



## **On the Edge of the Wild:**

Day and overnight visitors' setting preferences

Zsófia Cságoly



**Faculty of Life and Environmental  
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Day and overnight visitors' setting preferences

Zsófia Cságoly

60 ECTS thesis submitted in partial fulfillment of a  
*Magister Scientiarum* degree in Environment and Natural Resources

Advisors  
Anna Dóra Sæpórsdóttir  
Rannveig Ólafsdóttir

Faculty Representative  
Ólöf Ýrr Atladóttir

Faculty of Life and Environmental Sciences  
School of Engineering and Natural Sciences  
University of Iceland  
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Faculty of Life and Environmental Sciences  
School of Engineering and Natural Sciences  
University of Iceland  
Sturlugata 7.  
101, Reykjavik  
Iceland

Telephone: 525 4000

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# Abstract

Wilderness areas have become an important attraction for tourists who seek contrasting experiences to their urbanized lifestyles. Simultaneously this increasing popularity also creates challenges for the preservation of the very natural and primitive conditions that these areas offer. Due to growing numbers of visitors in search of connections to sublime landscapes combined with easier accessibility, Icelandic semi-wilderness areas are becoming progressively popular. Increasing accessibility in many areas challenges management with finding the balance between preserving the fragile arctic ecosystems of semi-wilderness areas and providing various visitor types with their sought-after recreational experiences.

This study aims to assess visitors' experiences and preferences for environmental conditions and infrastructure in semi-wilderness areas foreseeing increased accessibility. Þórsmörk, located at the edge of the southern highlands of Iceland, was chosen as a representative case study, as it is currently facing increased and improved accessibility. A questionnaire survey was conducted during the summer of 2014 and the data was analysed with particular focus on comparing the responses of day and overnight visitors. The results show that a large majority of both day and overnight visitors to Húsadalur, Þórsmörk perceive unspoiled wilderness as part of the area. The results do not show a significant difference between day and overnight visitors when compared on the Purist scale, implying that despite an expected increase in the number of daytime visitors coincide with increased access to the area, visitors' composition on the Purist scale is not likely to change dramatically from its current state. However, growth in day visitor numbers to Húsadalur, Þórsmörk is likely to result in degrading wilderness values available for overnight visitors found through solitude. It is important that management of semi-wilderness areas is based on responsibly conducted frameworks to preserve not only the ecological health but also their attractiveness.

**Keywords:** tourism, semi-wilderness, accessibility, visitor experience, infrastructure, Þórsmörk

# Útdráttur

Víðerni eru mikilvægt aðdráttarafl fyrir ferðamenn sem leita eftir að komast burt frá amstri og streitu borgarlífsins. Í ljósi vaxandi vinsælda víðerna meðal ferðamanna felst mikil áskorun í að vernda náttúrlegt ástand og frumstætt yfirbragð víðerna. Svæði sem eru á jaðri víðerna eru almennt aðgengilegri en eiginleg víðerni og hafa þau því átt vaxandi vinsældum að fagna. Mikilvægt er að stjórna og stýra umferð á slíkum jaðarsvæðum til að stuðla að jafnvægi á milli verndunar viðkvæmrar náttúru, þeirrar upplifunar sem mismunandi tegundir ferðamanna sækjast eftir og þeirrar uppbyggingar sem aukin ferðamennska krefur.

Markmið þessarar rannsóknar er að meta upplifun ferðamanna á svæðum í jarði víðerna hér á landi. Tilviksrannsókn var gerð í Húsadalur, Þórsmörk sem er staðsett í jaðri Suðurlandshálendisins, en þar er fyrirhugað er að reisa göngubru yfir Markarfljóti. Við það mun aðgengi inn á svæðið aukast mjög en hingað til hefur það verið takmarkað við faratæki sem komast yfir illfær jökulfljóti og gangandi umferð ofan af hálendinu. Spurningalisti var lagður fyrir á vettvangi sumarið 2014 en í úrvinnslu og greiningu gagna var megin áhersla lögð á að bera saman viðhorf dags- og næturgesta á svæðinu. Niðurstöður sýna að mikill meirihluti bæði dags- og næturgesta upplifa víðerni sem hluta af aðdráttarafli svæðisins. Niðurstöðurnar sýna hins vegar ekki marktækan mun á milli dags- og næturgesta þegar þeir eru greindir með hliðsjón af viðhorfskvarðanum (e. Purist scale), sem gefur til kynna að aukinn fjöldi daggesta í kjölfar aukins aðgengis, mun ekki hafa afgerandi áhrif á samsetningu ferðamanna á svæðinu. Hins vegar mun aukinn fjöldi daggesta í Húsadalur, Þórsmörk að öllum líkindum valda auknu álagi og þannig hnignun þeirrar víðernisásýndar sem einkennir svæðið í dag og er mikilvægur hluti aðdráttarafls svæðisins að mati þeirra næturgesta sem sækja á svæðið. Það er mikilvægt að skipulag og stjórnun svæða á jaðri víðerna byggji á heildstæðri og ábyrgri framtíðarsýn um nýtingu svæðisins, þannig að ekki sé gengið á gæði víðernanna sem svæðin búa yfir.

Lykilorð: ferðamennska, jaðarsvæði víðerna, aðgengi, upplifun ferðamennsku, innviðir, Þórsmörk



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# 1 Introduction

## 1.1 Tourism and wilderness

With an increasing number of travellers around the globe seeking closer connections with natural settings and inspirational experiences to contrast their ever more urbanized lifestyles, remote regions have gained heightened popularity as tourist destinations (Hall & Page, 2014; Buckley, 2006; Pigram & Jenkins, 2006; Saarinen, 2004). In response to this, the practice of nature-based tourism has risen markedly in remote areas worldwide (Hall & Boyd, 2005), often with complex social, environmental and economic impacts. Following the development of natural areas, the wilderness continuum seems to move from naturalness and remoteness, via increasing human development, towards semi-natural, agricultural and urban stages (Carver, 2014). Several studies point out (e.g. Kliskey & Kearsley, 1993; Saarinen, 2004; Sæþórsdóttir, 2014) that utilizing remote regions as a commercialized natural resource can easily become untenable if economic gain is prioritized over the protection of the very natural areas that attract tourists in the first place.

Numerous studies (e.g. Cole, Watson, & Roggenbuck, 1995; Ewert, 1998; Chavez, 2000; Abbe & Manning, 2007; Pierce III, 2015) have shown that with the rising popularity of daytrips to natural areas within close proximity to urbanized areas, management faces numerous challenges in the light of increasing accessibility. For example, how to optimize visitor experiences, coordinate high tourist numbers and meet the expectations of stakeholders, whilst also ensuring long-term protection of fragile landscapes that are themselves fundamental to the area's attractiveness from a tourist's perspective.

Studies by Sutter (2002) and Lane (2009) emphasize difficult access and the lack of roads as key elements to visitors' wilderness experience. Geographical complications regarding accessibility into certain areas have worked as natural barriers, limiting the number of visitors, and hence providing opportunities to experience the feelings of challenge, tranquillity and remoteness (Manning et al., 2000; Lawson & Manning, 2001; Stewart & Cole, 2001; Manning, 2007; Vaske & Shelby, 2008; Juutinen et al., 2011). According to Fritz and Carver (1998), the lack of accessibility has been identified as a decisive indicator on measuring wilderness. It is also captured in the definition by Lesslie and Taylor (1985), which states that wilderness is defined by remote and primitive environmental conditions. In wilderness areas, improving access, in conjunction with growing visitor numbers and the rapid expansion of infrastructure, are likely to diminish these conditions. Through this shift, user conflicts are more likely to arise. Certain groups may be less satisfied with their experience, leading to their replacement by others with higher tolerance for crowding and greater needs for infrastructure (Butler, 1996; Sæþórsdóttir, 2003, 2013; Hall, Seekamp, & Cole, 2010). Balancing the varying expectations of all user groups and to match them with appropriate natural settings is a challenging, but fundamental goal for effective management of natural areas (Cole, 2004; McCool, Clark, & Stankey, 2007).

Iceland is a country still considered to contain relatively large wilderness areas, most of which are located in the uninhabited interior highlands (Ólafsdóttir & Runnström, 2011). These areas seem to be facing increased pressure on local ecosystems through, for example, erosion (Ólafsdóttir & Runnström, 2013) or increased littering and crowding – all processes that may negatively impact visitor experiences (Sæþórsdóttir, 2014). Indeed, the majority (79.7 %) of international visitors to Iceland during the summer of 2013 came with the main intention of experiencing nature (Icelandic Tourist Board, 2014). However, given the points raised above, it is an open question whether their expectations were adequately met.

## 1.2 Objectives

The overall aim of this research is to contribute to the management of semi-wilderness areas that foresee increased accessibility by assessing visitors' experiences and varied preferences for environmental conditions and infrastructure. A case study is carried out in Húsadalur, Þórsmörk, a popular tourist site located on the edge of the southern Icelandic highlands. Formerly, the site has had limited and difficult access due to unbridged glacial rivers surrounding the area, but improved accessibility is foreseen by road surface improvements and the possible establishment of a walking bridge over a glacial river.

This research will address the following questions:

- *What are the characteristics of visitors to Húsadalur, Þórsmörk?*
- *Is there a difference in day and overnight visitors' experiences and preferences towards current infrastructure in Húsadalur, Þórsmörk? If there is, what are the differences?*

In order to monitor the changes in the Icelandic semi-wilderness areas, it is of vital importance to create baseline studies before the expansion of accessibility and infrastructure takes place. Based on length of visitors' stay, this research will provide baseline information for appropriate management strategies of semi-wilderness areas that are likely to undergo increased accessibility, as well as for supporting the protection of the more fragile, pure wilderness areas.

## 2 Theoretical background

### 2.1 Taming the wild

Throughout the past centuries, a tendency has developed where people seek to return to wilderness areas in search of experiences that involve discovery and challenges, feelings of perceived danger, pristine non-human nature and scenic landscapes; all of which provide a break from the well regulated day-to-day urban life (Watson & Roggenbuck, 1986; Ewert, 1998; Borrie & Roggenbuck, 2001; McDonald, Wearing, & Ponting, 2009; Seekamp & Cole, 2009; Pavelka & Draper, 2015). This is now an ever-present characteristic of modern life and recreation. Due to the short preparation time, less equipment, supplies and experience required, semi-wilderness areas worldwide have become increasingly popular among tourists (Ewert, 1998; Chavez, 2000; Schneider, 2000). Ewert and Hood (1995) noted a difference between the type of visitors attracted to such areas in contrast to those who are prepared to experience multiple days in a more isolated wilderness.

Visitors can be classified based on the length of stay, for example, distinguishing between two major groups such as day and overnight visitors. According to Cole and Hall (2008b), the variation in visitors' experience based on length of stay can be greater than based on the extent of use. Hence using length of stay can be a more accurate indicator for pinpointing visitors' preferences. Day and overnight visitors are not as significantly different as first thought (Papenfuss, Roggenbuck, & Hall, 2000; Cole, 2001), however, Cole (2001) found contrast between the two types in their level of tolerance towards crowding and consequently their support of access limitation, with day users being the less sensitive type. He also points out that for day visitors, pristine wilderness areas might not be as necessary because they can be provided with the sought experience in more civilized semi-wild settings. As Hammitt and Schuster (2000) predict, changes in wilderness visitors' composition will occur in the next hundred years where day visits will be more frequent and the infrastructure will change catering for efficient time utilization, more reliance on guides and available information, and the increased need for facilities during short visits.

In response to the threat exposed by developing road systems to the existence of wild landscapes, a legal definition of wilderness was first established in the US Wilderness Act of 1964. The Icelandic official definition of wilderness was not formulated until 1998, when it was implemented in relation to the preparation of the Icelandic Nature Conservation Act no. 44/1999 (Ólafsdóttir & Runnström, 2011). There it is stated that a pristine wilderness is an area of land:

- (1) Where no trace of human activity is to be found and the natural landscape develops without any pressure related to human influences;
  - (2) That is situated at a distance of at least 5 km from human structures and other infrastructure, such as roads, houses, power lines, telecommunication masts, dams, etc.;
  - (3) That is at least 25 km<sup>2</sup> in size, or such that one can enjoy solitude and the natural landscape without disturbance from human structures or traffic resulting from mechanized vehicles.”
- (English translation from Ólafsdóttir and Runnström, 2011, p.281-282)

In countries, such as the United States of America, Canada, Australia and New Zealand, past decades have been spent on exploring visitors' experience and setting preferences in wilderness areas. In Iceland there is a fairly short history of such studies. Recently social research has focused on areas in the highlands, investigating visitors' perception and experience of wilderness areas (Sæþórsdóttir, 2010; Sæþórsdóttir, 2013; Sæþórsdóttir, 2014).

