



Master Thesis

Ecological impacts of tourism in Swiss National Park

Assessing the ecological impacts of nature based tourism in the Swiss National Park

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List of abbreviations

- **IUCN:** International Union for Conservation of Nature
- **NBT:** Nature based tourism
- **SNP:** Swiss National Park
- **UNEP:** United Nations Environment Programme
- **UNESCO:** United Nations Educational, Scientific and Cultural Organization
- **WCPA:** World Commission on Protected Areas

Abstract

This research paper intends to get an insight of a new topic, mainly to identify and to assess the ecological impacts in the Swiss National Park based on the general ideas found in literature combined with the specific answers resulted from the research. Thereby, the author of this paper desires to provide some new information which could provide some new knowledge to the literature. This research paper will first try to develop a list with general ecological impacts of tourism, followed by a selection of ecological impacts of nature based tourism in the Swiss National Park and an assessment of their consequences. Moreover, the author of paper will investigate the management awareness and taken actions with regard of these impacts and consequences.

1. Introduction

1.1. Background

The topic of this research is a new one, as there could not be found any previous studies which investigated the ecological impacts of nature based tourism in the Swiss National Park (SNP).

The author considers that this is an interesting topic that should be researched because during last years, nature based tourism (NBT) has had a notable growth in Switzerland and many other European countries and appeared as a consequence of reducing the negative impact determined by mass tourism on the natural ecosystem (Matilainen & Lähdesmäki, 2014). Furthermore, Swiss National Park is an important natural resource for Switzerland because it is considered the biggest protected area of this country which is famous for the variety of flora and fauna (Swiss National Park, 2015). Moreover this park was established for both scientific purposes and for having an area which is not preserved from the development of the human society (Kupper, 2014).

Nevertheless, the activity of tourism inevitably creates impacts and therefore consequences (Terry & Sarah, 2000) (Tisdell & Wilson, 2012). The well-being of an ecosystem is essential for the preservation of a protected area and any impacts upon the ecosystem (ecological impact) could temporarily or definitively change it in a negative way (Dowling, Newsome, & Moore, 2002).

Therefore the author considers that it is important to identify and to assess the ecological impacts of nature based tourism in such pristine and important area for Switzerland, in order to determine whether or not the activity tourism is either a beneficial or a detrimental one for the national park, or if doesn't have any influence upon it.

1.2. Research Problem

The research problem comes from the lack of specific literature concerning the ecological impacts of nature based tourism in the Swiss National Park. The author of this paper could not found any other studies related to this subject and only general information about ecological impacts, about nature based tourism and about Swiss National Park.

Another problem comes from the confusion in literature because some scholars use the term of ecological impacts as synonym for the environmental impact (Buckley, 2003) (Liu et al., 2015) (Haukeland, Veisten, Grue, & Vistad, 2013) (Kelkit, Ozel, & Demirel, 2005) and there could not be found any study which clearly compares the two concepts.

1.3. Research Aim and Questions

The aim of this study is to identify and to assess the ecological impacts of nature based tourism in the Swiss National Park.

This aim is summarized in the following research question:

'What are the ecological impacts of nature based tourism in the Swiss National Park and how are they affecting this area?'

The question is formulated broadly and in order to ensure a red thread for the paper, several sub-questions were formulated as support to the main question. By answering to all sub-questions the author will be able to fulfil the aim of this research paper.

Table 1 presents an overview of the research question and sub-questions:

Table 1: Overview of the research question and sub-questions

Research question:
What are the ecological impacts of nature based tourism in the Swiss National Park and how are they affecting this area?
Sub questions:
1. What is nature based tourism?
2. What is Swiss National Park?
3. Is the tourism at the Swiss National Park nature based or not?
4. What are ecological impacts?
5. What are possible ecological impacts of nature based tourism?
6. What are the consequences of those impacts upon the area of the Swiss National Park?
7. Is the management of the SNP aware of these possible impacts and consequences? If yes, how is it dealing with them?

Source: Own Illustration

2. Methodology

2.1. Research Strategy and Design

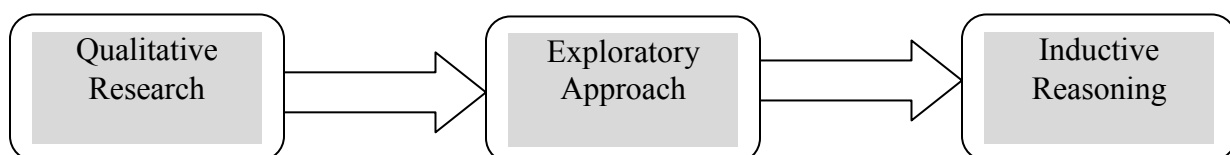
This research paper uses a qualitative research methodology because the author of this paper is interested to work with a smaller sample (due to time limitation) which could bring him saturation, through rich and detailed answers, at his research questions. Moreover, according to Bryman & Bell (2007) a qualitative research is interested in the quality of information, in words and not in numbers, which represents the main focus of the author. Unlike a quantitative research, the answers received from the interviewees could not be easily transformed in numbers as they could be very complex. According to Hopper (2011) a qualitative research combines the interviews with the historical research (such as literature review) and the author of this paper uses literature to understand the context of his research and afterwards compares it with the specific answers received from the interviewees.

This research paper is using an exploratory approach, mainly because there is no specific literature about the impacts and consequences of nature based tourism in the Swiss National Park. Therefore it can be considered that this paper is exploring a new topic and that it is providing a first insight of an unknown topic which could represent the basis for future researches. Moreover, according to Bryman & Bell (2007) one characteristic of the exploratory research specifies that the typical data collection technique for this approach is to use expert' interviews, a technique that it is used by the author of this paper.

The reasoning of the research is inductive because the outcome of the research can contribute to the theory that causes the whole subject. The author intends to move from a specific case to a more generalized theory by revealing, based on the experts interviews, which are the possible ecological impacts in the research area which, according to Bryman & Bell (2007), this is a specific approach of the inductive reasoning. Furthermore, due to the lack of specific literature regarding this topic, the author has formulated his own research question which he intends to answer to with the help of the expert' interviews.

The figure below illustrates an overview of the research strategy and design:

Figure 1: Research strategy and design overview



Source: Own Illustration

2.2. Population and Sampling

In the selection of the population and sample for this research paper, the author has consulted with the internal advisor, Prof. Dr. Ivan Nikitin and with a representative of the SNP, Prof. Dr. Norman Backhaus. It was decided upon two categories of interviewees, meaning people who are working or collaborating with the Swiss National Park and people coming from the Academic background and who are familiar with situation at SNP.

The population for the first category, meaning the people who are working for the Swiss National Park, is measurable as the official website of the national park presents a list with the personnel, from different departments, a list containing a number of 45 persons.

Out of this number, a purposeful sampling was applied, meaning that the persons selected among these employees were chosen based on their knowledge with regards of the topic of this paper and a snowball sampling was used as well, as the targeted experts were chosen based on the recommendations and contacts given by the Swiss National Park committee. The sampling for this category represents a total number of 6 persons. Below it is presented a list of the people selected to represent the first category:

1. Heinrich Haller: SNP| Management, Director
2. Hans Lozza: SNP| Management, Communications & PR Manager
3. Pia Anderwald: SNP| Department Research and Geo information, Researcher
4. Thomas Rempfler: SNP| Department Operating and Monitoring, Staff member
Monitoring
5. Vincent Somerville: SNP| Former Biologist at the Swiss National Park
6. Constanze Conradin: Biosfera Val Müstair | Environmental Education and Research,
Project management Nature & Landscapes (collaborator SNP)

The population for the second category, meaning the people who are coming from an academic background, who are knowledgeable in the field of ecological impacts of tourism and who are aware of the current situation of the Swiss National Park is difficult to estimate as there is no official centralization of the names of these persons.

The sampling for this category is was made by convenience, meaning that the persons selected were easy to reach, an example would be, persons working in the University field. A sampling of 4 people was selected:

1. Prof. Dr. Reto Rupf: ZHAW School of Life Sciences and Facility Management
2. Dr. Philippe Saner: University of Zurich, Department of Evolutionary Biology and
Environmental Studies

3. Dr. Voll Frieder: HTW Chur Department 'Lebensraum', Institute for Tourism and Leisure ITF
4. Prof. Stefan Forster: ZHAW School of Life Sciences and Facility Management

2.3. Data Collection

The data was collected as presented in the Table 2. The author has used the sub research questions as guidelines for structuring and presenting the data collection methods.

It is important to mention that the data is collected both through literature review and through semi-structured interviews.

For the literature review, the author has gathered the information from books, scientific papers and journals. The main sources for obtaining them are the HTW Chur Library, Google Scholar, Science Direct, Emerald Insight, Taylor & Francis and SAGE Journals.

The author of this paper conducted a primary research, meaning that the data was collected first-hand with the help of the semi-structured interviews and that he was directly involved in the collection of data. Therefore, the main knowledge was generated through primary research. The reason why semi-structured interviews were chosen is because the author was sometimes insisting with additional questions which were not included in the interview guideline where he considers that the received answer would need additional clarifications.

The author desired to be flexible, meaning that the interviews were conducted either face-to-face, by telephone or by e-mail in order to increase the chances of the respond rate of the target group. Nevertheless, in the case of conducting the interview by e-mail the author was aware that he would be obliged to use the method of structured interview, which could have restricted the access of in-depth information. Therefore, the author was insisting on the above mentioned options which include a direct interaction with the interview (face-to-face or telephone).

The semi-structured interview has a structured guideline with a set of seven pre-established questions (See Appendix 1). The first five questions were addressed towards all ten interviewees, whereas the last two questions were asked only to the persons who are familiar with the management of the Swiss National Park.

Table 2: Data collection

Research Question: What are the ecological impacts of nature based tourism in the Swiss National Park and how are they affecting this area?
Sub-question 1: What is nature based tourism?
Data collection: The interest of the scholars regarding this topic has increased in the last years, as long with the availability of relevant academic articles. Therefore, due to the accessibility of scientific resources, <u>literature review</u> was the method for gathering the relevant information. (See chapter 3.2.)
Sub-question 2: What is Swiss National Park?
Data collection: In order to gain a more in-depth insight upon this topic, <u>literature review</u> was the chosen method for gathering information. The data was collected from the official website, books and from scientific papers as well. (See chapter 3.3.)
Sub question 3: Is the tourism at the Swiss National Park nature based or not?
Data collection: In order to clarify whether or not the tourism at the Swiss National Park is nature based, the author compared the characteristics of nature based tourism from <u>literature</u> with the current situation of the Swiss National Park. Supplementary <u>expert interviews</u> were executed for confirming if the tourism in SNP is nature based. (See chapter 4.3.)
Sub-question 4: What are ecological impacts?
Data collection: With the purpose of better understanding this concept, <u>literature review</u> was used as the main data collection method for answering this sub-question. For a further confirmation the author has also conducted <u>expert interviews</u> . (See chapter 4.2.)
Sub-question 5: What are possible ecological impacts of nature based tourism in the Swiss National Parks?
Data collection: Due to the fact that the author of this paper could not found any specific literature, only <u>expert interviewees</u> were conducted (See chapter 4.4)
Sub-question 6: What are the consequences of those impacts upon the area of the Swiss National Park?
Data collection: Like in the previous question, specific literature could not be found. Therefore the author relied on the <u>expert interviewees</u> (See chapter 4.5.)

Sub-question 7: Is the management of the SNP aware of this possible impacts and consequences? If yes, how it is dealing with them?

Data collection: The data collection method used for answering to this question was conducting expert interviewees (See chapter 4.6.)

Source: Own Illustration

2.4. Data Analysis

The data analysis process started with the transcription of the interviews. Nikitin (2016) defines transcription as '*the process of converting audio recorded data or handwritten field notes*'. The interviews which were recorded with the help of the telephone were fully transcribed (word by word) in order to decrease the chances of neglecting an important aspect.

As it could be seen in Appendix 3, the author of this paper has analyzed all the interviews 'answers for each specific question. Meaning that for example the author took the first question and analyzed all the answers to this specific question and afterwards the author moved to the second question and analyzed all the answers for this question and so on. The author repeated this method for each interview question.

Furthermore, for each interview question the following stages were used in the process of data analysis:

1. Reading the transcripts: The author has carefully read all the interviews 'transcripts, question by question, in order to form a general opinion about the interviewees' points of view.
2. 'Cut and paste': The data from the transcripts was examined by the author and the most relevant sections were extracted and listed in the Data Analysis Table from Appendix 3, in the 'Phrase' column.
3. Reduction and explanation: As seen in the Data Analysis Table from Appendix 3, reduction was the main technique used as some phrases were repetitive or had the same meaning and therefore they could be renamed under the same code. One example would be the synonym phrases which, despite that the different words, they had the same meaning. Explanation was used by the author to describe his decision and to clarify the meaning of a phrase.
4. Coding and classification (codes, sub-codes, sub-sub-codes): As seen in the Data Analysis Table from Appendix 3, the extracted phrases were coded based on themes, ideas, keywords. The resulted codes were classified either as codes, sub-codes or even sub-sub-codes. The reason behind this classification is that some codes were affiliated with one another. For

example, one code could be put under the umbrella of another code and therefore, it becomes a sub-code.

5. Interpretation and link to literature: Is the last step of the Data Analysis Table from Appendix 3 and after the author has gathered and coded the answers of the interviewees, the codes were used as key words for analyzing the literature and spotting similarities and differences between what theory is stating and what are the opinions of the interviewees. Moreover, this step was used as a base for creating the discussions in Chapter 4: Results and Discussion.

6. Creating the code book: A code book was created for each interview question with the codes indentified in step number 4, after all the previous steps were taken into consideration. Therefore due to the fact that there are 7 questions, the author has created 7 code books. (See Appendix 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7)

7. Write the results: By creating the code books, it became easier for the author to form a general opinion about the interviewees 'answers and to write about their opinions in Chapter 4: Results and Discussion.

8. Create the discussion: Also in Chapter 4: Results and Discussion, the author used the findings from the fifth stage of this research analysis to compare the literature with the answers received from the interviewees.

3. Literature Review

The objectives of this literature review are first of all to answer to the first two research question by offering some general insights about nature based tourism and Swiss National Park, in order to create the basis for the later on discussion. Furthermore this literature review intends to present some general ideas about the concept of ecology and environment which in a later chapter it will be used as support for clarifying the difference between environmental and ecological impacts. Moreover, this literature review presents the concept of protected areas, for better understanding the concept of a natural reserve. This is important to investigate because the Swiss National Park is classified as a natural reserve and due to the fact that the park is considered such a pristine place, the impacts of tourism should not affect its composition.

3.1. Types of Tourism

For many centuries, tourism has embraced different forms, becoming in the middle 19th century an opened international industry towards all the members of the society and not only to the elite (Mehmetoglu, 2010). Nowadays, tourism is considered one of the biggest industries in the world according to the employment and expenditures figures.

The number of people who are travelling internationally every year is over 800 million and companies like airlines, hotels and restaurants are highly dependent on the tourism sector (Kuenzi & McNeely, 2008). Furthermore tourism, as it is known today, comprises either mass or alternative tourism (Hall & Boyd, 2005) (Dowling, Newsome, & Moore, 2002).

Mass tourism, also known as traditional or conventional tourism, did not evolve until the Second World War (Mehmetoglu, 2010) and it is referring to a great number of people who are seeking their own background and culture in institutionalized surroundings (Hall & Boyd, 2005). This is also supported by Dowling, Newsome, & Moore (2002) who state that a main characteristic of mass tourism is the large number of tourists and that they desire to replicate their background in less authentic settings. Since the beginning of mass tourism in 1960, it has become clear that the balance between tourism and environment was affected because, instead of protecting the environment, tourism started to damage it (Mason, 2016). Although in the past, this form of tourism was considered a valuable type of export industry due to the fact that it generated foreign currency for the host countries, this image of beneficial type of tourism has been questioned by a large number of scholars since 1970. The main argument against mass tourism was its un-sustainability characteristic, which has negatively impacted the nature, culture and local resources of the host communities (Mehmetoglu, 2010). A great number of natural areas worldwide are under an intensive tourism pressure (Dowling, Newsome, & Moore, 2002).

The increased awareness of the tourists and locals regarding the unwanted long term effects of mass tourism which coincided with the environmental movement in the 1980s accelerated the efforts to create an alternative framework to this type of tourism, namely, alternative tourism (Mehmetoglu, 2010) (Hall & Boyd, 2005). Alternative tourism, also known as specific interest or responsible tourism (Dowling, Newsome, & Moore, 2002) (Hall & Boyd, 2005) can be defined as a small scale locally owned activity which is consistent with the social, natural and community values (Hall & Boyd, 2005). Some characteristics of alternative tourism are referring to a minimal impact upon the environment and the involvement of the locals in the decision making process (Hall & Boyd, 2005).

However Mason (2016) argues that the other way around is possible as well. If a well managed and control mass tourism could sometimes be less damaging than having a small number of tourists visiting a fragile location which is not so well prepared to receive tourists. An older paper partially supports this statement by suggesting that there is a tendency in mass tourism for shifting towards more sustainable practices, such as recycling or better controlling the electricity usage (Fennell, 1999 as cited in Dowling, Newsome, & Moore (2002).

3.2. Nature based tourism

Nature based tourism is the main component of the alternative tourism which “*attempts to minimise the negative effects of traditional tourism*”(Lindberg and Hawkins, 1993; Doan, 2000 as cited (Kelkit et al., 2005). The interest of academics for nature based tourism has increased in the last years (Alaeddinoglu et al., 2011) (Luo & Deng, 2007) (Dowling, Newsome, & Moore, 2002) (Hall & Boyd, 2005) along with the attention given by the media and general public (Vespestad & Lindberg, 2011).

Nature plays an essential role in nature based tourism as the activities which are taking place are influenced by the natural environment (Fredman et al., 2012). According to literature there are three dimensions with regards of the role that nature plays in nature based tourism: activities dependent on the natural setting (such as safari); experiences enhanced by the natural setting (such as camping); experiences where the natural setting plays a subordinate role (such as an outdoor swimming pool) (Mehmetoglu, 2010) (Fredman et al., 2012).

Although there is no commonly agreed definition of nature based tourism (Fredman et al., 2012) some scholars tried to discover the essence of this form of tourism. Nature based tourism can be defined as the type of tourism whose main actions are related with nature (Matilainen & Lähdesmäki, 2014). Hall & Boyd (2005) supports this statement because they consider nature as being the main objective of nature based tourism. Moreover, they state that nature based

tourism takes place in natural settings, having as a main concern the understanding and preservation of the environment. This is also backed by Dowling et al (2002) who encourage the idea that nature based tourism occurs in the natural surroundings, focuses on some particular components of the natural environment (such as safari) and on the development and conservation of the natural areas (such as natural parks). Conservation is a principle which recognizes that the resources are limited and that they should not be wasted (Dowling, Newsome, & Moore, 2002). Tisdell & Wilson (2012) also support this concept, because according to them, nature based tourism is based on the visits to the “inanimate objects” which they associate as being the mountains, lakes, so basically the natural surroundings, combined with the utilisation of the natural living things (flora and fauna). Some definitions are repetitive and Fredman et al., 2009 as cited in Fredman et al., (2012, p. 290) gathered four most common recurrent themes related to nature based tourism: “(1) visitors to nature areas (2) experiences of natural environments, (3) activity participation (4) normative aspects related to sustainable development, local impacts, etc”.

Weaver (2001) as cited in Mehmetoglu (2010, p. 175), stated that the majority forms of tourism can be categorized as being nature based, because it includes a diversified range of tourism sectors “*ecotourism, adventure tourism, conservation tourism (...)*”. However, in the last years, other scholars have become sceptic in this regard as they treat these types of tourism separately. Moreover they consider ecotourism, adventure and nature based tourism as being different aspects of the alternative tourism (Vespestad & Lindberg, 2011) (Hall & Boyd, 2005). Furthermore, nature based tourism could be categorized, according to the literature into consumptive and non-consumptive wildlife tourism. The consumptive wildlife tourism involves activities of killing the wildlife and the non-consumptive tourism focuses on the conservation of the wildlife ¹ (Tisdell & Wilson, 2012). Moreover, according to Tisdell & Wilson, (2012) nature based tourism could be classified further classified in:

1. Tourism relying on non-captive life:
 - Non-consumptive: animals watching, flora viewing
 - Consumptive: recreational hunting and fishing in the wild
2. Tourism relying on semi-captive wildlife:
 - Non-consumptive: wildlife orphanages, open plan zoos
 - Possible consumptive: game and safari parks
3. Tourism relying on captive wildlife:

¹ Wildlife is defined as animals living in their own natural habitat (Tisdell & Wilson, 2012)

- Non-consumptive: traditional zoos
- Consumptive: farmed wildlife

A definition of non-consumptive nature based tourism is given by Duffus and Dearden (1990) as mentioned in Tisdell & Wilson (2012, p. 33) which is stating that this form of tourism is: “*human recreational engagement with wildlife where the focal organism is not purposefully removed or permanently affected by the engagement*”.

According to the classification and definition made by Tisdell & Wilson it can be stated that the tourism in the Swiss National Park is relying on non-captive wildlife and is using a non-consumptive approach due to the strict regulation with regards of the disturbance of the nature which is forbidding the killing of wildlife.

Non-consumptive nature based tourism has first appeared ever since the modern protected settings appeared in North America and Africa under the name of protected areas (Woodroffe, Thirgood, & Rabinowitz, 2005).

This non-consumptive nature based tourism is seen as a sustainable form of nature based tourism, because according to Tyrväinena et. al (2014) sustainable tourism promotes the conservation of the natural heritage and biodiversity. This is also supported by Duffus & Dearden (1990) who state that when doing tourism, a non-consumptive approach is desired because this type of interacting with wildlife has benefits such as conserving the nature and wildlife on the long term and it also changes the attitudes towards the wildlife and their habitats.

Nature based tourism is considered nowadays to be not only the main, but also the fastest growing component of the tourism sector (Vespestad & Lindberg, 2011) (Matilainen & Lähdesmäki, 2014) whose growth is still expected to continue due to the increased interest of the consumers for unspoiled nature, to see wildlife in their natural state (Vespestad & Lindberg, 2011) (Tisdell & Wilson, 2012) (Matilainen & Lähdesmäki, 2014). According to literature, nature based tourism faced a steadily growth especially in rural and peripheral areas, places which are not touched by the urbanization development (Tyrväinena et. al, 2014) (Hall & Boyd, 2005).

Nature based tourism has many potential benefits such as an increased interest and motivation for the conservation of the nature in the long term. This is an important aspect when it comes to the situation where many natural habitats are decreasing due the human activities which are directly or indirectly affecting them (Tisdell & Wilson, 2012). Areas which are protected by the state, such as national parks or natural reserves, the conservation of the site is in the majority of cases, prioritized over the tourism use (Fredman et al., 2012).

Nevertheless, Hall & Boyd (2005) argue that any type of tourism, including nature based tourism, will cause environmental degradation. Moreover, Tisdell & Wilson (2012) specify that

although nature based tourism could contribute to the conservation of nature, if not managed properly, this type of tourism could lead to a contradictory result: the overexploitation of wildlife and the resource which generates income along with it. A good management of the specific area could avoid such problem, because as it is mentioned in the literature, the overexploitation tends to appear in places where the management of such activities is weakly or does not exist (Kuenzi & McNeely, 2008) (Tisdell & Wilson, 2012). Tyrväinena et. al, (2014) is also highlighting the importance of the management and planning for controlling the negative impacts of tourism by offering more environmental friendly tourism products and reducing the impact of human activities. Kuenzi & McNeely (2008) state that a well managed nature based tourism could contribute to both the conservation of the environment and even the alleviating of poverty.

Eradicating poverty is also supported by the second benefit of nature based tourism which is referring to the potential to gain money from the conservation of the wildlife, which is possible nowadays. It is mentioned that the money gained through non-consumptive nature based tourism has become a feasible alternative to the unsustainable consumptive usage of wildlife which can lead to the extinction of some species. For example, in Canada, until 2008, the total expenditure by whale-watching tourists every year, a non-consumptive form of tourism, was around of Can. \$ 150 million (Tisdell & Wilson, 2012).

Alaeddinoglu et al. (2011) support the fact that non-consumptive nature based tourism brings economical benefits because according to him, in many places like Australia, Kenya, Nepal, and New Zealand this form of tourism constitutes the main revenue of those countries. The reason why the economical benefits are important is due to the fact that they can provide a strong argument when it comes to shifting from consumptive towards a non-consumptive nature based tourism approach and therefore towards an efficient conservation tool (Tisdell & Wilson, 2012).

The third benefit of nature based tourism is the psychological welfare of the human being and therefore enhancing the life quality. Tourism which takes place in nature gives to people the opportunity to be engaged with nature and thus to beneficiate from this engagement. Some of the nature based tourism benefits for the psychic are: improved state of mind, reduced stress, self-esteem, self-acceptance, spiritual enrichment and even happiness. As previously mentioned, the interest of tourists towards nature based tourism has increased in the last years. One of the motives, mentioned in the literature is due to the fact that tourists perceive the natural environments as therapeutic environments. Other motives for tourists to travel in natural environments are to escape from the routine and stressful everyday life and also to seek recreational psychological rewards. These benefits are very important nowadays because in the current society, the mental health problems are increasing and they are becoming an urgent

issue (Willis, 2015). Luo & Deng (2007) also illustrated these travel motivations under their classification of reasons why are people travelling to natural settings. One classification contains four categories represented by: physical, cultural, interpersonal, status and prestige motivators. An indirect consequence of the benefits provided by the nature is the desire of people to support the conservation of the natural environment. This is due to the fact that the natural settings provide and support these psychological benefits (Willis, 2015). Basically, people are carrying about the protection and conservation of nature and they strive to accomplish that because they are aware that by doing so, they will beneficiate from it.

Nature based tourism does not only bring benefits, but it also comes with a great deal of risks. Among the factors which are vulnerable to risk, natural environment is one of the factors mentioned by the literature. As previously mentioned, if not managed properly, the ecosystem and habitats could be seriously affected by the tourism activities. Literature mentions that the natural environment is especially affected when the tourism activities which are focusing on nature are creating a great number of pressures upon the resources which essential for this type of activities. Other factors which are vulnerable to risk are the tourists itself because they can face safe and healthy risks, the local communities, especially the indigenous people because their community might be disturbed by the tourism activity and in the end the tourism industry itself which can be affected by the economic fluctuations (Kuenzi & McNeely, 2008).

Due to the fact that this paper is focusing on the ecological impacts of nature based tourism, a further classification and discussion of the risk associated with tourism will be presented in Chapter 2.5 (types of environmental impacts of tourism) with a focus on the environmental impacts.

3.3. Study area - Swiss National Park

The Swiss National Park was established in the early 1900s and at that time it was among the few national parks around the world. It is consider being the first national park in Europe as back then in Europe there were no other national parks. Before its official foundation date in 1914, the discussions about the future protected area were initially involving the term 'reserve', whereas after 1910 'national park' became the preferred term used for defining the region. Apparently the reason behind it was the fact that by using the term 'national park', it was easier to convince the public and politicians to join the cause of creating a protected area (Kupper, 2014).

Nowadays, it is the only national park in Switzerland and it comprises a total area of 170 km² (Krug, Abderhalden, & Haller, 2002). Moreover, it is considered the biggest protected area of Switzerland and it is famous for the variety of flora and fauna (Swiss National Park, 2015).

Besides protecting the flora and fauna, one of the main purposes for opening the national park was to create a protected area which could be available to science, to create a natural laboratory. In the first article of the federal decree upon the park, it was stipulated that the nature should be left to develop freely and also that the park should be under a scientific observation. In 1935 the national park was classified as a totally protected national park by the *Société d'acclimatation de France* in comparison with other national parks, from countries such as Austria, former Yugoslavia or former Czechoslovakia which were tagged as being only partially protected. The two main characteristics of the park, the fact that it is a totally protected area and that it is scientifically oriented became a trademark of the Swiss National Park becoming a model for other parks, for how a scientific oriented national park should look like (Kupper, 2014). Nowadays, due to its strict regulations, the park has received the highest rank-category I A or 'Champions League' from the International Union for the Conservation of Nature (IUCN) ² (Swiss National Park, 2015) (Krug, Abderhalden, & Haller, 2002). Usually, national parks are classified by the organization, as rank II because they are more exposed to mass tourism and the nature is not so well protected. The rank I A is given towards strict natural reserve whose main purpose is to conserve the biodiversity and to keep the ecosystems as untouched by the human activities as possible by minimizing the disturbance (IUCN, 2015). According to IUCN the Swiss Natural Park, despite its name 'national park', is a natural reserve where the impacts of human use are managed and controlled in order to secure the conservation of the nature.

As previously mentioned, the Swiss National Parks have very strict regulations in order to be able to protect the nature (Swiss National Park, 2015). With the exception of hiking, other type of sports are forbidden in the Swiss National Park. In 1910 the first map of trails has appeared (Kupper, 2014). However, although hiking is permitted, the tourists are prohibited to leave the marked hiking paths or to disturb the nature by making fires or sleep outside. Moreover, people are not allowed to bring dogs into the park, to leave the garbage, to bath into the lakes and to remove the natural objects such as plants or animals (Swiss National Park, 2015). Since the middle of 1900s there have been several complaints in the annual report with regard of people who did not obey the rules, such as throwing the garbage. The park authorities took a stand and tried to inform and to educate people to keep suitable park behaviour. Since 1942, there was a high interest for educating the tourists coming to the Swiss National Park. The tourist office of

² IUCN, International Union for Conservation of Nature is the oldest and the biggest global environmental organization whose mission is to conserve the biodiversity. The classification made by IUCN is recognized by international bodies and governments as being a worldwide standard for defining and registering protected areas (IUCN, 2015)

Graubünden published a guide of the national park, which comprised a short history of the park, a description of the flora and fauna, an advice of how should the tourists prepare for their visit and list of hiking trails (Kupper, 2014).

