency, an agency shall act with the lesser agency to secure abatement.
6. Establish procedures to ensure that no employee is subject to restraint, interference, coercion, discrimination or reprisal for filing a report of an

unsafe or unhealthy working condition, or other participation in agency occupational safety and health program activities.

7. Ensure that periodic inspections of all agency workplaces are performed by personnel with equipment and competence to recognize hazards.
8. Ensure response to employee reports of hazardous conditions and require inspections within twenty-four hours for imminent dangers, three working days for potentially serious conditions, and twenty working days for other conditions. Assure the right to anonymity of those making the reports.
9. Ensure that employee representatives accompany inspections of agency workplaces.
10. Operate an occupational safety and health management information system, which shall include the maintenance of such records as the Secretary may require.
11. Provide safety and health training for supervisory employees, employees responsible for conducting occupational safety and health inspections, all members of occupational safety and health committees where established, and other employees.
12. Submit to the Secretary an annual report on the agency occupational safety and health program that includes information the Secretary prescribes.

APPENDIX B

Criteria of a Well-Designed Health and Safety Programme:

The Department of the Interior which oversees the National Park Service should have the following for a well-designed Health and Safety Program:

- The Department designates a Designated Agency Safety and Health Official and this person should have a rank of Assistant Secretary (Code of Federal Regulations 29 C.F.R§ 1960.6)
- The Department's Office of Occupational Health and Safety has an adequate budget and staff to implement the Department's health and safety programme (Code of Federal Regulations 29 C.F.R§ 1960.6)

The National Park Service should have the following criteria for a well-designed health and safety programme:

- Have a Health and Safety budget that includes appropriate financial and other resources to effectively implement and administer its health and safety plan (Code of Federal Regulations 29 C.F.R§ 1960.7)
- Have sufficient personnel at all levels, plus funding for administrative costs, travel expenses and protective equipment to administer its health and safety programme (Code of Federal Regulations 29 C.F.R§ 1960.7)
- Have and use health and safety inspectors that have equipment and competence to recognize hazards (Code of Federal Regulations 29 C.F.R§ 1960.25)

- Inspect each workplace, including office operations at least annually (Code of Federal Regulations 29 C.F.R§ 1960.25)
- Promptly abate all unsafe and unhealthful conditions (Code of Federal Regulations 29 C.F.R§ 1960.30)
- Performs a sufficient number of unannounced inspections and unannounced follow-ups to ensure the abatement of hazardous conditions (Code of Federal Regulations 29 C.F.R§ 1960.25)
- Post each Notice of Unsafe or Unhealthful Working Conditions that includes a full description of the unsafe or unhealthful working condition and planned abatement schedule until the hazard has been abated or for 3 working days, whichever is later (Code of Federal Regulations 29 C.F.R§ 1960.26)
- Include in its health and safety procedures the right of each employee to report unsafe and unhealthful conditions without threat of restraint, interference, coercion, discrimination or reprisal for filing a report (Code of Federal Regulations 29 C.F.R§ 1960.46)
- Provide adequate training for all supervisory employees and for safety and health specialists (Code of Federal Regulations 29 C.F.R§ 1960.55 and 29 C.F.R§ 1960.56)
- Implement career development programmes for their occupational safety and health specialists enabling the specialists to meet present and future safety and health program needs (Code of Federal Regulations 29 C.F.R§ 1960.56)

- Each employee serving in a collateral duty safety and health position receives safety and health training within 6 months of assignment (Code of Federal Regulations 29 C.F.R§ 1960.57)
- Provide appropriate safety and health training for employees including specialized job safety and health training appropriate to the work performed by the employee, the training also shall inform employees of the occupational safety and health program, with emphasis on their rights and responsibilities. (Code of Federal Regulations 29 C.F.R§ 1960.59)
- Establish committees to monitor and assist with its safety programme (Code of Federal Regulations 29 C.F.R§ 1960.37)
- Safety and health personnel are held accountable for their individual safety and health programmes (Code of Federal Regulations 29 C.F.R§ 1960.11)
- Recognize superior performance in discharging safety and health responsibilities by individuals or groups (Code of Federal Regulations 29 C.F.R§ 1960.11)

APPENDIX C

Information Included in the Safety Statement are:

- The hazards identified and the risks assessed
- The protective and preventive measures taken and the resources allocated to safety health and welfare
- The plans and procedures for dealing with emergencies
- The duties of employees
- The names and job titles of persons assigned to perform tasks pursuant to the safety statement
- The arrangements for the appointment of safety representatives and safety consultation at the work place and the names of any safety representatives and/or safety committee members

APPENDIX D

The 9 General Principles of Prevention are:

1. The avoidance of risks.
2. The evaluation of unavoidable risks.
3. The combating of risks at source.
4. The adaptation of work to the individual, especially as regards the design of places of work, the choice of work equipment and the choice of systems of work, with a view, in particular, to alleviating monotonous work and work at a predetermined work rate and to reducing the effect of this work on health.
5. The adaptation of the place of work to technical progress.
6. The replacement of dangerous articles, substances or systems of work by safe or less dangerous articles, substances or systems of work.
7. The giving of priority to collective protective measures over individual protective measures.
8. The development of an adequate prevention policy in relation to safety, health and welfare at work, which takes account of technology, organisation of work, working conditions, social factors and the influence of factors related to the working environment.
9. The giving of appropriate training and instructions to employees.

APPENDIX E

The Topics the Emergency Plan Must Cover:

1. first aid, fire-fighting,
2. the evacuation of employees and others present in the workplace,
3. contact with the appropriate emergency services with regard to first aid, emergency medical care, fire fighting and rescue arrangements,
4. the designation of employees to implement the emergency plan, emergency procedures or necessary measures,
5. the number of those designated employees, their training and the appropriate equipment available to them.

APPENDIX F

The Duties of the Employer are:

- The management and conduct of the work place
- Preventing improper conduct or behaviour
- The design, provision and maintenance of safe work places, safe means of access and egress from the workplace and safe plant and machinery
- Ensuring safety and prevention of risk from the use of any substances or articles from noise, vibration or ionising or other radiations or any other physical agent at the place of work
- Providing safe systems of work
- Providing adequate welfare facilities
- Provision of adequate instruction, training and supervision and any necessary information
- Preparing risk assessments and safety statements that take account of the general principles of prevention when implementing necessary safety, health and welfare measures
- Provision and maintenance of suitable personal protective equipment where risks cannot be eliminated or where such equipment is prescribed
- The preparation and where necessary the revision of adequate plans and procedures to be followed and measures to be taken in case of an emergency or the presence of serious or imminent danger

- To report accidents and dangerous occurrences to the Authority as required by the Regulations under the Act
- To obtain where necessary the services of a competent person to assist in ensuring the safety, health and welfare of their employees

APPENDIX G

The Duties of Employees:

- comply with safety and health legislation
- take reasonable care to protect his or her own safety, health and welfare and that of any other person who may be affected by his or her acts or omissions at work
- not be under the influence of alcohol , drugs or combination of the two to the extent of endangering themselves or others
- if reasonably required by their employer submit to any appropriate, reasonable and proportionate tests by or under the supervision of a registered medical practitioner who is competent
- co-operate with his or her employer or any other person as necessary to assist that person in complying with safety and health legislation
- do not engage in improper conduct or other behaviour such as violence, bullying or horseplay which could endanger another person at work
- where safety and health training related to a particular task is required, attend and undergo any reasonable assessment required by the employer or prescribed in Regulations
- taking account of the training and instructions given by the employer, correctly use any article or substance of protective clothing and equipment for the use at work or for his or her protection

APPENDIX H

Questionnaire A

1. What legislation covers the Health and Safety in National Parks? Where can I access this information?
2. Is there EU legislation that deals with health and safety in the parks that the park service must follow? If so what is it? Where can I access this information?
3. Is there any UN or World legislation or requirements dealing with health and safety in the parks that the park service must follow? If so what is it? Where can I access this information?
4. Does the park service have a system to record data when someone in the park gets injured?
5. Is the data for visitor injuries and employee injuries recorded separately or together?
6. Does the park service have information on where the person was when they were injured?
7. Does the park service have information on the severity of the injury?
8. Does the park service have data on search and rescues that have been done?
9. Does the park service have data on how many people had to be hospitalized due to their injuries?
10. Does the park service have data on how many injuries ended up with someone being air lifted?
11. Does the park service have data on what the person was doing when they got injured?
12. Does the park service have data on near misses when someone almost got hurt but did not?