According to Spenceley et al. (2015), marketing based on visitor preferences can be a powerful tool, for visitor management too. By identifying groups, so called market-segments, with similar needs, management can create a brand, which will keep on attracting the same type of visitor. Measures by which visitors can be divided into segments are, for example, their demand for activities, setting preferences or motivations (Haas, Driver, & Brown, 1980; Manning, 2011). Studies suggest that assimilating wilderness perceptions into management strategies (e.g. Kliskey & Kearsley, 1993; Higham, Kearsley & Kliskey, 2000) and understanding visitors' preferences for management purposes (e.g. Bryan, 1977; Duffus & Dearden, 1990; Newsome, Moore, & Dowling, 2012; Fennell, 2014) are important facets of successful management models.

Visitors' wilderness perception can for example be measured through a framework such as the Purist Scale Model, which identifies four groups according to their certain preferences within natural settings (Stankey, 1973; Fredman & Emmelin, 2001; Vistad & Vorkin, 2012; Sæþórsdóttir, 2013). The four purism groups are: *strong-purists*, *moderate-purists*, *neutralists* and *urbanists*. Strong purists have a greater need for freedom, pristine environment, solitude, and for primitive service or limited facilities; whereas urbanists require good services and facilities, and express greater tolerance towards the presence of other visitors. Neutralists do not have strong preferences in either direction (Stankey, 1973; Sæþórsdóttir, 2013). Previous research (Shin & Jaakson, 1997; Ewert, 1998) identified a correlation between visitors arriving to exclusive wilderness areas and having high Purist scale scores, while areas with lower perceived wilderness value accommodate visitors with lower Purist scale scores. This would suggest that if increased access were degrading the level of wilderness value, it would be more likely to identify visitors with lower purist scale scores in a certain area, namely semi-wilderness.

Depending on the given visitor types in certain areas, there are likely to be multiple measures to help managing the increasing numbers of visitors. To regulate the impact, which visitors can have on the environment, Cole and Williams (2012) showed - through surveillance in American wildernesses - that visitors have a more positive response towards restriction on behaviour than actual physical boundaries. They also had preferences towards protection of the environment rather than preserving visitor experiences. Furthermore, high capabilities for adaptation to changing settings is a common skill that visitors possess (Cole and Hall, 2008a). However, according to Cole and Williams (2012), instead of initially placing too much importance on wilderness visitors' experience, certain strategic limitations can be set by management and within those limits visitors have the opportunity to create their own experiences.

Some segment groups can be expected to change their travel behaviour based on their heightened sensitivity towards social conditions e.g. crowding, noise. They will visit less crowded sites or express preferences towards applying use-limits (Higham, 1998; Sæþórsdóttir, 2013). That decision is up to management to make if they are willing to lose



this market group in order to fulfil the expectation of the adaptable majority of visitors or to bring a new market group into the area.

## 2.2 Management frameworks

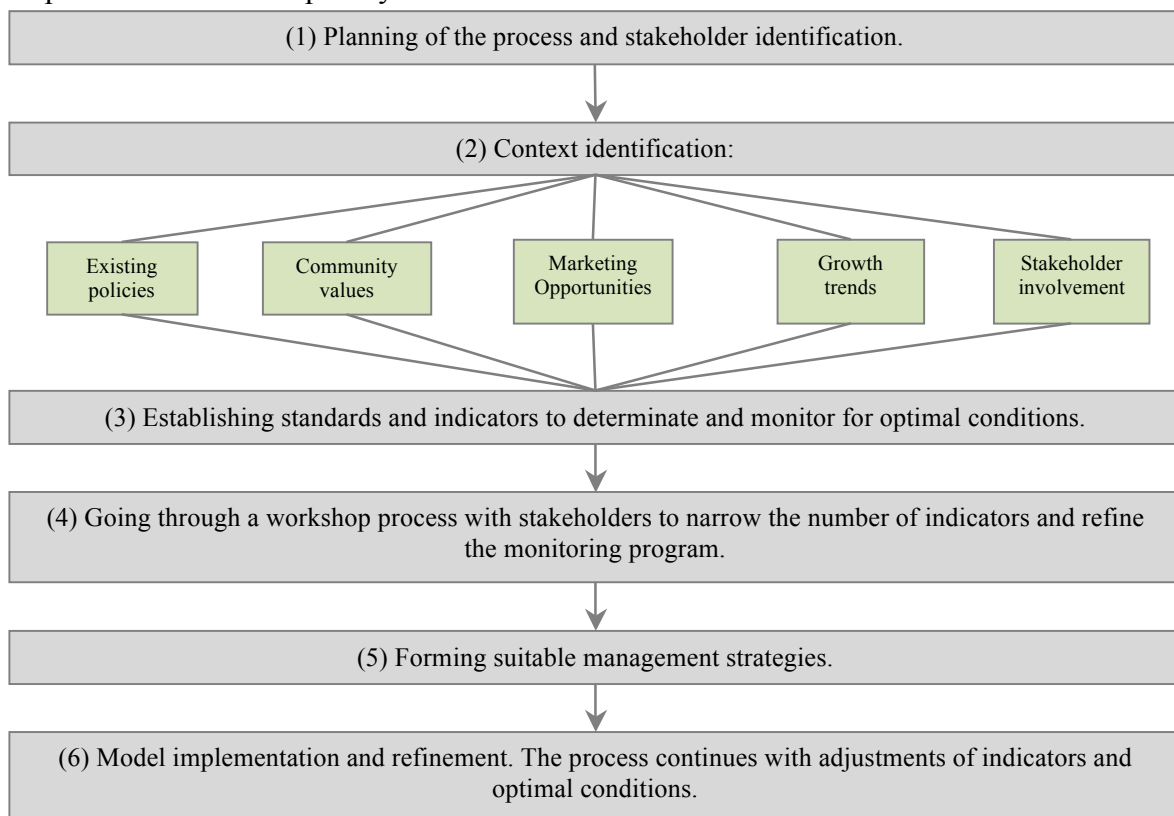
During the evolvement of visitor frameworks, the approach from establishing Carrying Capacity to deal with increasing use of recreational areas by providing a maximum number (or a threshold) of visitors in a given area; the emphasis from limits of use has now shifted towards the success of management plans and policies which aim to meet visitors' expectations (Clark & Stankey, 1979; Stankey et al. 1985; Butler, 1996). The frameworks have become more complex and sensitive to multiple interest groups, integrating economic, environmental, and social components.

Though planning is of importance in order to minimize negative impacts, maximize economic turns and contribute to positive attitudes of local stakeholders, it is not always the solution (Hall, 2008; Newsome, Moore, & Dowling, 2012). Planning wild or semi-wilderness areas as a response to increasing levels of accessibility threatens basic wilderness experience values, such as the concept of freedom, solitude, spontaneity, and potential risk (Higham, 1998; Cole, 2000; Hendee & Dawson, 2001). Due to the shift in values, further changes in the type of visitors attracted to the area will occur, hence a need for change in management strategies will arise as well. When considering use limits as a possible tool for management, it is important to have a holistic approach on the area in question. The increase in visitor numbers often affects only a few trails or facilities rather than the wilderness area as a whole. A common human behavioural pattern of trying to reduce discomfort, also known as the "path of least resistance", is likely to be the cause. According to heuristic theory (Gigerenzer & Todd, 1999), individuals (visitors) would prefer to have immediate easier solutions rather than dealing with complications and the complexities of optimising their decisions. This in relation to semi-wild areas would simply mean that areas with larger levels of comfort will most likely receive higher numbers of visitors than ones that are less accessible or less comfortable. Studies show (e.g. Schreyer, 1979; Merigliano & Smith; 2000) that zoning - the establishment of smaller units with diversified conditions within an area - can provide the means to satisfy different visitor types and various expectations. As a consequence, management can ensure the possibility that multiple visitor groups can find satisfaction, while protecting the more sensitive areas, despite the growth in visitor numbers. Furthermore Hall (2001) stated that creating zones also gives management a better chance to monitor increased accessibility throughout the whole area and to redistribute large visitor numbers before setting out use limits. Meanwhile, in setting directions for management, there is a need for guidelines which can be drawn from the definition of wilderness, visitors' opinion, stakeholders' interest, as well as management's vision, following guidance from a visitor planning framework.

The Tourism Optimisation Management Model (TOMM) was developed in the 1990s in Australia. The origin of the concept is from the continent's third largest island, Kangaroo Island, which used to only be accessible to visitors by sea and air. During 1996, access increased due to the opening of a fast ferry service line (Jack, 2000). Following this, the island's economic stability, which rested on agriculture, shifted as the tourism sector gained more and more importance. When visitor numbers started to increase management quickly realized that while utilizing the island's nature as a resource it was crucial to establish a

framework that both supported economic growth as well as the protection of the resource itself (Colmar, 2014).

TOMM draws from the benefits of earlier established management tools, such as ROS (Recreation Opportunity System) and LAC (Limits of Acceptable Change). Instead of emphasizing setting limits, by expressing flexibility it specifically encourages regional stakeholder participation as a solution for long-term success of management (Manidis, 1997). The framework is highly suited for regional planning, relevant for various settings (e.g. terrestrial, marine, wilderness, high use areas), and furthermore, it provides an opportunity for integration with other visitor planning tools. In Figure 1. the six main steps of the framework are presented, starting with an outline of the interest groups involved, through the establishment of indicators for description of the optimal conditions, and finally the implementation of the model over the managed area with possibilities for adjustment and refinements. However Newsome, Moore and Dawling (2012) examined shortcomings of TOMM, concluding that establishing the framework requires extensive data collection and data management, the identification and monitoring of various interest groups and exploration of the complexity of issues at hand.



*Figure 1. The main steps of the Tourism Optimisation Management Model. (Adapted from McArthur, 1999).*

Keeping in mind that use levels have a limited capacity in foretelling all social and ecological impacts (Washburne, 1982), it is necessary to admit that recreational use creates an impact in certain areas, often causing negative change in the distinctive characteristics and features of the area. By identifying the type and extent of impact that the establishment of a new walking bridge can cause for instance, its effect can be examined and addressed in a flexible manner by management in order to preserve the attractiveness of the area and the wilderness experience in Þórsmörk.

## 3 Research methods

### 3.1 Study area

The selected case study for this research is Húsadalur, Þórsmörk, which is situated on the edge of the southern highlands of Iceland, north of Eyjafjallajökull (Figure 3). The area is characterized by various landscapes, including volcanoes, glaciers and hillsides covered with native birch forests, and according to Tómasson (2012), many Icelanders refer to Þórsmörk as one of the most beautiful places around the country. According to the Nature Conservation Act, Icelandic law no. 44/1999, the area is not under any official protection status although The Icelandic Forest Service is in charge of the conservation of the vegetation, with the focus on forest restoration. The area contains four sites, Húsadalur, Langidalur, Slyppugil and Básar, which have various levels of facility development. A restaurant and reception, huts, campgrounds, cooking facilities, toilets, and showers are available at the various locations either by foot, bus or modified 4x4 cars. While Húsadalur is the most developed site, Slyppugil remains the least developed site, only accessible on foot. To each location, with the exception of Slyppugil, bus services are available usually from mid- May to mid-October, depending on the prevailing snow conditions. For visitors' safety a warden hut is established in Langidalur.