The first accommodation in the Swiss National Park was built in 1911 in Val Cluozza, a hut which provided accommodation and meals for 20 persons. The hut was also serving as shelter for the first park ranger and his family who created a small farm, with pigs, cow, goats and chickens, in order to self-supply themselves and the visitors, due to the fact that the hut was located deep into the park, after a couple of hours of walking. The hut was not seen with good eyes from the competition, especially from the hotels and restaurants located in Zernezh (Kupper, 2014). Now, due to the high interest of conserving the area, the only available accommodation is in the Chamanna Cluozza or in the Hotel Parc Naziunal Il Fuorn (Swiss National Park, 2015).

Before the foundation of the park in 1914, different sheep and cattle had grazed in the park area for many years. This has contributed to the diverse vegetation and “*nutrient-patterns with tall-herb communities*” of the region (Spatz et al, 1980 as cited in Schuetz et al. (2003, p. 178). Once the Swiss National Park was established, all the hunting, deforestation and grazing were interrupted. One of the main effects was that the number of red deer faced a rapid growth after 1940. However according to some concerns of the scholars regarding to the increased number of deer was that the tall-herb community would be threatened with disappearance (Schuetz et al., 2003).

Nowadays, the park is famous for its diversified flora and fauna. There are a lot of species of animals which are living and are depended on the park protection. From mammals such as red deer, chamois, ibex, fox, marmot, to birds such as the golden eagle and nutcracker, to reptiles such as the northern viper and lizard and to the diversity of insects, all these animals found shelter between the boundaries of the national park, leaving far away from the urbanized environment. The flowers and plants of the Swiss National Park are also diverse and a lot of species could be found in the park: conifers such as Cembra pine, Mountain pine and Norway spruce and flowers such the Alpine clematis and Edelweiss, a flower which is threatened by extinction. Also from a geological perspective the park represents an important resource, as a lot of types of rocks are present there and even footprints of dinosaurs were found inside the park (Swiss National Park, 2015).

Previously to the problem of the deer, the visitors in the park have attracted the attention to the scientists. The debates with regard of tourism in the park started since the beginning of the foundation of the park. Tourists who came into the park were seen more as intruders. During the

First World War, the Committee for Scientific Research in the National park complained to the park commission about the large number of tourists who came into the park, because according to them, too many visitors into the park would contradict the primary objectives of the park. However, their complain was rejected as it was proven that the number of people who were visiting the park was rather small and as it was stipulated in the governmental decree, every Swiss citizen had the right to come and visit the park. Moreover, after 1990 tourism was seen as an opportunity and the park authorities tried to be actively involved into its management (Kupper, 2014). Nowadays, the number of people who are visiting the park is around 150.000 (Swiss National Park, 2015).

The major problem which is debated nowadays is The Ofenpass road. This road links Val Mustair and Engadine across the Swiss National Park. Since 1960 due to the extension of the road to the Livigno Valley, the number of cars and motorcycle crossing the park has consistently increased, disturbing the wildlife and this became a major issue for the park authorities (Kupper, 2014).

3.4. Ecology, environment and protected areas

Ecology studies *'the structure and functioning of the ecosystems and thus, how plants and animals interact together and with the physical environment'* (Dowling, Newsome, & Moore, 2002, p. 25). This is also supported by Mason (2016) who states that ecology is concerned with the relationship between animals and plants. Moreover this relation is described as being a complex one due to the fact that it comprises a wide range of factors, from soil, water and plants to microorganisms, plants and animals (Mason, 2016).

Ecosystems represent the main resource for different services or industries, such as nature based tourism (Kuenzi & McNeely, 2008). Moreover, ecosystems are essential to human beings because they support life, offer materials and energy and absorb waste products (Gössling, 1999). There are many ecosystems around the world and they are involving the individual components (such as animals, plants, microorganisms) and the links between them (Mason, 2016). Dowling et al. (2002) describes the ecosystems more detailed, stating that an ecosystem is composed of biotic components meaning the living organisms (animals and plants), the abiotic components such as the non-living organisms (soil, temperature, water) and the flow of materials and energy, such as nutrients. It is also specified in the Teacher Guide (2011) that the organisms are constantly interacting with each other and their environment. Moreover, it is mentioned that they can even change in response to conditions in the environment. The environment can comprise one or more ecosystems. Basically, the term environment is referring

to the humans surrounding. At a large scale, the environment can be categorized in two main divisions: natural and built. The built environments are the ones which are modified by the human implications, such as the rural and urban settings and the natural environments are those who mainly remain unchanged by the human interference and keep their natural characteristic. The natural environments could be found either in natural landscapes or in the so called 'protected areas' (Dowling, Newsome, & Moore, 2002) which are now covering 12 % of the surface of the globe (Cengiz, 2007). Protected areas first appeared in the Renaissance period for the personal use of the nobles, as royal hunting reserves (Eagles, McCool, & Haynes, 2002). In more recent times, protected areas were created for the purpose of protecting the biological diversity from the exploitation (Dowling, Newsome, & Moore, 2002).

The number of tourists which prefer the outdoor activities is continuously growing and together with it, the attractiveness of protected areas as destinations for the outdoor activities (Eagles, McCool, & Haynes, 2002). Moreover, protected areas are considered to be those regions where the usage of wildlife is legally limited. National parks and natural reserves are the first two category of protected areas, followed by natural monuments, habitat management areas, protected seascapes and landscapes and managed resource protection areas (Dowling, Newsome, & Moore, 2002) (IUCN, 2015). Furthermore a protected areas could be split into different zones, such as '*core zone, corridor zone, buffer zone or natural zone, cultural zone, management zone and natural rehabilitation zones*' (Cengiz, 2007, p. 260) based on how pristine the respective zone is and what purpose does it serve. Nevertheless, these zones are not always separated, but they also coexist. In the core zone for example you have corridors, marked by hiking trails, that are usually kept in an altered state through a continuous disturbance (Dowling, Newsome, & Moore, 2002). Protected areas require a good management based on ecological knowledge because several protected areas have been damaged when ecological aspects were not taken into consideration. It is essential when doing tourism in a protected area, in order to protect it on a long term, that there is a balance between the conservation and the usage of that specific area (Cengiz, 2007). There is a challenging situation for the managers of the protected areas because they need to ensure that the visitors are able to participate in the desired activities and in the same times, the values for the conservation of the area are respected (Eagles, McCool, & Haynes, 2002) because even in protected areas the visitors will impact the natural resources (Haukeland, Veisten, Grue, & Vistad, Visitors' acceptance of negative ecological impacts in national parks: comparing the explanatory power of psychographic scales in a Norwegian mountain setting, 2013).

These areas are usually managed by the government agencies or in some countries these sites are privately protected or managed by NGOs. UNESCO also plays an important role in the protection of such areas. It is a worldwide organization which aims to identify and conserve natural heritages (UNESCO, 2015). These areas are managed according to some global standards set by the IUCN and its World Commission on Protected Areas (WCPA), which is a network of protected sites expertise which gathers a great number of protected area managers, experts, scientists and representatives of NGOs (Kuenzi & McNeely, 2008).

The human activities have impacted negatively the ecosystems, by determining the extinction of some species which contributes to the loss of the biodiversity (Gössling, 1999). Both animals and plants are affected by the human activities. Sometimes, these activities could determine the loss of the biotic organisms through activities such as for example, getting rid of the vegetation. This creates disturbance in an ecosystem because as an indirect effect of the vegetation removal could also impact the abiotic components, such as creating an alteration in the nutrient properties of the soil (Dowling, Newsome, & Moore, 2002). However, if managed properly, some human activities, such as tourism can provide protection to the natural ecosystems, through conservation of the biodiversity (Gössling, 1999). In recent years, tourism was used as a mean of bringing economic benefits locally while becoming a tool for conservation of the protected areas through a non-consumptive approach (Xu et al., 2009). Nevertheless, Dowling, Newsome, & Moore (2002) argue that even tourism, if not properly managed, could create disturbance to the biotic organisms through the loss of habitat, introduction of new species and even pollution.

Using nature as the place where the tourism activities take place is more challenging than using a place controlled by the humans. Nature based tourism is taking place in a predominately natural rather than built environment (Fredman et al., 2012). Natural areas are referring to the locations where the wilderness³ was not disturbed by humans and where humans are only visiting this area temporarily. There are many areas considered as “enclaves”, being ringed by the built environments and protected by humans. Nevertheless, according to literature in many sites, natural and built environments coexist and that natural environments are more or less influenced by humans. (Fredman et al., 2012). Moreover, in an usual setting the human and the natural environment are interconnected and the activity of humans are not just affecting the environment, but are also affected by it (Mason, 2016)

³ Wilderness is referring to the untouched settings, areas which are not marked by the progress and civilization of the human society (Dowling, Newsome, & Moore, 2002)

The stakeholders of a natural environment realised that change happens inevitably when an area is exposed to tourism use (Dowling, Newsome, & Moore, 2002). Worldwide, tourism is usually a seasonal activity and the environment could be affected only in some part of the year. Therefore the environment is able to recover during the rest of the year. Nevertheless this depends on the magnitude of tourism impact, meaning if the impact was so great that the area has little chances for recovery. An example are ski slopes from the Swiss Alps where a great number of tourists come during the winter and the impact is so great, that the slopes are no able to re-grow vegetation during the summer period and they become more threatened by erosion (Mason, 2016).

In order to better understand how a natural area reacts to tourism it is important to have a look on aspects such as stability which is referring to the capability of an ecosystem to stay unchanged and to the resistance which is referring to the capacity of an ecosystem to take in or to absorb the impacts (Dowling, Newsome, & Moore, 2002). This could be connected with the concept of carrying capacity, which is defined by Daily and Ehrlich, 1992 as cited in Nakajima & Ortega (2016) as being the '*maximum size of a species population that a given area can support without reducing its ability to maintain a given species for an undefined time period*'. The carrying capacity is not only based on the perception of the observer but it could also be measured (Mason, 2016). In recent years there has been an effort to actually developing the carrying capacity, in terms of number of tourists and to develop the necessary policies, based on the scientists' definition of capacity (McCool & Lime, 2001) McCool and Patterson as cited in Dowling, Newsome, & Moore (2002) argue that the carrying capacity of a protected area is an inappropriate way to determine to determine the balance between protection and usage of a natural area. Instead they suggest looking at the 'acceptable change', at what conditions are wanted, at what type of impacts are acceptable or not, and at what actions are desired to reach this goal. Managing a natural area is mandatory in order to control and limit the change to an 'acceptable' level. Therefore the main task of the managers of a protected area is to determine what the acceptable or desired conditions are and how to reach them (Dowling, Newsome, & Moore, 2002).

3.5. Environmental and ecological impacts of tourism

The activity of tourism inevitably creates impacts and therefore consequences (Terry & Sarah, 2000) (Tisdell & Wilson, 2012).

There is a fine line in literature when speaking about ecological and environmental impacts of tourism. Some scholars (Buckley, 2003) (Liu et al., 2015) (Haukeland, Veisten, Grue, & Vistad,

2013) (Kelkit, Ozel, & Demirel, 2005) do not differentiate the ecological from the environmental impact and use both terms more like synonyms, despite the fact that each concept has its own definition as it will be shown in this chapter.

This chapter intends to clarify the meaning of both terms 'ecological impacts' and 'environmental impacts' and to identify which environmental impacts of tourism could also be ecological impacts based on the definitions given by literature, by building a list with all the ecological impacts of tourism.

Tourism is a human activity which is taking place in the environment. As previously mentioned there are two types of environment, natural and built. The built environment is composed of by economic, cultural and social factors and the natural environment comprises the animals, plants and their habitats (Mason, 2016).

Tourism can have significant impacts upon both types of environment and upon their factors, and this impact could contribute to a reduction in the number of tourists (Mason, 2016) due to the fact that the tourism industry is highly depended on the good condition of the environment (UNEP , 2015). Therefore tourism could affect the environment itself, both natural and built and factors such as economic, cultural, social factors and animals, plants and their habitats as well (Michailidou, Vlachokostas, Moussiopoulos, & Maleka, 2016).

Environmental impact is the third category of tourism impacts, among social-cultural and economical and it is referring to the impacts of tourism upon the natural and the built environment (Andereck, Valentine, Knopf, & Vogt, 2005) (Mason, 2016).

Despite the fact that tourism is an industry which is highly depended on the natural environment (Zhong, Deng, Song, & Ding, 2011), it can impact the natural environment both at a local scale as well as at a global scale through transport, accommodation or other activities involved in this industry (Michailidou, Vlachokostas, Moussiopoulos, & Maleka, 2016). When talking about the tourism impacts upon the environment, one aspect which should be taken into consideration is ecology (Mason, 2016). When there are disturbances in the ecosystems, meaning that the natural state of an ecosystem is changed, then this creates an **ecological impact** (Dowling, Newsome, & Moore, 2002). Ecological impacts are also studied from a scale perspective. At a larger scale one ecological impact could be the pollution created by airplanes which can contribute to climate change, and at a smaller scale one ecological impact could be the impact of trampling upon the plants (Mason, 2016).

Furthermore, the tourism impacts could be both positive and negative impacts, depending on the perspective and judgment of the observer (Mason, 2016) (Eagles, McCool, & Haynes, 2002). Although there are some positive impacts of tourism, in the recent literature, most of the

tourism impacts upon the environment have been categorized as being negative (Mason, 2016). Some of these impacts include: “*overcrowding, overdevelopment, unregulated recreation, pollution, wildlife disturbances and vehicle use*” (Dowling, Newsome, & Moore, 2002, p. 19).

The development and the number of visitors upon a region are directly related with the environmental and ecological damage (Terry & Sarah, 2000) (Mason, 2016). Tourism destinations which have a small number of trails or roads, small access, not so many facilities and few visitors are less exposed to risk (Dowling, Newsome, & Moore, 2002). As mentioned before the type of tourism activity will influence the degree of impact. For example, the non-consumptive tourism activities will have a low environmental impact, whereas the consumptive ones will have a greater impact (Mason, 2016).

In the mountainous environment there are several types of tourism impacts including ecological impacts. The on growing demand for tourism, especially in the developed countries, in the mountainside setting could result in deforestation and loss of wildlife. Moreover, other impacts could appear due to camping, hiking, littering and so on (Dowling, Newsome, & Moore, 2002). Tourists are the ones who affect the environments because the more popular a site becomes, the risk of more tourists coming there and negatively impact that location, increases (Terry & Sarah, 2000). Nevertheless as stated before, an increase demand of tourism could also result in an increased interest for conservation. A common explanation for creating wildlife tourism attractions is that they can provide a security for long-term protection of wildlife and their habitats and if managed and controlled carefully, visiting the wildlife can influence the tourists to adopt attitudes and behaviors with regard of nature conservation (Ballantyne, Packer, & Hughes, 2009). However in some areas there was evidence, that tourists can negatively impact the wildlife and their habitats (Semeniuk et al., 2009), such as creating injuries or even death to of some animals, disturbing their natural behaviour and alternating their natural habitat (Ballantyne, Packer, & Hughes, 2009). Moreover, tourists may also have a direct negative influence upon the vegetation and they can even change the physical environment by for example, compacting or eroding the soil (Dowling, Newsome, & Moore, 2002).

The degree of impact of an area is interconnected with the level of management. Poor managed forms of tourism can irrevocably destroy natural environments. Literature mentions that in order to avoid or to reduce the negative impacts it is required the implementation of suitable policies and coming up with planning and management strategies (Ballantyne, Packer, & Hughes, 2009) and for being able to efficiently manage tourism in a destination a good ecological perspective of the managers is required (Dowling, Newsome, & Moore, 2002). Moreover, as a solution for minimizing the negative impacts, Ballantyne, Packer, & Hughes (2009) stresses about the

importance of educating tourists in order to influence their behaviour, not only at the specific location itself, but also in their home, leisure or work environments (Ballantyne, Packer, & Hughes, 2009).

The tourism impacts will be classified into impacts made by the tourism development, meaning for the creation and maintenance of the touristic infrastructure, such as roads, accommodation and impacts made by the tourists themselves through their presence. This paper sticks to the classification made by UNEP because this organization offers up-to-date information and its classification comprises the entire range of impacts. Furthermore, due to the focus of this paper upon the ecological impacts of tourism, the **following list will focus only on the ecological impacts**, meaning on the ones which could change or alter the constitution of an ecosystem. These impacts were found in literature not defined as ecological impacts, but under different names such as *environmental impacts*, *impact upon environment* and *impacts upon ecosystem*. The author of this paper considered them as ecological impacts based on the definition given by Dowling, Newsome, & Moore (2002).

Table 3: Negative ecological impacts of tourism

NEGATIVE IMPACTS
<i>1. Tourism development (creating and maintaining the touristic infrastructure)</i>
<u>1. Water resources:</u> The main natural resource in the tourism industry is water, especially fresh water (UNEP , 2015). Tourism industry' main effect is the overuse of water (either in hotels, swimming pools, and golf clubs) (Sunlu, 2003) and therefore the reduction of the water resources (Mason, 2016). This concern is usually bigger in countries from the "hot regions" where there is a deficiency of water (Sunlu, 2003). Some figures show that the tourism industry uses 93.9 billion gallons of water per year (Terry & Sarah, 2000). Moreover, one effect would also be the desiccation due to an increased extraction of groundwater (Kuenzi & McNeely, 2008).
<u>2. Local resources:</u> Tourism can create great pressure upon the local resource (UNEP , 2015) such as energy, food and raw materials which have a short supply (Sunlu, 2003) and their exploitation could create an ecological impact (UNEP , 2015) (Mason, 2016). It is stated tourism industry uses 72.1 GWhours of energy per year (Terry & Sarah, 2000).
<u>3. Land degradation:</u> Increased tourism pressure on land resources such as forests, soil and so for creating the infrastructure and accommodation which are necessary for this industry (UNEP , 2015). These effects could include deforestation, erosion or compaction of the soil (Kuenzi & McNeely, 2008).
<u>4. Tourism development:</u> Land degradation due to the development of tourism infrastructure

(construction of roads, accommodations and so on). One evident example is: the wetlands which were destroyed for the construction of the tourism infrastructure (Terry & Sarah, 2000). Moreover, the construction of tourism facilities puts a pressure upon the landscapes. One example is the land clearing for construction which causes deforestation (Sunlu, 2003) as for example the construction of a ski resort requires massive deforestation (UNEP , 2015). Moreover the development of roads for gaining access to a location could create sediment runoff and could also introduce invasive species (Dowling, Newsome, & Moore, 2002) (Kuenzi & McNeely, 2008) such as weeds, pests and even animals (Kuenzi & McNeely, 2008).

5. Water pollution: The water could be polluted through sewage or spillage of fuel (Mason, 2016) The wastewater has impacted the lakes, rivers which are located near the tourist attractions, affecting the health of the flora and fauna (UNEP , 2015).

2. *Presence of tourists*

1. Air pollution: This usually happens due to the CO₂ emission (Mason, 2016) In the last years, the mobility of tourists has increased and the air pollution together with it. This is negatively impacting the flora and fauna due to a decrease in the quality of air (Terry & Sarah, 2000). Global warming is an effect of this impact, which is affecting the entire ecosystems worldwide (UNEP , 2015).

2. Noise: Noise pollution coming from vehicles or even from the tourists themselves could disturb the wildlife (Mason, 2016) (Terry & Sarah, 2000) (Dowling, Newsome, & Moore, 2002).

3. Littering: There is a high risk that visitors of an area will drop litter (Mason, 2016). This represents a serious problem, especially in areas with large number of tourists. The improper disposal of the waste can genuinely degrade the natural environment and affect the ecosystems (Terry & Sarah, 2000). Tourists, who are doing hiking or are in an expedition in mountain areas, leave a big amount of waste, such as garbage or camping equipment (UNEP , 2015).

4. Trampling: it affects both the soil and vegetation and it is the consequence of the visitors who are leaving the settled trails for various reasons (camping, taking photos, wildlife viewing, informal toilets) or it happens in places where there are not any predefined pathways and the tourists are not conditioned by them (UNEP , 2015) (Dowling, Newsome, & Moore, 2002). This could lead to the extinction or deterioration of the vegetation (Terry & Sarah, 2000). Moreover, trampling could affect the soil by accelerating the erosion or increasing the runoff and the vegetation by reducing its capability to regenerate and change its composition (UNEP , 2015).

5. Tourists activities: Disturbances are created by the presence of tourists at the specific location and they can appear due to noise, visual or harassing behavior. The ones which are the

most affected by these behaviors are the animals (Eagles, McCool, & Haynes, 2002). Tourism can disturb or even damage the wildlife. The feeding patterns could be altered, some habitats might be lost (Mason, 2016) and the reproduction of wildlife could be affected (Tisdell & Wilson, 2012) because the presence of humans could endanger the reproduction of breeding species (Kuenzi & McNeely, 2008). Moreover, tourism could jeopardize the survival of some hunted species in case there is no clear control and there is a free access for recreational hunting (Tisdell & Wilson, 2012). Tourism could also reduce the number of wildlife, by killing them, as previously mentioned through hunting or even fishing activities. (Eagles, McCool, & Haynes, 2002) The vegetation could be destructed as well as a consequence of excessive hiking activities, camping, horse riding and so on (Mason, 2016) (Dowling, Newsome, & Moore, 2002).

Source: Own Illustration

Unlike in the case of the negative impacts, due to the fact that in literature there are few positive impacts, a classification is not required and the impacts will just be listed in the following table. Moreover as well as in the case of negative impacts, there will be taken into consideration only the impacts which are ecological, meaning the ones which have could have an impact or an effect upon the ecosystems:

Table 4: Positive ecological impacts of tourism

POSITIVE IMPACTS
1 <u>Establishment of protected areas:</u> In order to meet the increased demand of tourists for pristine nature, protected areas could be established (Mason, 2016).
2. <u>Site restoration and maintenance:</u> the revenues coming from tourism could be used for the restoration of the site (Mason, 2016). Activities such as hunting and fishing they can stimulate the stakeholder to maintain the natural habitats for a future usage of the tourists (Tisdell & Wilson, 2012) as for example, in order to maintain the attractiveness of a location, so the tourist will come again in the future, cleaning programmes could be established (Mason, 2016).
3. <u>Conservation of species:</u> Encouraging to protect and to conserve wildlife. Moreover, saving endangered species from being extinct because for example The species which are threatened by extinction in the wild could be saved in these captive and semi-captive environments and later on they can even be reintroduced in their natural habitats (Tisdell & Wilson, 2012). It can also increase the willingness to pay of different stakeholders for maintaining the ecosystems and for the protection of different species. For example, activities which involve fishing or hunting do not always have negative impacts upon the biodiversity, because they can contribute economically for the conservation of the hunted species (Eagles, McCool, & Haynes, 2002)

Source: Own Illustration

3.6. Literature Review Summary

This literature review helped the author to form a general opinion about different concepts such as Alternative Tourism and Nature Based Tourism, Swiss National Park and Protected areas, Ecology and Ecological Impacts, Environment and Environmental Impacts. However the literature is missing specific information such as the ecological impacts in the Swiss National Park. Nevertheless the literature is used as a support for the author to further investigate the specific aspects of the research by relying his ideas on the general information found in literature.

4. Results and Discussions

4.1. Differences between ecological and environmental impacts

In this chapter there will be presented the results and discussion for the first question of the interview:

‘Some articles consider environmental and ecological as being the same thing. Others say that environmental impacts are referring to the impact upon the environment and ecological impacts to the impact upon the ecosystems. Is there any difference, in your opinion, between environmental and ecological impacts?’

The reason why this question was asked is that although the both terms have different definitions, in literature it could not be find any paper which clearly compares the two terms and sometimes they are even used as synonyms by some scholars.

In the discussion part the author will compare the findings from the literature with the answers received from the scholars.

4.1.1 Results

The first question was asked towards al ten interviewees. As presented in Appendix 2 and 3, their answers were diverse and their opinions were divided.

The main answers when asked about the difference between ecological and environmental impacts were that there is no difference, others had a different opinion saying that there is a difference between the two concept and others mentioned that this is just a matter of definition. Moreover, the two concepts have been compared from different perspectives, from the environment, ecology or ecosystem perspective and others simply compared the concepts, of environmental and ecological impacts.

Mr. Hanz Lozza, Mr. Reto Rupf and Mr. Stefan Forster state that when talking about the difference between ecological and environmental impacts, it is a matter of definition.

Ms. Constanze Conradin, Mr. Hans Lozza and Mr. Reto Rupf agreed that there is no difference between the two terms. Ms. Constanze Conradin motivated her answer, saying that the environmental impacts affect the ecosystem and therefore all the environmental impacts could be considered ecological impacts. Mr. Reto Rupf had a different opinion why there is no difference between ecological and environmental impacts, specifying that the environment is a big part of the ecology and that it should be seen as an ecological system. Moreover, he also mentioned that it is not important to distinguish between the two terms because this is not the main issue. Mr. Hanz Lozza also agreed that it is not so important to distinguish between the

two terms because for example, in the communication at the Swiss National Park no differentiation is made between the two concepts.

On the other hand, the rest of the interviewees agreed that there are differences between the two concepts. Mr. Heinrich Haller, Ms. Pia Anderwald, Mr. Vincent Somerville, Mr. Philippe Saner, Mr. Voll Frieder and Mr. Stefan Forster gave their opinion towards the differences between environmental and ecological impacts. Mr. Philippe Saner arguments that both environmental and ecological impacts could have the same cause but that but the way you look at it, could be different. Mr. Heinrich Haller, Ms. Pia Anderwald and Mr. Philippe Saner compared environmental and ecological impacts. Mr. Heinrich Haller said that environmental impacts are more an assessment and that ecological impacts are more a scientific term. On the other hand, Ms. Pia Anderwald specified that the environmental impacts are more concerned with the physical environment and that ecological impact with organisms and their interactions lower scale. Mr. Philippe Saner also characterized the two terms, but giving a different definition, saying that from his perspective, environmental impacts are referring to a flow or a change of material or energy, whereas an ecological impact comprises both, a flow in energy or material and effect upon an individual. Mr. Philippe Saner also gives an example to support his argument saying that in the case of an environmental impact, the pollution coming from the cars could affect the river ecosystem of the national park and an ecological impact could happen if the population sized reduced to a critical level, due to poisoning.

Another approach used by the interviewees, was to compare the two concepts from the environment, ecology and ecosystem perspective. The terms ecology and ecosystems were used in the comparison, as components of the ecological impacts and the term environment was used as component of the environmental impact.

Ms. Pia Anderwald, Mr. Vincent Somerville, Mr. Voll Frieder and Mr. Stefan Forster characterized the environmental impacts from the environment perspective. Ms. Pia Anderwald characterized environment as being a general term which is often referring to the abiotic conditions. However, Mr. Vincent Somerville mentioned that environment is related to both, biotic and abiotic components. Mr. Voll Frieder agreed with Ms. Pia Anderwald in the sense that the term environment is general, it is referring to the broader public and this term is connected to everything related to the nature, an environmental impact could be something like just switching on the car. Mr. Stefan Forster said that the term environment is complex and it involves both the natural and cultural environment.

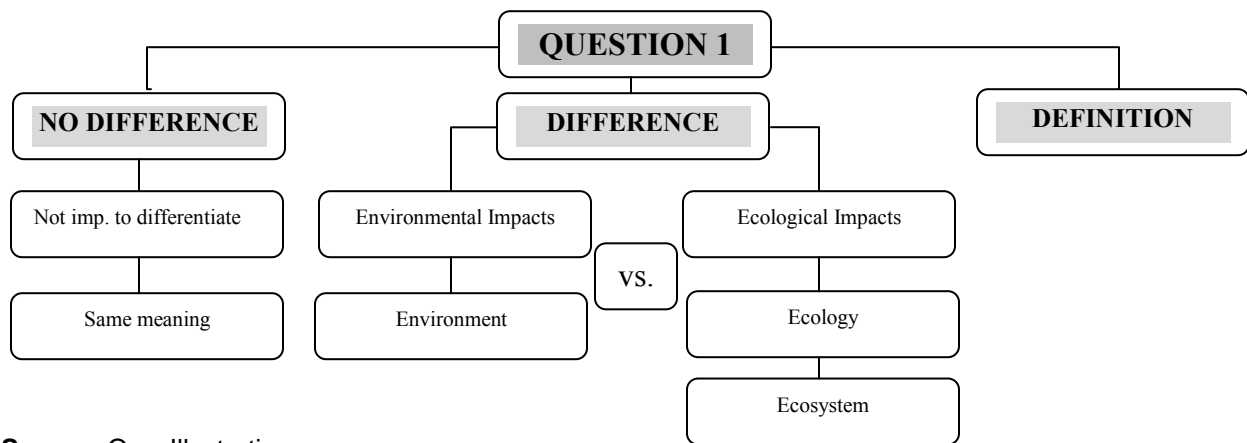
Furthermore, these interviewees together with Mr. Philippe Saner characterized the ecological impacts from the perspective of ecosystem and of the ecology. Mr. Vincent Somerville

characterized an ecosystem as being the interaction between the biotic factors, whereas Ms. Pia Anderwald characterized the ecosystem as being the interaction between organisms and environment. Moreover, Ms. Pia Anderwald described the ecosystem as being a unit or type of environment which is also confirmed by Mr. Voll Frieder who sees the ecosystem as a closed unit. Moreover, he states that an ecosystem is referring to a specific term, for example the ecosystem of a river and that the impact on ecosystem could be the construction of a dam on the river.

Furthermore Mr. Philippe Saner and Mr. Stefan Forster talk about the ecological impact from the perspective of ecology. Mr. Philippe Saner states that the term ecology comes from the term 'household' and that it is concerned with the distribution of animals and plants. Moreover, he also states that ecology also involves a flow in energy and materials. These arguments support his previous characterization of the concept of ecological impacts. Mr. Stefan Forster arguments shortly that ecology, from a scientific perspective, is referring to the causes and effects on the ecosystem.