13. How does the park service deal with near misses?
14. Who records the data and what do they do with it?
15. Is there evidence of the data impacting on policy for managing the parks?
16. Can I get access to the data sets and from whom?
17. Do you have visitation numbers for the parks? If so where can I get them?
18. How does the park service approach the health and safety training of park employees? Is it a central training program that all must attend or does each park deal with the training of their employees?
19. What is the level of training?
20. How often is the training repeated and how often the employees take a refresher course? Do they have to redo the whole training or is it just a refresher course?
21. If a person is injured at a park do the employees have to do a refresher course on health and safety?
22. Is the training re-examined at if there is a major injury
23. How often is the training course changed?
24. If the training course is changed do all employees have to take the new course?
25. Are there EU standards that the training course must abide by? If so, what are they?
26. Are there international standards that the training course must abide by? If so what are they?
27. Where can I get copies of the syllabus for the training course(s)?

28. In your opinion are there any improvements that the park service can be doing in regards to health and safety?

APPENDIX I

Questionnaire B

Name and Title:

Park:

1. Does the Park focuses more on employee safety or visitor safety?

A:

2. Is there guidance on visitor safety in the Park's management plan?

A: Yes No

3. Is there guidance on employee safety in the Park's management plan?

A: Yes No

4. Does the Park have a system to record how many visitors come to the Park?

A: Yes No If answered yes, please explain the system below:

5. Can visitors enter the Park without a Park employee knowing that the visitor is on Park grounds?

A: Yes No

6. How often are the rangers in the Park trained in safety issues dealing with the Park and what type of training do rangers receive?

A:

7. What measures are taken if an employee has an incident?

A:

8. Does the Park have a volunteer organisation associated with it? (If answered yes see question 9)

A: Yes No

9. What type of safety training do volunteers of the park get?

A:

10. How often does your National Park liaise with other National Parks in regards to safety for visitors? Please provide an example:

A:

11. How often does your National Park liaise with other National Parks in regards to safety for employees? Please provide an example:

A:

12. Does the Park liaise with other relevant organizations in dealing with safety in the Park? (mountain rescue, coast guard and other rescue services that are not part of the Park)

A: Yes (if answered yes, please list the other organizations) No

The other organizations are:

13. How many times per year are there safety meetings?

A:

14. How often is safety discussed when having Park related meetings?

A: Every meeting More than half of the meetings Half of the meetings Less than half of the meetings Never

15. In your park what is the biggest safety issue for visitors?

A:

16. In your park what is the biggest safety issue for employees?

A:

17. Does your National Park do public outreach programmes? (If answer yes, please see question 18)

A: Yes No

18. Do any of the public outreach programmes include safety issues?

A: Yes No

19. Does the Park receive adequate funding to deal with health and safety issues?

A: Yes No

20. Do you collect data on the number of safety incidents (near misses and injuries) occurring with visitors and employees? If so, what do you do with the data and where can I obtain these data?

A:

21. Do you feel that a centralized system that provides centralized safety training, guidance and tools for the National Parks is useful? If so, why?

A:

22. In your opinion are there any improvements that the park service can make in regards to safety for both employee and visitor?

A:

23. Please comment on anything else that you feel is important in regards to dealing with safety in your Park.

A:

APPENDIX J

Roles and Responsibilities at the NPS

A. Director

1. Sets forth Service-wide occupational safety and health policies and goals, and establishes a system of accountability for accomplishment of those policies and goals.
2. Issues Director's Orders to meet safety and health needs of the Service.
3. Designates an Agency Safety and Health Official (Bureau DASHO).

B. Associate Director

1. Serves as the "Designated Agency Safety and Health Official" (DASHO) for the National Park Service. Participates in Departmental DASHO Council meetings.
2. Exercises the authority of the Director to develop and manage the Service's occupational safety and health program that results in the achievement of this policy.
3. Issues an occupational safety and health program reference manual (Reference Manual 50B) to provide detailed information on specific implementation requirements and strategies for an occupational safety and health program in the NPS.
4. Appoints and directly supervises the NPS Risk Management Program Manager. Provides adequate resources for the effective implementation and administration of the Program.
5. Appoints, or authorizes the appointment of, a Serious Accident Investigation Team Leader for the immediate investigation of serious accidents involving the National Park Service.
6. Authorizes a Risk Management Council for the purpose of providing advice and assistance to the NPS Risk Management Program Office and to the Service's Designated Agency Safety and Health Official (DASHO) on policy, programs, and concerns that are national in scope.
7. Authorizes an evaluation of regional and service centers' risk management programs, at least once every 3 years.

C. Program Manager, Risk Management Program

1. Serves as a professional advisor/consultant to assist the Associate Director and the National Leadership Council in their development of Service-wide risk management policy, direction, and goals.
2. Conducts, or coordinates periodic program reviews of Regions and Centers, at least once every three years.

3. Provides professional occupational safety and health program assistance, and manages resources in support of Service-wide policy and programs
4. Provides data to managers relating to employee occupational injuries and illnesses.
5. Participates in the Department's Safety and Health Council.
6. Serves as a liaison, and coordinates activities between the Occupational Safety and Health Administration (OSHA) and the National Park Service.

D. Regional Director

1. Provides leadership and guidance to accomplish NPS risk management policies and goals, and holds operating unit managers accountable for implementing effective occupational safety and health management systems.
2. Appoints a Regional Risk Manager.
3. Prepares an annual risk management work plan.
4. Provides periodic program review of park units using the Risk Management Program Elements as minimum criteria, at least once every three years.
5. Recognizes and rewards safety achievement.
6. Appoints a senior subordinate to serve as the regional Designated Safety and Health Official (DSHO).
7. Appoints two regional representatives to the Risk Management Council: 1) a Regional Risk Manager, and 2) a person representing an Operations discipline from a park.
8. Determines whether site managers have an effective occupational safety and health process. Takes action to make sure that those who do not have this process in place will establish such a process that effectively reduces employee injuries and illnesses. Holds each accountable for failure to do so.

E. Regional Risk Manager

1. Serves as a professional advisor/consultant on occupational safety and health issues/matters for the regional director, regional DSHO, operating unit managers, and safety personnel.
2. Advises the regional director on the status of park occupational safety and health efforts. Evaluates park programs to determine progress/status at least once every three years, based on the Risk Management Program Elements as a minimum.
3. Provides regular and repeated counsel to individual field unit managers with sustained high accident rates to improve their safety record.

4. Represents the region as a member of the national Risk Management Council.

F. Park Manager

1. Responsible for compliance with Director's Orders #50A and #50B, and achieving all GPRA goals associated with occupational safety and health.

2. Provides employees and volunteers protection from adverse work and/or environmental conditions, or substances that may cause injury or illness.