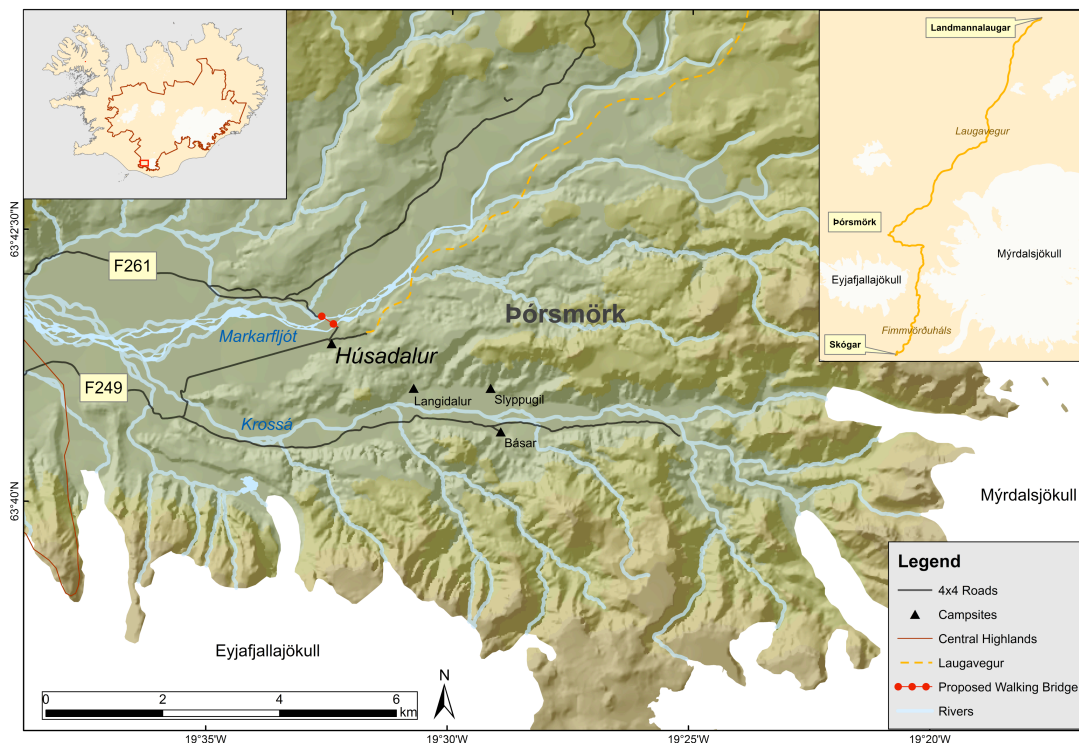


Figure 2. Topographical map of Þórsmörk and its surrounding area. (Based on data from National Land Survey of Iceland, 2015)

- Map indicating the roads allowing access to the area, and tourist sites providing facilities to accommodate visitors. The proposed walking bridge indicated with a red dotted line.

As a consequence of its geographic location, access to Húsadalur, Þórsmörk traditionally has been limited by water level condition due to two un-bridged glacial rivers: Krossá and Markarfljót. Driving into the area has only been possible in appropriate four-wheel drive vehicles over road no. F249 and via Krossá, with the much larger Markarfljót remaining impassable for vehicles (cf. Figure 2). Furthermore, Húsadalur is at the southern end of the *Laugavegur* hiking trail, which stretches over 55 km from Landmannalaugar to Þórsmörk and has presently become one of the most popular mountain trails from an international perspective (Tourism-review, 2015). Despite the limited access, Þórsmörk is the second most visited area within the interior highlands of Iceland. During the summer of 2014, 24.1% of all international tourists (Icelandic Tourist Board, 2015a) and 5.5% of Icelanders visited the area (Icelandic Tourist Board, 2015b).

As Þórsmörk is situated in close proximity to active volcanoes covered by glaciers, Bird et al. (2010) stress that the area is likely to be affected by flood hazard in the event of a sub-glacial volcanic eruption. Following the eruption of Eyjafjallajökull in 2010, a group named Friends of Þórsmörk (Icelandic: Vinir Þórsmörkur) was established. The group includes six parties with economic and ecologic interest in the area, including: the Icelandic Touring Association (Ferðafélag Íslands), Útivist Travel Association (Ferðafélagið Útivist), Hostelling International Iceland (Farfuglar), Reykjavík Excursions (Kynnisferðir), the municipality of Rangárþing eystra and the Icelandic Forest Service (Skógrækt ríkisins). Through this group claiming the need for increased safety in Þórsmörk, a proposal for a walking bridge over Markarfljót was put forward (Alþingi, 2011). The architectural competition for the final bridge design ended in September 2014 (Icelandic Road and Coastal Administration, 2015). The establishment of the proposed walking bridge, along with surface improvements performed on road F261 (see Figure 2.), will provide visitors with the opportunity to approach Húsadalur in regular cars. It is expected that with growing visitor numbers the extent of infrastructure will further increase (Húsadalur Secondary Plan, 2015), with a likely concurrent loss in wilderness value.

Ascribed to difficulties related to the financial support of the project, the constructions of the bridge at the time this essay was written have not started.

## 3.2 Sampling

This study was executed using a positivist approach during the data collection. The method originates from French philosopher, Auguste Comte, and means that the gained knowledge is based on information deriving from sensory experience, and furthermore interpreted with the use of logic and reason (Marsh & Stoker, 2010). The data perceived through senses provides empirical evidence as a basis for this research. In order to assess visitors' preferences for environmental conditions and infrastructure it was decided to use quantitative research methods. For large and varied samples this can be the most representative way to produce empirically based information. However, the conclusions drawn from the data collected in such a manner will mainly function as a "useful generalisation" (Rice, 2010, pp. 231-232), where the sample size represents the whole of the population. As well, relying too much on sensory experiences perhaps falsely implies that we have the capacity to absorb every bit of information to be found out there.

According to Mason (2014), face-to-face approaches are ideal for coordinating research over a small geographic area. An advantage of the approach is that people filling in questionnaires can be assisted right away if questions appear, or mistakes during the fulfilment of the questionnaire can be detected and corrected on the spot. For example, demographic information on gender could be added in case the interviewee misses the answer. However it's important to keep in mind that the accuracy of answers can be greatly dependent on the mood or honesty of the respondent. Manning (2011) draws attention to varied outcomes when examining visitors' experience in different stages in space and time throughout their visit.

In this research, a questionnaire survey among visitors was conducted during a seven-day period in Húsadalur - where the walking bridge is going to be established in Þórsmörk - from the 25<sup>th</sup> to the 31<sup>st</sup> of July 2014. The questionnaires were available on a printed form in English, German, French and Icelandic. A solo researcher handed out the questionnaires aiming to contact every visitor face-to-face, for the purpose of creating as large a sample size as possible in order to make the generalisations more accurate. This was followed by a brief description of the research project. For clarifying that the questions are related to a specific location, visitors were provided with the visual identification of Þórsmörk on a map. Questionnaires were distributed each day from 10 AM until 9 PM, when the last bus left the area. On busy days it was not possible to contact everyone, many would finish their hike and immediately take the bus out of the area. Also, despite trying to persuade everyone to fill in the questionnaire, not all visitors felt the desire to bring forward their opinions. Occasionally individuals excluded themselves, especially in cases of couples and travel groups, which eventually reduced the sample size. The majority of visitors were surveyed in their exit phase before leaving the area, when there is supposed to be more focus on the environment and introspection.

During the seven days a total of 446 fully answered questionnaires were gathered from Húsadalur, of which 31.5% were day visitors and 64.5% were overnight visitors. This, for the given period, represents a 43% response rate from all visitors. The proportion was calculated from car (and passenger) counting that aimed to register the total number of visitors in the area (Sæþórsdóttir, Þórhallsdóttir, & Ólafsson, 2014).

Along with the survey a daily journal was kept in order to notate variations in visitor types (e.g. the relative composition of groups and individuals, horseback riders, hikers, school groups, etc.) and weather conditions.

### **3.3 Questionnaire design and data analyses**

The survey was part of a larger project called 'Tourist carrying capacity at eight popular tourist destinations in South and West Iceland' (*Þólmörk ferðamanna á átta vinsælum ferðamannastöðum á Suður- og Vesturlandi*) initiated by the Icelandic Tourist Board and managed by Anna Dóra Sæþórsdóttir, assistant professor at the University of Iceland. The questionnaire contained thirty-seven questions, some of them using a Likert scale approach for investigating visitors' wilderness infrastructure preferences, as well as seven open-ended questions for visitors' remarks on attractiveness of the area.

The questions were composed in a way to allow assessment of the following:

1. *Visitors' attitude*: The first section of the questionnaire aims to identify preferences, which visitors have towards the natural state of the area, infrastructure and other visitors. One of the questions, namely “*How important are the following factors for you while travelling in this area?*” (no.18, see Appendix 1), draws from Stankey's (1973) methods, with the aim to group visitors into four purism classes. The answers were given on a five-point Likert scale, from which a purist score was calculated. For calculating the scores, each of the 15 items listed beneath the question had five boxes, and each box was assigned a value from one to five. The interviewees needed to choose one single box, based on how important they considered the given infrastructure or conditions. From there the points were summed, with the lowest score (14 points) assigning an *urbanist* and the highest score (70 points) indicating a *strong-purist* (Stankey, 1973; Sæþórsdóttir, 2010). Between the extremes, two other intervals were established for *moderate-purists* and *neutralists*. When talking about the certain groups in contemporary research it is recommended to keep in mind that, for example, so called strong purists would most likely differ from a strong purist described in earlier studies 20-30 years back in time. Knapp (2000) points out that technology supporting outdoor activities has come a long way. With the development of gadgets, people who would identify contemporarily as strong purist are likely to engage in using electronic navigation equipment and advanced outdoor clothing, naturally increasing their comfort level (not to mention their chances of survival) while exploring wild areas.

2. *Activities and behaviour*: This section was designed to gain information on how long visitors are staying in the area. Which hiking routes they are engaging with, what is their chosen type of accommodation and mode of travel, and if they had previously visited the area.

3. *Demographic visitor characteristics*: The third section of the questionnaire gathers information on gender, age, occupation, and nationality.

The answered questionnaires were scanned in with the help of a computerized system. The statistical analysis of the data took place using the SPSS statistical program. With the help of descriptive analyses, demographic characteristics of visitors were identified. To assess differences between the perceptions of members of the identified main group categories, frequencies, mean values, t-tests and cross tabulations were performed.

### 3.4 Limitations

Even though the bridge is to be established in Húsadalur, increased visitor numbers are expected to affect the other three locations (Langidalur, Slyppugil and Básar) too. In order to have a holistic view over Þórsmörk it would have been beneficial to have data from all the locations to see, for example, if variations in visitors' preferences on infrastructure and services are site-specific or wholly representative.

## 4 Results

### 4.1 Visitor characteristics

The results show that for all visitors, division by gender is 45.5% females and 54.5% males. The majority of both day (57.9%), and overnight visitors (52.4%) were male (Figure 3). (A) is indicating that the majority of day visitors are male. (B) is indicating that with a lesser difference, still the majority of overnight visitors are male.

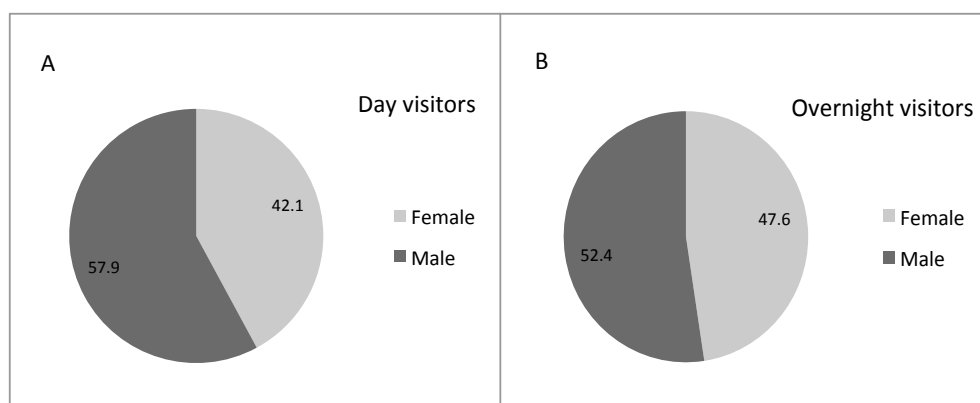


Figure 3. Day and overnight visitors' division by gender.

Visitor age varied widely, from the youngest, aged 13 years, up to 73 years, with an average of 36.6 years. The largest age group of both day (32.8%) and overnight visitors (31.9%) were between 20-29 years (Figure 4).