The figure below illustrates an overview of the different perspectives of the interviewees:

Figure 2: Overview Question 1



Source: Own Illustration

4.1.2 Discussion

Literature does not present a clear distinction between environmental and ecological impact of tourism because it could not be found in any paper a clear comparison of the two terms. Sometimes it is misleading because some scholars use the both terms without making any differentiation and give the same meaning to both terms, using them more as synonyms, instead of treating them separately (Buckley, 2003) (Liu et al., 2015) (Haukeland, Veisten, Grue, & Vistad, 2013) (Kelkit, Ozel, & Demirel, 2005). Nevertheless, there are some papers which do not mix the two terms and assign to each one of them separate definitions (Dowling, Newsome,

& Moore, 2002) (Mason, 2016). The interviewees were asked to tell their opinion about this issue, if they consider whether or not there are differences in the two concepts. The opinions were diverse, as some responded that there is no difference (Constanze Conradin, Hans Lozza and Reto Rupf) whereas others considered the contrary (Heinrich Haller, Pia Anderwald, Vincent Somerville, Philippe Saner, Voll Frieder and Stefan Forster).

The motivation behind the 'no difference' answer was either because they did not consider that it is important if such differentiation would be made or either because they consider that the two terms basically mean the same thing.

The interviewees, who agreed that there is a difference between the two terms, motivated their opinion differently. Their argumentation was diverse and some answers coincided or was based on the theory. One example of such statement which was confirmed by literature is made by Ms. Pia Anderwald who states that the '*ecosystem and ecological is more on interactions between organisms amongst each other and their (physical) environment*' and this argument confirms the literature, Dowling et al. (2002) who also describes the ecosystem as 'how plants and animals interact together and with the physical environment'. Mr. Philippe Saner' argumentation is also supported by literature as he states that ecology and ecological impacts is concerned with the distribution of individuals and a change or a flow in energy and material and the effects upon them which is partially confirmed by Dowling et al. (2002) who state that ecology studies ecosystems which are composed of biotic components meaning the living organisms, the abiotic components such as the non-living organisms and the flow of materials and energy. Mr. Stefan Forster describes the term environment as being composed of both natural and cultural environment, which is partially supported by Andereck, Valentine et al. (2005) and Mason (2016) who states that environmental impacts of tourism are referring to the impacts of tourism upon the natural and the built environment and the ecology the science which studies the cause and the effect upon the ecosystem which is also partially supported by Dowling et al. (2002) who states that ecology studies the structure and functioning of the ecosystems.

In other cases, the interviewees have a different opinion than in the literature about for example what an environmental impact is, that it is a general term and it is referring to the abiotic conditions (Pia Anderwald), that it is referring to the broader public and it is related to everything you find in nature (Voll Frieder) and that it is composed of both all living and not-living organisms (Vincent Somerville) which in literature this statement is part of the definition of an ecosystem. Moreover, some interviewees are seeing the ecosystem as a unit or type of an environment (Pia Anderwald) or as a closed unit (Voll Frieder).

In conclusion, there were variations in the answers given by the interviewees and in some cases their answers were supported by literature. Probably this is due to the fact that the concept of ecological impacts needs further research. Also in literature there is sometimes a misunderstanding because the ecological impact is in some cases confused with the term environmental impacts. Based on the findings from literature and on the arguments of some interviewees, this paper supports the idea that the two terms should be treated differently.

4.2. Environmental impacts of tourism that could affect the ecosystems and therefore could be ecological impacts

Chapter 4.2.1 Results intends to present the results of the second interview question which is:

'What environmental impacts of tourism can affect the ecosystems and therefore can be considered ecological impacts?'

Moreover, Chapter 4.2.2 Discussion intends to compare the answers received from the interviews with the findings found in Chapter 3.5: Environmental and Ecological impacts of tourism. The reason why this question was asked because as previously mentioned in this chapter the terms environmental impacts and ecological are sometimes used as synonyms, despite the fact that different definitions are given to them.

In literature there could not be found a list with the ecological impacts of tourism and only with environmental impacts of tourism. The author of this paper identified several environmental impacts which, based on the definition given by literature, could also be ecological impacts.

This question was asked in order to confirm or to infirm the impacts found in literature and also to maybe to add some new impacts to the list.

4.2.1. Results

This question *'What environmental impacts of tourism can affect the ecosystems and therefore can be considered ecological impacts?'* was asked towards all ten interviewees and among them, nine have answered to this question and their response will be further presented below.

As it can be seen in Appendix 3.2, the two main categories of answers resulted based on the interviewees' answer were that possible environmental impact which could also be ecological impact (environmental-ecological impacts) could happen either due to the presence of tourists at a specific location or either due to the development of tourism in a region. One answer was not classified in these two categories, the one of Mr. Philippe Saner who stated that ecological impacts could be any impact with detrimental impacts on plants or the animals, or microbes in ecosystem.

Furthermore, the interviewees who agreed that ecological impacts could appear due to the simply presences of tourists in a location are: Ms. Constanze Conradin, Mr. Hans Lozza, Mr. Heinrich Haller, Ms. Pia Anderwald, Mr. Reto Rupf, Mr. Thomas Rempfler, Mr. Philippe Saner, Mr. Voll Frieder and Mr. Stefan Forster.

Four interviewees specified that ecological impacts of tourism could possibly happen due to a *great number of tourists/overcrowding* (Constanze Conradin, Hans Lozza, Pia Anderwald and Reto Rupf). One of the impacts that could happen due to overcrowding according to Constanze Conradin and Hans Lozza is the noise which could create changes in the ecosystem because the animals could be disturbed by it. Mr. Voll Frieder also agrees that animals could be disturbed and even scared by a large number of tourists, in such a way that they could run from their habitat and hurt themselves. Mr. Hans Lozza also mentions that overcrowding could also affect the destruction of the vegetation and could erode the trails.

Furthermore, Ms. Constanze Conradin specifies that in *sensitive habitats animals could be disturbed* not necessarily by a large number of tourists but by the simple presence of small groups of tourists. Mr. Hans Lozza also agrees in this matter as he specifies that the presence of people in isolated places where animals hide is a dangerous impact.

According to the interviewees, *trampling* was another impact created by the presence of tourists in a location (Constanze Conradin and Reto Rupf) which could appear either due to informal toilets or just walking on different paths. This impact could create a consequence upon the small plants and small animals, also known as microenvironment and upon the wildlife.

Furthermore *littering* is also an environmental impact which could affect the ecosystem and therefore could be an ecological impact (Constanze Conradin and Philippe Saner) and this could appear due to the garbage or waste left by the tourists and could have an effect upon the animals. Nevertheless, according to Ms. Constanze Conradin this is depending on the region, as some well managed region might not be affected by this impact, whereas others, poorly managed could be affected by it.

Mr. Hans Lozza, Ms. Pia Anderwald, Mr. Reto Rupf and Mr. Stefan Forster specified that *traffic or travel* towards and in a tourism destination is another environmental-ecological impact⁴. This is due to the fact that it could either create noise pollution (Mr. Hans Lozza) or could increase the CO₂ emissions and afterwards affecting the climate (Ms. Pia Anderwald, Mr. Reto Rupf)

The last tourism impact mentioned by the interviewees are the *tourism activities* (Hans Lozza and Philippe Saner) such as paragliding, skiing, mountain biking which could create noise

⁴ environmental-ecological impact is the name given by the author of this paper towards the possible environmental impacts which could affect the ecosystem and therefore could be considered ecological impacts

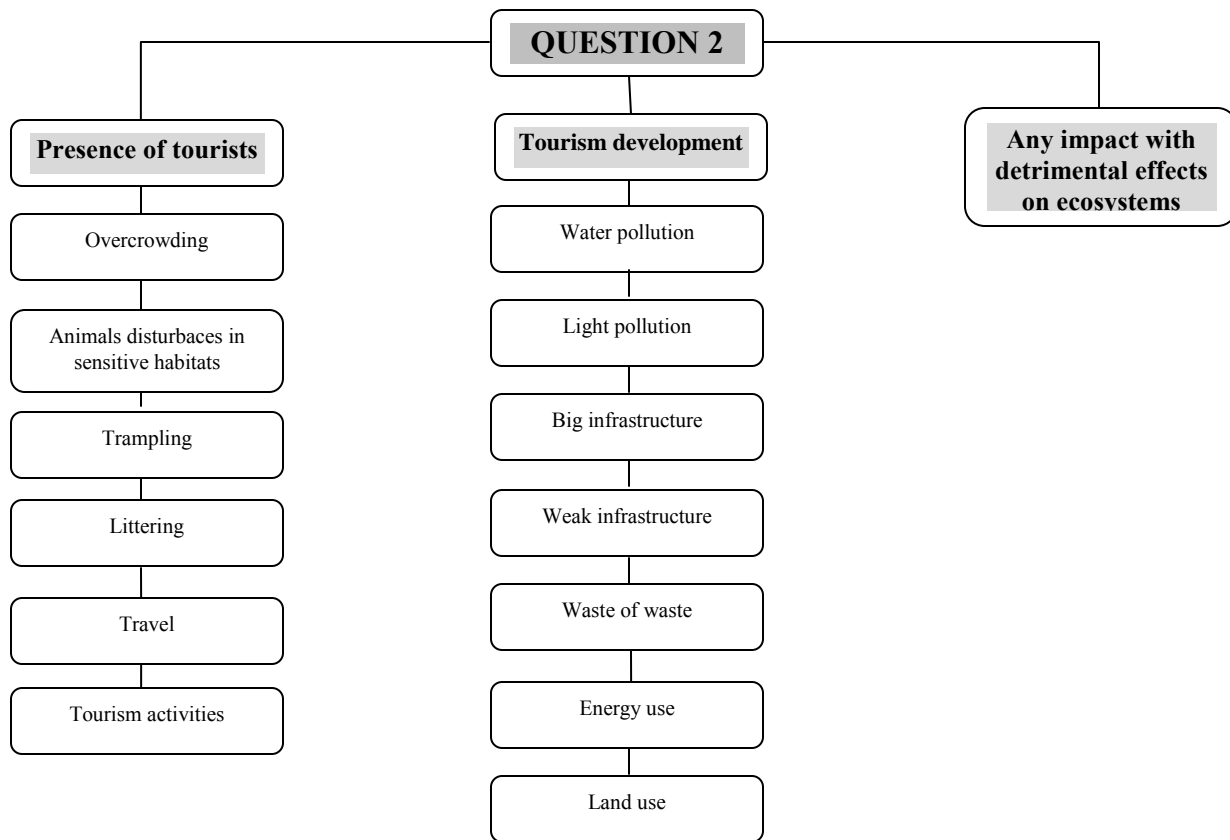
disturbance (Philippe Saner) or activities of night such as camping or making fire which could be very dangerous for the ecosystems (Hans Lozza).

The second category of environmental-ecological impacts of tourism resulted from the interviewees' answers are the impacts which appear due to the development of tourism (Pia Anderwald, Thomas Rempfler, Voll Frieder and Stefan Forster). Such impacts could be the *water* and *light pollution* which happens due to the existence of the tourism amenities (Pia Anderwald). Mr. Voll Frieder mentions that the ecosystems could be destroyed if big *infrastructure*, such as ski slopes and hotels, would be build or that the other way around is possible as well, if a tourism destination would have a *weak infrastructure* which is not strong enough to protect the nature, the ecosystems could be affected as well. For example, if trails are not well maintained, people would walk everywhere and this could have impacts, like mentioned before, upon the microenvironment and wildlife. The impacts mentioned by Mr. Stefan Forster are waste of water consumption, energy use, climate change and land use.

In conclusion, Mr. Thomas Rempfler mentions something important for the both perspectives, the development of tourism and the presence of tourists, that *'Humans have the power to change their surrounding like no other creature and at a very high speed, so that organisms do not have sufficient time to evolutionarily adapt to changes. In this sense humans influence ecology wherever they are, whatever they do (producing food, building infrastructure).'*

The figure below illustrates an overview of the different perspectives of the interviewees by summarizing the previously presented answers:

Figure 3: Overview Question 2



Source: Own Illustration

4.2.2. Discussion

In Chapter 3.5: Environmental and Ecological impacts of tourism, several ecological impacts of tourism were identified. In literature these impacts were classified under different names, such as environmental impacts, impact upon the environment and impacts upon ecosystem. The author of this paper considered them as being ecological impacts based on the definition given by Dowling, Newsome, & Moore (2002) who states that when there are disturbances in the ecosystems, meaning that the natural state of an ecosystem is changed, then this creates an ecological impact. This is also supported by one of the interviewee, Mr. Philippe Saner who states that an ecological impact is any impact with detrimental impacts on plants or the animals, or microbes in ecosystem.

Literature presents the impacts of tourism from two perspectives, positive and negative ones (Mason, 2016) (Eagles, McCool, & Haynes, 2002). However in literature there are more negative impacts than positive (Mason, 2016). When asked about which are the environmental-ecological impacts of tourism all the interviewees have mentioned only the negative impacts.

The same as in literature, the cause of the impacts according to the interviewees was either due to the presence of tourists themselves or due to the tourism development.

According to Constanze Conradin, Hans Lozza, Pia Anderwald and Reto Rupf the presence of tourists, especially in large number, could create a great ecological impact. Some consequences according to them would be the noise which could disturb the animals. This is also supported by Mason (2016) Terry & Sarah, (2000) Dowling, Newsome, & Moore, (2002) who state that noise pollution coming from the tourists themselves could disturb the wildlife. Moreover, in literature it is mentioned that disturbances are created by the presence of tourists at the specific location and they can appear due to noise, visual or harassing behaviour and the ones which are the most affected by these behaviours are the animals (Eagles, McCool, & Haynes, 2002). Other consequence mentioned by the interviewees and confirmed by literature is that a large number of tourists could impact and destroy the vegetation and could erode the soil.

Other ecological impact was mentioned by Ms. Constanze Conradin and Mr. Hans Lozza who state that the presence of people in isolated and sensitive habitats could affect the wildlife. This is also supported by Mason (2016) who says that having a small number of tourists visiting a fragile location could be damaging for the ecosystem and environment.

Trampling and littering are other ecological impacts presented in literature and confirmed by the interviewees. Constanze Conradin and Reto Rupf mentions that trampling could appear either due to informal toilets or just walking on different path and this could create a consequence upon microenvironment (small animal and plants) and wildlife. Literature mentions that trampling does not affect only the microenvironment and wildlife and that it also affects the soil (UNEP , 2015) (Dowling, Newsome, & Moore, 2002). Furthermore littering according to literature and to Constanze Conradin and Philippe Saner, represents a serious problem, especially in areas with large number of tourists because it could affect the ecosystem. However Ms. Constanze Conradin specifies that littering might not exist or would be so small in some well managed regions, that it could not be considered an ecological impact.

According to Mr. Hans Lozza, Ms. Pia Anderwald, Mr. Reto Rupf and Mr. Stefan Forster travelling towards and in a destination could create an ecological impact either due to the fact that it could create noise pollution or that it could an increase in the CO₂ emissions which could contribute to climate change. Mason, (2016), Terry & Sarah, (2000), Dowling, Newsome, & Moore, (2002) support this statement because according to them, noise pollution could appear from the tourists vehicles and that air pollution happens due to the CO₂ emission which appears because the mobility of tourists has increased.

The second source of ecological impacts, meaning the tourism development appeared in the answers of the interviewees (Pia Anderwald, Thomas Rempfler, Voll Frieder and Stefan Forster) and also in the literature.

One of the impacts mentioned by the interviewees and confirmed by the literature were the water pollution, which according to literature the water could be polluted through sewage or spillage of fuel (Mason, 2016) and according to Ms. Pia Anderwald the water is polluted due to the touristic amenities.

Mr. Voll Frieder specify that the construction of big infrastructure could affect the ecosystem which is also supported and completed by Terry & Sarah, (2000) and Sunlu (2003) who are stating that the development of tourism infrastructure such as roads and accommodation could create land degradation and put a great pressure upon the landscapes. Mr. Voll Frieder mentions that the other way around, is also possible, when there is a weak infrastructure which is not strong enough to have the capability to protect the nature. This is also confirmed by UNEP, (2015) and Dowling, Newsome, & Moore, (2002) who say that a weak infrastructure, where there are not any predefined pathways and the tourists are not conditioned by them, it could have as a consequence the trampling.

Mr. Stefan Forster also enumerates some ecological impacts confirmed as well by literature, impacts such as water consumption, which Sunlu, (2003) says that the tourism industry' main effect is the overuse of water (either in hotels, swimming pools, and golf clubs) and Mason (2016) further explains that therefore the water resources are reduced. Mr. Stefan Forster also mentions the energy and land use which also confirmed by Mason, (2016) and UNEP, (2015).

Light pollution was the only impact which was mentioned by one of the interviewee (Pia Anderwald) and it was not presented in literature. Moreover, the answers received from the interviewees covered all the ecological impacts listed by the author of this paper. The only impact which was presented in the literature and which was not confirmed by the interviewees was the pressure upon the local resources, such as food and raw materials (Sunlu, 2003) and which could create an ecological impact if it would be exploited (UNEP , 2015) (Mason, 2016).

Therefore it could be stated that overall, all of the interviewees' answers have found coverage in literature, as well as the other way around, most of the impacts listed in literature review were confirmed by interviews. This could mean that the interviewees shared similar opinion with the author of this paper when talking about which environmental impacts could also be ecological impacts. This shared opinion creates a strong argument for making a conclusion in this regard which will be further presented in Chapter 5: Conclusions.

4.3. Swiss National Park, nature based tourism or not?

This chapter intends to present the results of the third interview question which is:

'Do you consider the tourism at the Swiss National Park to be nature based?'

Moreover, in the discussion part, the author will also compare these results with the findings from Chapter 3.2. Nature based tourism and Chapter 3.3. Study area- Swiss National Park.

The reason why this question was asked was due to the fact that in literature there could not be found any paper which could clearly specify that the tourism in the SNP is nature based. However, based on the definitions of nature based tourism and on the information found about the Swiss National Park, the author of this paper assumed that the form of tourism in the SNP is nature based. Moreover, the author wanted to confirm this assumption by asking all the interviewees which are coming from different backgrounds (University or from SNP) what is their opinion in this matter.

4.3.1 Results

As presented in Appendix 3.3, all ten interviewees were asked whether or not they consider the tourism in the Swiss National Park to be nature based and all of them have agreed that yes, it is nature based. Mr Reto Rupf adds that the tourism at SNP is nature based with the exception of Ofenpass Road. He also mentions that nevertheless, it is still questionable whether or not this road is considered as part of the Swiss National Park.

Furthermore the interviewees motivated their answers from two perspectives. The first one was from the point of view of tourists, the reason why they are coming to the SNP (Constanze Conradin, Hans Lozza and Pia Anderwald). All three of them agreed that the reason why the tourism in the SNP is nature based is due to the fact that tourists are going there to enjoy the nature. Moreover, Mr. Hans Lozza explains that the reason why tourists are coming to the SNP is because in they are coming to admire the landscape and to do hiking, which is also confirmed by Ms. Constanze Conradin and that in 35% of cases, people are coming to see the animals and in 40% of cases they are coming to admire the vegetation.

Another perspective of why the tourism in the SNP is nature based is due to, what the supplier, meaning the Swiss National Park, is offering. This perspective was approached by Mr. Hans Lozza, Mr. Heinrich Haller, Ms. Pia Anderwald, Mr. Vincent Somerville, Mr. Philippe Saner, Mr. Voll Frieder and Mr. Stefan Forster.

Ms. Hans Lozza described the SNP as a good place for nature lovers and Mr. Voll Frieder described it as the most important nature based tourism offer in Switzerland. Mr. Stefan Forster

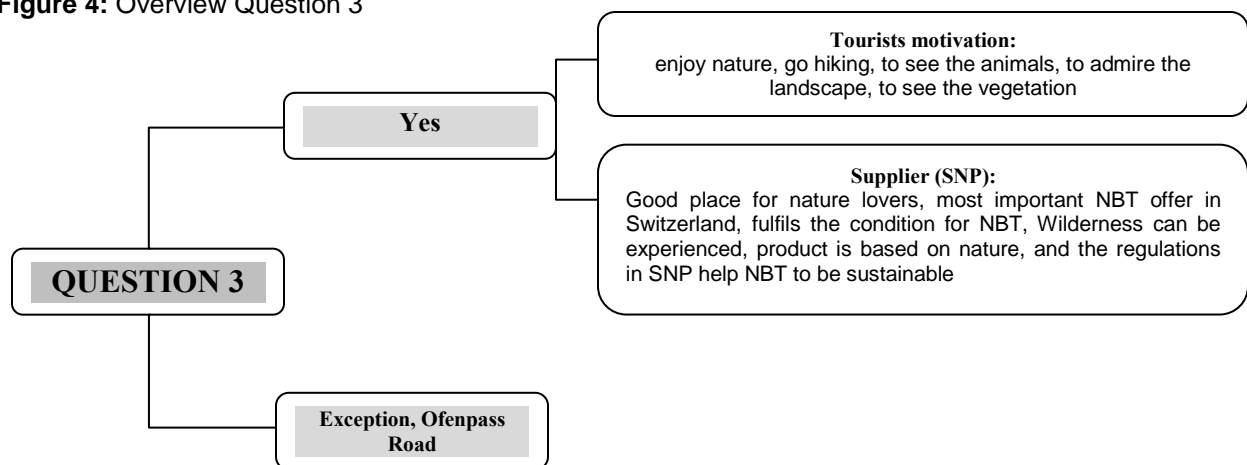
also agrees that the tourism at the SNP is nature based because you have the possibility to experience the wilderness.

Mr. Heinrich Haller motivates that the Swiss National Park fulfils the conditions for NBT (nature based tourism) because the park is classified by the IUCN as being Category 1a protected area and that it has strict regulations, like for example, that it is not allowed to leave the marked pathway. Mr. Vincent Somerville completes Mr. Heinrich Haller, saying that the regulations help to keep the impact of tourists as low as possible. Nevertheless, Mr. Philippe Saner agrees that the regulations of the SNP help the nature based tourism there to be sustainable, however he mentions that NBT does not necessarily involves sustainable tourism, as it could be defined as any type of tourism which targets the nature. This means that any type of tourism which targets nature, sustainable or not, is labelled as being nature based. Mr. Voll Frieder also supports this statement as he mentions that the product of NBT is based on nature.

Moreover, Mr. Voll Frieder says that in the Swiss National Park you have the possibility to do tourism while also protecting the nature and that the product of SNP is a sustainable offer. Both he and Ms. Pia Anderwald specify that in the park there are no amenities for tourists such as hotels, roads with a single of exception, the picnic and footpath areas.

The figure below illustrates an overview of the different perspectives of the interviewees by summarizing the previously presented answers:

Figure 4: Overview Question 3



Source: Own Illustration

4.3.2. Discussion

Based on the definitions found in theory, the author of this paper considered the type of tourism in the Swiss National Park as being nature based. However, in order to confirm this assumption, all the interviewees were asked to give their opinion in this regard.

All the interviewees confirmed the expectations of the author saying that the tourism in the SNP is nature based. Moreover, Mr. Voll Frieder describes the tourism in SNP as the most important nature based tourism offer in Switzerland. As it was presented in the Chapter 4.3.1 Results, the interviewees had in some cases different opinions about why the tourism in SNP is nature based and in other cases their opinions were similar. Moreover, some of the motivations given by the interviewees were sometimes confirmed by literature, as it will be further presented in this chapter.

Some of the reason why the interviewees agreed that the tourism in the Swiss National Park is nature based is due to the fact that SNP is a good place for nature lovers (Hans Lozza), there are hiking possibilities in nature (Constanze Conradin and Hans Lozza), as well as admiring the animals, the vegetation and the overall landscape (Hans Lozza).

Other reason mentioned by Constanze Conradin, Hans Lozza and Pia Anderwald of why the tourism in SNP is nature based is due to the fact that tourists come here to enjoy the nature, and this park is the only national park in Switzerland and it comprises a total area of 170 km² (Krug, Abderhalden, & Haller, 2002) which is famous for its diversified flora and fauna and its wilderness (Swiss National Park, 2015).

Mr. Philippe Saner defines nature based tourism as being the form of tourism which simply targets the nature. This is also supported by Matilainen & Lähdesmäki (2014) who stated that nature based tourism can be defined as the type of tourism whose main actions are related with nature. Moreover, Mr. Voll Frieder considers that the main product of nature based tourism is nature, which is also confirmed by Fredman et al., (2012) who mentions that nature plays an essential role in nature based tourism as the activities which are taking place are influenced by the natural environment.

In literature, in Chapter 3.2 Nature based tourism, several types of NBT were identified and the tourism in SNP was classified by the author, based on the definition in this chapter and also based on the information found about the SNP in Chapter 3.3, as a non-consumptive nature based tourism. According to Tyrväinen et al. (2014) this represents a sustainable form of nature based tourism because the sustainable tourism promotes the conservation of the natural heritage and biodiversity. Some interviewees were also agreeing that the nature based tourism in the Swiss National Park is sustainable. Mr Heinrich Haller mentions that the SNP is classified

by the IUCN as being Category 1a protected area and therefore it has strong regulation, aspect also confirmed by literature (IUCN, 2015). Mr Philippe Saner says that the regulations of the Swiss National Park help the tourism there to be sustainable. Mr. Voll Frieder also confirms that the tourism in the Swiss National Park is not only just nature based, but it is also a sustainable one. Moreover, he also mentions that in the Swiss National Park you have the possibility to do tourism and protect the nature as well. Kuenzi & McNeely (2008) complete this statement saying that well managed nature based tourism could contribute to both the conservation of the environment and even the alleviating of poverty. Mr. Vincent Somerville specifies that the park was originally founded for scientific purposes and that the regulations keep the impact of tourists and scientists as low as possible which is also confirmed by Kupper (2014) in his book.

Based on the findings from the interviews, the author is capable to confirm the assumption formulated based on the findings from literature, that the tourism in the Swiss National Park is nature based. As a plus of information, the author has also discovered that according to literature and to the interviewees the tourism in park is not only nature based, but that is sustainable as well, due to the strict regulations of the SNP.

4.4. Ecological impacts of nature based tourism in the Swiss National Park

This chapter intends to present the results of the forth interview question which is:

'What are possible ecological impacts (positive and negative) of nature based tourism in the Swiss National Parks?'

The reason why this question was asked was due to the fact that there is a gap in literature, that there could not be found any paper which talks about the ecological impacts in the SNP. That is why this question will intend to cover this gap in literature by asking persons of the Swiss National Park and also experts in this field.

In the discussion part the author of this paper will compare the specific answers of the interviewees (specific ecological impacts in the SNP) with the general information found in literature (general ecological impacts and general information about the functioning of SNP).

4.4.1. Results

As seen in Appendix 3.4, the forth question was asked towards all ten interviewees and their opinions will be further present below.

When asked about the possible ecological impacts in the Swiss National Park Ms. Constanze Conradin, Mr. Hans Lozza, Mr. Heinrich Haller, Mr. Thomas Rempfler, Mr. Philippe Saner and Mr. Voll Frieder mentioned that the Swiss National Park has very strict regulations, which

according to Mr. Heinrich Haller, reduces the human influences. Due to this aspect there are not so many ecological impacts there (Constanze Conradin and Hans Lozza) and others even mentioned that are no ecological impacts at all (Philippe Saner and Voll Frieder).

When asked if there are some tourists who do not obey these rules, Mr. Hans Lozza said that people are usually respecting the rules, which was also confirmed by Mr. Heinrich Haller and Mr. Reto Rupf who based their answers on facts, that out of 120.000 visitors/year, only allowed 20-30 persons did not obey the rules and were getting a fine. Mr. Voll Frieder is supporting this statements saying that the management is doing well to inform and teach the people and Mr. Heinrich Haller and Mr. Philippe Saner are saying that the rangers have a good control there and that even the visitors are encouraged to take actions.

However, there were some interviewees who identified some negative ecological impacts. Ms. Hans Lozza specified that one cause for negative impacts could be related to the traffic in the park. Mr. Heinrich Haller, Ms. Pia Anderwald and Mr. Vincent Somerville added that the presence of humans on the pathways could represent a potential problem. This is because the humans might create noise (Vincent Somerville) and this could disturb some animals such as the red deer, which might determine them to avoid the areas where there are people and also they could even be stressed by the presence of the tourists (Pia Anderwald). Nevertheless according to Ms. Constanze Conradin and Mr. Heinrich Haller, some animals, such as the marmots, got used with the humans and are not disturbed by them. This aspect according to them is neither negative nor positive and it is just a fact. Furthermore, littering and trampling were other negative ecological impacts mentioned by Mr. Heinrich Haller and Ms. Pia Anderwald because people might leave garbage along the footpaths and around picnic areas and some of them might erode the soil through trampling. Mr. Hans Lozza also confirms these impacts saying that there is a possibility that tourists will leave trails and therefore creating erosion, or that some tourists might take the plants and the vegetation might be harmed and also that there could be a change in the animal behaviour due to the noise made by the tourists. However, according to Heinrich Haller, these possible impacts are reduced due to the strong regulations of the park and even maybe due to the rangers to the education of the tourists as well. He agrees that these human influences might exist, but they are reduced and they are considered as acceptable influences. Both he and Mr. Voll Frieder agree that there are higher benefits of nature based tourism in the Swiss National Park than negative ecological impacts. Mr. Heinrich Haller highlights the importance of this park to be not only ecologically relevant, but economically relevant as well. The reason for this, according to him, is to maintain the interest and support of the local populations for protecting the park. This is also supported by Mr. Voll

Frieder and Ms. Constanze Conradin who are saying that if there is tourism in the Swiss National Park, the interest for its protection will grow and together with it, the understanding coming from the society of Switzerland. This is completed by Mr. Reto Rupf who is stating that if nobody would be interested anymore in the park, its value will decrease. He also specified that one reason why the area is benefitting from the protection, it is due to the fact that its surroundings benefit economically. Mr. Voll Frieder also added that if there is an interest for the park, then the SNP will benefit from a great publicity and a greater reaction of the general public.