3. Implements and enforces occupational safety standards and procedures to prevent injuries, illnesses, and property losses, and to reduce exposure to legal liability.

4. Identifies, evaluates, and controls occupational health hazards, and where they cannot be controlled, protects the health of at-risk employees. Procedures for managing specific occupational health hazards are found in Reference Manual 50B.

5. Encourages employee participation and involvement in the development, promotion, and implementation of the occupational safety and health program.

6. Develops, implements, and keeps current, written, site-specific, occupational safety and health work plans.

7. Annually conducts self-audits of occupational safety and health programs.

8. Develops and integrates into all operational work plans site-specific goals to achieve GPRA Goal IV-A6 (Employee Safety).

9. Secures appropriate occupational safety and health training for employees.

10. Thoroughly investigates to discover causes of job-related accidents that result in or have the potential to cause injury, illness, or property damage. Identifies and implements corrective actions to prevent recurrence.

11. Investigates employee accidents, following procedures prescribed in the "Investigative Responsibilities," section of Reference Manual 50B.

12. Dedicates necessary staff resources to full implementation of the Workers' Compensation Case Management Guidelines (Director's Order #50A).

13. Provides continuous feedback to managers on occupational safety and health performance, and recognizes and rewards occupational safety/health achievement.

14. Requires occupational safety and health to be integrated into all daily operations, activities, and training. Hold supervisors accountable for their overall occupational safety and health performance.

15. Appoints a collateral duty safety contact in the absence of a full time safety manager to serve as a point-of-contact for occupational safety and health issues.

Ensures that services of an occupational safety and health professional are available when the site needs technical information and support.

16. Requires that all employee injuries and illnesses are recorded using the Department of Interior's Safety Management Information System (SMIS). Identifies first and second level reviewers for SMIS.

17. Maintains, and displays appropriately, an OSHA Log, Form 200, or equivalent.

18. Provides an opportunity for organized labor to participate in occupational safety and health activities.

19. Establishes a system of accountability that includes rewards and consequences for safe or unsafe work practices.

20. Ensures that safe practices are incorporated into Emergency Operating Plans.

G. Park Safety Officer

1. Serves as a professional and technical advisor/consultant to the line management of the operating unit on occupational safety and health issues.

2. Conducts an investigation of all employee occupational safety/health accidents/incidents, and accurately enters them into SMIS.

3. Advises the site manager of all lost time employee accidents/incidents, and sits on the Technical Board of Investigation (TBI) for those accidents.

4. Maintains an OSHA 200 Log, or equivalent, for the unit.

5. Provides, or assists line management in providing appropriate training, including training on: managing employee safety and health; OSHA Standards relating to facilities/working environments, and inspections of those environments; preparation and use of job hazard analyses; and unsafe work practices in the workplace.

6. Assists supervisors and line management in conducting analyses of work-site safety; advises the site manager where improvements should be made, and where successes are being experienced.

7. Works collaboratively with Human Resources/Personnel Office to assist and promote effective management of OWCP cases.

8. Provides Park Manager with data and reports on overall site occupational safety and health program progress.

9. Serves as the point-of-contact for occupational safety and health, and other matters relating to employee safety and health management for the operating unit.

10. Accurately enters into SMIS all employee accident data.

11. Provides Park Manager with recommendations for the services of an

occupational safety and health professional when the site needs technical information and support.

I. Supervisor

The supervisor is directly responsible for employee work practices, and:

1. Serves as the safety contact for his/her operation. Coordinates the development of occupational safety and health procedures that relate to activities within the scope of the supervisor's control.
2. Implements and enforces occupational safety and health standards within the supervisor's scope of authority to prevent injuries and property losses, and to reduce exposure to legal liability. Inspects facilities under his/her control to ensure compliance with all applicable standards.
3. Trains every employee, every volunteer, and all persons doing work for the NPS within the supervisor's scope of responsibility, so they are qualified to perform that work safely and effectively, and know the OSHA standards that apply to their assigned activities. Conducts safety orientation for all new staff members within his/her operation, and conducts yearly/refresher safety training for seasonal employees and volunteers within his/her operation.
4. Integrates occupational safety and health into all activities and functions within the supervisor's scope of control and responsibility. Observes and evaluates work performances to ensure that safe work procedures are practiced.
5. Identifies job-related hazards and ensures that Job Hazard Analyses are prepared to mitigate the risks.
6. Eliminates or mitigates potential causes of accidents, injuries, and illnesses, with the goal of full compliance with all applicable standards.
7. Establishes a working culture that encourages employees to recognize and discuss unsafe behavior of co-workers, and to practice safe work procedures, even when working alone.
8. Personally investigates to discover all causes of employee accidents. Identifies and implements corrective actions to prevent recurrence. Enters employee accident information accurately into the Safety Management Information System (SMIS).
9. Promotes physical fitness and wellness among subordinates.
10. Utilizes a system of accountability that includes rewards and consequences for safe or unsafe work practices.

J. Every NPS Employee

1. Adheres to established occupational safety and health procedures.

2. Properly uses and maintains required clothing and/or personal protective equipment.
3. Takes the initiative for his/her own safety and health and that of co-workers.
4. Takes the initiative to maintain a level of personal wellness and fitness as needed for assigned work tasks.
5. Identifies and, where appropriate, corrects unsafe conditions and work practices.
6. Reports unsafe/unhealthful conditions and/or operations.
7. Immediately reports a mishap, including minor accidents or a “near-miss,” to supervisor, but no later than the end of the work shift.
8. Helps establish a safe and healthful working culture; practices safe work procedures, even when working alone.

APPENDIX K

Roles and Responsibilities at NPWS

Safety Manager

- Ensure that the provisions of all relevant safety legislation, instructions and SOPS are put in place and enforced in all areas under their control.
- Appoint in writing such Safety Officers (SO), Deputy Safety Officers (DSO) and Assistant Safety Officers (ASO) as are needed to perform the functions listed below. Ensure that the duties are divided up between them so that every officer is clear on their roles. Ensure that a system of acting or temporary safety officers is in place to deal with absences.
- Provide systems for the appropriate training of SOs, DSOs, ASOs, Safety Representatives (SRs) and workers, including systems to record training given.
- Provide resources for the performance of their functions for the SOs, DSOs, ASOs, SRs, and workers.
- Set up a system of Safety Committees, with local committees in compliance with Schedule 4 of Safety, Health and Welfare at Work Act 2005, so that all workers have an opportunity to have views expressed.
- Receive and respond to inputs from Safety Committees, SRs, workers and any other sources.
- Provide a system for the making of Risk Assessments for all work.
- Provide a system of Safety Advisors, suitably qualified and available to all safety officers.
- Provide Safety Statements, Safe Operating Procedures, safe working systems, PPE and equipment.

- Provide systems for safety inspections.
- For construction works appoint in writing a competent person or persons for the purpose of managing the project with regard to health and safety.

Safety Officers and Deputy Safety Officers

- Ensure that the relevant safety training is identified, carried out and recorded.
- Ensure that the appropriate PPE and safety equipment is identified, purchased, issued and replaced as appropriate.
- Ensure that all staff are informed of their duties and of the safe systems of work.
- Ensure work is planned with attention given to health, safety and welfare of all concerned.
- Cooperate with safety committees and SRs.
- Cooperate with SM by providing information to and consulting with on Health, Safety and Welfare issues
- Ensure that all accidents are investigated, that accident reports are produced and sent to the SM. Also, ensure all notifiable accidents and dangerous occurrences are notified to the Health and Safety Authority.
- Ensure that safety inspections of lands, premises and equipment takes place as necessary, and that the results are recorded and acted on.