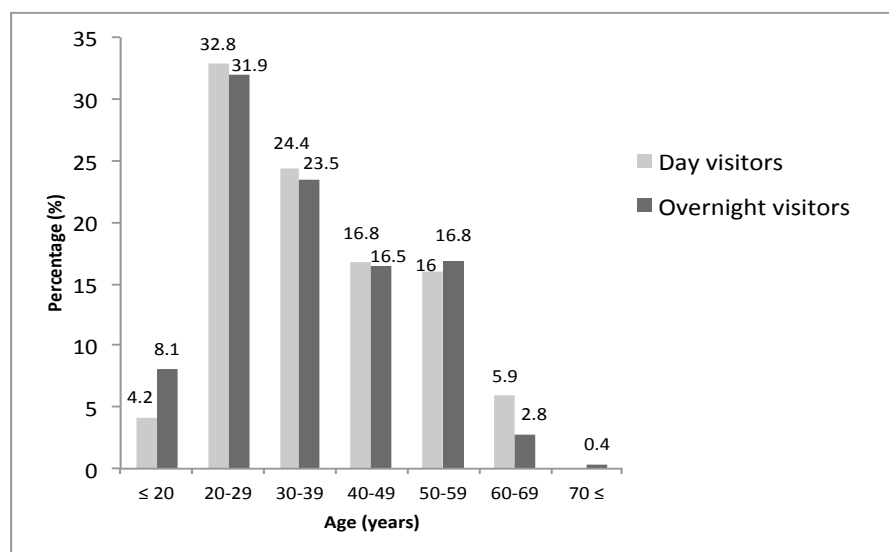


Figure 4. Visitors' age distribution expressed as percentages and differentiated by length of stay.

Regarding the nationalities of visitors (Table 1); the most abundant are Germans (17.5%) and French (14.9%). Icelandic visitors made up 7.3% of all tourists during the week of the survey. All British visitors (100%) to Þórsmörk during the week of research stayed overnight, as did a high portion of Swiss/Austrian visitors (87.5%). By contrast only 54.8% of Icelandic visitors stayed overnight.

*Table 1. Visitors' nationalities.*

| Nationality    | Day visitors (%) | Overnight visitors (%) | All visitors (%) |
|----------------|------------------|------------------------|------------------|
| German         | 22.6             | 15.5                   | 17.5             |
| French         | 19.4             | 11.9                   | 14.9             |
| BENELUX        | 12.1             | 13.7                   | 12.8             |
| Other European | 12.1             | 12.9                   | 12.3             |
| N. American    | 12.9             | 9.4                    | 10.9             |
| Swiss/Austrian | 4.0              | 12.6                   | 9.5              |
| Icelandic      | 11.3             | 6.1                    | 7.3              |
| British        | -                | 9.7                    | 6.4              |
| Scandinavian   | 4.0              | 5.8                    | 5.5              |
| Other nations  | 1.6              | 2.5                    | 2.8              |

With regard to the visitors' length of stay, the largest group among overnight visitors was those who spent one night in the area (38.8%), closely followed by 33.7 % of respondents, who stayed for two nights (Figure 5). The average length of stay was 3.6 nights, while the longest stay was 70 days (n=2). This latter result is due to staff members and volunteers working in the area being amongst the interviewees. The average length of stay without these outliers is reduced to 2.11 nights. However, in all other cases the outliers' opinions were included, and assumed to be of equal relevance to the study questions as the interviewees who are perceived as leisure visitors to the area. Most day visitors spent four hours in the area (23.7%), while the average length of stay for day visitors was 8.2 hours.



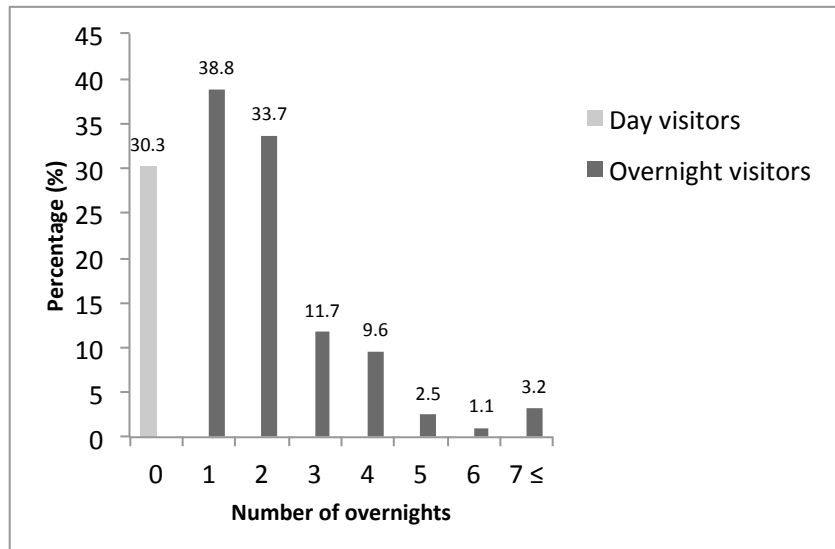


Figure 5. Length of stay among all visitors, with focus on overnight visitors' length of stay.

A total of 64% of overnight visits to Húsadalur, Þórsmörk were connected with walking the Laugavegur hiking trail. About 60% of these respondents had walked the Laugavegur trail north to south, starting their hike from Landmannalaugar, with 5.9% setting out from Húsadalur.

The means of transportation are displayed in Figure 6. There is a significantly larger group (+20%) arriving on foot to the area, who are overnight visitors (55.6%). This might be due to the fact, that many visitors who finish their Laugavegur hike in Húsadalur, spend the night there, before heading out of the area. In relation to motorized transport, day visitors represent a larger proportion of the interviewees arriving to Húsadalur via bus (50%), rental car (41%), private car (16.4%), and private car (16.4%).

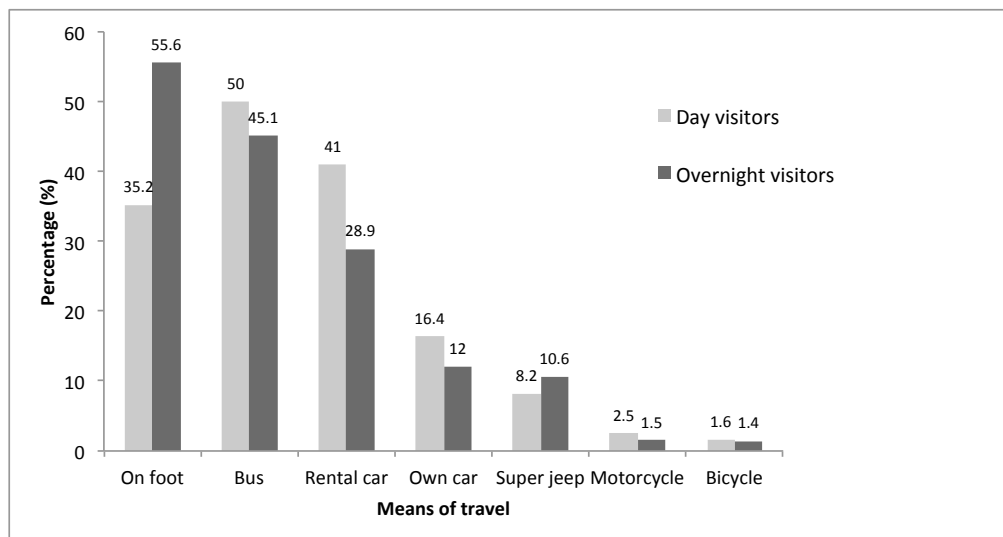


Figure 6. Day and overnight visitors' means of travel to Húsadalur, Þórsmörk.

- Note, that the percentages of various means of travel do not add up to 100%. This is due to the question being set up as multiple choices, with allowing respondents to be part on multiple categories.

The composition of visitors according to the Purist scale shows that the most abundant of the four purist-groups are neutralists (58.5%), followed by urbanists (24.3%), then moderate-purists (16%), with only 1.2% strong-purists visiting the area (Table 2). The majority of day (55.2%) and overnight (59.5%) visitors are neutralists. While 33.6% of day visitors are urbanists, only 22.1% of overnight visitors belong to the same group. Overnight visitors formed a larger percentage of both moderate (17.9%) and strong (1.4%) purists, than day visitors.

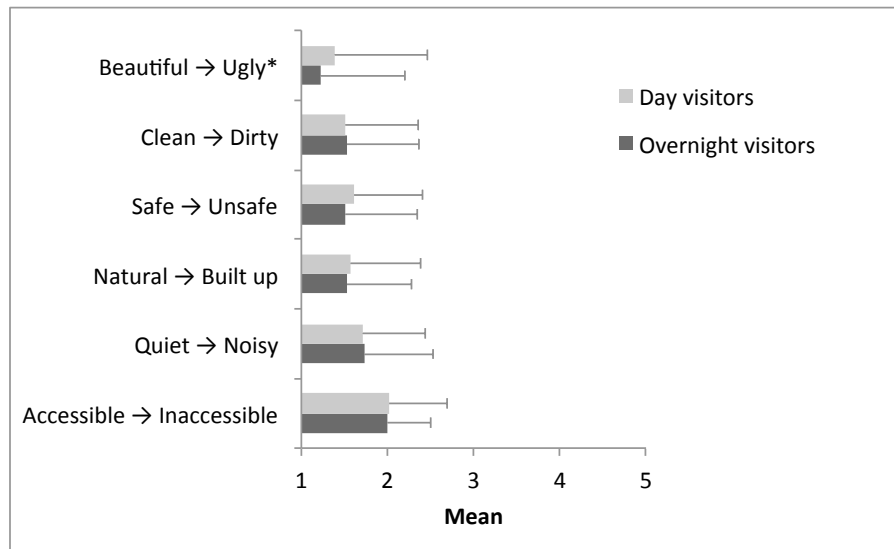
*Table 2. Purist group division, visitation record and wilderness perception of visitors to Húsadalur, Þórsmörk.*

|   | Day visitors<br>(%) | Overnight<br>visitors<br>(%) | All<br>visitors<br>(%) |
|---|---------------------|------------------------------|------------------------|
| Purist groups (question no.18, Appendix.1)                                      |                     |                              |                        |
| Urbanist  | 33.6                | 21.1                         | 24.3                   |
| Neutralist  | 55.2                | 59.5                         | 58.5                   |
| Moderate-purist   | 11.2                | 17.9                         | 16.0                   |
| Strong-purist   | -                   | 1.4                          | 1.2                    |
| Have you visited before?  |                     |                              |                        |
| Yes   | 13.7                | 10.6                         | 11                     |
| No  | 86.3                | 89.4                         | 88.8                   |
| Are you visiting Húsadalur – Þórsmörk to experience “unspoiled wilderness”?     |                     |                              |                        |
| Yes   | 76                  | 83                           | 81                     |
| No  | 24                  | 17                           | 19                     |
| Do you consider “unspoiled wilderness” to be a part of the appeal of this area? |                     |                              |                        |
| Yes   | 94.4                | 95.5                         | 95.1                   |
| No  | 0.8                 | 1.7                          | 1.4                    |

Concerning repeated visitation, nearly 90% of respondents were visiting the area for the first time (Table 2). A slightly larger proportion of day visitors (13.7%), compared with overnight visitors (10.6%) had been to Húsadalur, Þórsmörk before. Visitors were asked if they were visiting the area to experience “unspoiled wilderness”. A large majority (81%) of them were of that opinion, slightly more overnight visitors (83%) than day visitors (76%). When asked if they consider “unspoiled wilderness” to be a part of the area’s appeal, nearly all (95%) consider it to be so (cf. Table 2).