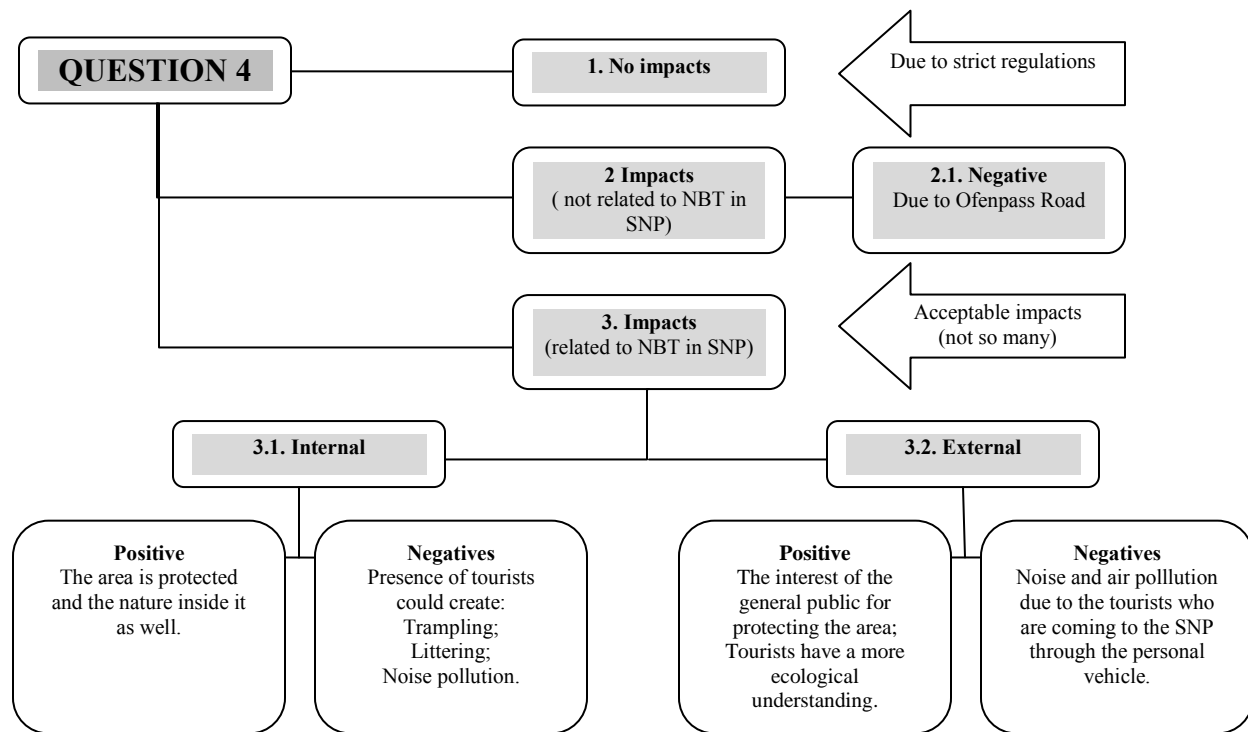
A more general positive ecological impact according to Mr. Voll Frieder would also be that the tourists will have a more ecological understanding, that maybe they would travel more by train and maybe that they would pay more for the ecological hotels.

Mr. Philippe Saner specified that the ecological impacts might not necessarily come from the tourism inside the national park, but one should also look at the surrounding and consider them as well. Mr. Hans Lozza is also supporting this by saying that although the SNP has very strict rules, it could not avoid impacts such as the air pollution for example.

With regard of the external ecological impacts, the answers of the interviewees were divided in two perspectives. On one hand, the external impacts which are generated by the tourists who are coming to the Swiss National Park and on the other hand, the external impacts which are not necessarily related with the tourism in the SNP. Among the possible external impacts created by the tourists of the SNP are the air and noise pollution created by the tourists who are coming by the personal vehicle, instead of a public transport (Hans Lozza and Reto Rupf), especially the ones coming through the Ofenpass Road. This road was considered as a main source for ecological impacts by the Mr. Hans Lozza, Mr. Heinrich Haller, Ms. Pia Anderwald and Mr Voll Frieder. According to them, although this road is going through the national park, it is not necessarily related to the tourism in the park, as this road is more used as a connection, for going from point A to B instead of being used as a way of going to the national park. According to these interviewees, this road is a source of air and noise pollution, due to the cars and motorcycle which are going through it. According to them, this creates a great issue for the animals because they are disturbed by it and it also influences the emotions and expectations of the visitors.

As a visualisation of the interviewees 'answers, the figure below illustrates an overview of the different perspectives of the interviewees by summarizing the previously presented answers:

Figure 5: Overview Question 4



Source: Own Illustration

4.4.2. Discussion

Ms. Constanze Conradin and Mr. Hans Lozza argued that in the SNP there are no ecological impacts due to the fact that the park has very strict rules. The theory presented in Chapter 3.3 Study area- Swiss National Park, also confirms that the rules are very strict and that is why the Swiss National Park was classified by IUCN as being category 1a, natural reserve (Swiss National Park, 2015) (Krug, Abderhalden, & Haller, 2002). On the official website of the park this rules are presented (Swiss National Park, 2015) and Mr. Heinrich Haller specified that these rules were created with the purpose of reducing the impacts of the people in the SNP.

The author of this paper wanted to find out if there were situations when tourists did not respect the rules. Both Mr. Hans Lozza and Mr. Heinrich Haller argued that there were very few cases of tourists who did not respect the rules and overall there are very few ecological impacts in the park due to the presence of tourists.

Furthermore, some interviewees identified the possible negative ecological impacts which could happen due to the presence of tourists in the national park. These impacts were not new, as all of them have been presented before in the literature review, in Chapter 3.5 and also in the results and discussion of Chapter 4.2. Mr. Heinrich Haller, Ms. Pia Anderwald and Mr. Vincent

Somerville specified that presence of humans on the pathways could represent a potential problem because they might create noise (Vincent Somerville), they might take some plants (Hans Lozza), stress the animals (Pia Anderwald) and contribute to trampling and littering (Heinrich Haller and Pia Anderwald).

Moreover, when talking about the negative impacts, literature mentions that it is also important to talk about the concept of acceptable change. This is referring to the conditions which are desired, at which type of impact is acceptable or which not and to what actions are desired to reach this goal Dowling, Newsome, & Moore (2002). Regarding the concept of acceptable change, Mr. Heinrich Haller argues that the impacts created by the tourists in the Swiss National Park are small and do not threaten the wellbeing of the nature and that is why they are accepted by the management of Swiss National Park.

Other opinions concerning the negative impacts are related to impacts created outside which could have an effect inside the national park, named by the author as external impacts.

Some interviewees mentioned that these external impacts could be connected with tourism at the SNP. An example given by the interviewees is related to the tourists who are coming to the Swiss National Park using their own personal vehicles instead of coming by public transportation. This could cause noise and air pollution which could create an impact upon the ecosystem of the park (Hans Lozza and Reto Rupf).

Moreover, other opinions said that these external impacts are not necessarily connected with the tourism in the national park (Mr. Hans Lozza, Mr. Heinrich Haller, Ms. Pia Anderwald and Mr. Voll Frieder). An example given by the interviewees was referring to the Ofenpass road and on the persons (not SNP's tourists), who are driving through this road with the cars and motorcycles, could cause impacts such as air and noise pollution which is disturbing the ecosystem in the SNP. This is also confirmed by literature, in Chapter 3.3 it is specified that since 1960 the number of cars and motorcycle crossing the park has consistently increased, disturbing the wildlife and this became a major issue for the park authorities (Kupper, 2014).

The interviewees presented an opposite perspective as well. They mentioned that tourism in the Swiss National Park could also create some positive ecological impacts, which in the view of Mr. Voll Frieder and Mr. Heinrich Haller have a greater influence than the negative impacts. In the general ecological impacts of tourism in Chapter 3.5, there were also presented some positive impacts such as the establishment of protected areas, the site restoration and maintenance and the conservation of species. The interviewees mentioned that tourism could have a positive ecological impact upon the SNP due to the fact that the area benefits from a high interest and from the protection of the general public and of the communities around it, which are benefiting

economically from having a protected area like the SNP nearby which is attracting tourists (Mr. Voll Frieder and Ms. Constanze Conradin). Moreover, Mr. Voll Frieder also mentions that the tourists who are coming into the park could also develop a better ecological understanding and afterward being more willing to adopt attitudes in the benefit of the nature.

Due to the fact there could not be found in literature any other study concerning the ecological impacts of nature based tourism in the Swiss National Park, the author of this study will base his conclusion on the answers received from the interviewees and on the general ideas found in theory.

When investigating the possible ecological impacts in the SNP, the author of this paper has found out that the opinions of the interviewees were rather similar. There were only some few answers which supported that in the park there are no ecological impacts. The majority of opinions admitted that, inside the Swiss National Park there are some negative ecological impacts which are caused by the presence of tourists. However, the majority of interviewees agreed that these impacts are acceptable because they do not represent a threat for the wellbeing of the ecosystems. Moreover, according to both the interviewees and to the theory, the main ecological problem that SNP has is not necessarily related to the nature based tourism, but it is caused by the Ofenpass road and by the car and motorcycle's drivers which are passing through that road.

Another deduced conclusion was that nature based tourism in the SNP is more beneficial than detrimental as, according to the interviewees, helps to keep the general public interested in keeping, maintaining and protecting the Swiss National Park and the wilderness inside it.

4.5. Ecological impacts consequences

This chapter intends to present the results of the fifth interview question which is:

'What are the possible consequences of those impacts upon the area of the Swiss National Park?'

This question was developed as a continuation of the previous question, where the interviewees were asked to identify the possible impacts of nature based tourism in the Swiss National Park. This question was asked by the author with the intention of having a more in depth insight of the impacts, by asking the interviewees to explain the consequences of the impacts presented by them.

In the discussion part, as there is no literature about this specific case, the author will compare the specific answers of the interviewees with the general information found in literature. Moreover, in the discussion part the author will compare the answers of this question with the

answers presented in the previous chapter as well, because they are interconnected and therefore they should be analyzed under the same umbrella.

4.5.1. Results

Like in the previous chapter, all ten interviewees were asked to give their opinion about the possible consequences of the impacts presented by them.

One consequence presented by Constanze Conradin, is that people will enjoy the Swiss National Park and they will recommend it to others. This might determine the number of park visitors will increase and that the suppliers around the SNP will benefit from this. Mr. Philippe Saner argues that from an ecological perspective, the areas around SNP will not benefit, as they will be more intensively used and therefore the consequence would be, that there will be created a pressure upon the natural resources of those areas. Mr. Voll Frieder also supports the idea that the consequences are affecting the areas around the SNP and not the park itself. He mentions that the suppliers around SNP have a broader understanding of the environment and ecology and about what people want to find in the area. He specifies that the SNP has a good influence upon the development during the mass season because the suppliers are thinking much more in a more sustainable and ecological way.

Another consequence, which is presented by Mr. Hans Lozza, might also appear due to the SNP's tourists and more specifically, due to the noise made by them inside the park. The consequence presented by Mr. Hans Lozza is referring to the fact that animals might be disturbed by the noise and temporarily, they might go away when they feel the tourists' presence.

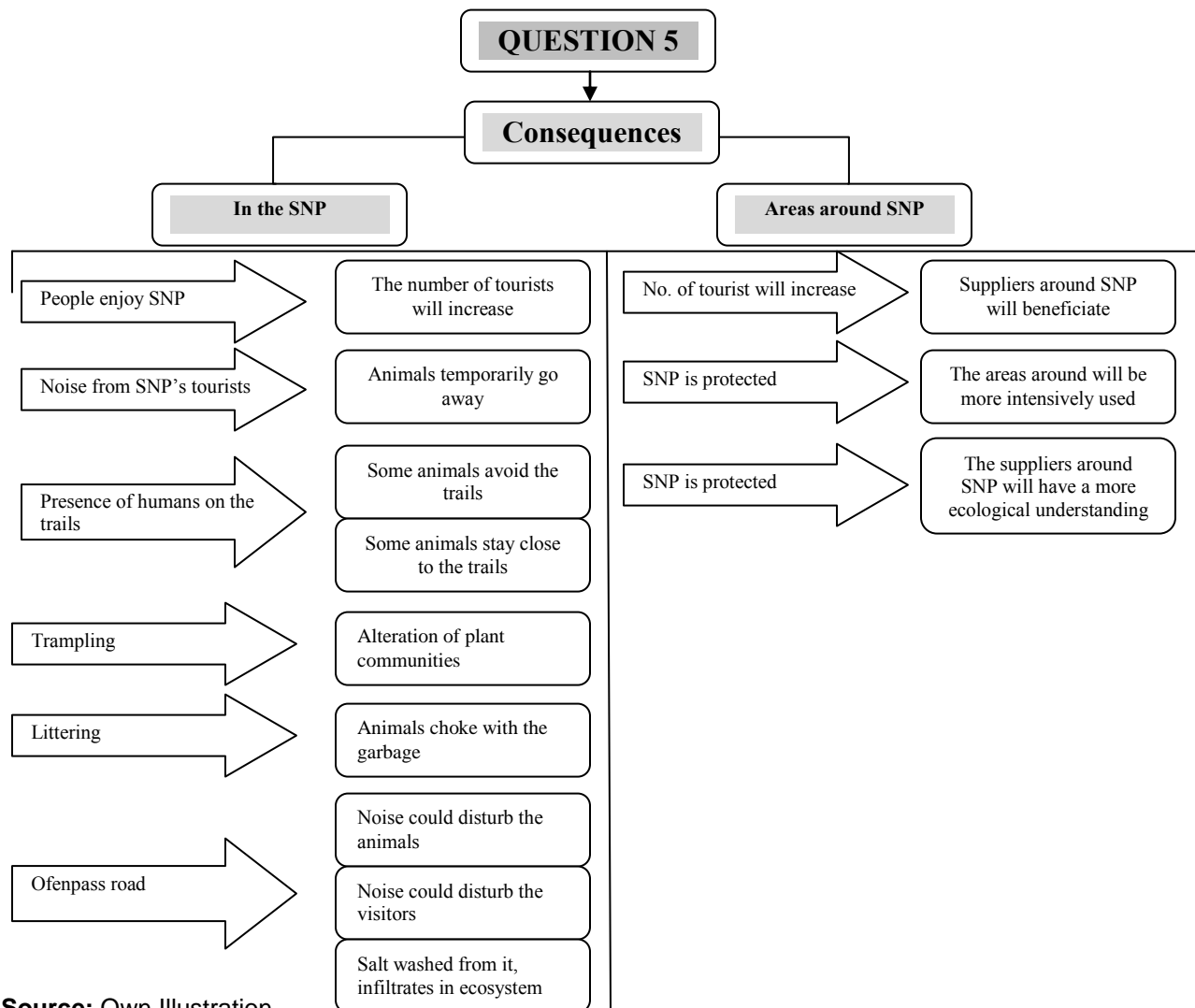
The presence of human on the trails as a cause for ecological impacts is mentioned by Mr. Hans Lozza, Mr. Heinrich Haller, Ms. Pia Anderwald and Mr. Thomas Rempfler as well. All of them specify that a consequence is that there is a change in some animals' behaviours, as some of them tend to avoid the trails and to go deeper inside the forests. On the other hand, Mr. Hans Lozza, Mr. Heinrich Haller and Mr. Thomas Rempfler argue that some animals have an opposite behaviour as they seek to stay close to the trails. This is because they do not perceive the trails as being dangerous and they know that some of their predators stay away from them and therefore for them, the trails are seen as a shelter.

Ms. Pia Anderwald also presents the consequences of the presence of tourists in the park, mainly the trampling which could cause the alteration of plant communities along the footpaths and littering which might affect the animals because they could choke with the rubbish left by the tourists. However, she stated that the rangers are doing a good job, to clear away the leftover garbage.

Mr. Herinrich Haller, Ms. Pia Anderwald and Mr. Reto Rupf are presenting the consequences of the Ofenpass road. Mr. Herinrich Haller and Ms. Pia Anderwald say that the noise coming from this road could disturb the animals, and Mr. Heinrich Haller also mentions that even the visitors might be disturbed by it. Mr. Reto Rupf presents another situation where the Ofenpass road is prepared in the winter with salt, and this salt is washed out from roads and infiltrates in SNP which could as a consequence, change the current state of the park ecosystem.

As a visualisation of the interviewees 'answers, the figure below illustrates an overview of the different perspectives of the interviewees by summarizing the previously presented answers:

Figure 6: Overview Question 5:



Source: Own Illustration

4.5.2 Discussion

The activity of tourism inevitably creates impacts and therefore consequences (Terry & Sarah, 2000) (Tisdell & Wilson, 2012)

This discussion will have a look on the impacts identified in the previous chapter and compare them with the answers in this chapter. The reason for this is that the two interview questions are interrelated and the discussion in this chapter intends to analyze them as a whole. Moreover, this chapter will also have a look on the general findings from the literature

In the previous chapter the impacts identified by the interviewees were coming from inside the SNP and from the outside. Mr. Heinrich Haller, Ms. Pia Anderwald and Mr. Vincent Somerville specified in the previous chapter, that the presence of humans on the pathways could represent a potential problem because according to Vincent Somerville, they might create noise. In this chapter only some of the above mentioned interviewees decided to present this aspect as well either because they already have explained the consequences or because they did not simply refer to them again. Eagles, McCool, & Haynes (2002) specify that the animals are the most affected by the presence and behaviour of tourists, such as tourists in a location could create noise. Mr. Hans Lozza, Mr. Heinrich Haller, Ms. Pia Anderwald and Mr. Thomas Rempfler specified that the presence of tourists on the trails and the noise made by them was a source for ecological impacts. Moreover, according to them the consequence that might appear would be that some animals would be frightened and go away, whereas others would profit from them as they would seek shelter near to the presence of tourists. This happens due to the fact that some animals are used with people, as mentioned in the previous chapter by Ms. Constanze Conradin.

Mason, (2016) specifies that there is a high risk that visitors of an area will drop litter. Furthermore as identified in the previous chapter as well by Mr. Heinrich Haller and Pia Anderwald the presence of tourists could create trampling and littering. The consequences of these impacts, presented by Ms. Pia Anderwald are the alteration of plant communities, which is also confirmed by Terry & Sarah, (2000) and the risk that animals could even choke with the garbage left by the tourists. However, according to Ms. Pia Anderwald the last presented consequence is not so likely to happen as the rangers are vigilantes with this situation.

Despite the fact that the Ofenpass road is considered as an external component of the SNP by the interviewees, they all have mentioned, both in the previous and in this chapter, that it could have an impact inside the protected area of SNP which according to Mr. Hans Lozza and Mr. Reto Rupf could create both noise and air pollution. A consequence of the Ofenpass road is according to Mr. Heinrich Haller and Ms. Pia Anderwald is the disturbance of the animals and

visitors, due to noise pollution. Another consequence presented by Mr. Reto Rupf happens due to the preparation of Ofenpass road with salt. A consequence of this action is that the Salt washed out from roads and infiltrates in SNP.

Mr. Philippe Saner mentions in the previous chapter that, one should also look at the surrounding of the national park. According to the interviewees, the consequences are not influencing only Swiss National Park. They could also be felt by the regions around the SNP.

Terry & Sarah, (2000) mention that a more popular a site becomes, more tourists will come there. This is confirmed by Ms. Constanze Conradin in this chapter, who states that people will enjoy the Swiss National Park and will recommend it to others and this might determine the number of park visitors to increase. One consequence according to her is that the suppliers around the SNP will economically benefit. However, Mr. Philippe Saner argues that from an ecological perspective, if you have the SNP which is a protected area, this means that the areas around will be more intensively used. Mr. Voll Frieder has a different perspective of what are the consequences upon the areas and the suppliers around the SNP. He says that the SNP has a positive influence upon the supplier around the park because they will think in a more sustainable and ecological way.

Considered by literature as a positive consequence, in the previous chapter, Mr. Voll Frieder and Ms. Constanze Conradin mention that the presence of tourism in the SNP determines the interest for the park to grow and together with it, the desire of protection and conservation the park.

In conclusion, all the interviewees supported the impacts presented by them in the previous chapter with arguments which explain their consequences. It has resulted that the consequences presented by the interviewees had an effect inside the Swiss National Park or upon the areas around it. Their explanation helped the author of this paper to better understand the magnitude and the influences of these impacts.

4.6. SNP management awareness and handling of the ecological impacts and their consequences

This chapter intends to present the results of the fifth interview question which is:

Is the management at the Swiss National Park aware of these possible impacts and consequences? If yes, how is the management at SNP dealing with them?

As seen in Appendix 3.6, this question was asked towards only five of the interviewees, the ones who know very well the management and the situation of the Swiss National Park.

Moreover, this question was asked with the intention of finding whether or not the management at the SNP is familiar with the before mentioned ecological impacts and how is it dealing with them.

The author considered that it is very important to discover this aspect because the management of the SNP has a great responsibility towards the well-being of the park and therefore it is natural to investigate this aspect as well.

4.6.1. Results

All five interviewees who were asked about this issue (Hans Lozza, Heinrich Haller, Pia Anderwald, Reto Rupf and Thomas Rempfler) responded that yes, the management is aware of these possible ecological impacts. Mr. Reto Rupf, even mentions that he thinks that the management of SNP is doing a very good job in dealing with these impacts and consequences. Ms. Pia Anderwald mentions that the park is monitoring these impacts in order to determine their magnitude, to see whether or not they are still in the limits of the acceptable changes.

When asked about how the management is dealing with these impacts, Mr. Hans Lozza has specified that the management is putting a great effort to find the people who do not behave according to the rules and also to try to educate people. According to him, the park has programs with young generations and also with people from the region.

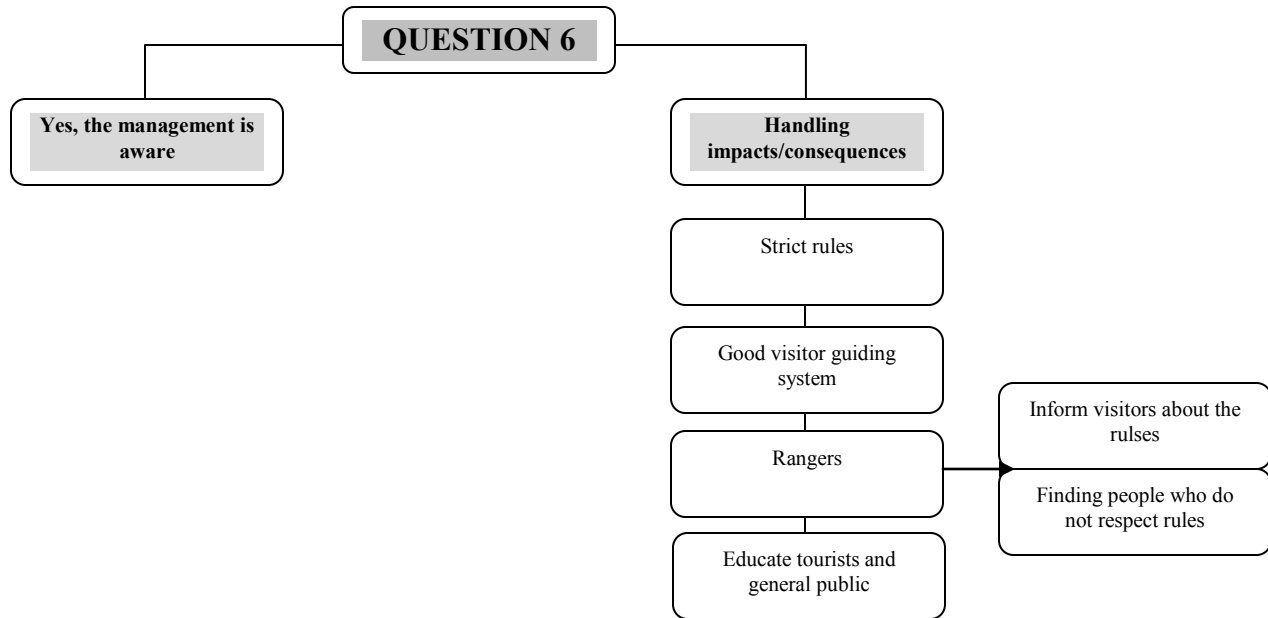
Furthermore both him and Mr. Reto Rupf mentions that SNP has rangers which are doing a great job to inform the visitors about the rules, because according to Mr. Hans Lozza people need to understand why the rules should be respected. Mr. Reto Rupf also specifies that the rangers are doing very well in looking after the visitors and he also mentions that the park has very good guiding systems, which comes in the tourists 'support.

Mr. Heinrich Haller argues that visitors are essential for the park and that they do not represent a threat for the park. He mentions that the management of SNP is aware of these impacts and it has implemented the rules and it is also supervising the tourists to respect these rules. And therefore according to him, it is not possible to do more with regard of human influence.

He also mentions that the management tried in the past to deal with the Ofenpass road but with no substantial success because it is an issue of a bigger scale, at a political level.

As a visualisation of the interviewees 'answers, the figure below illustrates an overview of the different perspectives of the interviewees by summarizing the previously presented answers:

Figure 7: Overview Question 6



Source: Own Illustration

4.6.2. Discussion

The literature highlights the importance of management in handling the tourism in a location.

Ballantyne et al. (2009) say that the degree of impact of an area is interconnected with the level of management and that the the implementation of suitable policies are necessarily for controlling the tourism impacts. Dowling et al. (2002) explain that for being able to efficiently manage tourism in a destination a good ecological perspective of the managers is required.

Therefore, the author of this paper wanted to have a look as well, at the management in the SNP. The interviewees were asked to asses whether or not the management of the SNP is aware of the possible ecological impacts and consequences.

All the interviewees agreed that the management is familiar with this situation and moreover that it has developed some strategies for preventing and controlling these impacts and consequences.

The interviewees, and also presented in literature, have mentioned that the park has strong regulations which are meant to prevent some impacts. Moreover, the interviewees specified that as a prevention and correction measure, the management in putting a lot of effort to find the people who do not behave according to the rules. Mr. Hans Lozza mentioned that the park has 8 rangers which are looking for the people to respect this rules and also to inform the visitors

about the rules. According to Mr. Heinrich Haller and Mr. Reto Rupf in Chapter 4.4.1, 20-30 people received a fine for not obeying the rules.

Ballantyne et al. (2009) stresses about the importance of educating tourists in order to influence their behaviour, not only at the specific location itself, but also in their home, leisure or work environments. Mr. Hans Lozza mentions that the management is trying to educate people with programs for young generations and also for people from the region.

Furthermore Ms. Pia Anderwald mentions that the park management is monitoring these impacts in order to determine their magnitude. As mentioned by Mr. Heinrich Haller in the Chapter 4.4.1., the management knows that there are human influences, but they are considered them as being acceptable. So by monitoring this impacts, the management is aware if they are still classified as being acceptable or not.

In conclusion based on the interviewees' arguments and based on the general information found in literature, it could be stated that the management of the Swiss National Park is aware of the possible impacts and consequences. Moreover, the SNP team tries to deal with them by using prevention measures such as having strict rules and having people monitoring the tourism activities in the park and also trying to educate and to make the tourists understand the importance of a good behaviour inside the park.

4.7. Recommendations for SNP management

This chapter intends to present the results of the last interview question which is:

What recommendations do you have for the management at the Swiss National Park?

As seen in Appendix 3.7, like in the previous chapter, this question was asked towards only five of the interviewees (Hans Lozza, Heinrich Haller, Pia Anderwald, Reto Rupf and Thomas Rempfler), the ones who know very well the management and the situation of the Swiss National Park. However there is a recommendation coming from one person who comes from a university background and who also has knowledge about the situation at the SNP, Mr. Stefan Forster.

This question was asked in order to discover if the persons who know the situation in the park and also the management have some recommendations for further improvements, for what the management there could do more.

4.7.1. Results

Mr. Reto Rupf considered that the management is doing very well and that he cannot think of any further recommendations.

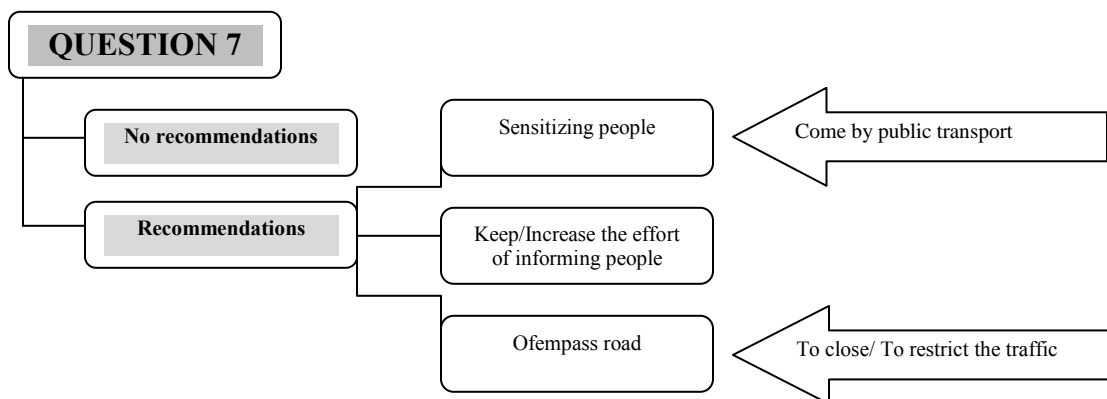
Mr. Hans Lozza is also agreeing that the management in the SNP is mainly doing a good job and he considers that the SNP could do more about sensitising people, to come by public transport instead of the personal vehicle in order to reduce the impacts generated by them. This is also supported by Mr. Stefan Forster whose one recommendation is the promotion of the public transport as well. He also recommends to the management of the SNP to improve the signalling and controls, in order to improve the visitor management.

Mr. Thomas Rempfler considers that in a protected area like Swiss National Park information is very important and he confirms that the management is doing well in this regard. He recommends the management of the SNP to keep or even to increase the management effort to inform visitors and community members.

Mr. Hans Lozza, Mr. Heinrich Haller and Mr. Stefan Forster mention the Ofenpass road. Mr. Hans Lozza specify that the management should do something about this road, but also according to him, this is very difficult because this road is a public one and they cannot just close it. Mr. Heinrich Haller also is supporting the idea that it would be necessary that the management should do something about the Ofenpass road. Mr. Stefan Forster recommends to the management at the SNP to try to find a way to restrict the traffic of that road and to promote as an alternative the public transportation.

As a visualisation of the interviewees 'answers, the figure below illustrates an overview of the different perspectives of the interviewees by summarizing the previously presented answers:

Figure 8: Overview Question 7



Source: Own Illustration

4.7.2. Discussion

One interviewee stated that they do not have further recommendations as they consider that the management of the SNP is doing a good job.