Assistant Safety Officers

- Ensure that all work is conducted in a safe and legal manner.
- Ensure that all PPE and safety equipment is used.
- Ensure that all PPE and safety equipment is checked, tested and replaced as appropriate.
- Ensure that hazards are identified and that a risk assessment for all work is carried out and acted on.
- Ensure that hazard inspections are conducted at the specified intervals and reports are compiled.
- Take immediate emergency action where appropriate to deal with hazards that are identified.
- Ensure that all staff are informed of their duties and of the safe systems of work
- Investigate and report on accidents and incidents.
- Cooperate with safety committees and SRs.

Employees

- Take reasonable care of their own health and safety and that of other personnel who may be affected by his/her acts or omissions.
- Cooperate with his/her employer or any other person to enable his/her employer to comply with statutory obligations.

- Use any suitable appliance, protective clothing, convenience, equipment or other means provided for securing safety, health and welfare.
- Report to management without delay any defects which he/she becomes aware of in equipment, place of work, or system of work, which might endanger safety, health and welfare.
- Not to intentionally or recklessly interfere with any safety measure provided for securing the safety, health or welfare of persons.
- Read, understand and utilise the Safe Operating Procedures provided for safe execution of the individual work processes.
- Inspect the work area and equipment to ensure that it is in proper working order and in safe condition prior to beginning work. **Equipment which is in poor/dangerous condition must be clearly tagged with a red “DO NOT USE” label.**
- When working with others in a process, ensure that all members of the team are working in accordance with procedures and training.
- Communicate any concerns regarding a work process and any environmental, health or safety issues to your Manager and/or Safety Officer or Safety Representative and work toward improvement and resolution of those issues.
- Report Near Misses and/or Safety Concerns to your Safety Officer
- In the event of serious or imminent and unavoidable danger, all employees are required to stop working and report the situation to their Safety Officer or Senior Management in the event of the Safety Officer being unavailable.

APPENDIX L

Some of the specialist training courses offered in the calendar year 2007-2008

include:

- National Powerboat Certification
- ISA Powerboat Level 1& 2
- First Aid and Manual Lifting
- Boat and Water Safety
- Chain Saw Use
- Use of Quad Bikes
- Off Road Driving
- Snorkelling
- Mountain Leader Course
- Mountain Skills Course
- Rock Climbing Training
- VHF Radio
- Tree Climbing Training

APPENDIX M

List of General SOPS Available to NPWS Employees

Field/Forestry Maintenance

- Hedge Trimmers
- Grass Trimmers
- Shovelling
- Mobile Platforms
- Rotary Tilers
- Chainsaw General
- Chainsaw Do's and Don'ts
- Chainsaw Personnel Protective Equipment
- Tree Trimming
- Tree Felling
- Bucking and Pruning Trees
- Power Hacksaw
- Tractors
- Tractors with rotary mowers
- Ride on mowers
- Lawn Mowers

Workshops/Construction

- Beltsanders
- Grinders
- Bandsaw
- Planers

- Tablesaw
- General Woodworking
- Machines
- Chisel
- Handtools
- Jig Saw
- Working with stone
- Jackhammer
- Airhammer
- Hand Drill
- Drill Machine
- Safety in Hammering
- Compressed Air
- Bobcat (mini-digger)
- JCB/Digger/Black-hoe
- Post Hole Diggers
- Mitresaw
- Pushsticks
- Radial Saw
- Bench/Pedestal and Handheld
- Grinders/Consaw
- Moulder
- Router
- Metalwork Machines
- Arc/Gas Welding

Chemicals

- Pesticides
- Flammable/Combustible
- Liquids
- Corrosive Material
- Purchasing and Substitution of Chemicals
- Safe Use, Storage and Disposal of Paint
- Asbestos

Working at Heights

- Rolling Scaffolding/Alto Towers
- Ladders-Inspection, Use and Storage

Offices

- Movement of Cash/ Robbery
- Office Thermal Comfort
- Office Lighting
- Sitting Comfort
- Prevention of Slips and Trips
- Guidance for Storage

General

- Fuelling
- Loader
- Working Near Power Lines
- General Vehicle Use

- Forklift
- Forklift Operations
- Waste Management
- Infectious Waste including Sharps, Syringes, etc.
- Manual Handling
- Young Workers and Students
- Working on Gas Lamps
- Lone Worker
- Removal of Ivy from Buildings
- Lime Kiln
- Control of Hazardous Substances
- Lime Kiln-PPE
- Lime Mortar

NPWS WORKSHOP, GROUNDWORK & OFFICE – SAFE OPERATING PROCEDURES

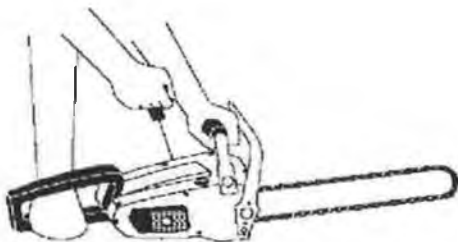
Only trained (where required) and competent personnel shall perform operations. The posting of a Safe Operating Procedure (SOP) does not replace the need for proper training.

Chainsaws

Safety tips to know when starting the saw.

DO

- Use only chain saws that have been manufactured and maintained according to standards.
- Know how to use the controls before starting a chain saw.
- Remove the chain guard (scabbard) and inspect the saw and machine for damaged, loose, missing parts, or other signs of wear, or leaks around the engine before starting.
- Ensure that the guide bar is tight and chain fits snugly without binding; adjust the chain tension, if required.
- Inspect the saw chain to ensure it is properly lubricated and is sharp. Sharpen and lubricate, as needed.
- Check the air filter and clean when needed.
- Check the muffler spark arrestor screen, if present. Spark arrestor screens help reduce the risk of fire, especially in dry forest conditions.
- Inspect the chain catcher - it helps reduce the risk of injury when a chain breaks or comes off the guide bar.
- Ensure that chain is clear of obstructions before starting.
- Engage the chain brake before starting the chain saw.
- Ensure that you have secure footing and that your stance is well balanced



- Hold the saw firmly on the ground. Point the chain away from your body and nearby obstructions. Use a quick, sharp motion on the starter cord.
- Warm up the saw prior to cutting. The saw should idle without the chain turning. If the chain continues to turn after the throttle switch is released, stop the saw. Then adjust the idle as shown in the owner's manual.
- Check that the throttle trigger, throttle trigger interlock, master control lever, etc. are operating properly.

DO NOT

- Do not use a saw if it has damaged, loose or missing parts.
- Do not "drop start" (starting a saw in hands) or when a chain saw is touching your body. This method leaves only one hand to control a running saw and can result in leg cuts.
- Do not start a saw unless it is at least 3 meters (10 feet) from any approved fuel safety containers.
 - Do not make adjustments to the chain or guide bar when the motor is running.

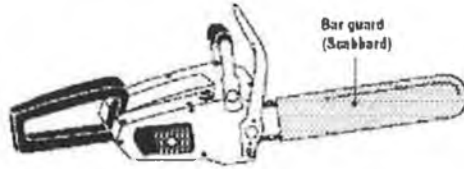
NPWS WORKSHOP, GROUNDWORK & OFFICE – SAFE OPERATING PROCEDURES

Only trained (where required) and competent personnel shall perform operations. The posting of a Safe Operating Procedure (SOP) does not replace the need for proper training.