## 4.2 Day and overnight visitors’ experience and preferences towards infrastructure

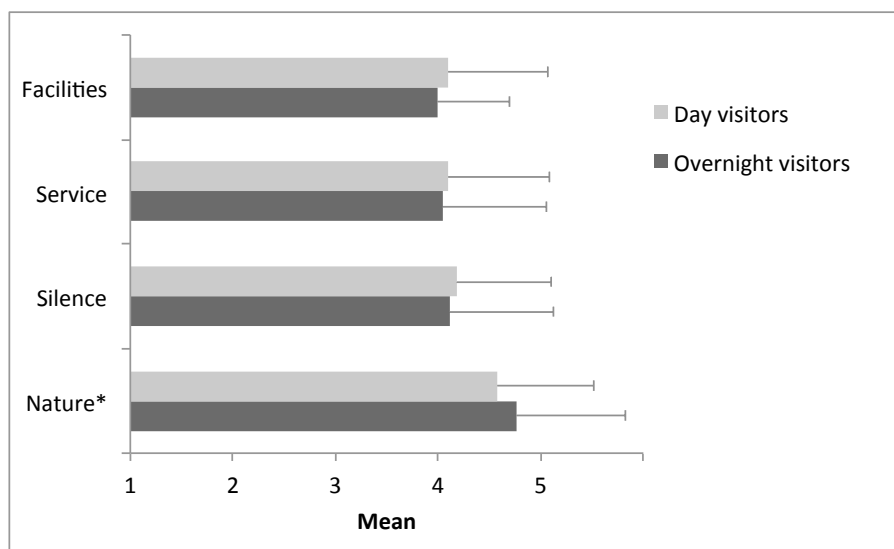
Most visitors found the area to be beautiful (77.1%), natural (60.3%), safe (58.8%) and clean (60.1%). In regards to quietness (46.7%) and accessibility (37.2%) the scores were somewhat lower (Figure 7). Notably, there was a significant difference in the opinions of day and overnight visitors with regard to the beauty of the area, with 80.6% of overnight, versus 69.1% of day visitors rating Húsadalur, Þórsmörk as beautiful. Interestingly, Húsadalur is perceived only by 1.7% of visitors as inaccessible. This might be ascribed to the fact that during the summer months there is a daily bus connection to the area.



*Figure 7. Day and overnight visitors' perception of the area.*

- Mean values on a five-point Likert scale. 1 indicates strong perceptions of the qualities written on the left hand side of the arrow, while 5 indicates strong perceptions of qualities on the right hand side of the arrow.
- The error bars represent the standard deviation.
- \* $p$ -value  $\leq 0.05$ ; statistically significant differences in experience of day and overnight visitors.

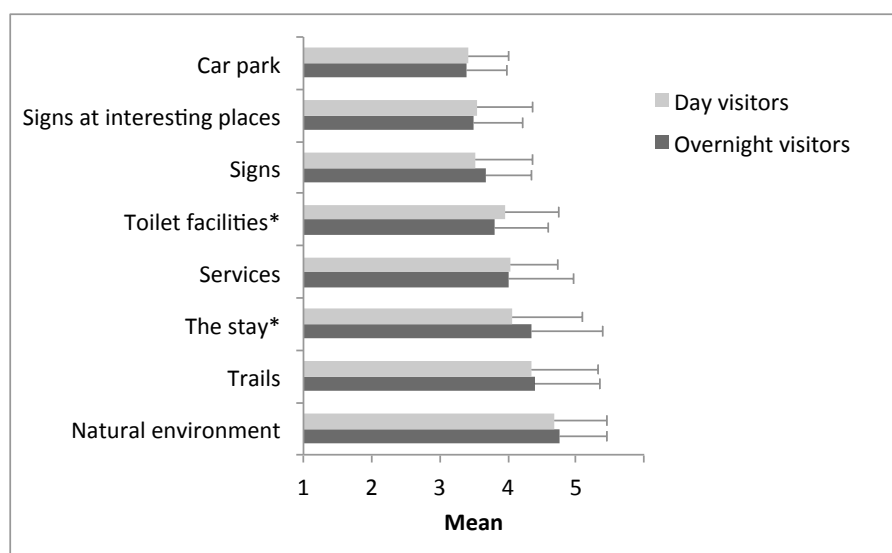
Visitors' expectations were rather fulfilled in all measured aspects - the mean score across all four aspects was 4.2 (Figure 8). While 86.3% of overnight visitors had completely fulfilled expectations regarding the nature (mean=4.77), a slightly lower proportion of day visitors (79.2%) stated the same (mean=4.58). Although services and facilities were rated highly overall, the available facilities did not meet 2.6% of overnight visitors' expectations (mean=4). Most complaints related to the "worn-down" state and inadequate numbers of toilets and showers. Notably, only 6.3% of overnight visitors claimed that their expectations were inadequately met in regard to silence (mean=4.12).



*Figure 8. Expectations of day and overnight visitors.*

- Mean values on a five-point Likert scale. 1 indicates expectations not met, while 5 indicates expectations completely met.
- The error bars represent the standard deviation.
- \* $p$ -value  $\leq 0.05$ ; statistically significant differences in expectations of day and overnight visitors.

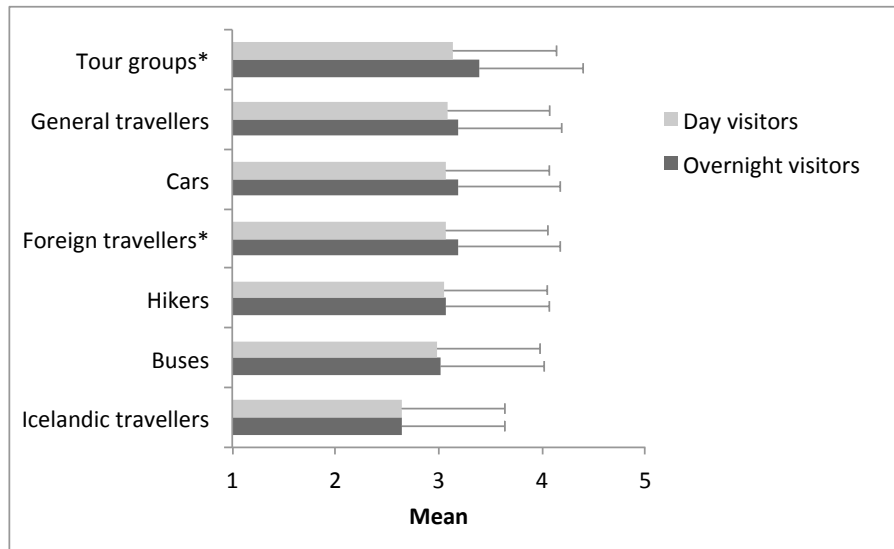
Day and overnight visitors' were generally very satisfied with their experience of Húsadalur, Þórsmörk. The mean satisfaction score for all visitors was  $> 4$ . Similar to their expectations of nature (see Figure 8), both visitor types were most satisfied with the natural environment aspect, day visitors slightly less so than overnight visitors (Figure 9). Responses to 'The stay', which aimed to capture visitor satisfaction with the overall experience of Þórsmörk, showed that day visitors were significantly less satisfied than overnight visitors, although scores for both visitor groups were still around 4. When asked about car parking, toilet facilities and signage, both visitor types' opinions were  $< 4$ . Overnight visitors were significantly less satisfied with the toilet facilities (mean=3.8).



*Figure 9. Satisfaction of day and overnight visitors.*

- Mean values on a five-point Likert scale. 1 representing dissatisfaction in relation to the examined aspect, while 5 representing satisfaction towards the examined aspect.
- Even though 'Stay' would be more correct for labelling, for consistency, 'The stay' has been taken directly from the questionnaire.
- The error bars represent the standard deviation.
- \* $p$ -value  $\leq 0.05$ ; statistically significant differences in expectations of day and overnight visitors.

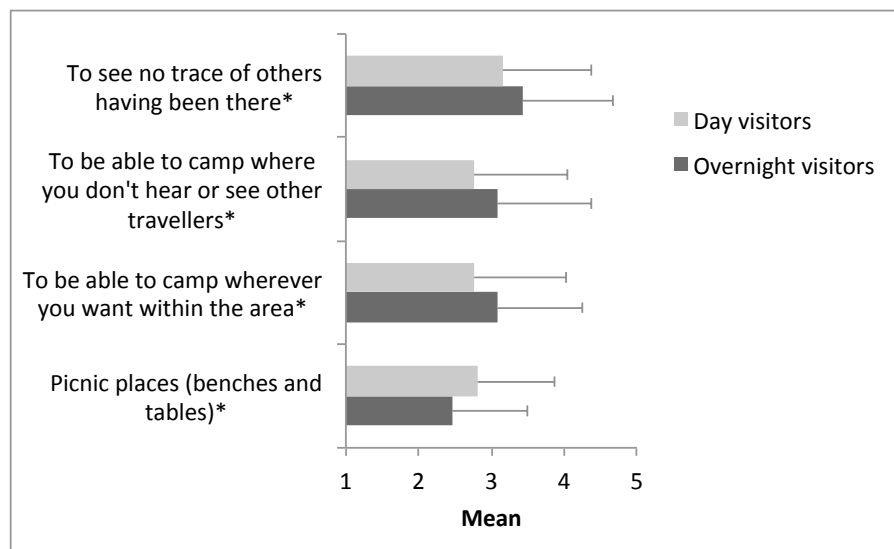
Overnight visitors also stated that there were slightly above acceptable numbers of foreign travellers (mean=3.18) and tour groups (mean=3.40) in the area (Figure 10). When considering the results across all seven aspects presented in Figure 10, it appears that if visitor numbers increase in the future, overnight visitors' satisfaction is expected to decline.



*Figure 10. Day and overnight visitors' opinions regarding the number of travellers/vehicles in the area.*

- Mean values on a five-point Likert scale. 1 representing 'too few', 3 'acceptable' and 5 'too many' of each aspect.
- The error bars represent the standard deviation.
- \* $p$ -value < 0.05; statistically significant differences in opinions of day and overnight visitors.

Evaluated from the Purist scale scores, overnight visitors had significantly stronger preferences towards seeing no traces of others than day visitors (significant differences between visitor types denoted by \* in Figure 11). Overnight visitors also place more emphasis on being able to camp wherever desired, and without seeing or hearing other visitors. Day visitors considered the presence of picnic tables and benches more important than did overnight visitors (Figure 11).



*Figure 11. Significant differences in day and overnight visitors' wilderness setting preferences.*

- Mean values on a five-point Likert scale. 1 representing 'not at all important', number 3 'neutral' and number 5 'very important'.
- The error bars represent the standard deviation.
- \* $p$ -value < 0.05; statistically significant differences in opinions of day and overnight visitors.

In relation to questions on future infrastructure projects in Húsadalur, Þórsmörk, day visitors were more in favour of developments that focussed on increased accessibility to the area, comfort and services than were overnight visitors (Figure 12). Only 6.7% of day visitors and 2.4% of overnight visitors are of the opinion that hotels are favourable in the area. A total of 5.4% day and 3.1% of overnight visitors consider power plants, dams and reservoirs appropriate. The addition of services such as visitor centres and cooked food for sale were in the top six categories identified as appropriate for Húsadalur, Þórsmörk. The construction of a walking bridge over Markarfljót had the support of 36% of all participants, with the division between 39% of day and 34.8% of overnight visitors. The proposal of building new mountain huts was supported by 31.8% of day visitors and by significantly more (i.e. 41 %) overnight visitors. Campsite development was the most desirable element of infrastructure for both visitor types, with overnight visitors showing stronger support (46.7%) than day visitors (32.7%) (Figure 12).