Other interviewee said that because the management at the SNP is doing a good job with informing the visitors and the general public, the management team should keep or even to increase this effort.

As specified by Kupper (2014), since 1960 the number of cars and motorcycle crossing the park through the Ofenpass road has increased becoming the major of problem of the Swiss National Park. This was also confirmed by Mr. Hans Lozza, Mr. Heinrich Haller, Ms. Pia Anderwald and Mr Voll Frieder in Chapter 4.4.1. Therefore the recommendations made by the interviewees were made with regard of the Swiss National Park. Mr. Hans Lozza, Mr. Heinrich Haller and Mr. Stefan Forster specified that the management of the SNP should do something about it. Mr. Heinrich Haller specified that attempts were made in the past, but without any success. Mr. Hans Lozza says that it is difficult to do something about this road, as the decisions are made at the political level.

In conclusion, as it was mentioned in the previous chapter the management of the SNP is aware of the possible impacts and it is taking the necessary measures to prevent or to reduce them. When asked about further recommendations, the majority of the interviewees mentioned the Ofenpass road. This road is mentioned both in literature and beforehand by the interviewees themselves as being the major problem of the SNP and therefore they consider that the management should try to do something about it.

5. Conclusions

Based on the findings from the literature and from the interviewees' responses, the author of this paper was able to build a strong answer for this paper's research question, namely '*What are the ecological impacts of nature based tourism in the Swiss National Park and how are they affecting this area?*'.

The challenge faced by the author was that this topic is a new one, as there were no previous studies regarding this subject. However with the help of the general ideas found in literature and the specific answers of the interviewees the author was able to form an opinion about this subject.

When trying to differentiate between the ecological and environmental impacts of tourism, because as previously mentioned, they were sometimes used in literature as synonyms instead of being treated separately, the interviewees were having different opinions. However, the author was able to conclude that the terms should be treated separately as they have different particularities. Moreover, the author decided that further in this paper, to stick to the definitions given by Dowling et al. (2002) to the ecological impacts and by Andereck et al. (2005) to the environmental impact. Nevertheless, the lack of consistency of the interviewees' answers, their different opinions and the confusion resulted sometimes from the literature determines the author to consider that this topic should be further investigated, in order to create a collective opinion with regard of the differences between ecological and environmental impacts of tourism and to overcome the idea that the two terms could be used as synonyms.

Furthermore, the author created a list with the ecological impacts of tourism based on the definition given by Dowling et al. (2002) and selected impacts which in the literature were classified as environmental impacts, impact upon the environment and impacts upon ecosystem. The author's assumption was confirmed by the interviewees' answers which in most of the cases shared similar opinions. The ecological impacts of tourism, according to the author and confirmed by the interviewees, were happening either due to the presence of tourists, such as overcrowding, trampling, littering and so on and due to the development of tourism in a region such as land and energy waste and so on (See Chapter 4.2.1 for the complete list of impacts).

The tourism in the Swiss National Park was meeting the characteristics of nature based tourism presented in the literature and the author assumed that the form of tourism in the SNP is nature based. This assumption was confirmed by the interviewees as well, because all of them agreed that the tourism in the Swiss National Park is nature based. Moreover, the author also

discovered that the tourism in park is not only nature based, but that it is sustainable as well, due to the strict regulations of the park.

Another discovery made by the author was that the nature based tourism in the Swiss National Park has both positive and negative impacts. According to the interviewees the negative impacts are happening due to both the presence of tourists inside the SNP because they create trampling, littering and noise pollution and due to the tourists 'choice to travel towards the park because if they decide to come by the personal vehicle they contribute more to the noise and air pollution, than coming by public transportation. However according to the interviewees nature based tourism in the SNP is more beneficial than detrimental because the positive ecological impacts of nature based tourism have a more favourable influence for the park than the negative impacts. The positive impacts presented by the interviewees are that if there is an interest for the park (such as the areas around it beneficiate from the tourists coming to SNP) the area will be protected and the nature inside it as well. Moreover another benefit of the tourism in the park is that the tourists will have a more ecological understanding. A supplementary discovery made by the author with the help of literature and of the interviewees' opinions that the main problem that the Swiss National Park has and which creates threatening ecological impacts, it is not due to the tourism in the SNP but due the road which is going through the park, namely the Ofenpass road. However this road could also be related with the tourism in park, if some visitors decide to come to the SNP with the personal vehicle through this road.

The author has found out that the above mentioned impacts have some consequences upon the SNP itself and also upon the areas and the suppliers around SNP. The main and the most essential consequence, identified by the author, is that NBT helps to keep the interest of the local communities and of the general public to care about the conservation and protection of the Swiss National Park. Therefore the wilderness inside it would be preserved and kept as pristine as possible.

According to the interviewees, another consequence would be that inside the park, the presence of human and their behaviour (noise) could scare some animals and make them avoid the zones where the tourists are usually present and in other cases, other animals got used with the people and that they intentionally stay close to the tourists, because they feel protected (from their predators). Other consequence is also targeting the animals, but according to the interviewees this would happen very rarely, is that some animals could choke with the garbage resulted from the tourists littering. The plants are also affected by the NBT and more specifically by the trampling created by the tourists. A consequence of the tourists trampling would be the

impossibility of some vegetation communities to re-grow temporarily. As established as being the main problem, the impacts created by the cars and motorcycles which are crossing through the Ofenpass roads, create consequences such as the disturbance of animals and visitors of the SNP and moreover it also has a consequence upon the vegetation and soil of the SNP because during the winter the road is prepared with salt which could be washed and infiltrated in the park 'ecosystem. The interviewees have also mentioned that the ecological impacts could create some consequences outside the SNP. If the presence of tourists in the park would increase, therefore the suppliers around SNP would economically benefit. Another consequence would be that if the SNP is protected and the nature is kept pristine, then this means that the areas around it would be more intensively used. The last consequence mentioned by the interviewees is that if the supplier will have the SNP as an example, they would have a more ecological understanding and act in a more ecological way.

The author found out that the management of the SNP is aware of both the possible negative and positive impacts of NBT in the park. The management agrees that the presence of tourists inside the park is important for maintaining the interest in the park of the various stakeholders. The management does not see the tourism in the SNP as a threat, because its negative influences are small and it took all the necessary measures to prevent this negative influences, such as developing strict rules, educating the tourists and the general public and also through the park rangers which are in charge with informing the visitors about the rules and finding the people who do not respect rules. The interviewees 'recommendations for the SNP management is to try to sensitise people to come by the public transportation, to keep or to increase the effort of informing people and try to do something about the Ofenpass road.

As an overall opinion, the author considers that the management is doing a good job to handle the tourism in the SNP and that the nature is always put first. Moreover, the management shows interest and dedication for taking care of the nature. The author shares the opinion that nature based tourism is not a threatening activity for the park and that it can even be beneficial for the education of tourists and for keeping an interest for the park. Despite the fact that there are some negative ecological impacts in the park, the author thinks that they are not that significant and that they should be accepted. The author believes that the human being is an important part of an ecosystem and that it should not be excluded. Especially in the case of the SNP, where according to the interviewees in most of the cases, the tourists behave as they are supposed to and as the numbers are showing that there are few occasions where the tourists do not respect the rules. However, the management is prepared to overcome these situations. As a final thought, the author believes that if tourists are complying with the rules of the park,

then the SNP could be considered as a good example where the humans did not lose the connection with the nature and that both of them could cohabitate without disturbing each other.

6. Limitations

One of the first limitations of this research is represented by the lack of specific literature with regard of the ecological impacts of nature based tourism in the Swiss National Park. Another limitation is that the author has only reviewed the literature available in English. This is considered a limitation because there might be some helpful information in German or in other languages. The last limitation is time because the author was restricted by it and maybe if the author would have had a longer period a time to conduct the research, he could have done a more in-depth investigation, such as using a larger sample for the interviews or going to the Swiss National Park for observation, as the park is closed during winter and beginning of spring.

7. Resources and ethical issues

The author presents in this paper the resources that have been used to complete this research paper and the ethical issues that might appear in the process of completing this study.

7.1. Resources

The author uses following resources in order to create this research paper:

- **Equipment:** A laptop with internet connection is needed for gathering and obtaining the relevant data. A telephone is also needed for conducting the telephone interviews. Moreover, the software Microsoft Word is needed for centralizing and analyzing the data and for writing the research paper;
- **Time:** is needed for analyzing the literature, preparing and holding interviews, analyzing the data, writing the conclusion and in the end, submitting the paper;
- **Knowledge:** obtained during the academic preparation of the author

7.2. Ethical issues

The author has considered the following ethical issues in his research paper:

- **Respect for persons:** All interviewees were treated with respect and consideration.
- **Plagiarism:** HTW will grade the research project with 1, if plagiarism is uncovered. Thus all the gathered information from the theory was cited in order to avoid plagiarism.
- **Falsification:** Could appear if something did not occur and therefore it was invented. Thereby, the author has presented the findings as they were presented in literature and by the interviewees without making up unrealistic situations.

8. Time schedule

Figure 9: Time schedule

Task	Month	October				November				December				January				February				March
	First day of the week	19	26	2	9	16	23	30	7	14	21	28	4	11	18	25	1	8	15	22	29	7
Initiation phase																						
First meeting with co-advisor																						
Submission topic																						
Preparation phase																						
Literature Review																						
Formulation Research Design:																						
Research approach																						
Research reasoning																						
Options of research																						
Methodology																						
Execution phase																						
Data collection																						
Data analysis																						
Results and discussions																						
Conclusions and recommendations																						
Completion phase																						
Final Adjustments																						
Printing																						
Hand-in (Final deadline: 11.03.2016)																						

Source: Own Illustration

Bibliography

- Abegg, B. a. (1994). Climate change and winter tourism: Impact on transport companies in the Swiss canton of Graubunden. *Mountain Environment in Changing Climates* , 328-340.
- Agnew, M. D. (2001). Potential impacts of climate change on international tourism. *Tourism and hospitality research* , 37-60.
- Alaeddinoglu et al. (2011). Identification and classification of nature-based tourism resources: Western Lake Van basin, Turkey. *Procedia-Social and Behavioral Sciences* , 198-207.
- Andereck, K. L., Valentine, K. M., Knopf, R. C., & Vogt, C. A. (2005). Residents' perceptions of community tourism impacts. *Annals of tourism research* , 1056-1076.
- Ballantyne, R., Packer, J., & Hughes, K. (2009). Tourists' support for conservation messages and sustainable management. *Tourism Management* , 658-664.
- Bayers, A. (2005). Contemporary human impacts on Alpine ecosystems in the Sagarmatha (Mt. Everest) national park, Khumbu, Nepal. . *Annals of the association of American Geographers* , 112-140.
- Bryman, A., & Bell, E. (2007). *Business Research Methods* (Bd. 2nd edition). New York.
- Buckley, R. (2003). Ecological indicators of tourist impacts in parks. *Journal of Ecotourism* , 54-56.
- Cambridge dictionaries online. (2015). *Meaning of "ecosystem" in the English Dictionary*. Abgerufen am 14. 11 2015 von dictionary.cambridge.org:
<http://dictionary.cambridge.org/dictionary/english/ecosystem>
- Cengiz, T. (2007). Tourism, an ecological approach in protected areas: Karagöl-Sahara National Park, Turkey. *The International Journal of Sustainable Development & World Ecology* , 260-267.
- Climate Change Conference. (2010). *Climate change facts and figures*. Abgerufen am 6. December 2014 von <http://www.climatecentre.org/downloads/File/conferences/COP-16/Fact%20and%20Figures.pdf>
- Dowling et al. (2002). *Natural area tourism: Ecology, impacts and management*. Clevedon, Buffalo, Toronto, Sydney: Chanel View Publications.
- Dowling, R., Newsome, D., & Moore, S. (2002). *Natural area tourism: Ecology, impacts and management*. Clevedon, Buffalo, Toronto, Sydney: Chanel View Publications.
- Duffus, D., & Dearden, P. (1990). Non-consumptive wildlife-oriented recreation: A conceptual framework. *Biological Conservation* , 2013-231.
- Eagles, P. F., McCool, S. F., & Haynes, C. D. (2002). *Sustainable tourism in protected areas: Guidelines for planning and management*. IUCN.
- Elsasser, H. B. (2002). Climate change as a threat to tourism in the Alps. *Climate Research* , 253-257.
- Fredman et al. (2012). The nature of nature in nature-based tourism. *Scandinavian Journal of Hospitality and Tourism* , 289-309.
- Gössling, S. (1999). Ecotourism: a means to safeguard biodiversity and ecosystem functions? *Ecological Economics* , 303-320.
- Hall, C., & Boyd, S. (2005). *Nature-based tourism in peripheral areas: Introduction. Nature-based tourism in peripheral areas*. Clevedon, Buffalo, Toronto: Chanel View Publication.
- Hannam, K. (2005). Tourism management issues in India's national parks: an analysis of the Rajiv Gandhi (Nagarahole) National Park. *Current Issues in Tourism* , 165-180.

- Haukeland, J. V., Veisten, K., Grue, B., & Vistad, O. I. (2013). Visitors' acceptance of negative ecological impacts in national parks: comparing the explanatory power of psychographic scales in a Norwegian mountain setting. *Journal of Sustainable Tourism* , 291-313.
- Haukeland, J. V., Veisten, K., Grue, B., & Vistad, O. I. (2013). Visitors' acceptance of negative ecological impacts in national parks: comparing the explanatory power of psychographic scales in a Norwegian mountain setting. *Journal of Sustainable Tourism* , 291-313.
- Hopper, J. (16. February 2011). *Why do qualitative research?* Abgerufen am 25. November 2015 von methodological.wordpress.com: <https://methodological.wordpress.com/2011/02/16/why-do-qualitative-research/>
- IUCN. (2015). *About IUCN*. Abgerufen am 20. December 2015 von iucn.org: <http://www.iucn.org/about/>
- Kelkit et al. (2005). A study of the Kazdagi (Mt. Ida) National Park: an ecological approach to the management of tourism. *The International Journal of Sustainable Development & World Ecology* , 141-148.
- Kelkit, A., Ozel, A. E., & Demirel, O. (2005). A study of the Kazdagi (Mt. Ida) National Park: an ecological approach to the management of tourism. *The International Journal of Sustainable Development & World Ecology* , 141-148.
- Koenig, U. &. (1997). Impacts of climate change on winter tourism in the Swiss Alps. *Journal of sustainable tourism* , 46-58.
- Krug, K., Abderhalden, W., & Haller, R. (2002). User needs for location-based services in protected areas: case study Swiss National Park. *Information Technology & Tourism. Information Technology & Tourism* , 235-242.
- Kuenzi, C., & McNeely, J. (2008). Chapter 8: Nature Based Tourism. In *Nature-based tourism. In Global Risk Governance* (S. 155-178). Springer Netherlands.
- Kupper, P. (2014). *Creating wilderness: a transitional history of the Swiss National Park*. Berghahn.
- Liu et al. (2015). The development of ecological impact assessment in China. *Environment international* , 46-53.
- Luo, & Deng. (2007). The new environmental paradigm and nature-based tourism motivation. *Journal of Travel research* .
- Mason, P. (2016). *Tourism impacts, planning and management (Third Edition)*. Routledge.
- Mason, P. (2010). *Tourism impacts, planning and management*. Elsevier.
- Matilainen, & Lähdesmäki. (2014). Nature-based tourism in private forests: Stakeholder management balancing the interests of entrepreneurs and forest owners? *Journal of Rural Studies* , 70-79.
- McCool, S. F., & Lime, D. W. (2001). Tourism carrying capacity: tempting fantasy or useful reality? *Journal of Sustainable Tourism* , 372-388.
- Mehmetoglu, M. (2010). Accurately identifying and comparing sustainable tourists, nature-based tourists, and ecotourists on the basis of their environmental concerns. *International Journal of Hospitality & Tourism Administration* , .
- Michailidou, A. V., Vlachokostas, C., Moussiopoulos, N., & Maleka, D. (2016). Life Cycle Thinking used for assessing the environmental impacts of tourism activity for a Greek tourism destination. *Journal of Cleaner Production* , 499-510.
- Nakajima, E. S., & Ortega, E. (2016). Carrying capacity using emergy and a new calculation of the ecological footprint. *Ecological Indicators* , 1200-1207.
- Nikitin, I. (2016). *Research Methods, Qualitative Data Analysis presentation*. HTW Chur.

Oxford dictionary. (2014). *Greenhouse gas definition*. Abgerufen am 20. November 2014 von <http://www.oxforddictionaries.com/definition/english/greenhouse-gas>

Schuetz et al. (2003). Impact of herbivory by red deer (*Cervus elaphus* L.). *Forest Ecology and Management* 181 (2003) , 177–188.

Semeniuk et al. (2009). Hematological differences between stingrays at tourist and non-visited sites suggest physiological costs of wildlife tourism. *Biological Conservation* 142(8) , 1818-1829.

Statistics, G. o. (2001). *Ecological Impact*. Abgerufen am 14. November 2015 von [oecd.org: https://stats.oecd.org/glossary/detail.asp?ID=718](http://stats.oecd.org/glossary/detail.asp?ID=718)

Sunlu, U. (2003). Environmental impacts of tourism. *Conference on the Relationships between Global Trades and Local Resources in the Mediterranean Region* , 263-270.

Swiss National Park. (2015). *Swiss National Park*. Abgerufen am 13. November 2015 von [nationalpark.ch/en: http://www.nationalpark.ch/en/](http://www.nationalpark.ch/en/)

Teacher Guide. (2011). *Pond Interactions Teacher Guide*. Abgerufen am 24. 11 2015 von [riveredgenaturecente.org: http://riveredgenaturecenter.org/wp-content/uploads/2014/01/Pond-Interactions-Teacher-Guide-New.pdf](http://riveredgenaturecenter.org)

Terry, D., & Sarah, C. (2000). *Environmental Implications of the tourism industry*. Washington, DC: Resources for the Future.

Tisdell, C., & Wilson, C. (2012). *Nature based tourism and Conservation*. Edward Elgar Publishing Limited.

Treweek, J. (1995). Ecological impact assessment. *Impact Assessment* , 289-315.

Tyrväinena et. al. (2014). Towards sustainable growth in nature-based tourism destinations. *Landscape and Urban Planning* , 1-15.

UNEP . (2015). *Tourism's Three Main Impact Areas*. Abgerufen am 25. December 2015 von [unep.org: http://www.unep.org/resourceefficiency/Business/SectoralActivities/Tourism/FactsandFiguresaboutTourism/ImpactsOfTourism/EnvironmentalImpacts/TourismsThreeMainImpactAreas/tabid/78776/Default.aspx](http://www.unep.org/resourceefficiency/Business/SectoralActivities/Tourism/FactsandFiguresaboutTourism/ImpactsOfTourism/EnvironmentalImpacts/TourismsThreeMainImpactAreas/tabid/78776/Default.aspx)

UNESCO. (2015). *Introducing UNESCO*. Abgerufen am 10. December 2015 von [unesco.org: http://en.unesco.org/about-us/introducing-unesco](http://en.unesco.org/about-us/introducing-unesco)

Vespestad, & Lindberg. (2011). Understanding nature-based tourist experiences: An ontological analysis. *Current Issues in Tourism* , 563-580.

Willis, C. (2015). The contribution of cultural ecosystem services to understanding the tourism–nature–well-being-nexus. *Journal of Outdoor Recreation and Tourism* , 38-43.

Woodroffe, R., Thirgood, S., & Rabinowitz, A. (2005). *People and Wildlife, Conflict Or Co-existence? (No. 9)*. Cambridge University Press.

Xu et al. (2009). Contribution of tourism development to protected area management: local stakeholder perspectives. *International Journal of Sustainable Development & World Ecology* , 30-36.

Zhong, L., Deng, J., Song, Z., & Ding, P. (2011). Research on environmental impacts of tourism in China: Progress and prospect . *Journal of environmental management* , 2972-2983.

Appendices

Appendix 1: Interview guideline

1. Some articles consider environmental and ecological as being the same thing. Others say that environmental impacts are referring to the impact upon the environment and ecological impacts to the impact upon the ecosystems. Is there any difference, in your opinion, between environmental and ecological impacts?
2. What environmental impacts of tourism can affect the ecosystems and therefore can be considered ecological impacts?
3. Do you consider the tourism at the Swiss National Park to be nature based?
4. What are possible ecological impacts (positive and negative) of nature based tourism in the Swiss National Parks?
5. What are the possible consequences of those impacts upon the area of the Swiss National Park?
6. Is the management at the Swiss National Park aware of these possible impacts and consequences? If yes, how is the management at SNP dealing with them?
7. What recommendations do you have for the management at the Swiss National Park?

Appendix 2: Interview Transcript

Appendix 2.1: Interview Transcript- Constanze Conradin

(Telephone)

1. Some articles consider environmental and ecological as being the same thing. Others say that environmental impacts are referring to the impact upon the environment and ecological impacts to the impact upon the ecosystems. Is there any difference, in your opinion, between environmental and ecological impacts?

For me there is no so much difference between environmental and ecological impact. Because when you have an environmental impact it automatically affects the ecosystem, so I don't see such a big difference between environmental and ecological impacts.

2. What environmental impacts of tourism can affect the ecosystems and therefore can be considered ecological impacts?

The main issue I think it is with regard of the number of tourists. If you have too many tourists it might disturb the animals either due to noise, or their simply physical presence there. If people are going to sensitive habitats, where animals would be disturbed by the presence of human beings. I think the number of tourists going to a location is very important. Informal toilets could be an impact as well. Also when tourists walk on different paths, they can destroy some plants or even small animals, like ants for example. Garbage might be another issue. But this depends on the region, in our region I didn't see so much littering from tourists. But in the south canton of Berne, for example, you could see garbage left by the tourists there.

3. Do you consider the tourism at the Swiss National Park to be nature based?

Yes I consider. This is because the tourists coming to the Swiss National Park are coming for two mainly reasons. One would be to enjoy the nature and the other to go hiking.

4. What are possible ecological impacts (positive and negative) of nature based tourism in the Swiss National Parks?

Swiss National Park has many strict regulations and I don't think that there are too many ecological impacts there. One ecological impact would be the fact that the animals got used with humans. This you cannot consider as being negative or positive. It is just a fact.

What about the tourists that don't obey to the rules?

I didn't hear so many cases of tourists that are not respecting the rules in the Swiss National Park. But in the park you have rangers which are taking care that the tourists respect the rules. The tourists who are not respecting the rules are receiving a fine.

As a positive impact do you agree that if you have tourists and their interest for the park is growing, this will help for the conservation of the nature?

Yes this could be the case. If people will enjoy the nature, they will be more sensible to it, maybe also telling to others about their experience at the Swiss National Park. And the interest for the park will grow.

5. What are the possible consequences of those impacts upon the area of the Swiss National Park?

If people are enjoying the Swiss National Park, they would recommend to other persons and so on. One consequence would be that more tourists will come to the Swiss National Park. This would beneficiate the region for sure. I'm not so sure if this is the case for Swiss National Park as well. So the region would beneficiate, but there might be some ecological impacts for the park, if there are more tourists there, which we might not know for now. For example, in September there is the pairing season for the red deer. A lot of people are coming to see the deer in that time. And there is overcrowding, so many people there. It is not so nice in the park in that period because there are so many people then.

But is there an impact for the deer to have so many people in the park? Or are they used already with humans and are not affected?

No, the red deer are already used with people. I don't think they are bothered too much. The animals in general, I think they are used with the people now.

Appendix 2.2: Interview Transcript- Hans Lozza

(Telephone)

1. Some articles consider environmental and ecological as being the same thing. Others say that environmental impacts are referring to the impact upon the environment and ecological impacts to the impact upon the ecosystems. Is there any difference, in your opinion, between environmental and ecological impacts?

We do not really make a big difference. It is a question of definition. The Swiss National Park is a special case because it is IUCN category 1a. That means there is no tree deforestation, no agriculture, no hunting and the human influence is reduced to minimum. It is not very important to make a differentiation of the two concepts. The thing is that the Swiss National Park is not separated from the rest of the world, although it is a natural reserve and we have very strict rules which have the aim to avoid human influence. Of course, the rules cannot avoid air pollution, for example. If there is an environmental or ecological impact, it is difficult to say. It is a little bit both. We don't really know what happens with those air pollution. Do they affect something in the park? It is difficult to say. In our communication we do not make the differentiation between environmental and ecological impacts.

So you use both terms, either environmental and ecological impacts?

Yes.

2. What environmental impacts of tourism can affect the ecosystems and therefore can be considered ecological impacts?

The environmental impacts of tourism, yes, they can have an ecological influence, maybe the overcrowding, if there is a destruction of the vegetation, the erosion of the trails, noise that chase away the animals, the presence of people in isolated places where certain animals hide. Activities of night, camping or making fire could be really dangerous. And of course the biggest problem is the traffic, noise pollution. And all this factors could affect for instance the ecological impacts because they can have an influence in the different ecological systems. With the park itself it is a little bit different because we have very strict rules and the visitors need to stay on the tracks, they are not allowed around to make fires. We don't really have many of these impacts in our park. But the traffic, the cars, they produce a lot of noise and produce also air pollution and this is one of our major problems. One side, they are nature lovers and on the other side they come by car, instead of the public transport. This is a question of sensitization. I only speak now about the Swiss National Park, because of course there are other environmental impacts of tourism, such as horses for example. But this is not possible in the Swiss National Park, you are just allowed to walk there, horses are not allowed, no mountain bikes, no bikes. It is a little bit different in our case.

I also read that no dogs are allowed as well..

Yes because the other animals would smell them and nobody is able to keep his dog quiet for six- seven hours. That is why it is not allowed to take a dog inside the national park in order to keep the influence of humans as low as possible. But we still have 150.000 visitors per year. So this is not a real problem.

3. Do you consider the tourism at the Swiss National Park to be nature based?

Yes, absolutely, it is nature based. But if tourists come by car it is not really nature based. The motivation to come is to see the animals and we know about the results of a study 35% of the people come to see the animals and 60% because of the landscape, because of the hiking possibilities and 40 % because of the flowers, vegetation. So that means that people come because they like nature, they want to see the animals. Swiss National Park is a good place for the nature lovers.

So you always walk by yourself, or are you accompanied by a guide?

You can do whatever you like, you have the both possibilities. We had for example last year, 5000 people taking a guide and the rest preferred to walk by themselves.

But is there a possibility, if they are not guided by someone, that the tourists will not respect the rules?

Yes, of course, it happened sometime. We have 8 rangers which track if people are respecting the rules. And sometimes you have people living the tracks. Every year you find some of them, there are like around 40 people who are taking fines. It is a national rule, so you really have to enforce it. People appreciate it, because they know that there are rules and for them it is really important that the others are also respecting the rules. It is a certain control between the tourists themselves. 90% of visitors state that it is very important for them that the nature is completely protected in the national park. That it is why they come, because they know that there is an interest for nature.

We move to question number four, although we already have discussed about some issues.

4. What are possible ecological impacts (positive and negative) of nature based tourism in the Swiss National Parks?

Traffic is an important issue, people, animals and if tourists know what to not do in the Swiss National Park. If they leave the trails, if they take plants, make noise, of course might be a change in the behaviour of the animals, or there might be erosion, or the vegetation might be

harmed and so on. Still, this is not really the case because people visiting the Swiss National Park, usually respect the rules. And also the erosion of the trails is not a real problem in the park. I know from other places where the erosion of the trails represents a big problem.

Are there any positive impacts of tourism in the Swiss National Park?

Well in the park itself no because there is no infrastructure. So we don't have a direct profit from the visitors coming in. We just give people the possibility to go into the park and have a look around. But we don't have infrastructure and we cannot really say that the animals benefit from the tourists coming into the park. The visitors should be only visitors. They should not have a real importance. That is the basic idea of a natural reserve. It is just for nature and people can go and have a look on it. But they should not interfere or change the nature. The region around the Swiss National Park profits from the tourists coming into the park. But not the park itself or the nature.

5. What are the possible consequences of those impacts upon the area of the Swiss National Park?

One consequence would be from the tourists who are making noise. It might be a problem when you have a classroom and they are very noisy, that might cause to some animals which are sensible to go away. It is just temporary, because usually the animals come back. We keep an eye on that, in case we have this situation, to do something about it.

The animals feel somehow restricted by the hiking trails? Do they avoid them?

Well, they get used to it. They know that on the trails there are people which are walking on these paths. And for instance at night, when they know there are no visitors, the animals come close to the trails as well. But they got used with the people. And the marmots, for instance, they know that there is no danger to be close to the trails and sometimes it is even a protection for them. Because the eagle, or the foxes, they do not come close to the tracks. And red deer they keep their distance, of 1 kilometre to those tracks and in some cases, 300 meters. They have a different behaviour. They are used with the tourists. The most important thing is that the tourists to keep on the tracks.

Do you have a problem with people living the garbage? Or usually people are well educated?

Mainly, it is ok. There is sometimes garbage, but it isn't a lot. It doesn't really affect the ecosystem. One aspect would be the toilets. We don't have toilets in the park because if we would have toilets, then you have something concentrated in one spot and you would need to throw everything out at the end of the season, which is not very ecological.

6. Is the management at the Swiss National Park aware of these possible impacts and consequences? If yes, how is the management at SNP dealing with them?

We keep an eye and we have little possibilities to avoid the impacts. We try to find people who don't behave according to the rules. We are in a more or less comfortable situation because if we would have ecological problems because of the visitors, we would have the possibility to do something about it. For example, to limit the number of people who are entering the park. But there were no problems until now, so we didn't have to use these measures. We also have the rangers who are aware of the situation. It is important that they inform the visitors because when you have those rule, it is important that people understand. Because the rules are not as police, but they are for protecting the nature. They know that animals need places that are undisturbed. They know if people walk on flowers, there are no flowers anymore. People in general understand to respect the rules. We try to educate the people. We have programs with young generations and also people from the region.

Do you also educate them to come by public transportation and not by personal vehicle?

Yes we try to do that. Also the number of people which are coming by public transportation is growing. But this takes a lot of time and sensitization work.