Chainsaws

Handling, transportation and storing

- Handle chain saws safely to prevent injury to yourself or others.
- Shut off the chain saw motor before setting it down or carrying it for more than a very short distance. It is extremely dangerous to carry a chain saw when the engine is running!
- Let the chain saw cool before transporting.
- Use a scabbard or bar guard to cover the chain when carrying or transporting a chain saw.
- Carry the chain saw with the bar to rear. Ensure the scabbard is on and the muffler is away from the body.
- Use a carrying case to prevent damage to the saw during transit and storage. The case also provides convenient storage for the owners manual and tools.
- Secure the chain saw and carrying case during transportation to prevent them from moving.



- Drain all fuel into an approved safety container before storing the chain saw for long periods including starting the motor to empty fuel from the carburetor.
- Store your chain saw in a cool, dry place.
- Do not carry a chain saw on your shoulder unless the chain is properly guarded or removed.
- Do not transport a chain saw in the passenger compartment of a vehicle

NPWS WORKSHOP, GROUNDWORK & OFFICE – SAFE OPERATING PROCEDURES

Only trained (where required) and competent personnel shall perform operations. The posting of a Safe Operating Procedure (SOP) does not replace the need for proper training.

CHAINSAWS

"Kickback"

Kickback is the term to describe the **unexpected upward motion of the guide bar**. Kickback occurs when the end portion of the nose of the bar (the kickback zone) strikes an object and the chain momentarily snags, or is pinched.



The most common and probably most violent kickback occurs when contact is made, either accidentally or intentionally, in this "kickback zone." In some cases the blade tip may move upward and back toward the operator who could suffer a very serious or fatal injury.

How to reduce the risk of kickback.

DO

- Select a chain saw that is equipped with kickback-reducing devices (e.g., chain brake) that are designed for the chain saw that you are using and meet recognised standards. These devices will reduce but will not prevent kickback.
- Watch the guide bar nose. Do not let it touch logs, ground etc. when running.
- Cut only one piece at a time.
- Run the saw at full power when cutting.
- Keep the chain sharpened to specifications.
- Match chain and bar for exact pitch and gauge.
- Set depth gauges to manufacturer's settings.
- Maintain correct chain tension
- Hold the saw securely with both hands. With thumb around top handle and a firm grip.
- Ensure that you have firm footing before starting to saw.
- Stand to side of the cutting path of the chain saw.
- Position yourself so that you are not near the cutting attachment when saw is running.
- Know where the bar tip is at all times.
- Make sure the chain brake functions and stops the chain.

DO NOT

- Do not stand directly behind the saw.
- Do not cut in the kickback zone.

NPWS WORKSHOP, GROUNDWORK & OFFICE – SAFE OPERATING PROCEDURES

Only trained (where required) and competent personnel shall perform operations. The posting of a Safe Operating Procedure (SOP) does not replace the need for proper training.

CHAINSAWS

Personal protective equipment.

Use proper safety clothing and personal protective equipment (PPE), that are appropriate for the tasks being performed, to reduce the risk of injury. Clothing should be well-fitting to prevent any entanglement with the chain saw. The following personal protective equipment and clothing are recommended when operating a chain saw.

Eye Protection PPE - Safety glasses with side shields, safety goggles, and face shields approved by recognised standards e.g. BS, ANSI etc.

- A face shield attached to the hard hat without safety glasses may not provide the adequate eye protection.

Gloves & Mitts - Leather gloves with ballistic nylon reinforcement on the back – at a minimum must be worn on left hand.

- They offer a good grip on the saw and absorbs some vibration that provides some protection for the hands.
- Leather gloves can also prevent cuts when sharpening the saw.

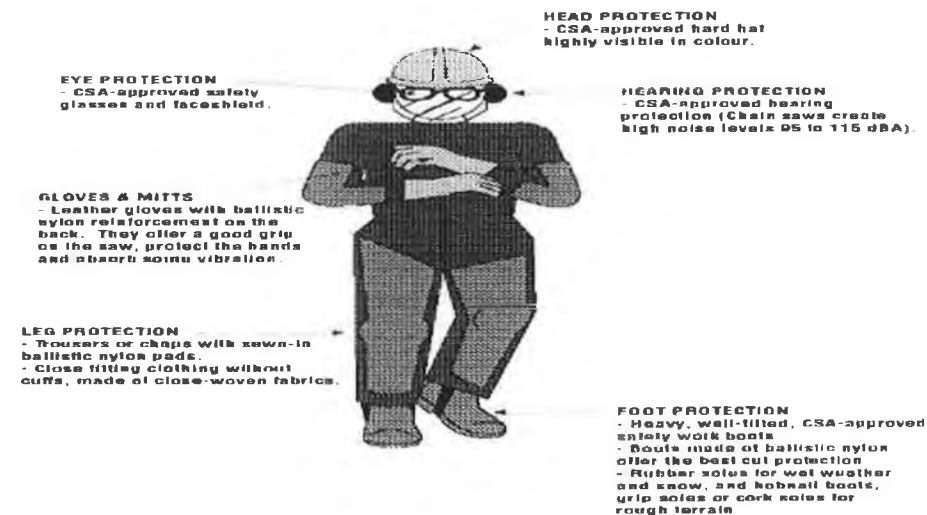
Foot Protection PPE - Heavy, well-fitted, safety work boots approved by recognised standards e.g. BS, ANSI etc.

In addition to the regular requirements for safety boots, chain saw operators should wear boots made from cut-resistant materials that offer protection from contact with running chain saws.

Head Protection PPE - Hard hat, highly visible in colour, approved by appropriate standards

Hearing Protection PPE - Hearing protection devices, approved by appropriate standards for Hearing Protectors. (Chain saws create high noise levels of up to 95 to 115 dBA.)

Leg Protection Clothing - Trousers or chaps with sewn-in ballistic nylon pads purpose made for Chainsaw operations.



APPENDIX N

List of Field Staff SOP Available to the NPWS Employees

Boats and Water Safety

- Boats General
- Life Jackets
- Other PPE
- Boat Command
- Boat Crew
- Contact with the Shore and with other Boats
- Weather
- Passengers
- Smoking
- Specification for Operational Conditions
- Operational Procedures for Inflatable Boats, Rigid Boats, Kayaks, Engines and Trailers
- Safety Equipment Inventory
- Distress Procedures
- Radio Frequencies
- Beaufort Scale

- Hypothermia: Symptoms, Immersion as a cause of hypothermia, If you cannot get out of the water and treatment
- Flares
- Training in Boat Skills

Climbing and Steep Ground Safety

- General
- Clothing
- Equipment: Ropes, Safety Harnesses, Helmets and other Equipment
- Training and Operational Procedures
- Tree Climbing: Protective Clothing, Tree Climbing Equipment and Procedures
- Using Ladders
- Steep Ground

Field Work Survival and First Aid

- First Aid
- Field Survival: General, The Basic Safety Measures, Call Out Procedure and Other Recommended Safety Procedures for Fieldwork

- Exhaustion/Exposure
- Survival in Mountains
- Field Survival Precaution for Caves and Tunnels: General, Safety
Classification of Caves and Tunnels and Call Out Procedure
- Survival in Bogs and Swamps
- Survival in Intertidal Areas
- Coastal Rocks, Riverside Rocks and Wet Limestone Pavement
- Lightening Strike
- Emergency Signals
- Wading

Chain Saws and Other Power Tools

- Training Courses
- Protective Clothing: Chain Saw Operators and Clearing Saw Operators
- The Saw and Ancillary Equipment: Chain Saw Characteristics, Chain Saw
Ancillary Equipment, Clearing Saw Characteristics, Clearing Saw Ancillary
Equipment and Fuelling Saws
- Operational Procedures