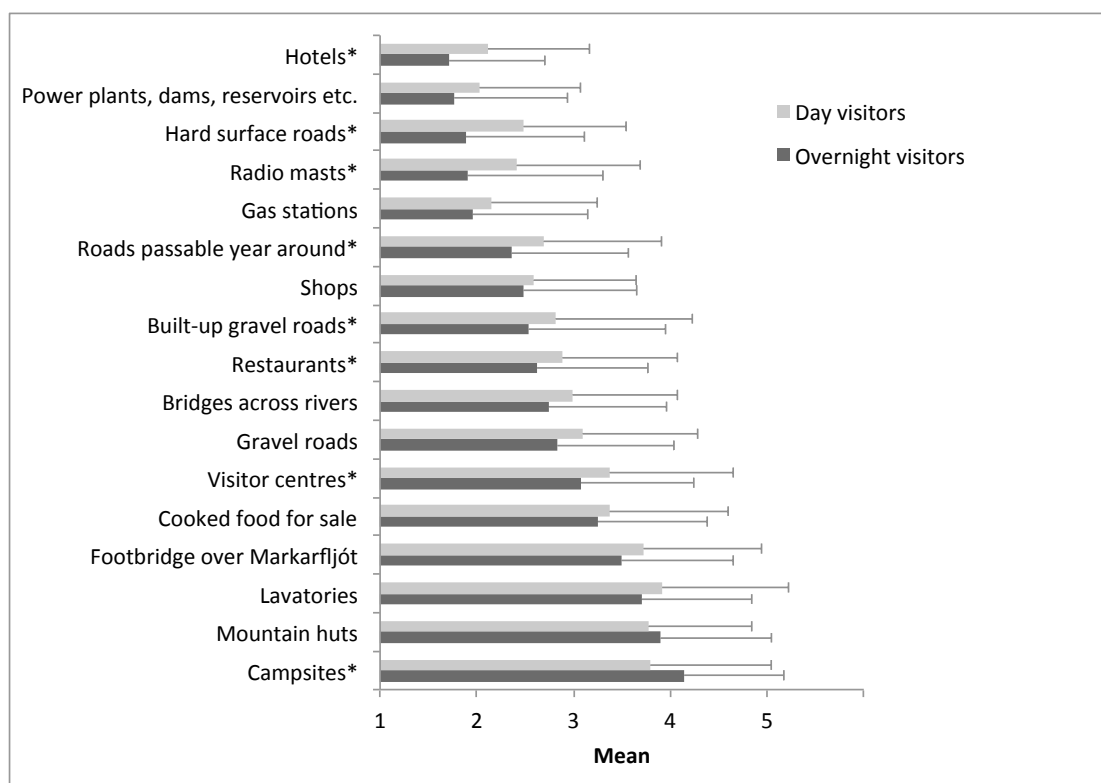


Figure 12. Day and overnight visitors' infrastructure preferences.

- Mean numbers on a five-point Likert scale. 1 representing 'very much against', and number 5 'very much for' for each infrastructure type.
- The error bars represent the standard deviation.
- \* $p$ -value  $\leq 0.05$ ; statistically significant differences in infrastructure preferences of day and overnight visitors.

According to measures of the Purist scale, day and overnight visitors were identified to similar extents as neutralists in the area of Húsadalur, Þórsmörk. In comparison to overnight visitors a somewhat larger proportion (+10%) of day visitors were urbanists. As part of the general experience, quietness and accessibility got lower scores from both groups. In relation to repeated visitation, a larger proportion of day visitors than overnight visitors had previously been to the area. Over half of the day visitor group were native inhabitants, signifying the area's attraction to Icelanders.

## 5 Discussion

### 5.1 Edging the wild

The results of this research show that visitors travelling to Húsadalur, Þórsmörk mainly fall into the neutralist category; meaning that the area is already utilized by groups with higher tolerance for crowding and bigger needs for infrastructure compared to ‘purists’ who are located on the other end of the purism continuum. However the results further show that a large majority (95%) of visitors perceive unspoiled wilderness as part of the area. As visitor numbers are expected to rise with increasing access, so is the number of facilities to provide basic services, subsequently resulting in decreased wilderness quality. This places Húsadalur not only geographically but also theoretically on the edge of the wild according to the correlation described by Shin & Jaakson (1997) and Ewert (1998) between the Purist scale and quality of wild areas (Figure 13). As difficult access has limited numbers of visitors to some extent, this has likely contributed to the high ‘wilderness’ value traditionally placed on the area by its visitors.

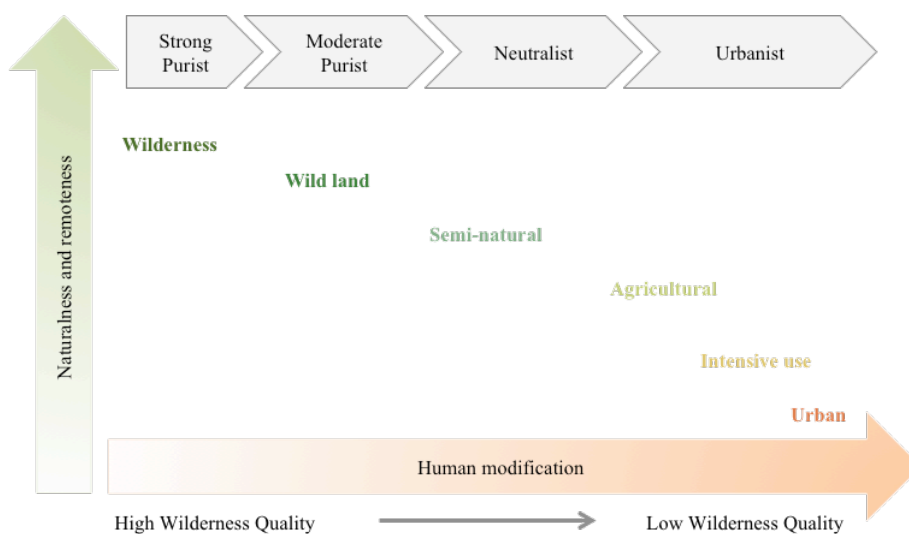


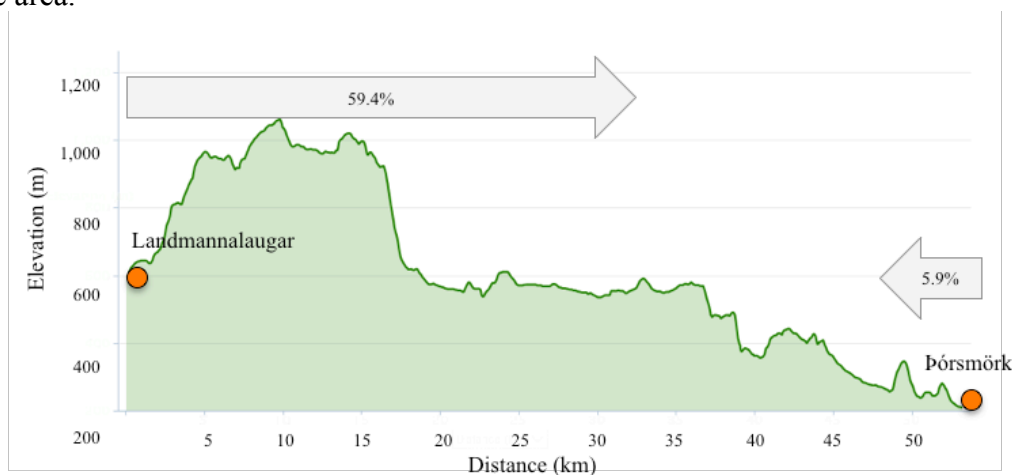
Figure 13. Wilderness continuum. (Adapted from Stankey, 1973 and Lesslie & Taylor, 1985)

Coinciding with improved access following the establishment of the proposed walking bridge into Húsadalur, the number of tourists arriving in rental and/or private cars, whilst already high, is expected to rise. An increase in rental car availability and the convenience of independent, spontaneous travel contribute to these expectations. Seemingly there is a correlation of increasing visitor numbers in recent years, and the growth in rental car numbers in Iceland, which have shot up from 4,756 in 2006 to 12,179 in the 2014 summer season (Íslandsbanki, 2015). Hence it is expected that with the growth of the tourism industry, rental car numbers will further increase. For Húsadalur, the anticipated growth in

car use for access is likely to have negative consequences for companies that run super jeep tours into the area, resulting in the loss of their customers.

Visitors' experience can vary to a great degree based on the length of stay (Cole & Hall, 2008b). However the results do not show significant differences between day and overnight visitors to Húsadalur, Þórsmörk, when compared on the Purist scale. This implies that despite the increasing number of daytime visitors associated with increased access into the area, visitors' composition on the Purist scale is not likely to change dramatically from the current state. However, for future surveillance it is important to keep in mind that if the day visitor numbers increase to a large extent, their preferences are more likely to outweigh the preferences of overnight visitors. This is important for management to be aware of when planning tourism in semi-wilderness areas, such as Húsadalur, Þórsmörk.

It is noteworthy that two thirds of overnight visitors (59.4%) arrived to the study area by foot from the Laugavegur hiking trail (Figure 14). This means that by the time they reached Húsadalur, they had spent between one and four days in areas characterised by more wilderness-like landscape (Ólafsdóttir & Runnström, 2013). Exposure to such a region would likely re-shape their experience and perception of wilderness, and hence impact their wilderness experience in Húsadalur. This might also explain why many visitors consider that there are too many others around, and in general express higher sensitivity towards noise, social factors and preferences towards certain elements of infrastructure, for example signed footpaths. Most visitors already have less satisfied opinions regarding the quietness of the area.



*Figure 14. Departures of overnight visitors from both ends of the Laugavegur trail.*

*Grey arrows represent percentages of departing overnight visitors at each end of the trail  
(Adapted from [www.offtrailrunning.is](http://www.offtrailrunning.is), 2016)*

Coincident with increased accessibility, the different types of visitors arriving to the area may have conflicting ideas of the “appropriate” use of semi-wilderness areas. This indicates that the more sensitive visitors are to social conditions, for example those who stay overnight in the area, the more likely they will suggest limits of use in order to maintain their need of wandering freely without encountering other hikers. When visitors feel that their expectations towards the experience are not met, they move towards less intact areas, opening a new frontier for similar issues. Others might be able to adjust their expectations and enjoy the increasing level of comfort (Cole and Hall, 2008b).



## 5.2 Preferred infrastructure in semi-wild areas

Regarding visitors' preferences towards infrastructure, only few would consider hotels, power plants, dams, radio masts or paved surface roads appropriate even in semi-wilderness areas, such as Þórsmörk. This is important in the light of current debate around Icelandic power plant developments in the interior of the country. The most supported elements of infrastructure are mountain huts and campsites. The emphasis on improving the current state of toilets and showers indicates that the capacity of facilities is currently under performing. More than one third of visitors support the idea of the proposed walking bridge to be built over Markarfljót. From the survey, it is not clear if the support derives from the need for increased safety or the need for comfort.

In the light of increased access, higher numbers of customers seem desirable from the business owners' point of view, providing higher incomes for the companies that have invested in the area. At the same time, with the subsequent planned road improvements it is projected that fewer people would need or use bus transportation. This has multiple consequences. Not only will there be fewer travel customers, but stakeholders would likely lose power over regulating the number of visitors accessing the area. While having the option to increase the number of specialized buses per day, once the means of independent travel become available, stakeholders will lose this power until further regulations are set. Such regulations could, for example, include certain opening hours for the walking bridge, a measure that would limit the numbers of people entering (but not the exiting) the area.

As Þórsmörk is not a uniform area, and comprises several different sites, namely Húsadalur, Langidalur, Slyppugil and Básar, it has great potentials for catering to various types of visitors accordingly to the Purist scale. By providing different settings for different visitor types, the likelihood of use-conflicts can be reduced, and visitors can be guided towards less sensitive sites (Hall, 2001). To use already high use areas for the protection of the more remote areas seems as a viable option for management, but only if they are established and maintained pro-actively and with sufficient monetary resources.

## 5.3 Management implications

For management to rely on visitor experiences and the guidance of the TOMM (Tourism Optimisation Management Model) is recommended. As there is already existing infrastructure in Þórsmörk and tourism development is beyond the beginning stage, the focus seems to have grown towards including stakeholders' interests.

The following points are intended to provide suggestions for the planning of further developments in Húsadalur, Þórsmörk:

- The establishment of a management committee would be highly advisable. Assigning a project manager would greatly improve the chances for clear communication between various interest groups, such as visitors, business owners, Friends of Þórsmörk. As well as to ensure a platform for transparent meetings and keep the focus on productive co-operation and reaching measures. With diplomatic and good communication skills the project manager should be able to engage all interest

groups in fulfilling long-term plans and short-term needs, while preserving “product” characteristics.

- Initiating a context description, of which this research could be considered a part of, will help management to identify clear measures and indicators of success. Identifying the physical and aesthetic differences between the various sites in Þórsmörk and identifying target groups can create the basis for building a long-term strategic plan.
- Despite the changeable environmental conditions, management is encouraged to establish a 5- to 10 year long-term plan with capacity for adaptation. Even though it will be challenging to get beyond short-term visions and individual interests, a holistic collective approach and a slow-burning process is much desired.
- To implement actions, management needs to identify those indicators that are supporting the long-term vision. Through inclusive and transparent meetings, means of action can be formulated.
- Some key indicators are likely to be:
  - Costs and benefits of the rise in day visitor numbers.
  - Visitor expectations met in relation to nature, infrastructure and service.
  - Visitors’ impact on landscape and wildlife.
- To support the long-term planning, setting up a monitoring program providing information on desired optimum conditions would be highly recommended. For cost efficient, continuous data collection, a collaborative relationship with graduate students from Háskóli Íslands [University of Iceland] or volunteer groups could serve as means.