7. What recommendations do you have for the management at the Swiss National Park?

It is a little bit difficult because I am also part of the Swiss National Park management. I think that in general the management is doing well and there is no need for further recommendations. Maybe the important thing is to sensitize people, to come by public transport. Maybe this is something that we can do more. We also have the road which is crossing through the park and it is very busy. But the biggest problem in that road is the motorbikes, which are coming maybe from Italy. They drive very fast, make a lot of noise and this is annoying for both the visitors and animals. But it is difficult to make something about it due to the fact that it is a public road and we cannot just close it. It is also difficult to try to reduce speed. This is for us the biggest problem.

Appendix 2.3: Interview Transcript- Heinrich Haller

(Telephone)

1. Some articles consider environmental and ecological as being the same thing. Others say that environmental impacts are referring to the impact upon the environment and ecological impacts to the impact upon the ecosystems. Is there any difference, in your opinion, between environmental and ecological impacts?

For me there is a certain difference between these two terms. For me, environmental impacts are more an assessment. So, environment impacts mean negative effects. On the other hand, the ecological impacts are more from a scientific point of view. The effects are considered more or less influence factors. In general I think that they are considered the same, but if you look closer to the details you will see the specifications that I've made. On one hand an assessment and on the other hand a scientific point of view.

2. What environmental impacts of tourism can affect the ecosystems and therefore can be considered ecological impacts?

I will only mention the impacts concerning the Swiss National Park. And in the park we do not have so many factors influenced by the nature based tourism. The main factor, from my point of view, is the presence of humans on the pathways. We have this rule that you need to stay on the marked pathway. But it is clear that if there are humans on these paths, you have an influence upon the nature. But our main problem is the Ofenpass road. This Ofenpass is the main road which goes through the national park. Nevertheless, this road is not related to the nature based tourism.

But the tourists coming in the Swiss National Park are coming through this road?

Yes, part of them are coming through this road. But this road is more the main connection between Engadine, Val Mustair valley, Tirol. So that is a connection without the relevance of the Swiss National Park. But of course, some parts of the tourists are coming through this road. And that is a problem and of course, an influence.

Other problem could be the deposition of garbage and the trampling. They are problems, but they are not the main problem in the Swiss National Park.

3. Do you consider the tourism at the Swiss National Park to be nature based?

For me is clear, yes. The tourism in our national park is nature based. And it is also very necessarily. Because as you know the Swiss National Park is category 1a, protected area according to IUCN and therefore the tourism in this park has to be nature based. That is a condition. The main aspect of this type of tourism is that you cannot leave the marked pathways. That is for me the most important aspect, to be nature based. And of course, now, during the winter the park is closed. So between November and end of May, beginning of June, the park is closed. This is also important for nature based because winter is a sensitive season for example wildlife. I am sure that we can fulfil the condition for nature based tourism in our institution.

4. What are possible ecological impacts (positive and negative) of nature based tourism in the Swiss National Parks?

I have mentioned some before.

I think that it is important that the Swiss National Park is opened to the general public because it is unrealistic to not have access to such big protected area. It is necessary to have this access for humans. You need to leave some space for the influences of humans. It would be bad if nobody would therefore have no interest in this park. So it is important that you give access.

So it is because if you have tourists there, then the interest for protecting the area would increase?

Yes, this is true because you are in an open political system and if you do not have the support of the local population and also of the national population, you cannot establish or maintain such a big protected area. It is very necessary to have the connection with the population, to give access.

But of course, you would have a certain influence by these visitors.

And once more, because of the rule that you cannot leave the pathways, the influence of humans is reduced.

I can say that we can handle the human influence in order to reduce to minimum the impacts.

But do you have tourists that do not obey to the rules?

They are a little. Just a very small number of people do not obey the rules. There are around 120.000 visitors, each year and normally you have between 20-30 problems with visitors, no

more. So the rules are accepted very well. And also the visitors can have a good control, not only the rangers. So there is a social control among the visitors.

I have mentioned the social and political system, the acceptance of such a park and an important point would be that Swiss National Park is considered economic relevant as well. So it doesn't just have an ecological relevance, but also an economical relevance. This is a main aspect in order to have a good emotion especially coming from the local population.

Another question would be, do you also agree that the animals are used with the people?

There are some animals which are used with the people, the marmots, for example. But it is also clear that during the day animals, such as red deer avoid the pathways. They only come close during the night and during the day, when there are people, they avoid the pathways.

These are influences, that it is right. We can't avoid that. But I think these are influences that we can accept. Also, as I have mentioned before, we are aware of those influences. But in general, it is not possible to do more in order to mitigate the human influence. It is necessary to have these visitors. And 120.000 visitors, each year, between beginning of June and end of October, does not represent a big problem from the national park. So this park is not as crowded as other protected areas.

I consider that the main problem of the Swiss National Park is Ofenpass road. This road is going through the park, it is the main road and in summer, the noise of vehicles, especially of the motorcycles is really disturbing. This has an ecological impact and also an influence on the emotions and expectations of the visitors. This situation is however, not related to nature based tourism. And it is very difficult for us to do something against, we are not responsible for this Ofenpass road because it is a political question. We tried to do something against it for many years but without any substantial success. Now we will see what we can do.

You already answered to the following question so we can move to the last question:

7. What recommendations do you have for the management at the Swiss National Park?

I have a recommendation with regards of the Ofenpass road. We need to do something about it.

Appendix 2.4: Interview Transcript- Philippe Saner

(Face to face)

1. Some articles consider environmental and ecological as being the same thing. Others say that environmental impacts are referring to the impact upon the environment and ecological impacts to the impact upon the ecosystems. Is there any difference, in your opinion, between environmental and ecological impacts?

I can't really give you the right answer, I can just give you my perspective or how I see things. Your topic, the focus of your thesis is to try to distinguish them and then to make recommendations about how either of them can be influenced by certain tourism activities. My understanding is that you can have an impact on the environment or on anything. That is the way we are, we do things, we create disturbance and I see the impact measured as a change. You measure something now and you measure something at a later point, there is a change in between and this is your assessment of an impact, whether is good or bad. That is what we do in science, we measure change, we try to refer to a theory, we try to correlated with. Now for the environmental impacts, in my understanding, it is a flow or a change of material or energy. And for an ecological impact, it is the change in the number of individuals. Because, my understanding of ecology, is that it is about the distribution of animals and plants. I am a biologist and that is my understanding of ecological patterns, how can we understand different species, animals and plants and for example the flora and fauna and how are they distributed in a landscape for example. An impact on them might reduce the population size, to the point when they are threatened and that is when we talk about something that we need to worry. But if you look at the term ecology, ecology comes from "oicos", so from the house or household. So whenever I talk with the people outside of the scientific field and they normally understand ecology as the flow of energy material. That is their understanding of ecology. So in the end, I think it is both, you have a change or a flow in energy and material and you have the effect on individuals, like a single deer, a single human being and I think you have to consider both, the effect on the flows in energy or materials and the individuals, and then you have a better understanding of what the impact is, so that is my difference about environmental and ecological impact. So for example, for the Swiss National Park, we had a student and she looked at the runoff of water from the roads into the national park water ecosystem. The idea was that if you have a lot of traffic, there will be pollution coming from the cars and they are on the road, it rains, and it will be washed in the river ecosystem of the national park and this will have detrimental effects and impacts. So that it would be an environmental impact. Now if certain deer populations would die because they get poisoned and the population size would be reduced to a critical level, the specie would go extinct and this would be an ecological impact. So, the cause is the same, but just the way you look at it is a little bit different. There was a recent study made by Greenpeace, where they looked at the protected outdoor clothing and they could prove that there are a lot of chemicals that they use to do the outdoor clothing. And this was showing a case of environmental impact of people, nature based tourism in a very remote area. They think they are protected but in the same time, they seem to pollute the area. I guess in the end, everything we do, has an impact. Yes, I think there is a difference between environmental and ecological impact, based on the explanation that I gave. That is my understanding of how they relate to each other.

2. What environmental impacts of tourism can affect the ecosystems and therefore can be considered ecological impacts?

From what I have said before, I think it would be any impact that creates a flow in material or energy, which has detrimental effects on either the plants or the animals, or the microbes in an ecosystem. So, waste for example, people throw out things out of the car and the animals might eat the plastic bags that would be the type of flow of material that causes an ecological impact. I think it is more noise, at least in Switzerland noise is a big problem, you have a lot of people with the paragliding, skiing, mountain biking, I think there is a lot with noise disturbance there. This is one example.

3. Do you consider the tourism at the Swiss National Park to be nature based?

As I have understand, nature based tourism is simply tourism that targets the nature. That's it. So, there is no concern about the impact there. It is just, we live in a very urbanized environment, so people come from Zurich, for example, to the mountains, where they try to have the weekend recreation. And you see, very impressively, every Sunday evening, you have all this cars coming from the mountains to the city on the highways, everything is packed. That is our understanding of recreation nowadays, you pack you things and you block the highways. So, yes I think that the tourism at the Swiss National Park it is nature based, I wonder if that is what we should aim for. Because, as I have understanding there is a whole concept of sustainability, sustainable tourism, you have nature based tourism and you have ecotourism, so I think that bringing the nature based concept to something that it is more integrated into the environment, maybe looking forward, if that it is possible. I guess that any form of tourism disturbers. So it is always about the level, how much tourism do you accept and I guess that in the SNP they have an amount of people that are allowed to go there. Restricting, that might help nature based tourism to be sustainable. But if you just say it is nature based tourism and you let a lot of people coming inside, the natural park can be destroyed. And even though it is nature based, it doesn't mean anything. I think going beyond nature based is important, if you assess the ecological impacts of tourism.

4. What are possible ecological impacts of nature based tourism in the Swiss National Park?

The one thing is certainly, inside the park it depends on the amount. I have understood that it is regulated nowadays and they are very restrictive, so you can only walk on your path. I think the Swiss National Park is very restrictive with that. So, honestly I cannot really think of any ecological impacts now, personally. I think that the impact comes mainly from the outside. I was thinking more of an inside-outside content. In the inside, I cannot see any ecological impact of tourism because it is so protected. But I think that this creates different aspects on the environment of the Swiss National Park. One thing is clear, if you take away an area, the rest are more intensively used and I guess that there is a lot of discussion there, in the sense, should you use everything sustainably? Or should you put something aside, making it very protective and use the other things more intensively? So, in this context, we say that we totally protect this, but this may cause that the other areas are more heavily used because you always have the same available amount of space. It means that you have to increase your productivity on the others. So people coming from Zurich to Engadine for recreation, it means that another mountain is heavily used by paraglide, mountain bikers and everyone. So I think that the ecological impacts may not be within the national park, but I would say that one should look at the surrounding and consider that. Also if you consider that the Swiss National Park is a tourism attraction, it means that you need a lot of access points and this causes fragmentation. But that is all outside. But nevertheless is sort of the buffer zone of the national park. I think it is better to not only look at the Swiss National Park, but also at the Swiss National Park in the context of its environment. And you also have to consider what does this mean with regards of nature based tourism. Because it is not an isolated patch, but it is integrated into activities around it, into tourism that is created, in Zernez for example, where they have the information center, you have

different access points where you can go in the Swiss National Park, but I perceive this as being minimum.

Although there would be some tourists which would not respect the regulation there?

I was only hiking there once, for two days and I never saw waste or anything. I think they are very restrictive. I think they have good guards. Now, the discussion in Switzerland, when you speak about the ecological impacts, we're back on the individuals. So that is the wolf and the bear. That is the big topic around the national park. So the bear that comes from Italy, the wolf, maybe also the lynx is a discussion. I think not so much in the mountain, but in the low land of Switzerland. The integration of these threatened species in a way into the context of Swiss National Park. I think this something where we have a problem nowadays because the Swiss National Park is big enough, is sort of attracting this species, but in the same time is not big enough, they migrate, they have big roots where they go for forcing and that is where you have the clash between the farmers, the persons who look after the sheep and I think there is where you have a conflict of interest between the national park and its core understanding of what it wants to protect and everything surrounding that wants to live there. There was the shooting of the wolf, of the bear, there is an obvious clash between the ecological impacts and the people living around the Swiss National Park.

5. What are the possible consequences of those impacts upon the area of the Swiss National Park?

I think it is mainly the increasing of the pressure upon the unprotected areas. I think this is my main point. If you protect something, then this means that the things around it are more intensively used. I don't really know if there is a solution to it, but one concept that I came across so far is, if we say we have an impact of nature based tourism, in the Swiss National Park or anywhere in the mountains, then what I believe that we should think about is how can we make the cities or the urban environments more attractive to spend your free time there. Because if you don't want everyone to go into the mountains, what can you offer them in the urban environment? So that they don't have to travel four hours by car, two hours each way to spend some time there and create massive environmental impacts by doing that. I think that this is something that we should better address as a society. Is about how do you make your immediate environment more attractive, that you don't need to go to protected areas. Maybe it doesn't work for all, you always have the ones who need to be alone, but certainly I think for families, there are a lot more that could be done. If you look how urban environments are done today, in my perception, there is no concept of nature based tourism in the urban environment, so you have the cities, you are glad if there is a little bit of playground, if there is one single tree. Then, there is no concept of integrating that. I think that a good example is now at Albis, where they try to have the ecology, the local fauna in a forest environment and they try to bring people there. So, in a way, by having that recreational area close to the city, it's like a buffer zone. So people don't go into the mountain because there is something very attractive in between, which is easy for them to get to, it is child friendly and things like that. So, maybe the way of actually improving the ecological impacts of nature based tourism on the Swiss national park is to provide the buffer zone around the urbanized areas where people can go. So basically, the ones who shouldn't really go into the Swiss national park, they get a similar experience by going closer. So I think that this needs a more Swiss landscape approach, rather than being concerned about your own environment (Graubunden is concerned only for Graubunden, Zurich is concerned only for Zurich). But how they interact with each other needs to be improved. I think at this level, this would be a potential solution. More landscape approaches to protect

something that remained unchanged. If you want to conserve that, you have to release the pressure by offering other things that can give recreational experiences.

Do you also see a positive impact of nature based tourism in the Swiss National Park? In terms of ecological impacts or for the Swiss National Park itself?

For the Swiss National Park for sure. I mean, by having tourism, you have something that it is protected. I mean there is a source of income, there is an interest into the environment, you can actually see what an unchanged environment looks like. That in itself is a positive experience. If you think about cross generation. How do you want to teach someone about sustainability, environment, if you can never experience, what it should be in an unchanged condition. I think that it is crucial. I am very positive about the Swiss national park, I really support it. It is great to have that. I also think that it is better to have one big patch, than a lot of small ones. We know that from theory. That it is better to have big things, rather than many small things and that it is better to have them connected.

A positive ecological impact for the flora and fauna due to tourism consists in maybe you recognize the beauty of specie, its unique and by experiencing that, you care about it. You can only protect something that you have a connection to.

Appendix 2.5: Interview Transcript- Pia Anderwald

(E-mail)

1. Some articles consider environmental and ecological as being the same thing. Others say that environmental impacts are referring to the impact upon the environment and ecological impacts to the impact upon the ecosystems. Is there any difference, in your opinion, between environmental and ecological impacts?

'Environment' seems more widely used, but often refers to abiotic conditions, while the focus of 'ecosystem' and 'ecological' is more on interactions between organisms amongst each other and their (physical) environment. I understand an 'ecosystem' as more of a unit or particular type of environment (e.g. a forest ecosystem), while environment itself seems more general. Environmental impacts would therefore refer more to the physical environment, but on a wider scale, than ecological impacts, which would affect more specifically organisms and their interactions, but on a narrower scale (depending on the type of ecosystem).

2. What environmental impacts of tourism can affect the ecosystems and therefore can be considered ecological impacts?

According to definition above, and limited to physical environment: Increase in CO₂ emissions through motorised travel to and within tourist destinations; water pollution and increased use in tourist hotspots; light pollution through tourist amenities.

3. Do you consider the tourism at the Swiss National Park to be nature based?

Yes. Apart from footpaths and picnic areas, the SNP provides no amenities for visitors. Tourists who visit the park thus do so in order to enjoy nature.

4. What are possible ecological impacts (positive and negative) of nature based tourism in the Swiss National Parks?

Positive ecological impacts: none.

Negative impacts: Disturbance of animals through presence of people (flight responses; avoidance of areas in the vicinity of footpaths during busy times; maybe increased stress); littering along footpaths and around picnic areas; soil erosion along footpaths; noise pollution from Ofenpass road.

5. What are the possible consequences of those impacts upon the area of the Swiss National Park?

Animals avoid areas close to footpaths during the day, when visitors present – possible changes in natural habitat use.

Alteration of plant communities along footpaths due to trampling.

Possible habitat shifts by organisms sensitive to noise away from Ofenpass road.

Left (plastic) rubbish may choke animals attempting to eat it; however, park rangers clear away any rubbish they find.

6. Is the management at the Swiss National Park aware of these possible impacts and consequences? If yes, how is the management at SNP dealing with them?

Yes. Monitoring projects to determine magnitude of impacts.

7. What recommendations do you have for the management at the Swiss National Park?

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Appendix 2.6: Interview Transcript- Reto Rupf

(Face to face)

1. Some articles consider environmental and ecological as being the same thing. Others say that environmental impacts are referring to the impact upon the environment and ecological impacts to the impact upon the ecosystems. Is there any difference, in your opinion, between environmental and ecological impacts?

It is a question of definition and it is a question of how you define the term environment. And if you had put the question as nature impact, then I would have said yes, but environmental I would say not that much. There are not that many differences because in my opinion the environment should be seen as an ecological system. But I would say that this is not the point whether you say environment or ecosystem. For me environment is a big part of ecology and nature. For me it is more important the notion of carrying capacity and not so much about the difference between ecological and environmental impacts. And other frameworks connected with the carrying capacity, the limits of acceptable change. For me the carrying capacity and the limits of acceptable change are the core issue here.

2. What environmental impacts of tourism can affect the ecosystems and therefore can be considered ecological impacts?

There are many environmental impacts. I think it is a matter of scale. For example, if you visit the Swiss national park. How would I go there? By train or personal vehicle. Then this would have an effect upon the climate. So the climate change is affecting the ecological circumstances of the national park. So this is an issue of a big scale. And then you can have issues of medium scale. For example, if I leave a trail in the national park, which is not allowed, I can affect maybe the red deer because they aren't used to my behaviour. This might impact in the medium scale. I affect the wildlife. At the micro scale level, for example my trampling effects of just walking. I affect also the microenvironment. In conclusion, there is a whole scale of environmental impacts which could affect the ecosystems.

3. Do you consider the tourism at the Swiss National Park to be nature based?

Yes, of course with the exception of the Ofenpass road which could have an effect on the Swiss national park. You can ask the question whether or not this road is part of the Swiss national park or not. If a motor biker is crossing the road. There is the question whether he is or not a

visitor of the Swiss national park. Because his purpose is not to go into the Swiss national park, but just to pass by that road.

4. What are possible ecological impacts (positive and negative) of nature based tourism in the Swiss National Parks?

Positive, in my opinion there are no ecological impacts. If you have a pristine nature and you as a human enter this nature, therefore the nature is affected and it is not pristine anymore. With my simple presence I would have an impact upon the nature. It is the goal to keep the Swiss National Park as pristine as it is. Therefore you would have a negative impact upon the nature.

Do you agree that if there are tourists coming into the park, then there is an increased interest for protecting the nature, the park?

It is also a matter of scale. If in the Swiss National Park nobody would be interested, then the value of the national park would be very low and maybe in thousands of year there would be the consequence that there would not be any national park at all. So protected areas they have a benefit of nature, because the surroundings would get money, not necessarily the park itself. And so there is a strong reason to keep the reserve as it is. Therefore with this protection of the national park you could say that you have an ecological impact.

And then we have discussed about the negative impacts.

If the tourists behave as they are supposed to, then the most negative one would be the way in which they choose to travel to the Swiss National Park. If they don't behave, then we would have the other negative impacts which we have discussed about.

5. What are the possible consequences of those impacts upon the area of the Swiss National Park?

I think that the consequences could be felt more in the surrounding areas. I think the indirect effects are affecting more the Swiss National Park, than the direct effects if the tourists behave as they are supposed to. For example, you have the red deer which during the haunting season they get shelter inside the park and this could affect the vegetation in the park. Another indirect effect could be also the climate change, or the nitrification. You have more nitrogen in the air and it would be transported through rain. That could affect the vegetation cover from the national park. Another one would be to the Ofenpass road. Because during the winter time they prepare this road with salt. And the salt gets washed out from the roads and infiltrates in the national park. This is also a strong negative impact.

6. Is the management at the Swiss National Park aware of these possible impacts and consequences? If yes, how is the management at SNP dealing with them?

I think they are aware very much of it. That is why they have a good visitor guiding system. They have these park rangers which are looking after these visitors. They also give some punishments to the tourists who do not behave. I think the mean is 20 punishments per year. So we can say that usually the tourists respect these rules. I think they are really aware of it and that they are doing a very good job.

7. What recommendations do you have for the management at the Swiss National Park?

I think they are dealing with these ecological and environmental matters very well and I do not have any further recommendations.

Appendix 2.7: Interview Transcript- Stefan Forster

(E-mail)

1. Some articles consider environmental and ecological as being the same thing. Others say that environmental impacts are referring to the impact upon the environment and ecological impacts to the impact upon the ecosystems. Is there any difference, in your opinion, between environmental and ecological impacts?

Environment = Umwelt

Ecology = Ökologie

Das ist eine Frage der Begriffsdefinition. Diese ist nicht ganz sauber geklärt. Aus meiner Sicht bezieht die Umwelt ganzheitlich den Natur- und Kulturraum in die Betrachtung mit ein. Wogegen eine ökologische Sichtweise eher eine naturwissenschaftliche, technische Perspektive von Ursache und Wirkung auf das Ökosystem darstellt. Diese Differenzierung ist aber subjektiv. Darum müssen Sie in ihrer Arbeit am Anfang die Begriffe klären, damit der Leser weiss, von welcher Definition Sie ausgehen. Dass der Tourismus mit verschiedenen Faktoren eine Ursache auf Veränderungen des Ökosystems hat, ist natürlich unbestritten.

Environment = environmental

Ecology= ecology

This is a question of the definition. This is not completely clarified. From my perspective, the environmental concerns holistically the natural and cultural environment. An ecological point of view is more of a scientific, technical perspective of cause and effect on the ecosystem. This differentiation is subjective. Therefore you need to clarify at the beginning the terms so that the reader knows which definition you go out. That tourism has a cause to changes in the ecosystems, of course, it is undisputed.

2. What environmental impacts of tourism can affect the ecosystems and therefore can be considered ecological impacts?

Aus ökologischer, technischer Sicht sind u.a. wichtige Einflussfaktoren im Vordergrund: die Mobilität, der Abfall, der Wasserbrauch, die Energienutzung, die Klimaveränderungen und der Bodenverbrauch. Wenn wir eine ganzheitliche Betrachtung des Umweltsystems anschauen,

sind u.a. folgende Einflussfaktoren zusätzlich von Wichtigkeit: Verlust von Kulturlandschaft, Zerstörung des kulturellen Erbes, Kapitalabfluss, schlechte Arbeits- und Lebensbedingungen im Tourismus ...

From an ecological and technical point of view the most important factors would be: the mobility, the waste of water consumption, energy use, climate change and land use. When we look at a holistic view of the environmental system, the following factors are also important: loss of cultural landscape, destruction of cultural heritage, capital outflow, poor working and living conditions in tourism ...

3. Do you consider the tourism at the Swiss National Park to be nature based?

Im Zentrum des Nationalpark-Tourismus steht das Erleben einer natürlichen Attraktion (Wildnis). Wenn dadurch Natur vermittelt und erhalten werden kann, wenn die einheimische Bevölkerung mitreden kann und davon regionalökonomisch profitiert und allg. eine nachhaltige Regionalentwicklung gefördert wird, dann ist der Tourismus als naturnah zu bezeichnen. Ich denke, dass diese Voraussetzungen im Schweizerischen Nationalpark gegeben sind.

In the heart of the National Park, tourists could experience the natural attraction (wilderness). If nature could be mediated, if the local population has a say and benefits economically, then sustainable regional development is promoted, therefore the tourism in the SNP could be described as natural. I think that these conditions are met in the Swiss National Park.

4. What are possible ecological impacts of nature based tourism in the Swiss National Parks?

Ein Kritischer Punkt aus ökologischer Sicht im Schweizerischen Nationalpark ist v.a. die starke Belastung durch die Mobilität mitten durch den Park (Ofenpassstrasse von Zernez in die Val Müstair). Bisweilen gibt es Probleme in der Besucherlenkung im Park und an den Parkgrenzen (Wandern, Biken, Skitouren).

A critical point from an ecological viewpoint in the Swiss National Park is the heavy load of mobility through the middle of the park (Ofenpassstrasse of Zernez in the Val Müstair). Occasionally there are problems in the visitor management in the park and the park boundaries (hiking, biking, skiing).

5. What are the possible consequences of those impacts upon the area of the Swiss National Park?

Eine Beschränkung des Verkehrs auf der Ofenpassstrasse (insb. im Sommer zu den Hauptreisezeiten) und gleichzeitige Förderung des öffentlichen Verkehrs könnte eine Massnahme sein. Dieser Vorschlag ist allerdings politisch kaum umsetzbar. Eine weitere Massnahme betrifft die Verbesserung der Besucherlenkung im Nationalpark (Signalisation, Kontrollen etc.)

A restriction of traffic on the Ofenpassstrasse (esp. In the summer peak travel times) and simultaneous promotion of public transport could be a measure. This proposal, however, is politically difficult to implement. Another measure is to improve the visitor management in the National Park (signaling, controls, etc.)

Appendix 2.8: Interview Transcript- Thomas Rempfler

(E-mail)

1. Some articles consider environmental and ecological as being the same thing. Others say that environmental impacts are referring to the impact upon the environment and ecological impacts to the impact upon the ecosystems. Is there any difference, in your opinion, between environmental and ecological impacts?

In general, I think this is a matter of definition of terms, but I would not be able to explain a difference.

2. What environmental impacts of tourism can affect the ecosystems and therefore can be considered ecological impacts?

To me ecology is the science about relations in the environment. Many organisms are together in a net of relations. As all species have different requirements and conditions change all the time, some become more and some less. The balance between organisms is never reached.

In ecology human is like a super factor and has a special role these days. In contrast to plants or even animals humans not only feed, reproduce and need safe places to stay. Humans have the power to change their surrounding like no other creature and at a very high speed, so that organisms do not have sufficient time to evolutionarily adapt to changes. In this sense humans influence ecology wherever they are, whatever they do (producing food, building infrastructure, etc.).

3. Do you consider the tourism at the Swiss National Park to be nature based?

Yes, as much as it can be (see rules in: <http://www.gr-lex.gr.ch/frontend/versions/1190>).

4. What are possible ecological impacts (positive and negative) of nature based tourism in the Swiss National Parks?

Swiss National Park now exists for more than 100 years and since the initiation humans have to follow tight rules (see 3.). Negative impacts are therefore limited by law. Positive impacts caused by human do not exist for a strict nature reserve (IUCN category 1a) that already exists for such a long time (for different categories of protected areas see: http://www.iucn.org/about/work/programmes/gpap_home/gpap_quality/gpap_pacategories/).

Generally said, Swiss National Park was founded to study ecology without the impact of humans. So humans are only allowed to watch, but not to change anything. So far, this is the only place all over Switzerland, where nature is higher assessed than human interests.

5. What are the possible consequences of those impacts upon the area of the Swiss National Park?

Strongly simplified example: Disturbance of wildlife

Depending on species and their behaviour animals are more or less afraid of humans. To a certain point some species or individuals can get used to this disturbance and for example lower flight distances (distance to human, when animal starts to flight). As there is no hunting inside Swiss National Park and people have to stay on paths flight distances are usually lower inside Swiss National Park compared to outside. In case of flights animals spend more energy and have to compensate this waste, regardless of where this happens (inside or outside). Red deer for example, adapt their behaviour and tend towards feeding inside forests and graze on meadows only at night. In doing so, red deer can cause problems in forests.

6. Is the management at the Swiss National Park aware of these possible impacts and consequences? If yes, how is the management at SNP dealing with them?

Yes, Park management performs the regulation.

7. What recommendations do you have for the management at the Swiss National Park?

In a protected area like Swiss National Park information is very important. Park management is putting a very big effort in that. My recommendation is to keep or even to increase this effort to visitors and community members.

Appendix 2.9: Interview Transcript- Vincent Somerville

(E-mail)

1. Some articles consider environmental and ecological as being the same thing. Others say that environmental impacts are referring to the impact upon the environment and ecological impacts to the impact upon the ecosystems. Is there any difference, in your opinion, between environmental and ecological impacts?

In my opinion the environment combines all living(biotic) and not-living (abiotic) things. Whereas the ecosystem is mostly concerned about interactions between biotic factors. I find it hard to distinguish environment and ecosystem.

2. What environmental impacts of tourism can affect the ecosystems and therefore can be considered ecological impacts?

From a biological perspective it is thought that every species occupies a niche and by that fulfilling a certain task. If one species goes extinct there is a vacuum or open niche. Also humans fall into the environment. The term sustainable has often been used in this context. Although it is not quite easy to define sustainable use, I think it should imply the use of a resource for example the environment without depleting it. By depleting I mean destroying interactions between organisms.

3. Do you consider the tourism at the Swiss National Park to be nature based?

Yes I do consider the tourism in the SNP as nature based. The main aim of the park already when it was founded was and still is for scientific purposes. By that the impact of scientist as well as tourist is tried to be kept to a minimal. This is done mainly by strict rules and regulations. On the history of the SNP and the foundation there is a good book released by Patrick Kupper called creating wilderness.

4. What are possible ecological impacts of nature based tourism in the Swiss National Parks?

Wherever there are tracks there are people in the national park (this only in summer, because the park is closed in winter). Wherever there are people there is noise and by that a certain disturbance of the animals.

An interesting story concerning the parks founding is that they thought if nature were kept alone then all open meadows would quickly grow closed with forest. This did not happen and shows that impact of humans might be different from the one we think it is.