Tools and Lifting

- Hand Tools
- Manual Lifting
- Winches

Use of Firearms by NPWS Staff

- NPWS Policy: Who Uses Firearms and for What, Policy on Health and Safety and List of Users
- Training and Selection of Users: Training Courses, Firearms Safe Handling, Rifle Users Course, Rifle Re-Qualification Course, Rifle Instructor Course, Shotgun Users Course, Rifle Marksmanship Improver Days and Deer Management Course
- Operational Procedures: Storage, Transport, Use of Shotguns and Use of Rifles
- Specifications of Equipment: PPE, Field Use and Range Use
- Medical Testing
- Humane Killing of Wounded Animals: Livestock, Deer, Other Species, Training, Humane Killing Methods, Suitable Firearms and Ammunition, Dangers to Consider and Carcase Disposal

Zoonoses/Live Animals and Animals Carcasses

- General Safety Guidelines
- Immunisation of Staff: Rabies, Tetanus, Hepatitis A, Hepatitis B, Lyme Disease and Tuberculosis
- Hygiene
- PPE: Gloves for Handling Carcasses, Gloves for Handling Live Specimens, Eye Protection, Face Masks, Other Clothing and Supply
- Zoonoses and Animal Diseases: General, Animal Diseases and Foot and Mouth Disease
- Zoonoses: Rabies, Botulism in Waterfowl, Ornithosis, Bovine Tuberculosis, Leptospirosis/Weil's Disease, Anthrax, Canine Tapeworm and Toxascaris, Scaler's Finger, Lyme Disease, Ringworm, Salmonellosis and Campilobacteriosis, Psittacosis, Brucellosis, Pasteurellosis, Tick Carried Viral Encephalitis and Exotic Animal's Diseases
- Handling Animals: Handling Captive Animals (Badgers, Foxes, Otters, Pine Martens, Squirrels, Other Rodents, Rabbits, Hares, Small Mustelids, Insectivores, Bats, Deer, Goats, Seals, Marine Mammals, Birds with Stabbing Beaks, Birds with Cutting Beaks, Birds with Talons) and Handling and Transport of Sick Animals
- Attacks by Animals: General, Bees, Wasps, Other Insects, Cattle, Horses and Other Livestock, Dogs, Seals, Deer, Birds and Other

Vehicles

- Legal Requirements : Insurance, Road Tax, Driver's Licence, Passengers, Log Book and Accidents
- Service, Maintenance and Repair
- Rules of the Road: Speed, Night Driving, Skidding, Reversing, Turning, Slowing Down and Stopping and Parking
- Off-Road Driving Techniques
- Misc. Driving Safety

Hazardous Substances

- General Rules
- Poisons
- Drugs
- Fuels
- Sprays
- Biohazards: Giant Hogweed, Other Poisonous Plants, Farmers Lung and Bracken
- Exposure to Sunlight: Eyes, Skin and Types of Skin Cancer (Basal Cell Carcinomas, Squamous Cell Carcinomas, Malignant Melanoma and Sources of Information)
- Oiled Birds and Mammals: Handling Oiled Specimens and Cleaning Oiled Birds

- Smoking

Law Enforcement

- General
- Assault: Communications Equipment, Behaviour, Safety Aspects of PPE, Equipment, Personal Clothing, Hair and Assault with a Firearm Used as a Club
- Daytime Patrols: Risk Reducing Measures
- Patrols During Hours of Darkness
- Stopping and Searching of Vehicles
- Stopping and Searching of Boats
- Checking Licences
- Searching Premises Under Warrant
- Attendance at Events

Fire

- Building Fires
- Vehicle Fires
- Vegetation Fires

SCUBA Diving, Snorkelling and Electrofishing

- SCUBA Diving
- Snorkelling: General, Training and Equipment
- Electrofishing

APPENDIX O

Criteria for the Safety Awards at NPS

Director's Safety and Health Achievement Award: Presented annually by the Director of the National Park Service, this award is the highest level Employee Safety Achievement Award granted.

The criteria for selection for recognition of outstanding safety and health performance by NPS employee are:

1. Achieved outstanding employee safety and health work conditions or performance through improved practices and attitudes (Best Practices).
2. Reduced employee accidents, injuries and fatalities.
3. Encouraged employee-driven actions in the recognition and control of hazards in the workplace.
4. Increased managerial and employee commitment toward accident prevention.
5. Advocated occupational safety and health leadership.

Andrew Clark Hecht Memorial Public Safety Achievement Award: This award is presented annually by the Director. It is the highest award bestowed by the NPS for outstanding public safety achievement.

The Criteria for selection for recognition of outstanding public (visitor) safety and health contributions are as follows:

1. Prevention of accidents that may cause serious injuries or fatalities.

2. Innovative work and achievement of an employee, non-employee or group to enhance public (visitor) safety awareness.

3. Promotion of visitor recognition of recreational activity hazards.

4. Development of visitor risk-reduction methods and managerial action to lessen human and material resource loss.

5 Advocacy in identification and control of environmental hazards that endanger safe and enjoyable visitor experiences.

APPENDIX P

Serious Accident Investigation Procedures, Time Frames and Team Checklist at the NPS

RESPONSIBILITY

ACTIONS REQUIRED

A. Team Leader:

1. (ASAP)

Upon Team's appointment, assemble the Team, assessing the teams' knowledge/experience, and completing teams' structure, if necessary, as dictated by serious accident complexity.

1. (WITHIN 48 HOURS OF INCIDENT)

a. Upon arrival at general accident location:

--Arrange for "Just-In-Time Training" (DOI)

--Arrange for clerical and administrative support.

--Hold meeting, to last 1-2 hours, max.

--Discuss technical procedures. (Purpose and Scope)

--Develop an Action Plan--Time/Resources.

--Identify individual assignments.

--Review 485 DM, Chapter 7.

--Background briefing by Park presenting preliminary evidence gathered.

b. The Team Leader should secure unlimited access to records, files, memos and personnel records pertinent to the investigation from the site manager.

3. (WITHIN 30 WORKING DAYS OF INCIDENT)

Complete a factual report (Time extensions require DOI DASHO approval), using 485 DM, Chapter 7, format. The SAIT submits the factual report directly to the Site Manager for follow-up action.

B. Site Manager:

1. (IMMEDIATELY)

Secure scene and care for injured.

2. (WITHIN 15 WORKING DAYS OF RECEIPT OF FACTUAL REPORT)

Site Manager convenes a Board of Investigation (BOI) to review the SAIT factual report. The BOI develops conclusions and recommendations with implementation assignments and follow-up dates. The BOI Management Report is submitted to the NPS DASHO through the Program Manager, Risk Management.

C. WASO-Risk Management:

1. (WITHIN 15 WORKING DAYS OF RECEIPT OF REPORT)

a. After receipt of the BOI Management Report, the Program Manager, WASO Risk Management, transmits report to the NPS DASHO with statement of concurrence or non-concurrence on each major report recommendation.

b. WASO-RM Office is office of record for the Accident Investigation Report.

2. (WITHIN 30 CALENDAR DAYS AFTER REVIEW BY DASHO)

WASO-RM prepares an abstract of accident. The DASHO may distribute this abstract to other Government agencies as appropriate.

D. Regional Director:

(WITHIN 90 DAYS OF ACCIDENT)

Regional Director of accident area will personally brief the Bureau Director.

E. Bureau DASHO:

Upon request, the Bureau DASHO may present a briefing on the serious accident to the DASHO Council.

F. Bureau Director:

The Bureau Director may be requested to personally brief the Secretary.

SERIOUS ACCIDENT INVESTIGATION TEAM CHECK LIST:

SAIT investigation identifies management system responsibilities and failures, as well as employee unsafe acts, conditions, and behaviors.