Further research into understanding the dynamics of visitors’ experience, motivation, seasonal differences and the setting preferences of varied visitor types (e.g. first time or returning, local or foreign visitors), will improve the set of tools available for successful management of semi-wilderness areas.

## **5.4 Future improvements**

During the survey period it became clear that some improvements to the questionnaire could be made in the future. Namely the translation into different languages needs to be more accurate, in order to avoid misunderstandings. Furthermore the addition of more languages would be beneficial; for example Spanish, given the number of visitors encountered. By adding questions investigating visitors’ expenditure, motivation and wilderness knowledge, more detailed information would be gained for establishing market groups.

## 6 Conclusions

Without proper infrastructure planning, the growing visitor numbers in semi-wilderness areas can not only detract from the experiences visitors initially seek, but can also negatively impact the environmental settings themselves – often the very reason why people visit these places.

In Iceland, with increasing numbers of visitors travelling to the popular sites, tourists are looking for alternatives, entering “uncharted” landscapes in the search of a unique experience. Such areas, like Húsadalur, Þórsmörk, lie within a few hours drive from Reykjavík. The growing popularity of these locations provides management with the challenge to find the balance between protecting these unique, remote areas, and providing high quality experiences to visitors.

In regard to visitors’ experience of Húsadalur, overnight visitors found the area significantly more beautiful and their expectations of nature were highly fulfilled. Examining visitors’ satisfaction over the same aspects, day visitors’ mean aspect scores were significantly lower. Overall, services and facilities gained high scores; however most complaints were regarding the state and number of toilet and shower facilities. According to the opinion of both groups, scores for car parks, signs and toilet facilities were rated below a mean value of 4. Overnight visitors were significantly less satisfied with the toilet facilities than their day visitor counterparts.

Regarding infrastructure preferences, over a third of all participants supported the establishment of a walking bridge over Markarfljót along with mountain huts and campsites. Interestingly, day visitors were always more in favour of infrastructure development than overnight visitors, except on two aspects – mountain huts and campsites. The construction of visitor centres and the availability of cooked meals were considered among the top six aspects of facilities. Only a very small portion of respondents was in favour of building new hotels and power plants.

Furthermore, significant differences between day and overnight visitors’ setting preferences were found, with daytime visitors expressing significantly greater support of the availability of picnic tables and benches. Overnight visitors significantly preferred low infrastructure, meaning to not to see traces of others and to be able to camp wherever desired without hearing or seeing others. Accordingly, overnight visitors also found that there were too many tourist groups and other travellers in the area.

Establishing a walking bridge as a first step towards increasing access can ensure the safe evacuation of an area in case of a natural disaster. At the same time, it is highly probable that it will also interfere with visitors’ wilderness experiences. The results of present research indicate that the continued growth in day visitor numbers in Húsadalur, Þórsmörk is likely to degrade the wilderness value of the area available for overnight visitors through a loss of solitude.

To sum up the outcomes of this research, the following points can be made:

- This research shows that despite overnight and day visitors being not very different from one another, in comparison to overnight visitors there is a greater percentage of day visitors who can be grouped as urbanists according to the Purist scale. With the increase of day visitors, this tendency is likely to further increase.
- Consequently, the need for bettering infrastructure, facilities and services (e.g. expanding parking places, establishing hard surface roads, increasing number of restrooms, providing more signs, and the construction of visitor centres), will rise, and hence the traditional wilderness value of the area is expected to decline.
- Shown by this research, overnight visitors feel that the number of foreign travellers and tour groups is currently too large. Therefore, I speculate that with increasing numbers of day visitors the number of overnight visitors would decline.

In the light of this knowledge, it is of vital importance that managers of the area develop responsibly conducted frameworks based on robust science and public engagement to preserve not only the ecological health but also the attractiveness of semi-wilderness areas.

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# Appendix A - Questionnaire



## Survey on Tourism in Þórsmörk

*This survey is part of a study of tourism in popular traveller destinations carried out by the University of Iceland in cooperation with the Icelandic Tourist Board. Please base your responses on **Húsadalur - Þórsmörk**. The survey will take around 10 minutes to complete.*

### 1. How satisfied or dissatisfied are you with the following in the area?

|                             | very<br>dissatisfied     | dissatisfied             | neutral                  | satisfied                | very<br>satisfied        |
|-----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| The stay                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Natural environment         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Trails                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Services                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Car park                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Toilet facilities           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Signs at interesting places | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Signs                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### 2. Was there anything that was particularly pleasing?

1. \_\_\_\_\_  
2. \_\_\_\_\_

### 3. Was there anything that was particularly disappointing?

1. \_\_\_\_\_  
2. \_\_\_\_\_

### 4. What was your experience of the area?

|            | neither/nor              |                          |                          |                          |                          |              |
|------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------|
| Natural    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Built-up     |
| Safe       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Unsafe       |
| Clean      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Dirty        |
| Quiet      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Noisy        |
| Accessible | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Inaccessible |
| Beautiful  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Ugly         |

### 5. My expectations were fulfilled regarding:

|            | not at all               |                          | adequately               |                          | completely               | no opinion               |
|------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Nature     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Service    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Facilities | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Silence    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



6. What is the area's main attraction? \_\_\_\_\_  
\_\_\_\_\_

7. Have you been here before? ☐ Yes, how often \_\_\_\_\_  
☐ No

8. Have you noticed any of the following caused by travellers? (if you have been here before and notice any changes, please fill in the less/more option as well)

|                                    | not at<br>all            |                          |                          |                          |                          | very<br>much             | less than<br>before      | more than<br>before      |
|------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Damaged vegetation                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Garbage                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Erosion of foot paths              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Damage of geological<br>formations | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

9. What is your opinion of the number of travellers/vehicles in the area?

|                      | too few                  |                          | acceptable               |                          | too many                 |
|----------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| General, travellers  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Foreign travellers   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Icelandic travellers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Tour groups          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Hikers               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Busses               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Cars                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

10. Did you expect to see more or fewer of the following in the area?

|                      | much fewer               | fewer                    | as expected              | more                     | many more                |
|----------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| General, travellers  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Foreign travellers   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Icelandic travellers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Tour groups          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Hikers               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Busses               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Cars                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

11. Did the travellers in any way detract from your experience of the area?

- ☐ No  
☐ Yes, in what way? \_\_\_\_\_

12. Did helicopter or aeroplane traffic detract from your experience of the area in any manner?

- ☐ No  
☐ Yes, in what way? \_\_\_\_\_





13. If you have been here previously, has the number of travellers changed since you came here last time?

- ☐ Fewer than before    ☐ No change    ☐ More than before    ☐ Have not been here before

14. How long are you planning to stay in the area?

\_\_\_\_ min.    \_\_\_\_ hours    \_\_\_\_ night/nights

15. How long are you planning to walk in the area?

- ☐ \_\_\_\_ min.  
☐ \_\_\_\_ hours  
☐ Do not intend to walk

16. Did you / do you intend to walk the Laugavegur trail?

- ☐ Yes, from Landmannalaugar  
☐ Yes, from Þórsmörk  
☐ No

17. Did you / do you intend to walk the Fimmvörðuháls trail?

- ☐ Yes, from Skógar  
☐ Yes, from Þórsmörk  
☐ No

18. How important are the following factors for you while travelling in this area?

|   | not at all<br>important  |                          | neutral                  |                          | very<br>important        |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Marked walking routes   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Designed foot paths   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Walk-ways (footbridge)  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To be able to enjoy peace   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To be able to enjoy unspoiled nature                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Picnic places (benches and tables)                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To have few other tourists around                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| That there is no trace of off-road driving                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To be able to walk without seeing structures<br>(other than huts) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To see no trace of others having been there                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Special markings on places of interest                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Campsite with facilities (toilets, garbage cans etc.)             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To be able to camp wherever you want<br>within the area           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To be able to camp where you don't<br>hear or see other travelers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Not to be disturbed by air traffic                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



**19. Your opinion on the following structures/facilities in the area?**

|                                     | very much<br>against     |                          | acceptable               |                          | very much<br>for         | no<br>opinion            |
|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Footbridge over Markarfljót         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Gravel roads                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Built-up gravel roads               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Hard surface roads                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Bridges across rivers               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Roads passable year round           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Power plants, dams, reservoirs etc. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Radio masts                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Hotels                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Mountain huts                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Campsites                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Shops                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Restaurants                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Gas stations                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Lavatories                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Cooked food for sale                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Visitor centers                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Other man-made structures: \_\_\_\_\_

**20. Do you consider "unspoiled wilderness" to be a part of the appeal of this area?**

☐ Yes ☐ No ☐ No opinion

**21. Are you visiting Húsadalur - Þórsmörk to experience "unspoiled wilderness"?**

☐ Yes ☐ No

**22. In your opinion which of the following may be present in an area for it to be considered "unspoiled nature/wilderness"? Mark more than one if appropriate.**

- |   |   |
|---|---|
| <input type="checkbox"/> Mountain huts          | <input type="checkbox"/> Dams/power plants                              |
| <input type="checkbox"/> Hotels                 | <input type="checkbox"/> Reservoirs                                     |
| <input type="checkbox"/> Roads                  | <input type="checkbox"/> Windmills                                      |
| <input type="checkbox"/> Tracks by vehicles     | <input type="checkbox"/> Damaged vegetation                             |
| <input type="checkbox"/> Fences                 | <input type="checkbox"/> Damaged natural phenomena                      |
| <input type="checkbox"/> Visitor centres        | <input type="checkbox"/> Traces of off-road driving                     |
| <input type="checkbox"/> Electrical power lines | <input type="checkbox"/> Designed footpaths                             |
| <input type="checkbox"/> Radio masts            | <input type="checkbox"/> Trails made by walkers and/or domestic animals |

**23. How much/little did the following influence your visit to the area at this time of year?**

|   | very little              | little                   | neither/<br>nor          | much                     | very much                |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| The destination was included in an organised tour | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Nature, what: _____                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Northern lights                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Interesting hiking area                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other, what: _____                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**24. Have you been to Iceland before?**

☐ Yes, in what month? \_\_\_\_\_ How often? \_\_\_\_\_

☐ No, never been before

**25. Are you interested in visiting Iceland again?**

☐ Yes, in what month? \_\_\_\_\_ ☐ No, I am not interested in visiting Iceland again.

Why that month? \_\_\_\_\_

**26. How much did the following have an effect on your decision to visit Iceland at this time of year?**

|                                  | very little              | little                   | neither/<br>nor          | much                     | very much                |
|----------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Climate                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Cultural event                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Holiday from work                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Educational trip                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Conference / meeting / work trip | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Nightlife                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Good price / special offer       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other, what? _____               |                          |                          |                          |                          |                          |

**27. Where did you stay last night?** \_\_\_\_\_

**28. Where are you staying tonight?** \_\_\_\_\_





**29. What type of accommodation do you use?** Mark more than one if appropriate.

- |   |   |
|---|---|
| <input type="checkbox"/> Hotel              | <input type="checkbox"/> With relatives/friends |
| <input type="checkbox"/> Camping            | <input type="checkbox"/> Hostel                 |
| <input type="checkbox"/> In the car         | <input type="checkbox"/> Others, which: _____   |
| <input type="checkbox"/> Farm accommodation |   |

**30. With whom are you travelling?** Mark more than one if appropriate.

- |  |   |
|--|---|
| <input type="checkbox"/> By myself         | <input type="checkbox"/> Work or club mates |
| <input type="checkbox"/> Family members    | <input type="checkbox"/> Incentive tour     |
| <input type="checkbox"/> Relatives/friends | <input type="checkbox"/> Other who? _____   |
| <input type="checkbox"/> An organized tour |   |

**31. How are you travelling?** Mark more than one if appropriate.

- |   |  |
|---|--|
| <input type="checkbox"/> In a private car                 | <input type="checkbox"/> On foot           |
| <input type="checkbox"/> In a rent-a-car                  | <input type="checkbox"/> Cruise Ship       |
| <input type="checkbox"/> By bus                           | <input type="checkbox"/> Super Jeep Tour   |
| <input type="checkbox"/> Motorcycles/All terrain vehicles | <input type="checkbox"/> Other, how? _____ |
| <input type="checkbox"/> On bicycle                       |  |

**32. Nationality?** \_\_\_\_\_

**33. What is your occupation?**

- |   |   |
|---|---|
| <input type="checkbox"/> Student            | <input type="checkbox"/> Managerial   |
| <input type="checkbox"/> Clerical/service   | <input type="checkbox"/> Vocational/technical                                     |
| <input type="checkbox"/> Unskilled          | <input type="checkbox"/> Working at home  |
| <input type="checkbox"/> Retired            | <input type="checkbox"/> Professional; (doctor/ lawyer/accountant/architect etc.) |
| <input type="checkbox"/> Other, what? _____ |   |

**34. Gender:** ☐ Female  
☐ Male

**35. Age:** \_\_\_\_\_ years

**36. Is there anything you wish to add?** \_\_\_\_\_

**37. Date answered (DD/MM/YY)**

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|--|--|--|--|--|--|

Húsadalur - Þórsmörk 2014



Thank you very much!