5. What are the possible consequences of those impacts upon the area of the Swiss National Park?

I think the consequences are very small

Appendix 2.10: Interview Transcript- Voll Frieder

(Face to face)

1. Some articles consider environmental and ecological as being the same thing. Others say that environmental impacts are referring to the impact upon the environment and ecological

impacts to the impact upon the ecosystems. Is there any difference, in your opinion, between environmental and ecological impacts?

From my point of view, environment and ecosystems it's like two kinds of definitions in the end. I don't see a huge difference between them because environment is maybe more the understanding of the broader public of everything that has to do with nature and ecosystem is a little bit more specific term or definition about specific ecosystems. So, maybe about an ecosystem of a forest, an ecosystem of a river in an area. So, it is really difficult from my perspective, I would say that the difference: environment is a more general term about everything that you find in nature and if you speak about the ecosystems you could say that you speak about a more specific ecosystem, so you can speak about the river in the national park, the measurement about the impact on an ecosystem, I would rather speak about an ecosystem as a closed unit in comparison with the environment, where is more like when you switch on your car and the impact on the ecosystem is when you build a dam on a river, from my point of view.

2. What environmental impacts of tourism can affect the ecosystems and therefore can be considered ecological impacts?

It could start with infrastructure, it would be either possible, you build a big infrastructure which can destroy an ecosystem and have an ecological impact, like, ski slopes or hotels and such things. The other way around, it can also be the weak infrastructure which is not strong enough to have the capability to protect the nature so, for example you can have a walking trail and it is not really well maintained, so people start to walk everywhere, like not on the path, but right and left, that would be another impact of tourism. And then for sure you have also the impact just of numbers of tourists. If you have an area which is wide and important for animals and you have a lot of visitors, they could start to disturb and scare the animals, especially in the winter or in other seasons, the animals would have to run away and they can hurt themselves. Those are negative impacts that might happen and therefore the management system is important. Think of where it is possible to bring the people and maybe if you speak about that, another idea that comes into my mind, a discussion which is going on, if you speak about ecological impacts of tourism. There are people which say that it is better to have all the tourists in one area. In this area we have some disturbances, but we have other areas which are maintained calm for the animals and for the nature. There are other opinions, which they say that it is very bad, it is a concept which can destroy an area, so it is better to take some people in this area, others in another area so there is no high number of tourism in one spot. It is a little different thinking,

you want to protect everything with the sustainable development or we would prefer to have all the development in a mass area and the rest is wilderness.

3. Do you consider the tourism at the Swiss National Park to be nature based?

I think for sure it is nature based because the supplier, in this case, the Swiss National Park and the product are based on the nature, on “selling the nature” of the national park. So, the most important nature based offer here in Switzerland, when you speak about tourism is the national park. So yes, it is nature based, as well because with a product like national park, you have the possibility and the advantage of tourism in the national park to protect some environment which would not have been protected without tourism, for sure. So, it depends always on the management, and as it is developed by now, I think there is a clear nature based tourism offer, but it can also be the case when a national park could develop very differently, if there would not be enough good management anymore, if the spending of the government for the national park would be reduced and all that, there would be problems. For example, the park is sometimes closed in different seasons of the year. All these things would be very important, if you look that there is no infrastructure, skiing, hotels, all that, it is all sustainable offers in the national parks. Those are topics which are important, by the management, how it is done by now, I would say yes, there is a nature based tourism offer.

4. What are possible ecological impacts of nature based tourism in the Swiss National Parks?

Negative ones would be for example, if you speak about national park, you speak especially about animals living there, plants. It is a very famous national park, it is the only one in Switzerland and that is why a lot of people are coming to see the nature and to experience the nature. You find high numbers of tourists in the summer season. The question of negative impacts which can be possible is the carrying capability. So, is it too many people over there, and therefore this could be considered as a negative impact. The other question would be if people are willing to obey the rules, that they stay on the tracks and to not go into some areas where they are not supposed to, or they don't take plants and not leave the garbage everywhere. I have a feeling that this is a question of the management of the national park which is doing very well, to inform the people, to teach the people. And when we speak about possible impacts, we have to look also at the positive impacts and the positive impacts from my perspective, are very important here, because first of all the nature in the area, is protected and by these we also have high publicity on what is going on there, a quite well understanding coming from the society of Switzerland that the protection of the nature is very important. For example, with the

excellent river Spöl there was some years ago, maybe two years ago, there was build a dam on one river which is going through the national park, which is a problem, because you have a high impact of humans, and this it should not be on the national park and it is an existing dam and there is water electricity, water electric company and there was an accident with the dam, it opened like a toxic water, a lot of mud from the lake, going through the river, so all the animals where dying, all the fishes and so. I think that in the media there was a lot of coverage about that problem, and the reason why it was so much coverage, was because it is a national park, the hydroelectric company had to build new structures into the dam, to make sure that this will not happen again. And this is one example where I can think that national park, and no other area which is not so important and well known by tourists, would be the same. This is one example, but could be also others. We can discuss also about tourists who visit the national park, which have a more ecological understanding. So do they travel more by train, arriving in the area, do they pay more for the ecological hotels. There are studies that implicit the tourists at national park, have higher understanding of this topics, but it is always difficult to say, how many people will think this way and act this way. But, in the end, I see much higher benefit out of nature based tourism for the nature, than the negative impacts. And this is very important to bring back together with the management, the infrastructure, that the management knows that this is going to a certain point and when to stop, because nature is always first, the ecology is first. If not, maybe in other areas in Switzerland where many tourists are coming we build a cable car, a hotel, a road and the questions starts whether is good to have a national park, or would be better not have it. But, in this case, I think that the positive impacts are much higher.

5. What are the possible consequences of those impacts upon the area of the Swiss National Park?

The positive impacts would be that there is a broader understanding of the environment, and the topics regarding the environment, the ecology and possible impacts would be that in the national park there is a lot of summer tourism and the suppliers in the area, like the hotels, everybody working in the tourism industry they have a good understanding about what people want to find in the area and what the demands area and also there are a lot of experience with the national park and through all the work of the management of the national park and the tourism industry, there is a better understanding about nature based tourism and we already see that and this is the most important one, that for example, the destination of Scuol which is very close to the national park and they also do the marketing and the products of the national park. They have very ecological, modern understanding of destination management nowadays

and not just only in summer, but also in the winter. So, the winter ski area, which is not in the national park, but the management of whole destination, also in winter, they try to be more ecological. The manager there, he has a very good understanding about nature based tourism, also everything about ecology. So, also in the winter offers and on the general mass tourism offers they have, they think much more in a more sustainable and ecological ways than before. We cannot say that this is just because of the national park, but I can imagine that the national park has a good influence upon the development during the mass season.

Appendix 3: Data Analysis

Appendix 3.1. Data Analysis Question 1

1. Some articles consider environmental and ecological as being the same thing. Others say that environmental impacts are referring to the impact upon the environment and ecological impacts to the impact upon the ecosystems. Is there any difference, in your opinion, between environmental and ecological impacts?

Interviewee	Constanze Conradin	Hans Lozza	Heinrich Haller	Pia Anderwald	Reto Rupf	Thomas Rempfler	Vincent Somerville	Philippe Saner	Voll Frieder	Stefan Forster
Phrase Category	A	B	C	D	E	F	G	H	I	J

Phrase	Codes	Sub-codes	Sub-sub codes	Reduction /Explanation /Scaling	Comment	Interpretation and link to literature
A1 ...not so much difference between environmental and ecological...	1. No difference			Reduction Phrase A1 and A3 (A1+A3)	Phrases A1 and A3 are repetitive Phrase A2= argument for A1+A3	none
A2 Because when you have an environmental impact it automatically affects the ecosystem...		1.1. Environmental impacts affect ecosystem		Explanation Phrase A2: When environmental impacts affect ecosystem, they are		
A3 I don't see such a big difference between environmental and ecological impacts...						

				ecological impacts		
B1 We do not really make a big difference...	1. No difference			Reduction Phrase B1 and B4 (B1+B4), 1.No difference	Phrases B1 and B4 are repetitive Phrases B2 and B3= arguments for B1+B4	none
B2 It is a question of definition	4. Question of definition					
B3 ... not very important to make a differentiation of the two concepts...	1. No difference	1.2. Not important to differentiate				
B4 In our communication we do not make the differentiation between environmental and ecological impacts						
C1 For me there is a certain difference between these two terms.	2. Difference			none	Phrases C2, C3 and C4= arguments for C1	none
C2 ...environmental impacts are more an assessment...		2.1. Environmental impacts	2.1.1. An assessment			
C3 ...ecological impacts are more from a scientific point of view...		2.2. Ecological impact	2.2.1. Scientific impact			
C4 On one hand an assessment and on the other hand a scientific point of view.		2.3. Assessment vs. scientific perspective				
D1 'Environment' seems more widely used, but often refers to abiotic conditions	2. Difference	2.4. Environment	2.4.1. Abiotic conditions	none	Phrases D	Phrase D2, D6 are supported by Dowling et al. (2002) who also describes ecosystem as 'how plants and animals interact together and
D2 ecosystem' and 'ecological' is more on interactions between organisms amongst each other and their (physical) environment		2.5. Ecosystem and Ecological	2.5.1. Interactions between organism and environment			
D3		2.6. Ecosystem	2.6.1. Unit/type of			

...ecosystem' as more of a unit or particular type of environment...			environment			<i>with the physical environment'</i>
D4 ...environment itself seems more general...		2.4.Environment	2.4.2 General			
D5 Environmental impacts ...refer more to the physical environment....		2.1. Environmental impacts-	2.1.2. Physical environment			
D6 ... ecological impacts...affect more specifically organisms and their interactions.. but on a narrower scale.		2.2. Ecological impacts	2.2.2. Organisms and their interactions 2.2.3 lower scale			
E1 There are not that many differences	1. No difference			none	Phrase E2, E3 and E4= arguments for E1	none
E2 ... the environment should be seen as an ecological system.		1.3.Environment as ecological system				
E3 ...this is not the point whether you say environment or ecosystem...		1.4. Does not matter				
E4 ...environment is a big part of ecology and nature.		1.5. Environment part of ecology				
E5 It is a question of definition and it is a question of how you define the term environment	4. Question of definition					
F1 I think this is a matter of definition of terms, but I would not be able to explain a difference	3. Unable to answer			none	none	none
G1 environment combines all living(biotic) and not-living (abiotic) things...	2. Difference	2.4. Environment	2.4.3. all living(biotic) and not-living (abiotic)	none	Phrases G1, G2 argument code 2: Difference	none
G2		2.6. Ecosystem	2.6.2 interactions			

...ecosystem is mostly concerned about interactions between biotic factors.			between biotic factors			
H1 ... the impact measured as a change. You measure something now and you measure something at a later point, there is a change in between and this is your assessment of an impact.	5. Impact measured as change			Reduction Phrase H5 and H6 (H5+H6), 2.7. Ecology +2.8. Ecological patterns	Phrases H4 and H5 mean the same thing Phrases H2 and H7 partially contradict themselves	H3, H4+H5, H7, H8 partially supported by Dowling et al. (2002) who states that ecology studies <i>ecosystem which</i> is composed of biotic components meaning the living organisms (animals and plants), the abiotic components such as the non-living organisms (soil, temperature, water) and the flow of materials and energy, such as nutrients.
H2 the environmental impacts, in my understanding, it is a flow or a change of material or energy...	2. Difference	2.1. Environmental Impacts	2.1.3. Flow/Change in material/energy (interviewee understanding)	Explanation Phrase	Phrases H3+H4, H5, H6, H7 are arguments for H8 Phrases from H1 to H11 build arguments for H12	
H3 ecological impact, it is the change in the number of individuals		2.2. Ecological Impacts	2.2.4. Change in number of individuals			
H4 ecology, is that it is about the distribution of animals and plants		2.7. Ecology	2.7.1. Distribution of animals and plants			
H5 ... ecological patterns, how can we understand different species, animals and plants ... the flora and fauna and how are they distributed in a landscape		2.7. Ecological Patterns	2.7.1. Different species and their distribution			
H6 ...ecology comes from "oicos", so from the house or household...		2.7. Ecology	2.7.2. House/ Household			
H7 the people outside of the scientific field and they normally understand ecology as the flow of energy material...		2.7. Ecology	2.7.3. Flow of energy and material (people outside scientific field)			
H8			2.7.4. Both, flow			

I think it is both, you have a change or a flow in energy and material and you have the effect on individuals...			in energy/material and effect on individual			
H9 ...traffic, there will be pollution coming from the cars ... it rains, and it will be washed in the river ecosystem of the national park and this will have detrimental effects and impacts. So that it would be an environmental impact		2.1. Environmental Impact	2.1.4. Pollution from cars washed into river ecosystem			
H10 ...if certain deer populations would die because they get poisoned and the population size would be reduced to a critical level, the specie would go extinct and this would be an ecological impact,		2.2. Ecological Impact	2.2.5. Population sized reduced to a critical level, due to poisoning			
H11 ...the cause is the same, but just the way you look at it is a little bit different.		2.8. Same cause, different perspectives				
H12 Yes, I think there is a difference between environmental and ecological impact.						
I1 environment is maybe more the understanding of the broader public	<i>2. Difference</i>	2.4. Environment	2.4.4. Broader public	Reduction Phrase I3 and I5 (I3+I5)	Phrases I3 and I5 mean the same thing	none
I2 environment... everything that has to do with nature		2.4. Environment	2.4.5 Everything related to nature	Reduction Phrase I2 and I4 (I2+I4)		
I3 ecosystem is a little bit more specific... maybe about an ecosystem of a forest, an ecosystem of a river in an area		2.6. Ecosystem	2.6.3. Specific, ecosystem of forest/ river			
I4 environment is a more general term about everything that you find in nature		2.4. Environment	2.4.5 General, everything you find in nature			

I5 ...more specific ecosystem, so you can speak about the river in the national park.		2.6. Ecosystem	2.6.3. Specific, river in the national park			
I6 ecosystem as a closed unit		2.6. Ecosystem	2.6.4. Closed unit			
I7 environment, where is more like when you switch on your car...		2.4. Environment	2.4.6 Switch on the car			
I8 impact on the ecosystem is when you build a damn on a river		2.6. Ecosystem	2.6.5. Build a dam on the river			
J1 This is a question of the definition	4.Question of definition			none	none	J2, partially supported by Andereck, Valentine, Knopf, & Vogt, (2005) and Mason (2016) who states that environment impacts is referring to <u>the impacts of tourism upon the natural and the built environment</u> J 3 supported by (Dowling, (2002) who states that ecology studies the structure and functioning of the ecosystems.
J2 ...the environmental concerns holistically the natural and cultural environment.	2. Deference	2.4. Environment	2.4.7 Natural and cultural environment			
J3 An ecological point of view is more of a scientific, technical perspective of cause and effect on the ecosystem		2.7. Ecology	2.7.5. scientific, technical perspective of cause and effect on the ecosystem			
J4 This differentiation is subjective						

Appendix 3.2. Data Analysis Question 2

2. What environmental impacts of tourism can affect the ecosystems and therefore can be considered ecological impacts?

Interviewee	Constanze Conradin	Hans Lozza	Heinrich Haller	Pia Anderwald	Reto Rupf	Thomas Rempfler	Vincent Somerville	Philippe Saner	Voll Frieder	Stefan Forster
Phrase Category	A	B	C	D	E	F	G	H	I	J

Phrase	Codes	Sub-codes	Sub-sub codes	Sub-sub-sub codes	Reduction /Explanation /Scaling	Comment	Interpretation and link to literature
A1 ...number of tourists. If you have too many tourists it might disturb the animals due to noise, or their simply physical presence there.	1. Presence of tourists	1.1. Number of tourists	1.1.1. Noise	1.1.1.1. Disturbance of animals	Reduction Phrase A1 and A3 (A1+A3)	Phrase A1 and A3 are repetitive	Phrase A1 + A3 supported by (Mason, 2016) (Terry & Sarah, 2000) (Dowling, Newsome, & Moore, 2002). Noise pollution coming from ... the tourists themselves could disturb the wildlife
A2 If people are going to sensitive habitats, where animals would be disturbed by the presence of humans.		1.2. Disturbance of animals in sensitive habitats					
A3 ... number of tourists going to a location is very important		1.1. Number of Tourists					
A4 Informal toilets could be an impact as well		1.3. Trampling	1.3. 1. Informal toilets				
A5 tourists walk on different paths, they can destroy some plants or even small animals, like ants for example			1.3.2. Walk on different paths	1.3.2.1 Small plants and animals destruction			
							Phrase A4 supported by (UNEP , 2015) (Dowling, Newsome, & Moore, 2002) Trampling visitors who are leaving the settled trails for various reasons (... informal toilets) or it happens in places where there are not any

A6 Garbage might be another issue		1.4. Littering	1.4.1. Garbage				predefined pathways
A7 But this depends on the region, in our region I didn't see so much littering from tourists...			1.4.2. Depends on region				Phrase A6 supported by Mason (2016) Littering: There is a high risk that visitors of an area will drop litter
B1 Maybe the overcrowding, if there is a destruction of the vegetation, the erosion of the trails, noise that chase away the animals,	1. Presence of tourists	1.1. Overcrowding	1.1.2. Destruction of vegetation 1.1.3. Erosion of the trails 1.1.1. noise	1.1.1.2. chase away animals		Overcrowding is also 1.1. like number of tourists because they mean the same thing	Phrase B1 supported by (Mason, 2016) (Terry & Sarah, 2000) (Dowling, Newsome, & Moore, 2002). Noise pollution coming from ... the tourists themselves could disturb the wildlife and (Dowling, Newsome, & Moore, 2002) and Mason (2016): vegetation could be destroyed as well as a consequence of excessive hiking activities,
B2 the presence of people in isolated places where certain animals hide		1.5. presence of people in isolated places where animals hide					
B3 Activities of night, camping or making fire could be really dangerous		1.7. Tourism activities	1.7.2. Activities of night	1.7.2.1 Camping 1.7.2.2. Making fire			
B4 biggest problem is the traffic, noise pollution		1.6. Traffic	1.6.1. Noise pollution				
C1 ...the presence of humans on the	1. Presence of tourists						

pathways.								
D1 Increase in CO2 emissions through motorised travel to and within tourist destinations	1. Presence of tourists	1.6. Travel	1.6.2 Increase in CO2			Travel is also 1.7. like traffic because they mean the same thing	Phrase D1 supported by Mason (2016): Air pollution happens due to the CO2 emission ... the mobility of tourists has increased and the air pollution together with it	
D2 water pollution	2. Tourism development	2.1. water pollution						
D3 light pollution through tourist amenities		2.2. light pollution						
D4 increased use in tourist hotspots	1. Presence of tourists	1.Overcrowding					Phrase D2 supported by Mason, 2016: The water could be polluted through sewage or spillage of fuel	
E1 ..if you visit the Swiss national park. How would I go there? By train or personal vehicle. Then this would have an effect upon the climate.	1. Presence of tourists	1.7. Travel	1.6.2. Affect the climate				Phrase E1 supported by: Air pollution happens due to the CO2 emission (Mason 2016)... Global warming is an effect of this impact, which is affecting the entire ecosystems worldwide (UNEP, 2015).	
E2 ...if I leave a trail in the national park, which is not allowed, I can affect maybe the red deer because they aren't used to my behaviour... I affect the wildlife		1.3. Trampling	1.3.2. Leave the trail	1.3.2.2. Affect wildlife				
E3 ...my trampling effects of just walking. I affect also the microenvironment				1.3.3. Just walking	1.3.3.1 Affect microenvironment			
F1 Humans have the power to change their surrounding like no other creature and at a very high speed, so that organisms do not have sufficient time to evolutionarily adapt to changes. In this sense humans influence ecology wherever they are, whatever they do (producing food, building infrastructure	1. Presence of tourists 2. Tourism development					none	none	Phrase F1 supported by Mason (2016): depends on the magnitude of tourism impact...that the area has little chances for recovery. An example are ski slopes ... where a great number of tourists come during the winter ... the slopes are no able to re-grow vegetation during the summer period
H1	3. Any					None	none	Phrase H2 supported by :

...any impact that creates a flow in material or energy, which has detrimental effects on either the plants or the animals, or the microbes in an ecosystem	impact with detrimental impacts on plants or the animals, or microbes in ecosystem						There is a high risk that visitors of an area will drop litter (Mason, 2016)... The improper disposal of the waste can ... affect the ecosystems (Terry & Sarah, 2000).
H2 for example, people throw out things out of the car and the animals might eat the plastic bags that would be the type of flow of material that causes an ecological impact	1. Presence of tourists	1.4. Littering	1.4.3. effect on animals				Phrase H3 partially supported by: Noise pollution coming from ... the tourists themselves could disturb the wildlife and (Dowling, Newsome, & Moore, 2002)
H3 Noise... is a big problem, you have a lot of people with the paragliding, skiing, mountain biking, I think there is a lot with noise disturbance there		1.7. Tourism activities	1.7.1. Paragliding, skiing, mountain biking,	1.7.1.1 Noise disturbance			
I1 It could start with infrastructure, it would be either possible, you build a big infrastructure which can destroy an ecosystem and have an ecological impact, like, ski slopes or hotels and such things	2. Tourism development	2.3. Big infrastructure (ski slopes or hotels)	2.3.1. Destroy an ecosystem		none	none	Phrase I1 supported by Land degradation due to the development of tourism infrastructure (construction of roads, accommodations and so on) (Terry & Sarah, 2000). Moreover, the construction of tourism facilities puts a pressure upon the landscapes (Sunlu, 2003).
I2 The other way around, it can also be the weak infrastructure which is not strong enough to have the capability to protect the nature. For example... trail and it is not really well maintained, so people start to walk everywhere		2.4. Weak infrastructure	2.4.1. Not strong to protect the nature (trail which is not well maintained)	2.4.1.1. People start to walk everywhere			

I3 ... the impact just of numbers of tourists. If you have an area which is wide and important for animals and you have a lot of visitors, they could start to disturb and scare the animals...the animals would have to run away and they can hurt themselves.	1. Presence of tourists	1. 1. Number of tourists	1.1.4. Disturb and scare the animals	1.1.4.1. The animals could run away and hurt themselves			Trampling affects both the soil and vegetation and it.... happens in places where there are not any predefined pathways and the tourists are not conditioned by them (UNEP , 2015) (Dowling, Newsome, & Moore, 2002)
J1 the most important factors would be: the mobility, the waste of water consumption, energy use, climate change and land use	1. Presence of tourists 2. Tourism Development	1.7. Travel 2.5. Waste of water consumption 2.6. Energy use 2.7. Climate change 2.8. Land use			none	none	

Appendix 3.3. Data Analysis Question 3

3. Do you consider the tourism at the Swiss National Park to be nature based?

Background	Swiss National Park							Academic		
Interviewee	Constanze Conradin	Hans Lozza	Heinrich Haller	Pia Anderwald	Reto Rupf	Thomas Rempfler	Vincent Somerville	Philippe Saner	Voll Frieder	Stefan Forster
Phrase Category	A	B	C	D	E	F	G	H	I	J

Phrase	Codes	Sub-codes	Sub-sub codes	Reduction /Explanation /Scaling	Comment	Interpretation and link to literature
A1 Yes I consider. This is because the tourists coming to the Swiss National Park are coming for two mainly reasons. One would be to enjoy the nature and the other to go hiking	1. Yes	1.1. Tourists	1.1.1. Enjoy nature 1.1.2. Go hiking	None	none	
B1 Yes, absolutely, it is nature based	1. Yes			None	none	
B2 The motivation to come is to see the animals and we know about the results of a study 35% of the people come to see the animals		1.1. Tourists	1.1.3. To see the animals			
B3 60% because of the landscape, because of the hiking possibilities			1.1.4. To admire the landscape 1.1.2. Go hiking			
B4 40 % because of the flowers, vegetation.			1.1.5. To see the vegetation			
B5 that means that people come because they like nature, they want to see the animals.			1.1.1. To enjoy nature			
B6 Swiss National Park is a good place for the nature lovers.		1.2. Supplier (SNP)	1.2.1 Good place for nature lovers			
C1 For me is clear, yes. The tourism in our national park is nature based.	1. Yes			None	none	
C2 Swiss National Park is category 1a, protected area according to IUCN and therefore the tourism in this park has to be nature based		1.2. Supplier (SNP)	1.2.2. Category 1a protected area			
C3 The main aspect of this type of tourism is that you cannot leave the marked pathways. That			1.2.3. Regulation: Cannot leave the marked pathway			

is for me the most important aspect, to be nature based						
C4 I am sure that we can fulfil the condition for nature based tourism in our institution			1.2.4. Fulfils the condition for NBT			
D1 Yes. Apart from footpaths and picnic areas, the SNP provides no amenities for visitors.	1. Yes	1.2. Supplier (SNP)	1.2.5. Does not offer amenities for tourists despite the picnic and footpath areas	None	None	
D2 Tourists who visit the park thus do so in order to enjoy nature		1.1. Tourists	1.1.1. To enjoy nature			
E1 Yes, of course with the exception of the Ofenpass road which could have an effect on the Swiss national park.	1. Yes 2. With the exception of Ofenpass road					
F1 Yes, as much as it can be	1. Yes			None	none	
G1 Yes, I do consider the tourism in the SNP as nature based		1.2. Supplier (SNP)		None	None	
G2 ...the park already when it was founded was and still is for scientific purposes.			1.2.6. Founded for scientific purposes			
G3 ...the impact of scientist as well as tourist is tried to be kept to a minimal. This is done mainly by strict rules and regulations			1.2.7. Regulations: keep the impact of tourists and scientists as low as possible			
H1 yes I think that the tourism at the Swiss National Park it is nature based, I wonder if that is what we should aim for	1. Yes			None	None	H2 supported by: Nature based tourism can be defined as the type of tourism whose main actions are related with nature (Matilainen & Lähdesmäki, 2014).
H2 nature based tourism is simply tourism that targets the nature						
H3	1. Yes	1.2. Supplier	1.2.8.			

and I guess that in the SNP they have an amount of people that are allowed to go there. Restricting, that might help nature based tourism to be sustainable		(SNP)	Regulations: help NBT to be sustainable			Hall & Boyd (2005)
I1 I think for sure it is nature based	1. Yes	1.2. Supplier (SNP)	1.2.9. It's product is based on nature	None	None	I2 supported by: Nature plays an essential role in nature based tourism as the activities which are taking place are influenced by the natural environment (Fredman et al., 2012)
I2 because the supplier, in this case, the Swiss National Park and the product are based on the nature, on "selling the nature" of the national park						
I3 the most important nature based offer here in Switzerland, when you speak about tourism is the national park						
I4 yes, it is nature based, as well because with a product like national park, you have the possibility and the advantage of tourism in the national park to protect some environment which would not have been protected without tourism						
I5 as it is developed by now, I think there is a clear nature based tourism offer						
I6 there is no infrastructure, skiing, hotels, all that, it is all sustainable offers in the national parks						
I7 yes, there is a nature based tourism offer						
J1 In the heart of the National Park, tourists could experience the natural attraction (wilderness).	1. Yes	1.2. Supplier (SNP)	1.2.14. Wilderness can be experienced	none	none	
J2 If nature could be mediated, if the local population has a say and benefits						

economically, then sustainable regional development is promoted, therefore the tourism in the SNP could be described as natural. I think that these conditions are met in the Swiss National Park									

Appendix 3.4. Data Analysis Question 4

4. What are possible ecological impacts (positive and negative) of nature based tourism in the Swiss National Parks?

Interviewee	Constanze Conradin	Hans Lozza	Heinrich Haller	Pia Anderwald	Reto Rupf	Thomas Rempfler	Vincent Somerville	Philippe Saner	Voll Frieder	Stefan Forster
Phrase Category	A	B	C	D	E	F	G	H	I	J

Phrase	Codes	Sub-codes	Sub-sub codes	Reduction /Explanation /Scaling	Comment	Interpretation and link to literature
A1 Swiss National Park has many strict regulations and I don't think that there are too many ecological impacts there	1. Strict regulations	1.1. Not so many ecological impacts		None	None	A1 confirmed by: the rules are very strict and that is why the Swiss National Park was classified by IUCN as being category 1a, natural reserve (Swiss National Park, 2015)
A2 ...animals got used with humans. This you cannot consider as being negative or positive. It is just a fact	2. Animals got used with humans					
A3	3. Positive	3.1. People will				

If people will enjoy the nature, they will be more sensible to it, maybe also telling to others about their experience at the Swiss National Park. And the interest for the park will grow.	impact	be more sensible to nature 3.2. The interest for the park will grow				(Krug, Abderhalden, & Haller, 2002)
B1 Although... we have very strict rules which have the aim to avoid human influence... the rules cannot avoid air pollution, for example. We don't really know what happens with those air pollution	4. Possible negative impact (not necessarily due to NBT in SNP)		4.1.1. Air pollution	None	B6 is an explanation for B5 that these impacts are usually not happening because the tourists respect the rules	B1 confirmed by: the rules are very strict and that is why the Swiss National Park was classified by IUCN as being category 1a, natural reserve (Swiss National Park, 2015) (Krug, Abderhalden, & Haller, 2002)
B2 With the park itself it is a little bit different because we have very strict rules and the visitors need to stay on the tracks, they are not allowed around to make fires. We don't really have many of these impacts in our park.	1. Strict rules	1.1. Not so many ecological impacts				
B3 But the traffic, the cars, they produce a lot of noise and produce also air pollution and this is one of our major problems.	4. Possible negative impact (not necessarily due to NBT in SNP)	4.1. Due to cars/ traffic	4.1.1. Air pollution 4.1.2. Noise			
B4 they are nature lovers and on the other side they come by car, instead of the public transport.	5. Negative impact	5.1. Tourists coming by car instead of public transport				
B5 Traffic in the park		5.2. Traffic in the park				
B6 If they leave the trails, if they take plants, make noise, of course might be a change in the behaviour of the animals, or there might be erosion, or the vegetation might be harmed and so on.	6. Possible negative impact (due to NBT in SNP)	6.1. Tourists leave trails 6.2. Tourists take the plants 6.3. Tourists make noise	6.1.1. Erosion 6.2.1. Vegetation might be harmed 6.2.1. Change in animal behaviour			