1. At accident scene:

- Secure scene (if not done previously)
- Become familiar with area
- Identify hazards, correct and/or secure
- Document physical evidence
- Photograph and sketch accident scene
- Release scene ASAP
- Arrange for critical incident debriefings for involved personnel

2. Obtain additional information as needed:

- Compliance w/applicable standards
- Operating procedures
- Inspections
- Maintenance records

- Building/site plans/schematics
- How is performance measured
- How are hazards identified
- Recordkeeping/implementation
- Safety meetings (tailgate, park)
- Management inconsistencies
- Accountability mgmt./employee
- Management priorities
- Standard Operating Procedures
- Supervisory effectiveness
- Work conditions
- Where did system fail
- Chain of responsibility
- Organizational charts/Flow diagrams
- Safety committee meetings
- Personnel records
- Employee orientation

3. Analysis of information to determine Root Cause:
 - Determine unsafe act, condition, or behavior
 - Determine management system failure

4. Write SAIT Investigation Report.

If evidence of Criminal Activity is identified, the SAIT will discontinue the investigation and notify the office of the Inspector General (OIG) and the Bureau DASHO immediately.

APPENDIX Q

AR1 ACCIDENT REPORT Form

Reference No:

The line Manager responsible for the person involved in the accident should complete this accident report form. All questions must be answered. This report should be submitted within two days of the accident occurring to Personnel, the Health and Safety Unit and to your Safety Manager. Any relevant Photographs or sketch of accident scene should be attached to this form. You should retain a copy for your record.

Injured Party: member of staff Visitor Contractor

Note: Please put ✓ in appropriate box

1. Injured Party Personal Details

Name of person injured	Date of Birth/Age
Address	Recruitment date (if applicable)
	Grade (if applicable)
	RSI No. (if applicable)
	Payroll No (if applicable)

2. Details of Accident

Day, date and time	Section/Area of Work
Accident location	
Activity at time of accident (if applicable)	

3. Description of accident

Was accident due to any particular factor e.g. weather, difficult terrain, slippery surface etc.

4. Training & Experience (if applicable)

What experience did he/she have of the activity being carried on when the accident occurred? (if applicable)

List Health and Safety Training courses attended/Safety warning i.e. verbal or sign (where applicable)

5. Injury

Nature of injury i.e. cut, strain, fracture, bruise etc

State part of body injured

6. Medical Treatment

- | | | | |
|-----|---|------|----|
| (a) | Did the injury necessitate the employee leaving duty? | Yes: | No |
| (b) | Has he/she been examined by the doctor? | Yes | No |
| (c) | Were any costs incurred in medical treatment | Yes | No |
- If yes, please specify _____

(d) Was adequate First Aid equipment available? Yes No
If no, state reason

(e) Was First Aid Administered: Yes No Name of Person :

7. Details of Witnesses to Include job description if employee

Statement Taken: Yes No Attached to this form Yes No

Statement Taken: Yes No Attached to this form Yes No
from injured party

8. Other Comments:

Please include any further relevant comments about the accident or opinion, which could have prevented accident from occurring. Include in comments any Personal Protected Equipment (PPE) (if applicable) worn by person involved in accident.

Signed: _____ Title: _____

Date: _____

This part of form to be completed by Personnel

Total number of days in Hospital (if applicable):

Total Numbers days absent from Work (if applicable):

APPENDIX R

Big Bend Survival Tips

Visitors to the Chihuahuan Desert constantly face heat gain and water loss. The more you are active in the sun, and the hotter the temperatures, the more water you need. Whether walking, backpacking, or day-hiking, you need to make efforts to conserve your internal water reserves.

REDUCE YOUR ACTIVITY Follow the example of desert wildlife. In the afternoon they are mostly inactive to conserve water loss. During the warmest days, generally from May through August, avoid hiking in the lower elevations after noon. The hottest part of the afternoon usually occurs around 5:00 p.m. and the desert may not cool off until well after midnight.

FIND SHADE Shade in the desert means the difference between excessive heat gain from the radiant sun and sheer comfort. In an emergency, a person resting in the shade will survive longer than someone exposed to the sun.

DRINK YOUR WATER Don't try to conserve the drinking water you have. Whether strolling in the Basin, or hiking the South Rim Trail, you must DRINK your available water. A reliable sign of dehydration is the color of your urine. Normally clear to faint yellow, urine darkens to a deeper yellow as the body dehydrates. People have died in the desert with water in their canteens. They rationed their water while their bodies dehydrated.

REDUCE ALCOHOL & CAFFEINE INTAKE

Caffeinated beverages and alcohol require more internal water reserves to eliminate than they retain. Electrolyte sport drinks are not water substitutes. Water is the best remedy for dehydration and listlessness.

PROTECT YOUR BODY Our sensitive skin burns easily; it needs shade, sunscreen, sunglasses, and proper footwear. Dehydration is accelerated by exposed skin, so keep your clothing on. Wear long-sleeved, loose-fitting, light-colored clothes. Be sure to cover your brain by wearing a hat.

In The Backcountry

Heat-related illnesses can and do quickly strike unprepared people. Park visitors have died from dehydration, and yet most people have the capacity to handle desert situations if they know and follow a few basic tips.

LEAVE A TRIP PLAN Communicate your plans with others. Let a friend or family member know your route and expected return. If you fail to return as scheduled, they should notify a park ranger.

BE PREPARED Be prepared for the unexpected. Imagine your vacation turning for the worse--maybe a disabled vehicle on the Old Ore Road, or an overestimation of your physical ability in the backcountry.

CARRY ALL WATER Never rely on springs for your only source of drinking water. What will you do if the spring you counted on is dry or contaminated once

you arrive? Carry ALL your necessary water...at least one gallon per person per day.

STAY PUT If you become lost or stranded, stay put. You may be uncomfortable, have to wait a day, miss a meal, but may probably be alive when rescuers arrive.

BE HONEST WITH YOURSELF

Know your physical limits and capabilities, before you have to depend upon them. Recognize when you are overheated or feeling dehydrated. Self-aid and first-aid can prevent mild heat-related illness from turning into another desert fatality.

Steps to take before heading out to Big Bend National Park

Before heading out on your own adventure, consider how you can prevent your trip from turning into a tragedy.

1. Talk to park staff. Find out about road and trail conditions, get trip advice, and buy the maps and guidebooks you need. Check the weather forecast, too.
2. Let someone know where you're going. Call family or friends at home to let them know your plans. Tell the camp hosts in the campground. Leave a note on your car stating where you're going hiking and when you expect to return.
3. Make sure your vehicle is in good condition and has a spare tire, a working jack, and other emergency equipment. Take extra water, food, and sleeping bags just in case. If you're on foot, make sure all of your hiking and camping gear is in good shape.
4. If your vehicle breaks down or gets stuck, stay with it! It is much easier for rangers to find a car on a road than a person walking through the desert.
5. Know how to signal for help. Cell phones may not work here, so don't count on being able to call out. Whistles, air horns, mirrors, and flares are all good attention-getters. While wood fires are not normally permitted in the park, they can be an effective signalling method of last resort, since the smoke can be seen for miles and will certainly get the attention of park rangers.