## Appendix B – Statistics

*Table 3. Day and overnight visitors' experience of the area.*

- \**p*-value  $\leq 0.05$ ; statistically significant differences in experience of day and overnight visitors.

|                           |                    | N   | Mean  | Std. Deviation | t      | p      |
|---------------------------|--------------------|-----|-------|----------------|--------|--------|
| Natural → Built up        | Day visitors       | 124 | 1.58  | 0.797          | 0.572  | 0.568  |
|                           | Overnight visitors | 287 | 1.53  | 0.844          |        |        |
| Safe → Unsafe             | Day visitors       | 124 | 1.61  | 0.804          | 1.245  | 0.214  |
|                           | Overnight visitors | 286 | 1.51  | 0.748          |        |        |
| Clean → Dirty             | Day visitors       | 123 | 1.50  | 0.717          | -0.289 | 0.773  |
|                           | Overnight visitors | 286 | 1.53  | 0.789          |        |        |
| Quiet → Noisy             | Day visitors       | 122 | 1.72  | 0.855          | -0.248 | 0.805  |
|                           | Overnight visitors | 285 | 1.74  | 0.836          |        |        |
| Accessible → Inaccessible | Day visitors       | 122 | 2.02  | 1.072          | 0.355  | 0.723  |
|                           | Overnight visitors | 284 | 1.99  | 0.977          |        |        |
| Beautiful → Ugly          | Day visitors       | 123 | 1.39* | 0.673          | 2.418  | 0.017* |
|                           | Overnight visitors | 283 | 1.23  | 0.511          |        |        |

*Table 4. Expectations of day and overnight visitors.*

- \**p*-value  $\leq 0.05$ ; statistically significant differences in expectations of day and overnight visitors.

|            |                    | N   | Mean  | Std. Deviation | t      | p      |
|------------|--------------------|-----|-------|----------------|--------|--------|
| Nature     | Day visitors       | 125 | 4.58* | 0.969          | -1.996 | 0.047* |
|            | Overnight visitors | 284 | 4.77  | 0.695          |        |        |
| Service    | Day visitors       | 107 | 4.10  | 0.921          | 0.576  | 0.565  |
|            | Overnight visitors | 264 | 4.04  | 1.009          |        |        |
| Facilities | Day visitors       | 116 | 4.10  | 0.945          | 0.940  | 0.348  |
|            | Overnight visitors | 269 | 4.00  | 0.1060         |        |        |
| Silence    | Day visitors       | 118 | 4.18  | 0.984          | 0.537  | 0.592  |
|            | Overnight visitors | 271 | 4.12  | 1.022          |        |        |

*Table 5. Satisfaction of day and overnight visitors.*

- \*p-value  $\leq 0.05$ ; statistically significant differences in expectations of day and overnight visitors.

|                             |                    | N   | Mean  | Std. Deviation | t      | p      |
|-----------------------------|--------------------|-----|-------|----------------|--------|--------|
| The stay                    | Day visitors       | 112 | 4.06* | 0.831          | -3.402 | 0.001* |
|                             | Overnight visitors | 281 | 4.34  | 0.678          |        |        |
| Natural environment         | Day visitors       | 125 | 4.68  | 0.604          | -1.067 | 0.287  |
|                             | Overnight visitors | 290 | 4.75  | 0.596          |        |        |
| Trails                      | Day visitors       | 127 | 4.35  | 0.822          | -0.462 | 0.644  |
|                             | Overnight visitors | 286 | 4.39  | 0.726          |        |        |
| Services                    | Day visitors       | 122 | 4.04  | 0.776          | 0.523  | 0.601  |
|                             | Overnight visitors | 287 | 4.00  | 0.791          |        |        |
| Car park                    | Day visitors       | 90  | 3.41  | 0.777          | 0.215  | 0.830  |
|                             | Overnight visitors | 202 | 3.39  | 0.713          |        |        |
| Toilet facilities           | Day visitors       | 120 | 3.97  | 0.697          | 1.933  | 0.054  |
|                             | Overnight visitors | 281 | 3.80* | 0.965          |        |        |
| Signs at interesting places | Day visitors       | 122 | 3.54  | 0.972          | 0.391  | 0.696  |
|                             | Overnight visitors | 280 | 3.50  | 0.965          |        |        |
| Signs                       | Day visitors       | 125 | 3.53  | 1.044          | -1.335 | 0.183  |
|                             | Overnight visitors | 283 | 3.68  | 1.051          |        |        |

*Table 6. Day and overnight visitors' opinion regarding the number of travellers/vehicles in the area.*

- \*p-value  $\leq 0.05$ ; statistically significant differences in the opinions of day and overnight visitors.

|                      |                    | N   | Mean  | Std. Deviation | t      | p      |
|----------------------|--------------------|-----|-------|----------------|--------|--------|
| General Travellers   | Day visitors       | 125 | 3.08  | 0.617          | -1.892 | 0.059  |
|                      | Overnight visitors | 284 | 3.19  | 0.533          |        |        |
| Foreign travellers   | Day visitors       | 122 | 3.06  | 0.593          | -2.029 | 0.043* |
|                      | Overnight visitors | 278 | 3.18* | 0.562          |        |        |
| Icelandic travellers | Day visitors       | 118 | 2.64  | 0.712          | 0.006  | 0.995  |
|                      | Overnight visitors | 274 | 2.64  | 0.829          |        |        |
| Tour Groups          | Day visitors       | 125 | 3.14  | 0.692          | -3.295 | 0.001* |
|                      | Overnight visitors | 281 | 3.40* | 0.744          |        |        |
| Hikers               | Day visitors       | 124 | 3.05  | 0.582          | -0.334 | 0.739  |
|                      | Overnight visitors | 285 | 3.07  | 0.474          |        |        |

|       |                    |     |      |       |        |       |
|-------|--------------------|-----|------|-------|--------|-------|
| Buses | Day visitors       | 124 | 2.98 | 0.584 | -0.478 | 0.633 |
|       | Overnight visitors | 278 | 3.02 | 0.693 |        |       |
| Cars  | Day visitors       | 123 | 3.07 | 0.624 | -1.627 | 0.105 |
|       | Overnight visitors | 277 | 3.18 | 0.720 |        |       |

*Table 7. Significant differences in day and overnight visitors' wilderness setting preferences.*

|   |                    | N   | Mean | Std. Deviation | t      | p     |
|---|--------------------|-----|------|----------------|--------|-------|
| Picnic places<br>(benches and<br>tables)                                    | Day visitors       | 124 | 2.81 | 1.201          | 2.551  | 0.011 |
|   | Overnight visitors | 290 | 2.47 | 1.229          |        |       |
| To see no trace<br>of others having<br>been there                           | Day visitors       | 126 | 3.17 | 1.056          | -2.474 | 0.014 |
|   | Overnight visitors | 289 | 3.44 | 1.023          |        |       |
| To be able to<br>camp wherever<br>you want within<br>the area               | Day visitors       | 124 | 2.77 | 1.293          | -2.211 | 0.028 |
|   | Overnight visitors | 291 | 3.08 | 1.283          |        |       |
| To be able to<br>camp where<br>you don't hear<br>or see other<br>travellers | Day visitors       | 122 | 2.75 | 1.255          | -2.500 | 0.013 |
|   | Overnight visitors | 292 | 3.09 | 1.168          |        |       |

*Table 8. Day and overnight visitors' infrastructure preferences.*

- \**p*-value  $\leq 0.05$ ; statistically significant differences in infrastructure preferences of day and overnight visitors.

|                                |                    | N   | Mean  | Std. Deviation | t     | p      |
|--------------------------------|--------------------|-----|-------|----------------|-------|--------|
| Footbridge over<br>Markarfljót | Day visitors       | 82  | 3.73  | 1.287          | 1.298 | 0.195  |
|                                | Overnight visitors | 204 | 3.50  | 1.395          |       |        |
| Gravel roads                   | Day visitors       | 98  | 3.09  | 1.066          | 1.886 | 0.060  |
|                                | Overnight visitors | 243 | 2.84  | 1.163          |       |        |
| Built-up gravel<br>roads       | Day visitors       | 99  | 2.81* | 1.085          | 2.091 | 0.038* |
|                                | Overnight visitors | 241 | 2.53  | 1.221          |       |        |
| Hard surface<br>roads          | Day visitors       | 105 | 2.49* | 1.302          | 4.281 | 0.000* |
|                                | Overnight visitors | 244 | 1.89  | 1.144          |       |        |
| Bridges across<br>rivers       | Day visitors       | 109 | 2.99  | 1.417          | 1.514 | 0.131  |
|                                | Overnight visitors | 254 | 2.74  | 1.426          |       |        |
| Roads passable                 | Day visitors       | 87  | 2.69* | 1.288          | 2.179 | 0.030* |

|   |                    |     |       |       |        |        |
|---|--------------------|-----|-------|-------|--------|--------|
| year round                                | Overnight visitors | 213 | 2.36  | 1.163 |        |        |
| Power plants,<br>dams,<br>reservoirs etc. | Day visitors       | 96  | 2.02  | 1.076 | 1.912  | 0.057  |
|   | Overnight visitors | 241 | 1.76  | 1.155 |        |        |
| Radio masts                               | Day visitors       | 102 | 2.41* | 1.213 | 3.609  | 0.000* |
|   | Overnight visitors | 240 | 1.91  | 1.152 |        |        |
| Hotels                                    | Day visitors       | 105 | 2.11* | 1.243 | 2.969  | 0.003* |
|   | Overnight visitors | 251 | 1.71  | 1.036 |        |        |
| Mountain huts                             | Day visitors       | 107 | 3.77  | 1.051 | -0.905 | 0.366  |
|   | Overnight visitors | 261 | 3.89  | 1.178 |        |        |
| Campsites                                 | Day visitors       | 107 | 3.80  | 1.059 | -2.880 | 0.004* |
|   | Overnight visitors | 270 | 4.14* | 0.994 |        |        |
| Shops                                     | Day visitors       | 107 | 2.58  | 1.198 | 0.672  | 0.502  |
|   | Overnight visitors | 259 | 2.49  | 1.205 |        |        |
| Restaurants                               | Day visitors       | 115 | 2.88* | 1.193 | 1.989  | 0.047* |
|   | Overnight visitors | 263 | 2.62  | 1.149 |        |        |
| Gas stations                              | Day visitors       | 101 | 2.15  | 1.236 | 1.348  | 0.179  |
|   | Overnight visitors | 244 | 1.96  | 1.131 |        |        |
| Lavatories                                | Day visitors       | 117 | 3.92  | 1.052 | 1.830  | 0.068  |
|   | Overnight visitors | 269 | 3.70  | 1.223 |        |        |
| Cooked food<br>for sale                   | Day visitors       | 109 | 3.37  | 1.094 | 0.849  | 0.396  |
|   | Overnight visitors | 256 | 3.08  | 1.192 |        |        |
| Visitor centres                           | Day visitors       | 113 | 3.37* | 1.219 | 2.116  | 0.035* |
|   | Overnight visitors | 265 | 3.08  | 1.213 |        |        |