B6 Still, this is not really the case because people visiting the Swiss National Park, usually respect the rules	1. Strict rules	1.2. People usually respect rules				
C1 the presence of humans on the pathways	5. Negative impacts	5.3. Presence of humans on the pathways		Reduction Phrase C6 +C7	Phrases C6 and C7 are referring to the same thing	C6 supported by: However, although hiking is permitted, the tourists are prohibited to leave the marked hiking paths or to disturb the nature by making fires or sleep outside. ... (Swiss National Park, 2015) C2, C14 supported: The Ofen Pass road. Since 1960 due to the extension of the road to the Livigno Valley, the number of cars and motorcycle crossing the park has consistently increased, disturbing the wildlife and this became a major issue for the park authorities (Kupper, 2014). C13 supported by: 'acceptable change', at what conditions are wanted, at what type of impacts are acceptable or not, and at what actions are desired to reach
C2 Ofenpass is the main road which goes through the national park. Nevertheless, this road is not related to the nature based tourism.	4. Possible negative impact (not necessarily due to NBT in SNP)	4.2. Ofenpass road				
C3 Yes, part of them are coming through this road... and that is a problem and of course, an influence.	5. Negative impacts	5.4. Tourists coming through Ofenpass road				
C4 Other problem could be the deposition of garbage and the trampling. They are problems, but they are not the main problem in the Swiss National Park.		5.5. Deposition of garbage 5.6. Trampling				
C5 ...it is important that the Swiss National Park is opened to the general public because it is unrealistic to not have access to such big protected area. It would be bad if nobody would therefore have no interest in this park. So it is important that you give access.						
C6 ...because of the rule that you cannot leave the pathways, the influence of humans is reduced.	1. Strict rules	1.3. Influence of humans is reduced				
C7 I can say that we can handle the human influence in order to reduce to minimum the impacts						
C8 Just a very small number of people do not	1. Strict rules	1.4. Small number of people				

obey the rules. There are around 120.000 visitors, each year and normally you have between 20-30 problems with visitors, no more. So the rules are accepted very well		do not obey the rules (20-30 out of 120.000)				this goal (Dowling, Newsome, & Moore (2002))
C9 And also the visitors can have a good control, not only the rangers. So there is a social control among the visitors	7. Visitors and rangers have control	7.1. Visitors 7.2. Rangers				
C10 the acceptance of such a park and an important point would be that Swiss National Park is considered economic relevant as well. So it doesn't just have an ecological relevance, but also an economical relevance. This is a main aspect in order to have a good emotion especially coming from the local population						
C11 There are some animals which are used with the people, the marmots	2. Some animals got used with humans					
C12 during the day animals, such as red deer avoid the pathways. They only come close during the night and during the day, when there are people, they avoid the pathways	8. Other animals avoid pathways when there are people					
C13 These are influences, that it is right. We can't avoid that. But I think these are influences that we can accept.	Acceptable influences					
C14 I consider that the main problem of the Swiss National Park is Ofenpass road. This road is going through the park, it is the main road and in summer, the noise of vehicles, especially of the motorcycles is really disturbing.	4. Possible negative impact (not necessarily due to NBT in SNP)	4.2. Ofenpass road	4.2.1. Noise (from vehicles and motorcycles)			
C15 This has an ecological impact and also an influence on the emotions and expectations			4.2.1.1. Influence emotions and expectations of			

of the visitors. This situation is however, not related to nature based tourism.			visitors			
D1 Negative impacts: Disturbance of animals through presence of people (flight responses; avoidance of areas in the vicinity of footpaths during busy times; maybe increased stress);	5. Negative impacts	5.3. Presence of humans on the pathways	5.3.1. Disturbance of animals	None	None	The Ofen Pass road. Since 1960 due to the extension of the road to the Livigno Valley, the number of cars and motorcycle crossing the park has consistently increased, disturbing the wildlife and this became a major issue for the park authorities (Kupper, 2014).
D2 Negative impacts:... littering along footpaths and around picnic areas; soil erosion along footpaths; noise pollution from Ofenpass road.	5. Negative impacts 4. Possible negative impact (not necessarily due to NBT in SNP)	5.5. Littering 5.6. Soil erosions 4.2. Ofenpass road	4.2.1. Noise pollution			
E1 If in the Swiss National Park nobody would be interested, then the value of the national park would be very low and maybe in thousands of year there would be the consequence that there would not be any national park at all. So protected areas they have a benefit of nature, because the surroundings would get money, not necessarily the park itself.	3. Positive impact	3.3. Protection of the park				
E2 Therefore with this protection of the national park you could say that you have an ecological impact						
E3 If the tourists behave as they are supposed to, then the most negative one would be the way in which they choose to travel to the Swiss National Park			5. Negative impact	5.1. Tourists coming by car instead of public transport		
F1 ...since the initiation humans have to follow tight rules (see 3.). Negative impacts are therefore limited by law. Positive impacts	1. 1. Strict regulations	1.5. Negative impacts are therefore limited by law		None	None	F1 supported by: the rules are very strict and that is why the Swiss National Park

caused by human do not exist for a strict nature reserve						was classified by IUCN as being category 1a, natural reserve (Swiss National Park, 2015) (Krug, Abderhalden, & Haller, 2002)
F2 Swiss National Park was founded to study ecology without the impact of humans. So humans are only allowed to watch, but not to change anything						
G1 Wherever there are tracks there are people in the national park (this only in summer, because the park is closed in winter). Wherever there are people there is noise and by that a certain disturbance of the animals.	5. Negative impact	5.3. Presence of humans on the pathways	5.3.1. Disturbance of animals	None	None	
H1 I have understood that it is regulated nowadays and they are very restrictive, so you can only walk on your path. I think the Swiss National Park is very restrictive with that. So	1. Strict regulations					H1 supported by: However, although hiking is permitted, the tourists are prohibited to leave the marked hiking paths or to disturb the nature by making fires or sleep outside. ... (Swiss National Park, 2015)
H2 I cannot really think of any ecological impacts now, personally		1.6. No ecological impacts				
H3 I think that the impact comes mainly from the outside. ... In the inside, I cannot see any ecological impact of tourism because it is so protected	9. Impacts coming from outside	Inside: 1.6. No ecological impacts				
H4 the ecological impacts may not be within the national park, but I would say that one should look at the surrounding and consider that						
H5 Swiss National Park is a tourism attraction, it means that you need a lot of access points and this causes fragmentation. But that is all						

outside						
H6 ... is sort of the buffer zone of the national park. I think it is better to not only look at the Swiss National Park, but also at the Swiss National Park in the context of its environment.	9. Impacts coming from outside	9.1. Access points	9.1.1 Causes fragmentation			
H7 I was only hiking there once, for two days and I never saw waste or anything. I think they are very restrictive. I think they have good guards	7. Visitors and rangers have control 1. Strict regulations	7.2. Rangers				
I1 It is a very famous national park, it is the only one in Switzerland and that is why a lot of people are coming to see the nature and to experience the nature	5. Negative impacts	5.2. Traffic in the park				
I2 You find high numbers of tourists in the summer season.						
I3 if people are willing to obey the rules, that they stay on the tracks and to not go into some areas where they are not supposed to, or they don't take plants and not leave the garbage everywhere	1. Strict regulations	1.6. No ecological impacts				
I4 the management of the national park which is doing very well, to inform the people, to teach the people	10. Management doing well to inform and teach people					
I5 the positive impacts from my perspective, are very important here, because first of all the nature in the area, is protected and by these we also have high publicity on what is going on there, a quite well understanding coming from the society of Switzerland that the protection of the nature is very important.	3. Positive impacts	3. 3. Protection of the park 3.4. High publicity on what is going on there, 3.5. Quite well understanding coming from the society of				

		Switzerland				
I6 tourists who visit the national park, which have a more ecological understanding... they travel more by train, arriving in the area, do they pay more for the ecological hotels.		3.6. Tourists have a more ecological understanding				
I7 I see much higher benefit out of nature based tourism for the nature, than the negative impacts						
J1 ...the heavy load of mobility through the middle of the park (Ofenpassstrasse of Zernez in the Val Müstair).	4. Possible negative impact (not necessarily due to NBT in SNP)	4.2. Ofenpass road				J1 supported: The Ofen Pass road. Since 1960 due to the extension of the road to the Livigno Valley, the number of cars and motorcycle crossing the park has consistently increased, disturbing the wildlife and this became a major issue for the park authorities (Kupper, 2014).

Appendix 3.5. Data Analysis Question 5

5. What are the possible consequences of those impacts upon the area of the Swiss National Park?

Interviewee	Constanze Conradin	Hans Lozza	Heinrich Haller	Pia Anderwald	Reto Rupf	Thomas Rempfler	Vincent Somerville	Philippe Saner	Voll Frieder	Stefan Forster
Phrase Category	A	B	C	D	E	F	G	H	I	J

Phrase	Codes	Sub-codes	Sub-sub codes	Reduction /Explanation /Scaling	Comment	Interpretation and link to literature
A1 If people are enjoying the Swiss National Park, they would recommend to other persons and so on. One consequence would be that more tourists will come to the Swiss National Park	1.People enjoy SNP and recommend it	1.1. More tourists will come to SNP		None	None	
A2 This would beneficiate the region for sure. I'm not so sure if this is the case for Swiss National Park as well			1.1.1. The region around SNP will beneficiate			
B1 tourists who are making noise. ... that might cause to some animals which are sensible to go away. It is just temporary, because usually the animals come back.	2. Tourists are making noise	2.1. Temporarily, make animals go away		None	None	
B2 ...on the trails there are people which are walking on these paths. And for instance at night, when they know there are no visitors animals come close to the trails as well. But they got used with the people. And the marmots, for instance, they know that there is no danger to be close to the trails and sometimes it is even a protection for them.	3. Presence of human on the trails	3.1. Some animals stay away from the trails 3.2. Some animals stay close to the trails (shelter)				
C1 There are some animals which are used with the people, the marmots	3. Presence of human on the trails	3.2. Some animals stay close to the trails (shelter)				
C2 ...during the day animals, such as red deer avoid the pathways. They only come close during the night and during the day, when there are people, they avoid the pathways		3.2. Temporarily, animals avoid the trails				
C3	4. Noise from	4.1. Disturb				

Ofenpass road. This road is going through the park, it is the main road and in summer, the noise of vehicles, especially of the motorcycles is really disturbing... This has an ecological impact and also an influence on the emotions and expectations of the visitors	Ofenpass road	animals 4.2. Disturb visitors				
D1 Animals avoid areas close to footpaths during the day, when visitors present – possible changes in natural habitat use.	3. Presence of human on the trails	3.2. Temporarily, animals avoid the trails				
D2 Alteration of plant communities along footpaths due to trampling.	5. Trampling	5.1. Alteration of plant communities along footpaths				
D3 Possible habitat shifts by organisms sensitive to noise away from Ofenpass road.	4. Noise from Ofenpass road	4.1. Disturb animals				
D4 Left (plastic) rubbish may choke animals attempting to eat it; however, park rangers clear away any rubbish they find.	6. Littering	6.1. rubbish may choke animals attempting to eat it (Rangers clear away)				
E1 Ofenpass road. Because during the winter time they prepare this road with salt. And the salt gets washed out from the roads and infiltrates in the national park. This is also a strong negative impact	7. Preparation of Ofenpass road with salt	7.1. Salt washed out from rods and infiltrates in SNP		None	None	
F1 Strongly simplified example: Disturbance of wildlife	8. Disturbance of wildlife			None	None	
F2 Depending on species and their behaviour animals are more or less afraid of humans. To a certain point some species or individuals can get used to this disturbance and for example lower flight distances (distance to human, when animal starts to flight	3. Presence of human on the trails	3.1. Some animals stay away from the trails 3.2. Some animals stay close to the trails (shelter)				
F3 Red deer for example, adapt their behaviour		3.3. Red deer adapt behaviour-	3.3.1. Problems in forest			

and tend towards feeding inside forests and graze on meadows only at night. In doing so, red deer can cause problems in forests		feed inside the forests				
G1 I think the consequences are very small					None	None
H1 ...the increasing of the pressure upon the unprotected areas. If you protect something, then this means that the things around it are more intensively used	9. Pressure upon the areas around SNP	9.1. The areas around SNP are more intensively used			None	None
I1 ...positive impacts would be that there is a broader understanding of the environment, and the topics regarding the environment, the ecology	10. Broader understanding of the environment and ecology				None	None
I2 the suppliers in the area, like the hotels, everybody working in the tourism industry they have a good understanding about what people want to find in the area	11. The suppliers in the areas around have a good understanding about what people want to find in the area					
I3 ...destination of Scuol which is very close to the national park and they also do the marketing and the products of the national park. The manager there, have a very good understanding about nature based tourism, also everything about ecology. they think much more in a more sustainable and ecological ways than before		11.1. The suppliers think much more in a more sustainable and ecological ways than before				
I4 We cannot say that this is just because of the national park, but I can imagine that the national park has a good influence upon the development during the mass season	12. SNP has a good influence upon the development during the mass season					

Appendix 3.6. Data Analysis Question 6

6. Is the management at the Swiss National Park aware of these possible impacts and consequences? If yes, how is the management at SNP dealing with them?

Interviewee	Hans Lozza	Heinrich Haller	Pia Anderwald	Reto Rupf	Thomas Rempfler
Phrase Category	B	C	D	E	F

Phrase	Codes	Sub-codes	Sub-sub codes	Reduction /Explanation /Scaling	Comment	Interpretation and link to literature
B1 We keep an eye and we have little possibilities to avoid the impacts. We try to find people who don't behave according to the rules	1. Yes, the management is aware of the influences	1.1. Try to find people who don't behave according to the rules				
B2 We also have the rangers who are aware of the situation.		1.2. Rangers				
B3 It is important that they inform the visitors because when you have those rule, it is important that people understand			1.2.1. Inform the visitors about the rules			
B4 We try to educate the people. We have programs with young generations and also people from the region		1.3. Educate people				
C1 we are aware of those influences. But in general, it is not possible to do more in order to mitigate the human influence	1. Yes, the management is aware of the influences	1.4. It is not possible to do more with regard of human		None	None	

C2 It is necessary to have these visitors... does not represent a big problem for the national park		influence	1.4.1 Visitor are necessarily and do not represent a problem for the park			
C3 And it is very difficult for us to do something against ... Offenpass road because it is a political question. We tried to do something against it for many years but without any substantial success. Now we will see what we can do		1.5. Offenpass road	1.5.1. Attempts to do something about it were made, but without success			
D1 Yes. Monitoring projects to determine magnitude of impacts	1. Yes, the management is aware of the influences	1.6. Monitoring projects to determine magnitude of impacts		None	None	
E1 I think they are aware very much of it	1. Yes, the management is aware of the influences			Reduction phrase E1 and E4 (E1+E4)	Phrases E1 and E4 mean the same thing	
E2 they have a good visitor guiding system.		1.7. Good visitor guiding system				
E3 They have these park rangers which are looking after these visitors		1.2. Rangers	1.2.2. Looking after the visitors			
E4 I think they are really aware of it and that they are doing a very good job						
F1 Yes, Park management performs the regulation	1. Yes, the management is aware of the influences					

Appendix 3.7. Data Analysis Question 7

7. What recommendations do you have for the management at the Swiss National Park?

Interviewee	Hans Lozza	Heinrich Haller	Pia Anderwald	Reto Rupf	Thomas Rempfler	Stefan Forster
Phrase Category	B	C	D	E	F	J

Phrase	Codes	Sub-codes	Sub-sub codes	Reduction /Explanation /Scaling	Comment	Interpretation and link to literature
B1: the management is doing well and there is no need for further recommendations	1. Management is doing well	1.1. No further recommendations		None	None	
B2: Maybe the important thing is to sensitize people, to come by public transport. Maybe this is something that we can do more	2. Recommendation	2.1. To sensitize people, to come by public transport				
B3: We also have the road which is crossing through the park and it is very busy. But the biggest problem in that road is the motorbikes, which are coming maybe from Italy... But it is difficult to make something about it due to the fact that it is a public road and we cannot just close it	3. Ofenpass Road	3.1. Difficult to make something about it				
C1 I have a recommendation with regards of the Ofenpass road. We need to do something about it	3. Ofenpass Road	3.2. The management should do something about it		None	None	

D1 -						
E1 I think they are dealing with these ecological and environmental matters very well and I do not have any further recommendations.	1. Management is doing well	1.1. No further recommendations		None	None	
F1 In a protected area like Swiss National Park information is very important. Park management is putting a very big effort in that. My recommendation is to keep or even to increase this effort to visitors and community members	2. Recommendation	2.2. Information	2.2.1. Keep or even to increase the management effort to inform visitors and community members	None	None	
J1 A restriction of traffic on the Ofenpass road (esp. In the summer peak travel times) and simultaneous promotion of public transport could be a measure. This proposal, however, is politically difficult to implement	2. Recommendation	2.3. Restriction of traffic on the Ofenpas road 2.4. Promotion of public transport could be a measure.	Difficult to implement	None	None	
J2 Another measure is to improve the visitor management in the National Park (signaling, controls, etc.)		2.5. Improve the visitor management	2.5.1 Signalling and controls			

Appendix 4: Code books

Appendix 4.1. Code book Question 1

1. Some articles consider environmental and ecological as being the same thing. Others say that environmental impacts are referring to the impact upon the environment and ecological impacts to the impact upon the ecosystems. Is there any difference, in your opinion, between environmental and ecological impacts?

1. No difference (A1+A3, B1+B4, E1, B3)
 - 1.1 *Environmental impacts affect ecosystem (A2)*
 - 1.2 *Not important to differentiate (B3)*
 - 1.3 *Environment as ecological system (E2)*
 - 1.4 *Does not matter (E3)*
 - 1.5 *Environment part of ecology (E4)*
2. Difference (C1, D, H12, G, I)
 - 2.1 *Environmental impacts (C2, D5, H2, H9)*
 - 2.1.1. *An assessment (C2)*
 - 2.1.2. *Physical environment (D5)*
 - 2.1.3. *Flow/Change in material/energy (interviewee understanding) (H2)*
 - 2.1.4. *Pollution from cars washed into river ecosystem (H9)*
 - 2.2. *Ecological Impacts (C3, D6, H3, H10)*
 - 2.2.1. *Scientific (C3)*
 - 2.2.2. *Organisms and their interactions (D6)*
 - 2.2.3. *Lower scale (D6)*
 - 2.2.4. *Change in number of individuals (H3)*
 - 2.2.5. *Population sized reduced to a critical level, due to poisoning (H10)*
 - 2.3. *Assessment vs. scientific perspective (C4)*
 - 2.4. *Environment (D1, D4, G1, I1, I2 +I4, I7)*
 - 2.4.1. *Abiotic conditions (D1)*
 - 2.4.2. *General (D4)*
 - 2.4.3. *All living (biotic) and not-living (abiotic) (G1)*
 - 2.4.4. *Broader public (I1)*
 - 2.4.5. *Everything related to nature (I2+I4)*
 - 2.4.6. *Switch on the car (I7)*
 - 2.4.7. *Natural and cultural environment (J2)*
 - 2.5. *Ecosystem and ecological (D2)*
 - 2.5.1. *Interactions between organism and environment (D2)*
 - 2.6. *Ecosystem (D3, G2, I3+I5, I6, I8)*
 - 2.6.1. *Unit/type of environment (D3)*
 - 2.6.2. *Interactions biotic factors (G2)*
 - 2.6.3. *Specific, ecosystem of forest/ river (I3 + I5)*
 - 2.6.4. *Closed unit (I6)*
 - 2.6.5. *Build a dam on the river (I8)*
 - 2.7. *Ecology (H4+ H5, H6, H7, H8, J3)*
 - 2.7.1. *Distribution of animals and plants (H4 + H5)*
 - 2.7.2. *House/ Household (H6)*

- 2.7.3. Flow of energy and material (people outside scientific field) (H7)
- 2.7.4. Both, flow in energy/material and effect on individual (H8)
- 2.7.5. Scientific, technical perspective of cause and effect on the ecosystem (J3)
- 2.8. Same cause, different perspectives (H11)

3. Unable to answer (F1)

- 4. Question of definition (B2, E5, J1, J4)
 - 4.1 Subjective differentiation (J4)

Appendix 4.2. Code book Question 2

2. What environmental impacts of tourism can affect the ecosystems and therefore can be considered ecological impacts?

- 1. Presence of tourists (A, B, C, D, E, F, I, J)
 - 1.1. *Number of tourists/ Overcrowding (A1+A3, B1, D4, I3)*
 - 1.1.1. Noise (A1, B1)
 - 1.1.1.1. Disturbance of animals (A1)
 - 1.1.2. Destruction of vegetation (B1)
 - 1.1.3. Erosion of the trails (B1)
 - 1.1.4. Disturb and scare the animals (I3)
 - 1.1.4.1. The animals could run away and hurt themselves (I3)
 - 1.2. *Disturbance of animals in sensitive habitats (A2)*
 - 1.3. *Trampling (A4)*
 - 1.3.1. Informal toilets (A4)
 - 1.3.2. Walk on different paths (A5, E2)
 - 1.3.2.1. Small plants and animals destruction (A5)
 - 1.3.2.2. Affect wildlife (E2)
 - 1.3.3. Just walking (E3)
 - 1.3.3.1. Affect microenvironment (E3)
 - 1.4. *Littering (A6, A7, H2)*
 - 1.4.1. Garbage (A6)
 - 1.4.2. Depends on region (A7)
 - 1.4.3. Effect on animals (H2)
 - 1.5. *Presence of people in isolated places where animals hide (B2)*
 - 1.6. *Traffic/ Travel (B4, D1, E1, J1)*
 - 1.6.1. Noise pollution (B4)
 - 1.6.2. Increase in CO2/ Affect the climate (D1, E1)
 - 1.7. *Tourism activities (B, H)*
 - 1.7.1. *Paragliding, skiing, mountain biking, (H3)*
 - 1.8.1.1. Noise disturbance (H3)
 - 1.7.2. *Activities of night (B3)*
 - 1.7.2.1. Camping (B3)
 - 1.7.2.2. Making fire (B3)
- 2. Tourism development (D, F, I, J)
 - 2.1. *Water pollution (D2)*
 - 2.2. *Light pollution (D3)*
 - 2.3. *Big infrastructure (ski slopes or hotels) (I1)*

- 2.3.1. Destroy an ecosystem (I1)
- 2.4. *Weak infrastructure (I2)*
 - 2.4.1. Not strong to protect the nature (trail which is not well maintained) (I2)
 - 2.4.1.1. People start to walk everywhere (I2)
- 2.5. *Waste of water consumption (J1)*
- 2.6. *Energy use (J1)*
- 2.7. *Climate change (J1)*
- 2.8. *Land use (J1)*

3. Any impact with detrimental impacts on plants or the animals, or microbes in ecosystem (H1)

Appendix 4.3. Code book Question 3

3. Do you consider the tourism at the Swiss National Park to be nature based?

1. Yes (A, B, C, D, E, F, G, H, I, J)

1.1. Tourists (A1, B, D)

1.1.1. Enjoy nature (A1, B5, D2)

1.1.2. Go hiking (A1, B3)

1.1.3. To see the animals (B2)

1.1.4. To admire the landscape (B3)

1.1.5. To see the vegetation (B4)

1.2. Supplier (SNP) (B6, C2+C3+C4, D1, G2, H3, I, J)

1.2.1 Good place for nature lovers (B6)

1.2.2. Category 1a protected area (C2)

1.2.3. Regulation: cannot leave the marked pathway (C3)

1.2.4. Fulfils the condition for NBT (C4)

1.2.5. Does not offer amenities for tourists despite the picnic and footpath areas (D1)

1.2.6. Founded for scientific purposes (G2)

1.2.7. Regulations: keep the impact of tourists and scientists as low as possible (G3)

1.2.8. Regulations: help NBT to be sustainable (H3)

1.2.9. It's product is based on nature (I2)

1.2.10. Most important NBT offer in Switzerland (I3)

1.2.11. The possibility to do tourism and to protect the nature (I4)

1.2.12. Does not offer amenities for tourists (I6)

1.2.13. Sustainable offer (I7)

1.2.14. Wilderness can be experienced (J)

2. With the exception of Ofenpass Road (E)

Appendix 4.4. Code book Question 4

4. What are possible ecological impacts (positive and negative) of nature based tourism in the Swiss National Parks?

1. Strict regulations (A1, B2, B6, C6, F1, H1+H2, H7, I3)
 - 1.1. Not so many ecological impacts (A1, B2)
 - 1.2. People usually respect rules (B6)
 - 1.3. Influence of humans is reduced (C6)
 - 1.4. Small number of people do not obey the rules (20-30 out of 120.000) (C8)
 - 1.5. Negative impacts are therefore limited by law (F1)
 - 1.6. No ecological impacts (H2, I3)
2. Animals got used with humans (neither positive nor negative) (A2, C11)
3. Positive impacts (A3, E1, I5)
 - 3.1. People will be more sensible to nature (A3)
 - 3.2. The interest for the park will grow (A3)
 - 3.3. Protection of the park (E1, I5)
 - 3.4. High publicity on what is going on there,
 - 3.5. Quite well understanding coming from the society of Switzerland
 - 3.6. Tourists have a more ecological understanding
4. Possible negative impact (not necessarily due to NBT in SNP) (B1, B3, C2+C14+C15, D2, J1)
 - 4.1. Due to cars/ traffic (B3)
 - 4.1.1. Air pollution (B1, B3)
 - 4.1.2. Noise (B3)
 - 4.2. Ofenpass road (C2, C14, D2 , J1)
 - 4.2.1. Noise (from vehicles and motorcycles) (C14, D2)
 - 4.2.1.1. Influence emotions and expectations of visitors (C15)
5. Negative impacts (B4+ B5, C1+C3+C4, E3, G1)
 - 5.1. Tourists coming by car instead of public transport (B4, E3)
 - 5.2. Traffic in the park (B5, I2)
 - 5.3. Presence of humans on the pathways (C1, D1, G1)
 - 5.3.1. Disturbance of animals (D1) ; G1 (due to noise)
 - 5.4. Tourists coming through Ofenpass road (C3)
 - 5.5. Deposition of garbage (C4 / Littering (D2)
 - 5.6. Trampling (C4 / Soils erosion (D2)
6. Possible negative impact (due to NBT in SNP) (B6)
 - 6.1. Tourists leave trails (B6)
 - 6.1.1. Erosion (B6)
 - 6.2. Tourists take the plants (B6)
 - 6.2.1. Vegetation might be harmed (B6)
 - 6.3. Tourists make noise (B6)
 - 6.2.1. Change in animal behaviour (B6)
7. Visitors and rangers have control (C9, H7)
 - 7.1. Visitors (C9)
 - 7.2. Rangers (C9, H7)

8. Other animals avoid pathways when there are people (C12)
9. Impacts coming from outside (H3+H4)
10. Management doing well to inform and teach people (I4)

Appendix 4.5. Code book Question 5

What are the possible consequences of those impacts upon the area of the Swiss National Park?

1. People enjoy SNP and recommend it (A1)
 - 1.1. More tourists will come to SNP (A1)
 - 1.1.1. The region around SNP will benefit (A1)
2. Tourists are making noise (B1)
 - 2.1. Temporarily, make animals go away (B1)
3. Presence of human on the trails (B2, C1, D1, F2)
 - 3.1. Some animals avoid trails (B2, C2, D1, F2)
 - 3.2. Some animals stay close to the trails (shelter) (B2, C1, F2)
4. Noise from Ofenpass road (C3, D3)
 - 4.1. Disturb animals (C3, D3)
 - 4.2. Disturb visitors (C3)
5. Trampling (D2)
 - 5.1. Alteration of plant communities along footpaths (D2)
6. Littering (D4)
 - 6.1. Rubbish may choke animals attempting to eat it (Rangers clear away) (D4)
7. Preparation of Ofenpass road with salt (E1)
 - 7.1. Salt washed out from roads and infiltrates in SNP (E1)
8. Disturbance of wildlife (F1)
9. Pressure upon the areas around SNP (H1)
 - 9.1. The areas around SNP are more intensively used (H1)
10. Broader understanding of the environment and ecology (I1)
11. The suppliers in the areas around have a good understanding about what people want to find in the area (I2)
 - 11.1. The suppliers think much more in a more sustainable and ecological ways than before (I3)
12. SNP has a good influence upon the development during the mass season (I4)

Appendix 4.6. Code book Question 6

6. Is the management at the Swiss National Park aware of these possible impacts and consequences? If yes, how is the management at SNP dealing with them?

1. Yes, the management is aware of the influences (B1, C1, D1, E1+E4, F1)
 - 1.1. Try to find people who don't behave according to the rules (B1)
 - 1.2. Rangers (B2, E3)
 - 1.2.1. Inform the visitors about the rules (B3)
 - 1.2.2. Looking after the visitors (E3)
 - 1.3. Educate people (B4)
 - 1.4. It is not possible to do more with regard of human influence (C1)
 - 1.4.1 Visitor are necessarily and do not represent a problem for the park (C2)
 - 1.5. Ofenpass road (C3)
 - 1.5.1. Attempts to do something about it were made, but without success (C3)
 - 1.6. Monitoring projects to determine magnitude of impacts (D1)
- 1.7. Good visitor guiding system (E2)

Appendix 4.7. Code book Question 7

7. What recommendations do you have for the management at the Swiss National Park?

1. Management is doing well (B1, E1)
 - 1.1. No further recommendations (B1, E1)
2. Recommendation (B2)
 - 2.1. To sensitize people, to come by public transport (B2)
 - 2.2. Information (F1)
 - 2.2.1. Keep or even to increase the management effort to inform visitors and community members (F1)
 - 2.3. Restriction of traffic on the Ofenpass road (J1)
 - 2.4. Promotion of public transport could be a measure (J1)
 - 2.5. Improve the visitor management (J2)
 - 2.5.1 Signalling and controls (J2)
3. Ofenpass Road (B3, C1)
 - 3.1. Difficult to make something about it (B3, J1)
 - 3.2. The management should do something about it (C1)

"I herewith declare that this is my independent work written by me and using only admissible aides and no other sources than those given. I have marked as such, all passages which have been taken literally or analogously from another source. I am aware that if this is not the case, the executive board of the university of applied sciences is entitled to rescind any qualifications awarded or any title bestowed based on this work."

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