APPENDIX S

**Wicklow National
Park**

Area	Hazard	Risk Rating	Control	Expected Completion
Education Centre				
Staff Toilets	Only cold water in wash hand basin. Wash hand basin do not of hot water supply. Insufficient welfare facilities as required per Health and Safety Act 2005.	Moderate	Water heater or hot water to be plumbed into sinks.	As soon as possible
Store Area	General storage untidy. Risk of items falling off shelves or resultant floor area bring trip hazards.	Intolerable	General tidy up of store area and ongoing housekeeping.	Immediate
Education Centre Office	Only adequate space for two members of staff. However many members of staff need to use office area, there are only two desks. Desks are overcrowded with computers and printers due to lack of space.	Moderate	Office area to be refurbished to ensure adequate shelving for non essential items will be stored off desks and desk areas to be kept clear for workstations.	As soon as possible
Back of the Building	Disabled access point to side of building does not have clear visible view to people entering visitors centre.	Substantial	Signs to be posted directing disabled access point.	As soon as possible
Use of Computers	Due to inadequate number of electrical outlets, multiadaptors are used throughout visitors centre. High risk of electrical fire if left on long term and unsupervised.	Substantial	Visitors centre to be rewired by qualified electrician to have sufficient number of electrical outlets.	As soon as possible

Area	Hazard	Risk Rating	Control	Expected Completion
Information Office	Staff required to carry small cash box from office to visitors centre. However, no policy in place for staff members actions in event of a robbery or hold up.	Moderate	Policy for staff in robbery hold up to be drafted and staff members to be trained accordingly.	On-going
Information Office	Staff isolated in information office away from other staff members who are in education centre. However, there is no panic button or policy for activation of alarm in the case of assault, robbery or hold up.	Moderate	Panic button to be installed and wired to rangers security or education centre. Policy also to be processed and actions to be taken in the event of hold up / robbery.	Next scheduled works
Park Head Quarters				
Canteen Area	Emergency lights hanging from ceiling.	Intolerable	Emergency lights to be repaired.	Immediate
Parking	No designated parking spot for disabled or handicap users.	Moderate	Designated handicap / disabled parking spots to be posted.	Next scheduled works
Headquarters Parking	Parking spaces not marked on tarmacadam. No control measures in terms of parking.	Moderate	Traffic system and parking layout to be marked out on tarmacadam.	Next scheduled works
Storage of Firearms	No inventory system for ammunition stores. No way of knowing number of ammunition at any one time.	Substantial	Inventory system to be put in place.	As soon as possible

Area	Hazard	Risk Rating	Control	Expected Completion
Firearm Stores	No system for checking out any guns. At a glance management are not able to determine who has guns and where guns are located.	Substantial	System for checking in and out of guns to be implemented for example and check in check out log book.	As soon as possible
Firearm Safe	Alarm system works independent and is not linked to main building alarm.	Substantial	Alarm system to be rewired and linked to main building alarm also.	As soon as possible
General Yard of Depot	In the event of diesel or plant fuel fluid leak, depot has not drainage or bunding system. Potential Environmental hazard.	Intolerable	Depot yard area to be concrete bunded for containment of spillage of diesel or fuel spill.	Immediate
Depot	Damaged equipment and plant depot without clearly identification to show out of order or damaged.	Intolerable	Need to introduce lock up system and reporting to stores area of damaged equipment so can be left for repair and not inadvertently by unsuspecting user.	Immediate
Depot	Lifting steps have not been checked since 2001. Danger of person falling off steps or steps collapsing causing serious injury from falling at height.	Intolerable	All lifting devices, steps, chains etc to be calibrated and certified annually.	Immediate
Depot	Use of check cherry picker without proper training may result in fatality from falling from height.	Intolerable	All staff who are to use cherry picker to be trained in working at heights and trained in the use of cherry pickers.	Immediate

Area	Hazard	Risk Rating	Control	Expected Completion
Depot	Use of chain saws and table saws and woodwork machinery without safe operating policies procedures in place. May lead to poor practice and resulting in injury.	Intolerable	Safe operating policies procedures to be posted and all operators to be trained accordingly.	Immediate
Depot	Machines in depot area in particular tables saws etc. require safety goggles and hearing defenders. However, no signs posted to ensure users wear such equipment.	Substantial	Post signage for goggles to be worn and hearing defenders to be worn.	As soon as possible
Loft	Long term storage of heavy items on loft may result in loft collapsing on persons underneath.	Intolerable	Need to establish load bearing of loft and ensure no items heavier than the maximum load bearing are kept in loft.	Immediate
Loft	Loading of loft at gate. Risk of person falling through gate when unloading items off forklift / teleporter.	Intolerable	Need safety harness for working at heights for person loading unloading items at loft when gate is open, otherwise gate to remain closed at all times.	Immediate
Towing Trailer	Risk of road accident for unlicensed drivers using 16 ft trailers.	Substantial	Park management to ensure that all operators of vehicles using long trailers are adequately licenced and trained.	As soon as possible

Area	Hazard	Risk Rating	Control	Expected Completion
Chemical Store	No material safety data sheet available for chemical store. Some chemicals have been stored for long term and containers are damaged.	Intolerable	All old and expired chemicals be removed from site by licensed chemical disposal company. Material safety data sheets to be made available and posted in area of use.	Immediate
Chemical Store	Multiple containers with no record and no writing of what is in container. Unidentified chemicals in containers.	Intolerable	All containers to have clearly displayed in writing what they contain. Chemicals to be kept in original containers where possible. No mixing of chemicals from one container to another. All unmarked containers to be disposed of by licenced chemical disposal company.	Immediate
General Park				
Forest Fires	Park staff are required to fight forest fires when need arises. However, no formal training of fire fighting for fires in park areas. High risk of death by asphyxiation or severe burns to people fighting fires when not properly trained.	Intolerable	Training to be given to all fire fighters in national parks and wildlife.	Immediate

Area	Hazard	Risk Rating	Control	Expected Completion
Forest Fires	Flame proof overalls for fighting fires as needed.	Intolerable	Distribution of flame proof overalls for fighting fires as needed.	Immediate
Public Walkways - White Route	Insufficient width on white route on railway sleepers for two way traffic. Stepping off white route may result in turning / twisting ankle.	Moderate	Control needed to put in place more laybys throughout white route to allow people to step off and allow people in opposite directions to pass by.	On-going
Public Walkways - White Route	Forest boundary fence on 600 steps are very close to steps. Some of the fencing is loose and contains barbed wire which, if person was to stumble, would cut and lacerate hand.	Intolerable	All boundary fence to be secured or removed and all barbed wire to be removed immediately from national parks and wildlife.	Immediate
Lakes	Swimming rings and life buoys under the control of County Council. However, no proper checking system in place to ensure all swimming rings are in place and working correctly. National parks and wildlife have no control over swimming rings.	Intolerable	National park and wildlife discuss with County Council possibility of rangers and park staff checking swimming rings on a daily basis to ensure in place and responsibility of maintaining to be left with national park and wildlife as these are the persons on site.	immediate

Area	Hazard	Risk Rating	Control	Expected Completion
Bridge at Miners	Bridge is supported by loose rock and scrap metal. Bridge has not been properly designed for correct span and support on either side.	Intolerable	Engineering assessment to be done on bridge to determine supports needed to high flash water flow to ensure that bridge is secure at all times and under no circumstances can bridge give way under pressure of water pressure or shift	Immediate
Bridge at Miners	Railing joints are between posts, not on posts. This can result in railing giving way under force or weight.	Intolerable	All railing to be removed and put in place with joints at post to ensure the stable and structural integrity remains in place.	Immediate
Wicklow National Park Safety Management System	No formal system to determine frequency and level of training and competency of operators, rangers and all staff members to ensure legal obligations and requirements are met such as safe pass, working at heights training CSCS cards, driving licence, vehicles MOT's certification of lifting appliances etc.	Substantial	Formal data bases and register of all staff at plant to be maintained at head quarters offices which will allow safety management team to review training needs and ensure that all items unregistered or uncertified or expired are removed from use as are staff and training needs identified for the coming year.	As soon as possible